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September 4–5, 2015

Edited by **Ludmila Veselovská, Jeffrey K. Parrott,** and **Markéta Janebová**

Palacký University
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Introduction

The articles in this volume are based on papers and posters presented at the 5th Central European Conference in Linguistics for Postgraduate Students (CECIL'S 5) at the Department of English and American Studies at Palacký University, Olomouc, in the Czech Republic on 4–5 September 2015.

For five years, the CECIL'S conference has aimed to bring together linguistics graduate students from a wide range of research areas, providing an interdisciplinary forum for students to present and discuss their work in an intellectually stimulating and informal setting. This year, the conference participants from 12 countries presented 24 papers and 11 posters. The essays here represent, we think, the best of the conference contributions. All these papers have been doubly reviewed and revised on the basis of these reviews. We hope that all readers will find several papers here to be of interest to them and their research. We also wish all the authors the best of luck with their future research.

The organizers would like to thank the invited speakers Klaus Abels, Pavel Caha and Jakub Dotlačil for their contributions at the conference. We also greatly appreciate the assistance of Petra Charvátová and Kamila Večeřová in the organization of the conference.

The editors are indebted to all those who have helped make the proceedings possible. First and foremost, we would like to thank all the authors for both their enthusiastic participation in the conference and their cooperation in the editorial process. We would also like to express gratitude to our colleagues and students from the Faculty of Arts of Palacký University, Olomouc, for their efforts related to the organization of the CECIL'S 5 conference and the subsequent publishing activities.

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And finally we would like to express our immense gratitude to all the reviewers who devotedly participated in the process of accepting and reviewing the papers for the conference and later another round of the peer-reviewing process for the proceedings. Special thanks are also due to Pavel Caha from Masaryk University, Brno, for the overall review of the proceedings.

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Metaphor in a Different Way: The Understanding of Metaphor and Irony in Schizophrenia

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Abstract: The study presents a critical approach to a test which intends to examine comprehension of metaphors and irony in schizophrenia. The paper aims to demonstrate a test rectification. We modified the target blocks of the metaphor and irony understanding test. The original test contains similes in the target sentences; however it is used as a metaphor understanding test. We replaced these similes with metaphors. The new target sentences were tested on two subgroups of schizophrenic individuals. Tests were taken by 7–7 patients, who had already had results from the original test. These results were used as control results for the new target sentences. The aim of the research was to show the test correction, thus it could actually measure metaphor comprehension with metaphors instead of similes. The research question was whether there is any difference in the patients' results from modifying the target blocks. It was expected that the different structures in the target sentences, namely the replacement of similes with metaphors, may influence the understanding of metaphors in the tasks.

Keywords: schizophrenia; language; understanding of metaphors and irony'; theory of mind; executive functions

1. Introduction

There are several contradictory results on theory of mind (ToM) abilities and the comprehension of metaphors and irony with schizophrenic people. This paper aims to demonstrate a correction attempt: we modified the target blocks of a metaphor and irony understanding test, which is used in the clinical protocol. The original test contains similes in the target sentences, which were replaced with metaphors (based on Herold et al. 2002a, 2002b, 2004, 2005).

1.1 Schizophrenia and Language

Schizophrenia was named by an Austrian psychologist, Eugen Bleuler, who coined the term from the Greek words Skhizein (σχίζειν), 'split' and Phred, phren- (φρήν, φρεν-), 'mind' in 1911. The sex distribution of schizophrenia is 1:1; the sociocultural rate is 1%, which means that every hundredth person has this disease. Schizophrenia is heterogeneous; it is considered a spectrum disorder, which consists of groups of different diseases (Németh 2003). According to the DSM-IV (2001), the following criteria of

symptoms represent the disease: (1) delusions; (2) hallucinations; (3) incoherent speech; (4) strikingly disintegrated or catatonic behavior; and (5) negative symptoms, i.e. emotional emptiness, alogia, or will-lessness. As Crow (2000) argues, "schizophrenia is the price that homo sapiens pays for language". Crow listed the following additional symptoms in his paper: loosening of associations; progressively moving away from the topic; incoherence and illogical thinking; circumstantiality (which means giving irrelevant details when speaking); clanging (which is also known as rhyme association);[1] neologisms; specific usage of words; difficulty in abstract thinking or 'over activity'; and repeating heard phrases (also known as echolalia). Crow also mentioned 'thought block', which is a sudden and sustained interruption. It is accepted by many that a significant proportion of lexical, semantic, and pragmatic aspects of the language is linked to the left temporal areas. The right side of these left temporal areas are thicker in the majority of the population. This asymmetry in schizophrenia is often lacking, and the corpus callosum, which connects the two hemispheres, has also been reported to have differences compared to the brains of healthy people (Kéri and Janka 2003).

Covington et al. (2005) reviews the connection between the disease and language at each linguistic level. Differences were detected in prosody, while other findings indicate that the negative symptoms of schizophrenia (as they are called in the psychiatric literature) may appear as a lack of tone and inflection. In other words, the intonation disorders were detected on the supra-segmental levels (Capran et al. 2010). The syntax is intact, even if the semantics and discourse structure is damaged. From the aspect of semantics and discourse organization, it can be concluded that even if this level is broken down (e.g. loosening of associations, clanging, incoherence, etc.), the intellect remains intact. The most striking abnormality occurs on the pragmatic level of language: 'strange words and strange contexts' (Lieberman et al. 2006). Negative symptoms of schizophrenia are characterized by a difficulty in finding words, which may include excessive creation of words – a kind of neologism (Covington et al. 2005; Noonan 2014). A linguistics-based assessment of executive functions by Garab (2007) summarized that some examples can be found for these executive function deficits; however all the results of studies cited are from international papers, and thus don't contain any data from the Hungarian population. In addition, they do not focus on the linguistics side of the topic (Garab 2007). 'Executive functions' is an umbrella term for modelling the processes of cognitive systems, which contain three main aspects: updating, inhibition, and shifting (see 1.2 below).

Besides research on executive functions, the examination of theory of mind (ToM) abilities with schizophrenic people seems like a new and untapped research area (Herold 2005). Herold and his team primarily research connections between pragmatic competence and ToM abilites. Their results showed that the theory of mind deficits can be detected independently of the acute phase. ToM deficits were validated on a Gricean maxim, where the Gricean maxim of relevance was violated. They found a correlation between verbal working memory and attentional disadvantages compared to the normal population, thus the theory of mind deficits were sentenced to be classified into the series of the neurocognitive deficits (Herold 2005).

1 An example of clanging: "He went in entry in trying tying sighing dying ding-dong dangles dashing dancing ding-a-ling!" (Grinnel 2008).

1.2 Pragmatics and Pragmatic Competence

It is necessary to add some brief notions regarding the theoretical framework of the present study. Cognitive relevance theory was used as the main framework to our amendment (Wilson and Sperber 2002), which has the following two key definitions:

> Relevance theory is based on a definition of relevance and two principles of relevance: a Cognitive Principle (that human cognition is geared to the maximisation of relevance), and a Communicative Principle (that utterances create expectations of optimal relevance). (Wilson and Sperber 2002, 249)

Connected to cognitive relevance theory, it is necessary to define 'pragmatic ability' or 'pragmatic competence'. Balázs's (2010) summarizes as follows: the term 'pragmatic competence' was first used by Chomsky in 1977, as the "appropriate usage of signs in communication". The existence of pragmatic competence is supported by several neurolinguistic studies; traditionally it is bound to the right hemisphere, but the exact location of pragmatic competence in the brain is still not known (Ivaskó 2004, cited by Balázs 2010). Ivaskó defines 'pragmatic ability' as "a function established jointly by several sub-areas" (Perkins, cited by Ivaskó 2013).[2] It could be said at least that there are several connections with the central executive system and intentions.

Miyake et al. (2000) specified three main executive functions: shifting, updating, and inhibition.

> The shift is flexible movement between complex tasks, operations, and mental resources, which is associated with writing and arithmetic skills. . . . The updating of incoming information requires monitoring and encoding. . . . Inhibition is an ability to intentionally inhibit dominant, automatic, or semi-answers. The inhibitory processes play an important role in reading, comprehension, vocabulary, and mastery of mathematics. (Tánczos 2012)[3]

By building up a theoretical framework, it is necessary to give some more results and ascertainments about connections between schizophrenia and theory of mind abilities.

> The skill of mentalisation means that we are able to estimate people's mental state, and thereby attribute intent, desire, belief, and emotions to them. ToM skills damage was first detected in autism. In the second half of the nineties intensive studies were conducted on schizophrenia, thus as a result, today we can say that theory of mind deficits are present in schizophrenia. According to the current view, the deficit, compared to autism for example, has a late onset, the development of the critical theory of mind skills take place properly, but deteriorate in later years (Herold 2005).[4]

However, there are numerous contradictory results on ToM abilities and the comprehension of metaphors and irony. Haas et al. (2014) examined the pragmatic connectors (or discourse markers) and phrases on patients living with schizophrenia, and they acquired worse results than the control people. Zeev-Wolf et al. (2014) researched the understanding of novel and conventional metaphors by those living with schizophrenia using response time measurement. They found that schizophrenic people

[2] Translated by Anita Bagi.
[3] Translated by Anita Bagi.
[4] Translated by Anita Bagi.

have right hemisphere predominance compared to controls when understanding conventional metaphors, while there is better recognition and perception with the comprehension of novel metaphors task compared to conventional metaphors. "Inference of the intended meaning, even in the case of idioms, requires interpretive strategies which are based on mentalisation" (Schnell 2007, 182).

It is necessary to refer to Happé's pragmatic research on patients with autism (1993; 1995), where she found that first-order theory of mind abilities are assigned to understanding of metaphors, while second-order theory of mind abilities are assigned to comprehension of irony. The definition of first-order ToM ability means that someone is able to judge an actor's thoughts and beliefs correctly, while the second-order ToM ability is when someone is able to judge thoughts and beliefs of actors in a story or in a situation. Herold and his colleagues used two short stories to measure these abilities, which are based on the primary Sally-Anne tests. Herold et al. (2002b; 2004) did research on patients with schizophrenia and concluded that first-order ToM abilities are assigned to metaphors, while the second-order to irony – similarly with Happé's results. In contrast, when Mo et al. (2008) repeated Herold et al.'s research, with patients with schizophrenia in the phase of remission in China, they found that second-order ToM-abilities were assigned to metaphor, while irony comprehension could not be associated with theory of mind abilities. The contradictory results of Mo's and Herold's research are probably due to differences in language and culture.[5]

2. Materials and Methods

2.1 Subjects

The new target sentences with real metaphors were tested on two subgroups of schizophrenic individuals, which were specified and defined as groups S and Z by psychiatric research. It seems that two subgroups of schizophrenia can be differentiated based mainly on executive functions and cognitive abilities, in addition to MRI-results. The two subgroups were defined based on the results of a semantic fluency task, a visual pattern test, a Wisconsin Card Sorting Test, and a backwards Corsi's cube test. While group S includes patients with frontal dysfunction affecting both hemispheres, group Z has left frontal dysfunction only (Szendi et al. 2010).[6]

Tests were taken by 7–7 patients from both subgroups, who had already had results from the former test containing the original target sentences; these results were used as control results for the new target sentences. The tests were taken in one session with every patient at the Department of Psychiatry at the University of Szeged, Faculty of Medicine. The results of two patients were left out because of deficiencies.[7] There was only one female participant in group S (and she was actually the only ambidextrous participant; however she was left out because of ToM results deficiencies). The rest of

[5] The comprehension of jokes in different cultures and languages are also different, which is caused by variant story structures and different cultural associations; e.g. puns are specifically bound to particular languages.

[6] The present paper is also connected to this clinical research.

[7] One patient had not got ToM outcomes and another patient had not got previous metaphor and irony understanding test results.

the subjects were all male and right-handed. The following table summarizes the subjects' age, education in years, and handedness (the former two are averaged).[8]

	group S (6)	**group Z (6)**
Age	46	39,5
Education	10.5	14.75
Handedness	right	right

Table 1. Subjects' age, education, and handedness

2.2 Test of Comprehension of Metaphors and Irony

The modification of the metaphor and irony comprehension test was intended as an improvement to the original test. The present study shows a critical approach to a test measuring first- and second-order theory of mind (ToM) abilities (based on Herold et al. 2002a; 2002b; 2004). Herold et al.'s test consists of two parts: firstly, it measures theory of mind-skills; secondly, it intends to examine comprehension of metaphors and irony in schizophrenia. In addition, the previous form of the test was measuring the understanding of similes, not metaphors. Compared to the previous results, we assumed that the different structures in the target sentences, namely, the replacement of similes with metaphors (*is/are like* to *is/are*) might influence the understanding of metaphors in the tasks (cf. Happé 1993; 1995). We expected (according to Happé's research on autism) that different sentence structures of metaphors and similes have different effects on understanding the meaning of the target blocks, i.e. it is easier to understand a simile than a metaphor.

The instructions of the test were quite simple: the leader of the experiment had to read out the story slowly and clearly and ask questions in the appropriate places. Below you can read a sample of the modified task (the target block is highlighted in italics and questions are in bold face).

> Two brothers, Thomas and Adalbert, are arguing. Adalbert doesn't listen to anything that Thomas says, and Thomas is getting angry. Thomas says, "Adalbert, I'm so glad you listen to my opinion too."
>
> **What does Thomas mean by it?**
>
> **What does Thomas think about Adalbert, that he listens to him or not?**
>
> The mother, who listened to the quarrel of the two boys, says, *"Adalbert, you really are a road roller sometimes!"*
>
> **What does the mother mean by it?**
>
> **What does the mother think about Adalbert, that he listens to Thomas or not?**

2.3 Further Tasks and Tests

Besides the comprehension of metaphors and irony test, further tests were taken. These additional tests were to measure different cognitive functions and working memory components. The table below contains test measures for cognitive function or the

[8] Ages of group S: 53, 37, 40, 46, 56, 44. Ages of group Z: 32, 27, 36, 61, 24, 57. Education of group S (in years): 12, 8, 12, 11, 9, 11. Education of group Z (in years): 18, 12, 15, 18, 14, 5, 11.

working memory component; brief explanations about the tests can be found following the table.

Tests	Tested function or working memory component
MMSE + Clock Drawing,	General cognitive condition testing
fluency tasks (letter, semantic, action naming)	Executive functions
ToM tests	Theory of mind abilities
Metaphor and irony comprehension	Pragmatic competence

Table 2. Tests taken for cognitive functions or working memory components

The Mini Mental State Examination (MMSE, see Folstein et al. 1975, Hungarian adaptation Tariska et al. 1997) is a quick cognitive test to measure and define different kinds of dementias. The test contains orientation questions, memory and repetition tasks, naming tasks, reading and writing parts, as well as figure copying tasks.

Attached to MMSE, the Clock Drawing test (Shulman 1986, Hungarian adaptation Kálmán et al. 1995) is used to measure executive functions. Subjects have to draw a clock, which has to show a specified time on the clock face with numbers and hour hands on it.

Fluency tasks are used to measure executive functions (Hungarian version, see Tánczos 2012). In the letter fluency task subjects are asked to say as many words as they can, that begin with the particular first letter, in 60–60 seconds (following Tánczos' study the letters 's' and 't' were used in the present paper, i.e. 60 seconds for the letter 's', and 60 seconds for the letter 't'). In the semantic fluency task subjects are asked to name as many animals, and then fruits as they can in 60–60 seconds. In the action naming task subjects are asked to say as many actions that people do as they can in 60 seconds. Several limitations were put on each task, e.g. "Please, do not repeat words!", "Please, do not repeat words with different endings!", etc.

To measure first- and second-order ToM abilities two short stories were used based on Herold et al. (2002a; 2002b; 2004). The first short story is very similar to the typical Sally-Anne test, but in an oral form; the second story is about a grandmother, a grandfather, and a grandchild who has a birthday. Details about the comprehension of metaphors and irony test are mentioned above in Section 2.2.

2.4 Hypotheses

Our hypotheses were as follows.

(1) Compared to the previous results, we expected that the different structures in the target sentences, namely the replacement of similes with metaphors (*is/are like* to *is/are*), might influence the understanding of metaphors in the tasks. This is because the original structures might facilitate the understanding of the target sentences (see Happé 1993, 1995; cited by Szamarasz 2014). As Happé's results show, understanding similes is easier than understanding metaphors. The grammatical structure of similes may help the listener to comprehend the target block's meaning, while the structure of a metaphor could be more difficult. The object of comparisons and *tertium comparationis* were always explicitly present in the original sentences, while in the new metaphors, they were not.

(2) We expected the results of the tests measuring ToM abilities to correlate with the metaphor and irony comprehension test results (Happé 1993, 1995, cited by Szamarasz 2014; Herold et al. 2002a, 2002b, 2004, 2005; Langdon et al. 2002); namely, if patients have higher scores in ToM tests, they would have higher scores in understanding metaphors and irony tests, too.

(3) We expected a difference between the theory of mind results of the two subgroups with a better performance in group Z, as the previous results show from Szendi et al.'s research (Szendi et al. 2010). The two subgroups were defined previously, based on the results of the semantic fluency task, the visual pattern test, the Wisconsin Card Sorting Test, and a backwards Corsi's cube test, where the group Z had better outcomes in every task.

(4) We expected a difference between the pragmatic abilities of group S and group Z, expecting that group Z would perform better (Szendi et al. 2010). We expected that if group Z had higher scores in tests which measure executive functions, they would have higher scores in ToM ability tasks and comprehension of metaphor and irony tasks.

(5) We expected that the results of the action naming fluency task, similar to previous research with letter and semantic fluency tasks, would be better in group Z; however, this has not been recorded previously (Szendi et al. 2010).

3. Results and Discussion

In the table below there is a list of tests taken. The maximum scores of the tests are shown in brackets after the name of the tests in the first column. The results of the two subgroups are averaged in the second and third column (minimum and maximum scores from the patients of these subgroups are parenthesized in each tier).

	Group S (6)	**Group Z (6)**
MMSE (max. 30 p.)	28.3 (24–30)	28.3 (24–30)
Clock (max. 10 p.)	6.1 (0–10)	5.1 (0–10)
's'	10 (16–4)	9.3 (13–4)
't'	10.1 (14–5)	10.1 (18–6)
Animal	16.3 (22–13)	17 (23–10)
Fruit	11.6 (14–6)	12.1 (18–6)
Action naming	11.5 (17–7)	14.1 (21–10)
ToM-1 (max. 2 p.)	1.3 (2–1)	1.83 (2–1)
ToM-2 (max. 2 p.)	0.66 (2–0)	0.66 (2–0)
Previous simile (max. 4 p.)	1.66 (3–0)	3.5 (4–2)
Previous irony (max. 4 p.)	1.5 (3–0)	2 (4.0)
New metaphor (max. 4 p.)	2.16 (3–1)	3.16 (4–0)
New irony (max. 4 p.)	1.83 (4–0)	2 (4–0)

Table 3. Two subgroups' averaged results of the tests

According to our hypotheses, we expected better outcomes in group Z in every task (Szendi et al. 2010). However, worse performances were obtained from the Clock Drawing test, which is not only used to measure executive functions, but could supply information about the level of dementia. While we cannot provide an explanation for

this, we believe that the connections between dementia and executive functions in schizophrenia could be examined on a larger sample in further studies.

Similarly, we assumed a better performance in group Z in the letter fluency task, but our assumption turned out to be false. The results are quite alike in the two groups, although there are differences in the lowest and highest scores; with the letter 's' group S scores higher, while with the letter 't' group Z scores higher. Aspects of the letters' frequency will be required to explain these results.

Based on previous results (Szendi et al. 2010), group Z was also expected to perform better in the semantic fluency tasks; the results we obtained are in line with our assumption.

The results of the action naming fluency task are completely new. The results of group Z are higher, including the highest and the lowest scores as well. The average score of group Z is 14.1, while the average score of group S is 11.5. Furthermore there are notable differences among the lowest and the highest scores in this task. The lowest score of group S is 7, while the lowest score of group Z is 10; the highest score of group S is 17, while the highest score of group Z is 21.

The results of the first- and second-order ToM tests seem fairly similar at first sight, however, group Z scores higher on average in the first-order task (group S: 1.3; group Z: 1.83), considerably higher than group S. Thus, these results satisfied our hypothesis, but not on every level. In the second-order ToM task, the two subgroups' results were completely the same, on average scores (0.66) as well as the lowest and the highest score (0–2). However the difference between the results of the two subgroups in the first-order theory of mind task were remarkable (1.3–1.83). These results could be a marker which leads our attention to the importance of different orders in ToM tasks.

Our results, compared to the previous ones, are partly in line with our expectations. We expected that the different structures in the target sentences, namely the replacement of the similes with metaphors (*is*/*are like* to *is*/*are*), might influence the understanding of metaphors in the tasks (Happé 1993; 1995). Interesting results were obtained as an outcome of our modification: metaphors were better understood by group Z in the previous form. However, after the modification group Z still performed better than group S. Although compared to the previous results of each group with similes, their results are reversed. While in the modified test with metaphors, group S had a better performance, group Z produced worse outcomes. Similar results were obtained from the irony understanding tests: the results of group Z remain exactly the same, while the results of group S have improved from 1.5 to 1.83. After a T-TEST calculation we did not receive any significant data ($p < 0.05$). The group S and Z results compared to each other with similes were < 0.05882 and the new results with metaphors were < 0.22174; this is the most significant data we received. On the one hand this outcome means there is not a significant difference between the two groups in understanding metaphors; however group Z has a better output on average. On the other hand, this might be caused by the low number of samples, which needs to be higher in future research. Just as we hypothesized, different results were obtained from the modified tests, but in a largely different way.

4. Conclusion and Additional Questions

(1) It was expected that the exchange of similes for metaphors would lead to different results compared to previous studies. Surprisingly, the results of group S (which we

expected to be worse) turned out to be better in understanding metaphors than similes, while the results of group Z deteriorated. The irony comprehension values also improved in group S, while the results of group Z remained unchanged.

(2) In the light of the present results, we cannot declare with certainty that the results of the tests measuring ToM abilities could be related to the metaphor and irony comprehension test results. Testing with more subjects is required.

(3) We expected a difference between the results of the theory of mind tests of the two subgroups, with better performance achieved by group Z. However, this hypothesis remains valid only for the first-order ToM task.

(4) We expected a difference between the pragmatic abilities of groups S and Z, and we expected group Z to have a better performance, but this was only partially fulfilled. The results of different tasks that measure executive functions are not completely satisfactory given our hypotheses. However, it is important to mention that there is no clear explanation which cognitive systems could be connected.

(5) It was expected that the results of the semantic fluency task, similar to previous research, would be better in group Z. The hypothesis proved to be true. In addition, group Z outperformed group S in the action naming fluency task, which has not been previously recorded.

After our discussion and conclusions, questions remain and are raised for subsequent studies. Firstly, there is the impact of medications, which raises questions about the results of each test. Secondly, the effects of the acute or chronic phases cannot be ignored since this may help better understand the subjects' results. There could be vastly different outcomes from the different general status of the patients. Thirdly, and connected to the previous ascertainments, although tests were taken in a phase of remission, the effects of time and a potential later psychosis need to be taken into consideration. In other words, the results always come from actual conditions, thus researchers need to repeat tests from time to time to obtain valid results. Finally, the test recording conditions need to be mentioned. The effects of the linguistic 'landscape' or working with human voices may also affect the results. Therefore, different methods and protocols during the test-shooting period may need to be tested. Connected to the results of former studies, additional targeted experiments of irony comprehension, such as comprehension of jokes, could be required.

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The Effect of Salience, Hemispheric Dominance, and Nativeness on the Processing of Novel Metaphors and Unfamiliar Opaque Adjective-Noun Compounds

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Abstract: This work presents a linguistic investigation of lexical access to the non-salient meaning of figurative expressions in English. Clearly, our inspiration was Cieślicka's investigation of the applicability of Fine/Coarse Coding Theory (FCCT) to L2 idiom processing as performed by bilingual speakers. In our study, we also employed Polish subjects with advanced command of English – not only since, following Cieślicka, we sought to verify the assumptions about bilinguals raised by the FCCT, but also because there is little scientific knowledge of how bilingual speakers manage to comprehend L2 non-/salient meanings of given expressions. However, on the account of the theory under analysis, we conducted an examination of other figurative expressions, i.e. novel metaphors and unfamiliar opaque Adjective-Noun compounds. The studies carried out for the sake of the following paper employed a cross-modal priming technique, in which novel metaphors were embedded in sentences, and a lexical decision task (selecting the correct definition), in which unfamiliar opaque compounds were presented auditorily. The central questions addressed in this paper, pertaining to the FCCT, are: (1) Do right-hemisphere dominant (RHD) language-users deal with non-literal (figurative, having non-salient meaning) utterances faster than left-hemisphere dominant (LHD) ones?; (2) Do L2 speakers process the L2 figurative (non-salient) meaning of a given expression more quickly or more slowly than the literal (salient) meaning of the same expression? As for the first study question, the FCCT claims that RHDs process non-salient expressions faster than LHDs, whereas LHDs process salient expressions faster than RHDs. The theorists' answer to the latter question is that, at the moment of reading a figuratively used sentence, L2 speakers discern only the literal (salient) meaning, and only later on the intended one (non-salient). Our study supported the first of the two assumptions, but questioned another; specifically, we observed a relationship between one's being either left or right dominant and the reaction time with which he/she processed non-salient meanings of expressions. Interestingly enough, the results revealed that L2 subjects obtained quicker response in the case of L2 figurative expressions as opposed to their literal equivalents, which is, in fact, at odds with the theory in question.

Keywords: figurative expressions; the Blending Theory; opaque compounds; novel metaphors; the Fine/Coarse Coding Theory

1. Introduction

In light of contemporary research devoted to the question of salience in language, we provide new empirical support concerning the processing of figurative language, in particular opaque compounds and novel metaphors, with regard to hemispheric

dominance and bilingualism. The central questions addressed in this paper are as follows:

(1) Do right-hemisphere dominant (RHD) language users deal with interpreting non-literal (figurative) utterances faster than left-hemisphere dominant (LHD) ones?

(2) Are L2 figurative expressions (non-salient) processed more slowly than their literal (salient) equivalents in the case of bilingual speakers?

Our goal is to verify the assumptions of the Fine/Coarse Coding Theory (FCCT).With regard to the questions stated above, the theory proposes the following answers:

(3) Subjects who are right-hemisphere dominant (RHD) are quicker than left-hemisphere dominants (LHDs) at processing figurative expressions whose intended meaning is non-salient.

(4) Since L2 speakers, at first glance, perceive all the L2 expressions as having literal meaning, coming up with the non-salient meaning of a given expression takes them much more time than in the case of analyzing expressions whose intended meaning is salient.

The expressions presented in (5), namely a novel metaphor in (5a), and an unfamiliar opaque Adjective-Noun compound in (5b), are viewed as figurative, whereas the expressions presented in (6), i.e. a literal sentence (6a) and a noun phrase with an adjectival modifier in (6b), are their literal counterparts. The studies on novel metaphors and on opaque A-N compounds were conducted independently, therefore the issue of literal equivalence is not uniform and was rendered differently. (In the study employing novel metaphors, a literal equivalent was the one which simply carried the same sense as an expression containing a word or a string of words used metaphorically; in the study focusing on compounds, a literal equivalent was a sentence which transformed a given opaque A-N compound into a phrase).

(5) (a) This is definitely too much love *to digest*.

(b) One of the environmental pressures in the Great Barrier Reef includes cyclic population outbreaks of the *blúebottles*, which are a kind of jelly fish.

(6) (a) I can't watch such affectionate people and always look the other direction.

(b) Water is frequently sold in *blue bóttles*, as they make a lasting impression that the water is crystal clear and thirst-quenching.[1]

In order to investigate to what degree the FCCT's assumptions are relevant, we compared the reaction times in processing between the metaphorical and literal

1. It has to be pointed out that compound words and corresponding A-N phrases were accentuated differently, as observed in 5b and 6b through accent marks. The experimental material did not contain stress indication marks.

expressions illustrated above as demonstrated by advanced Polish speakers of English; also, we took into consideration the hemispheric dominance of the participants.

2. Novel Metaphors

By the term *novel metaphors* we refer to figurative expressions which contain components denoting tangible objects but pertaining to abstract concepts. The same definition may be applied to conventional metaphors; these, however, can be distinguished from novel expressions by the fact that the meaning of the conventional ones are already contained in the any reliable dictionary (and therefore, most probably, in mental lexicon) because of them being permanently used in one and the same context (Steen et al. 2010). In other words, novel metaphors are created on the spot, and interpreting them correctly based on a given context does not involve immediate resorting to intended referents.

3. Unfamiliar Opaque Compounds

Opaque compounds, on the other hand, are understood here as compounds belonging to one of the following three types (Benczes 2004, 8):

(7) (a) TO (partially opaque: transparent-opaque) compounds, e.g., *blúebell*;

(b) OT (partially opaque: opaque-transparent) compounds, e.g., *gréenhouse*;

(c) OO (fully opaque: opaque-opaque) compounds, e.g., *blúebottle*.

These types of constructions have been much neglected in the analysis of idiomatic expressions.

The degree of opacity corresponds to the degree of metaphoricity, and thus, for the purposes of this study, we treat the terms *opaque* and *metaphorical* interchangeably. If a compound belongs to one of the abovementioned types (i.e., either partially or fully opaque), it can be classified as a *metaphorical compound*.

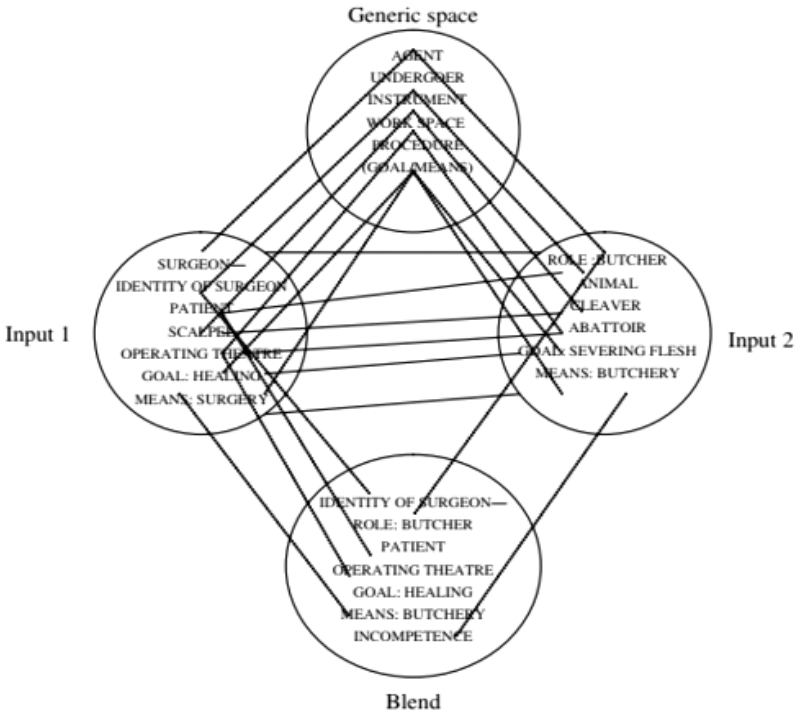
We do not treat the opaque compounds used in our experiment as conventional figurative expressions. One might argue that they all, along with their meanings, can be found in any reliable dictionary. Indeed, theoretically, they are lexicalized items. However, an item's lexicalization status does not correspond to its conventionalization level; i.e., the mere fact that an item is contained in the dictionary does not entail that it is well-known and widely used. Therefore, prior to conducting an experiment on opaque compounds, we measured how familiar a group of opaque compounds was for subjects; subjects were supposed to, by means of a 7-point scale, assess whether or not a given opaque compound was known to them. In the main experiment, we used only those (plus one control opaque compound, *greenhouse*) which subjects found least familiar. Because of the fact that the chosen opaque compounds did not belong to the group of highly conventional, well-known items (in many cases subjects saw the majority of the opaque compounds for the first time), we assumed that we could treat them as a kind of derivative of novel metaphors. Hence, because the opaque compounds we utilized in the experiment, although contained in the dictionary, are not conventional, we refer to this group of compounds as *unfamiliar opaque Adjective-Noun compounds*.

4. Interrelation Between Novel Metaphors and Opaque Compounds

There are a number of reasons why we decided to compare novel metaphors and unfamiliar opaque compounds. First of all, as Benczes (2004, 9) argues, the analysis of unfamiliar opaque compounds requires cognitive linguistic tools, such as metaphors. It is thanks to metaphorical cues that the meanings of unfamiliar opaque compounds can be resolved. The two kinds of figurative expressions are, in fact, based on literal concepts which refer to tangible referents. The juxtaposition of those concepts in the case of opaque compounds, or viewing them in the context of abstract concepts in the case of other metaphors, results in forming a new concept, which ultimately leads to creating a figurative expression.

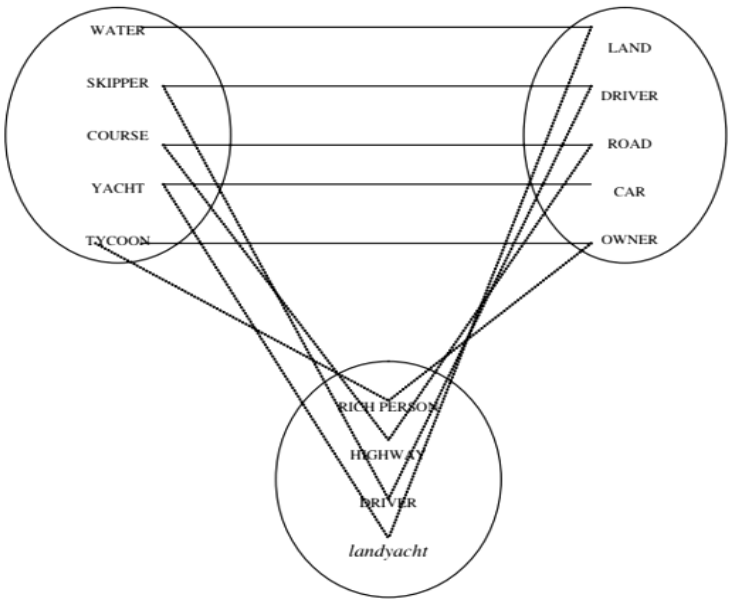
Furthermore, since both can be treated as belonging to non-conventional figurative language, their meanings can be accounted for via the *blending theory*. The theory, a hybrid of Conceptual Metaphor Theory and Mental Spaces Theory (Evans et al. 2006, 401–3), has recently gained much acclaim from linguists and has since been considered a reliable tool for analyzing non-conventional metaphorical expressions (Benczes 2004, 11; Gibbs 2001, 322). It postulates that humans subconsciously blend those traits of two entities used in an expression (in novel metaphors these are topic and vehicle, and in opaque compounds two or more free morphemes) in such a way as to obtain the correct interpretation. In brief, the appropriate meanings of non-conventional utterances are constructed by blending the so-called mental spaces. A single integration network, corresponding to the structure of a given figurative expression, (generally) consists of four of such mental spaces: two input spaces (containing information about two entities being juxtaposed in a given expression), a generic space (containing information which the two entities share in a more or less abstract way), and – most importantly – a blended space ("deriv[ing] structure that is contained in neither input" Evans et al. 2006, 404). Thanks to this process, in which a blended space is the most crucial component, it is possible to interpret a seemingly anomalous expression, be it either a novel metaphor or an unfamiliar opaque compound, correctly (Evans et al. 2006, 403–15). Figures 1 and 2 present the blending of mental spaces for a novel metaphor (*This surgeon is a butcher*) and an unfamiliar opaque compound (*landyacht)*. Thanks to the existence of a blended space, humans are able to derive the intended implications from the expressions in question; in the novel metaphor, we know that what is inferred is not the fact that the surgeon has great swimming skills but rather that they are incompetent, whereas in the unfamiliar opaque compound, we presume that the word describes a luxury car owned by a rich person.

As suggested above, the two kinds of figurative expressions may be perceived as highly similar in nature. For the purposes of the study, we therefore treat them as belonging to one group of figurative expressions and, at the same time, being the opposite of expressions which are literal. However, possible differences in the processing of these expressions may be due to differences in the way they are formed; opaque compounds are created by means of the imaginative word-formation process, whereas novel metaphors consist of single words or a string of words (phrases). While analyzing the results, we took this dissimilarity into consideration.



Source: Evans et al., 2006, p. 406

Figure 1. Integration networks for a novel metaphor (*This surgeon is a butcher*)



Source: Evans et al. 2006, 416

Figure 2. Integration network for an unfamiliar opaque compound (*landyacht*)

5. The Fine/Coarse Coding Theory (FCCT)

The central aim of this paper is to verify the assumptions of the Fine/Coarse Coding Theory (FCCT), whose advocates argue that there is an apparent relationship between hemispheric dominance and the processing of (non-)figurative expressions. Also, they argue that L2 speakers analyze L2 non-conventional figurative expressions differently than L1 speakers (obviously, those expressions will be L1 for them).

As already mentioned above, all novel metaphors and opaque compounds have their literal equivalents; i.e., the expressions in question have both their figurative and literal meanings. However, as claimed by the Graded Salience Theory on which the FCCT is based, it is the notion of *salience* that determines which of the two possible meanings will be activated first when processing a given expression. Most of the time, notwithstanding the surrounding context, speakers first identify the *salient* meaning of an expressions, i.e., the one which is characterized by the most frequent and conventional use. The *non-salient* meaning of an expression carries less obvious, less immediate, and less familiar interpretations; only thanks to the surrounding context can speakers deduce that in fact the non-salient meaning, rather than the salient one, has to be extracted (Cieślicka 2011, 14). As Gibbs puts it, "… salient meanings immediately arise when individual words are read, … [but] context quickly shapes the actual meanings people interpret for words they read" (2001, 320).

Importantly enough, both literal and figurative expressions have their salient and non-salient meanings. The figurative meaning of a given word or phrase can also be a salient one since it is quite a frequent phenomenon that a word or phrase are used primarily in their figurative sense. On the other hand, if the literal meaning of such a conventional metaphor is needed, it will be considered non-salient (e.g. in the case of conventional metaphors, *She has built high walls around her*, or in the case of conventional opaque compounds, *greenhouse*). On the other hand, an expression can have a literal meaning which is salient, and when in fact the figurative one is needed, it will be considered non-salient (e.g., in the case of novel metaphors, *Everybody agrees that this surgeon is a butcher*, and in the case of unfamiliar opaque compounds, *landyacht*).

In our study, we assume that the intended meaning of novel metaphors and unfamiliar opaque compounds (5a–b) used in our experiments is of the non-salient kind, while their literal equivalents (6a–b) carry salient meaning. As mentioned earlier, the status of literal equivalents differs depending on which kind of expression is analyzed. In the case of novel metaphors, as their literal equivalents we used literal words which together denoted the same sentence context as the one used in the figurative sentence (cf. 5a–b), while in the case of opaque compounds, we used a noun phrase with an adjectival modifier (cf. 6a–b). Notwithstanding this difference, both kinds of literal equivalents fulfill their purpose – they represent salient meanings of particular items.

According to the FCCT, second-language (L2) speakers interpret any L2 expressions, at least during online interpretation, not as meaningful wholes but as consisting of separate constituents which form a literal expression. Thus, according to the theory, it takes more time for them than in the case of native speakers to find out that given figurative expressions were supposed to be used in their non-salient sense – not literally but metaphorically (Cieślicka 2010, 138). In other words, L2 speakers will first activate the literal meanings of L2 expressions, either literal or figurative ones, because they will always be the salient ones (as opposed to figurative meanings, which are, according to the FCCT, always non-salient for L2 speakers). However, this kind of

meaning in the case of the figurative expression type will be incorrect, i.e. this is not the intended one; only after comprehending the whole context will it become apparent to subjects that in fact the non-salient one is needed.

What the FCCT further claims is that the left hemisphere (LH) is responsible for the processing of salient meanings, whereas the right hemisphere (RH) handles the non-salient meanings. This happens because of the internal structure of each hemisphere as well as because the hemispheres work asymmetrically (Vajda n.d.). Several studies (Giora et al. 2000; Lee et al. 2006) have shown that the LH is activated more (as observed, e.g., through imaging studies) while dealing with "small and focused semantic fields"; the RH, on the other hand, is observed to have heightened activation (on the basis of, e.g., dvf experiment testing results) when dealing with "large and diffuse semantic fields". In other words, the semantic relations between given units and a context may be twofold – either they are close because of the units' being permanently used in the particular context or they are distinct because of the units' being rarely or never used in the particular context (Cieślicka, 2010, 137). The hypothesis that follows from these observations is that subjects having their LH dominant are assumed to proceed actions in a logical way, therefore they will be prone to seek most obvious solutions – in this case, salient meanings – first. Conversely, subjects with RH dominance boast more non-conventional thinking, thus they are hypothesized to come up with less straightforward solutions – i.e. non-salient meanings – relatively faster in comparison to left-hemisphere dominants (Vajda, n.d.).

Based on the hypothesis put forward by the FCCT, our aim was to determine whether the relationship between hemispheric dominance and the processing of expressions of various degrees of salience, as proposed by the FCCT, is indeed valid. Additionally, we wanted to check whether L2 subjects indeed processed novel figurative expressions much more slowly than their literal equivalents, where the former kind of expressions corresponded to non-salient interpretation, and the latter to salient interpretation.

6. Our Study

In our two studies on novel metaphors and unfamiliar opaque Adjective-Noun compounds, we wanted to verify what follows:

(8) (a) Are there any differences in reaction times between figurative expressions and literal expressions, as processed by L2 speakers?

(b) Does hemispheric dominance influence processing of figurative and literal expressions? More specifically, do right-hemisphere dominant subjects process non-salient meanings more quickly than salient ones?

We conducted experiments on novel metaphors and opaque compounds independently, in which subjects of Polish origin with advanced command of English took part. Reaction time in responding to salient/non-salient meanings of those two kinds of expressions, depending on which one was needed with a given context, was measured. Detailed descriptions of either experiment are presented in the following section.

6.1 Experimental Procedure

The experimental procedures described in 6.1.1. focus on salient and non-salient (in this case, literal and metaphorical, respectively) meanings of novel metaphors and opaque compounds and on the processing thereof. First, in order to establish the role of hemispheric dominance in the issue of saliency, every participant was asked to measure (by means of the Brain Dominance Test available at http://www.ipn.at/ipn.asp?BHX) which hemisphere is their dominant one – they should be either left-hemisphere dominant (LHD) or right-hemisphere dominant (RHD). For both experiments (on novel metaphors and unfamiliar opaque Adjective-Noun compounds), the PsychoPy software was used.

6.1.1 Novel Metaphors

The experiment consisted of self-paced reading followed by rating on a 7-point scale. Twenty-five participants (12 of them LHD, 13 of them RHD) were given 20 examples. Each example contained two sentences displayed on the first slide. The first one provided contextual information and the second contained speaker emotion implied in the words used; on the second slide was either a word or a picture with a 7-point scale underneath. Twenty experimental items contained two sentences paired with a word, and the remaining twenty were two sentences paired with a picture. The participants were supposed to focus on speaker attitude as implied in the second sentence and assess the strength of this emotion on the 7-point scale after reading the second sentence.

Index	**Sentence type**	**Sentence 1 (providing context)**	**Sentence 2 (containing an emotion)**	**Emotion word/Picture showing emotion**
1.	*Novel metaphorical expression*	Yesterday I saw my ex-girlfriend, with whom I still have had some expectations, with a wedding ring.	Now it acts to me as a "sorry, we're closed" sign.	HARDSHIP
2.	*Literal expression parallel to the novel metaphorical expression*	My son's childhood isn't happy because his father is very arrogant to him.	I can hear my boy crying in his bed every time we go to sleep.	HARDSHIP
3.	*Filler sentence*	I wanted to share my impressions about the book I had recently read with my friend.	When I was giving praise to the book's complex plot and the writing style, my friend only smirked with distaste.	

Table 1. Examples of three utterance types examined in the experiment analysis

Each of the 40 experimental examples needed two slides to be displayed on. The first slide contained a context-providing sentence at the top and the target sentence underneath, which was meant to convey a particular emotion and on which participants were asked to concentrate more. As soon as the participants read the target sentence, they clicked the mouse, and the second slide appeared. At that point, the participants' task was to assess how accurately and strongly the target sentence expressed the target-sentence word or picture (expressing the speaker's feelings) that was displayed along with the 7-point scale underneath. Point 1 denoted very weak correlation between the sentence-target word/picture and the target sentence, whereas point 7 denoted very strong correlation between the sentence-target word/picture and the target sentence. The participants were to choose the most suitable point on the scale as quickly and as accurately as possible. Moreover, Inter Stimulus Interval (ISI) was measured – that is, the time that elapsed from the moment the subject clicked the mouse when he/she completed reading a target sentence to the moment of his/her marking the most appropriate point on the 7-point scale.

6.1.2 Opaque Compounds

Subjects heard 32 sentences, half of which were intended for analysis (the rest were used as fillers). A native speaker read the compounds (distinctly accentuating either the first or the second constituent of the compound) and the participants were supposed to choose one of the two possible interpretations suggested (for instance, *rédwood* vs. *red wóod*). In this case, not only the reaction time but also accuracy was measured.

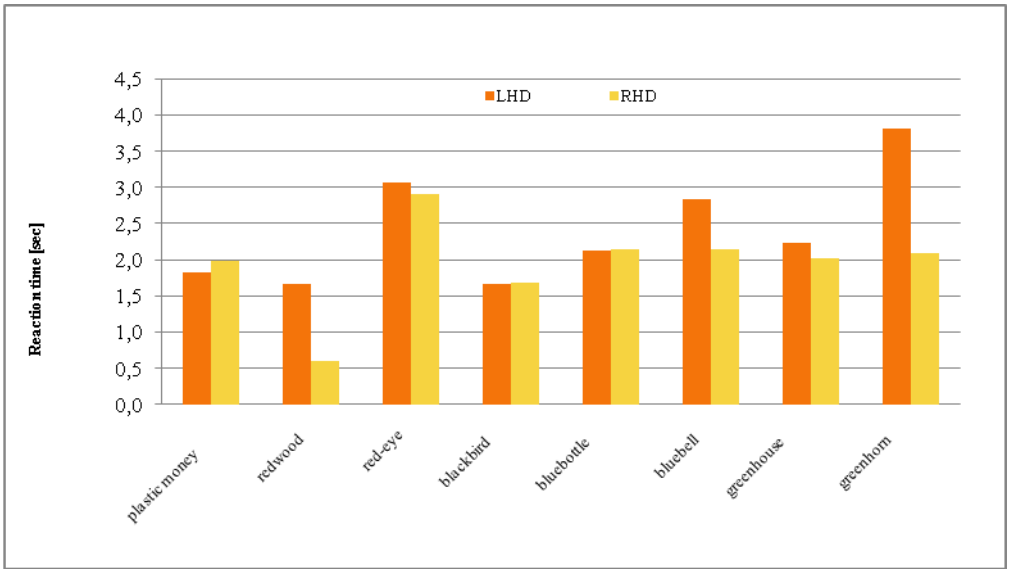
Table 2 briefly illustrates the experimental conditions.

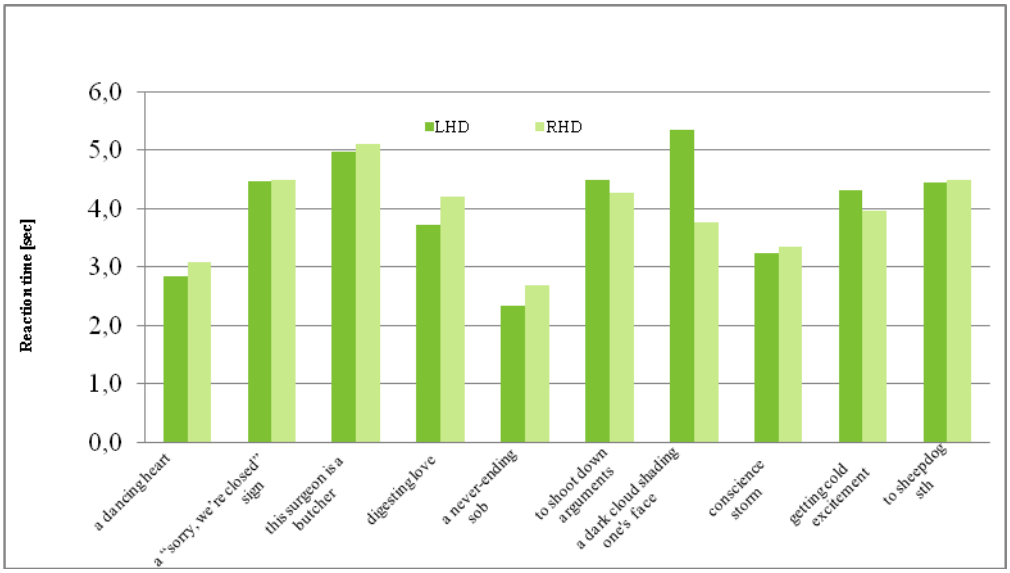
Metaphors	**Compounds**
25 L2 participants	25 L2 participants
7-point scale (used to assess the strength of an emotion word relating to a particular metaphorical sentence)	lexical decision task (using stress hints to decide which meaning of stress doublets is presented)
visual stimuli	audio-visual stimuli
10 novel metaphors, 10 literal equivalents, and 20 fillers	8 A-N opaque compounds, 8 A-N phrases, and 16 fillers
dependent variables: reaction time and rating score	dependent variables: reaction time and accuracy

Table 2. Experimental conditions

6.2 Results

Figures 4 and 5 show differences in response times between left-hemisphere dominants (LHDs) and right-hemisphere dominants (RHDs) in processing non-salient meanings of unfamiliar opaque compounds and novel metaphors, respectively.





Figures 3 and 4. Reaction times of processing of non-salient meanings of opaque compounds and novel metaphors as obtained by LHDs and RHD

Our results are almost entirely consistent with the FCCT. In the case of unfamiliar opaque compounds, the RHDs indeed processed them faster than the LHDs (Figure 3). On the other hand, considering novel metaphors, the picture is not clear-cut since the RHDs and the LHDs processed them equally fast, with a slight advantage for the RHDs (see *a dark cloud shading one's face* in Figure 4).

Let us now consider differences in reaction times between figurative expressions and their literal equivalents.

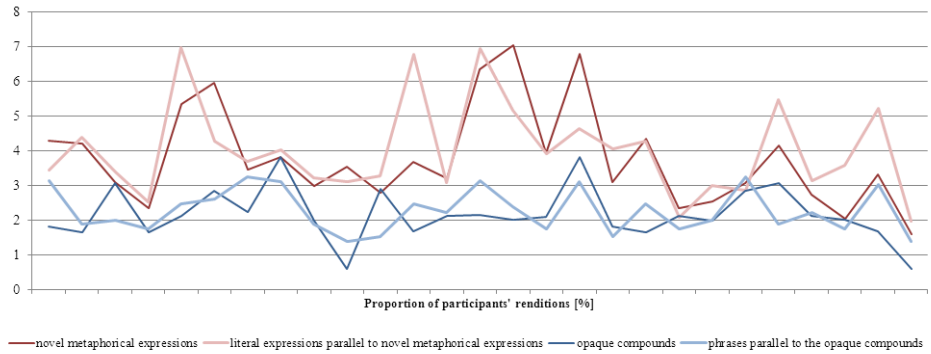


Figure 5. Reaction times for figurative and literal expressions

The red curves in Figure 3 show that more participants (63%) responded to novel metaphors more quickly than to their literal counterparts. The blue curves show that more participants (75%) responded to opaque compounds more quickly than to phrases equivalent to those compounds. Moreover, mean reaction times demonstrate that opaque compounds were processed faster (mean: **2.176 s**; LHD: 2.405 s, RHD: 1.947 s) than their phrasal counterparts (mean: **2.313 s**; LHD: 2.532 s, RHD: 2.094 s). As for novel metaphors, they were processed slightly faster (mean: **4.047 s**; LHD: 4.339 s, RHD: 3.754 s) than their literal counterparts (mean: **4.067 s**; LHD: 3.928 s, RHD: 4.205 s).

6.3 Conclusions

Our results both support and to some extent question the FCCT's assumptions. As for the relationship between hemispheric dominance and salience of expression meanings, our results are compatible with the FCCT's hypothesis, since we observed that if a subject was RHD, his/her response time results with respect to comprehending the non-salient meaning of figurative expressions were indeed better than when a subject was LHD.

It is additionally worth noticing that unfamiliar opaque compounds were generally processed faster than novel metaphors. Differences in response times between the two types of figurative expressions stem from the level of their lexicalization status. Opaque compounds used in the study were entirely lexicalized (due to presentation of their meaning to the participants), while novel metaphors are by definition alien to lexicalization. Therefore, because the meanings of novel metaphors are not contained in the mental lexicon whatsoever, both LHDs and RHDs were forced to resort to their own interpretation abilities.

However, our results do not support the FCCT's assumption that bilingual subjects will always process figurative expressions slower than literal expressions. Taking into account the reaction times of L2 subjects, there are evident discrepancies between processing figurative and literal language – novel and opaque figurative expressions were generally processed faster than their literal or conventionalized counterparts. We have not found any similar observation in any article on (non-)figurative expressions. The FCCT argues that, in the case of recognizing the non-salient meanings of given L2 utterances, shifting from the salient meaning (the incorrect one, in our case) to the (correct) non-salient one is usually more time consuming for L2 speakers than for L1

speakers. We assume, however, that novel and seemingly opaque figurative constructs strike with their imaginative power. This may be the decisive factor behind faster processing of such expressions, even in the case of non-native speakers.

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Appendix

Type of expression	No	Context-providing sentence	Target sentence	Emotion word
Novel metaphorical expressions	1.1	He has just proposed to me and gave me the most beautiful ring I've ever seen.	I can feel my heart dancing right now.	joy
	1.2	Yesterday I saw my ex-girlfriend, with whom I still have had some expectations, with a wedding ring.	Now it acts to me as a "sorry, we're closed" sign.	hardship
	1.3	I have some experiences with this doctor from the times when I had some cardiac problems.	I and everybody agree that this surgeon is a butcher.	reproach
	1.4	My Facebook friends always insert many kisses and hearts in their posts.	This is definitely too much love to digest.	disgust

	1.5	My husband treats me badly – he becomes jealous of me every single time I talk to another man.	I don't know how to change his way of thinking and I go through a never-ending sob nowadays.	hardship
	1.6	I was very confident while explaining to him my attitude towards this issue.	He then demonstrated his own attitude and simultaneously shot down all of my arguments.	shame
	1.7	Now, during a party, I've just found out my girlfriend is having an affair with someone else.	I can feel a dark cloud has shaded my face.	hurt
	1.8	I told my girlfriend that my relations with a new secretary are not what she thinks they are.	After that lie a sudden conscience storm attacked me.	guilt
	1.9	First, we thought this trip was going to be something special.	Excitement is however getting cold as nothing interesting is happening.	regret
	1.10	Our team has chosen her to supervise the project.	We all agree that she successfully sheep dogs this project all the way.	safe
Literal expressions parallel to the novel metaphorical expressions	2.1	I had a love affair with this beautiful girl over there.	But after some time of going out with her she told me we could only be friends.	grief
	2.2	Today I saw so many people kissing in the public.	I can't watch such affectionate people and always look the other direction.	disgust
	2.3	My son's childhood isn't happy because his father is very arrogant to him.	I can hear my boy crying in his bed every time we go to sleep.	hardship
	2.4	After many attempts, I have finally passed the test in the most difficult subject.	I can feel that I can do anything now.	joy
	2.5	I was this surgeon's patient.	I can now tell that he is very incompetent.	reproach
	2.6	I was very excited before our date.	As the conversation proceeded, I found out we had nothing in common.	regret
	2.7	I have just found out that my boyfriend was cheating on me for a long time and was a criminal.	It's been a long time since I last time didn't have power to do anything.	hurt
	2.8	My boss is very considerate towards my lack of knowledge of the field.	He supervises all the projects that I am currently preparing.	safe
	2.9	When she burnt the dinner, I told her she was the stupidest person I have ever met.	In the aftermath, I could not look into her eyes.	guilt

	2.10	I tried to persuade her to accept the manifesto of this new political party.	After a long discussion, she convinced me that my arguments were wrong.	shame
Filler sentences	3.1	Our daughter's new boyfriend really loves her and wants to be a part of our family.	On our first visit he not only gave an enormous bouquet of roses but also was smiling at me all the day and was forcing me that I let him help me with cooking – this was too much.	[a person who looks overwhelmed]
	3.2	Yesterday I read a very gripping book about a moving love story.	Now my mum wants me to talk with her about her problems at work but I cannot concentrate and I'm thinking all the time about the characters' fate.	[a person who looks lost in thought]
	3.3	The media encourage people to help children from Africa so that they have something to eat and to wear.	My mum is engaged in the action but I'm not because I have sufficiently many problems of my own to cope with.	[a person who looks indifferent]
	3.4	My girlfriend bought a new dress.	She asked me what I thought about it and I said she looked great in it only because I didn't want to destroy her good mood.	[a person who looks guilty]
	3.5	I've always thought that big love exists and up to now I thought my boyfriend is its embodiment.	When I found out that for two years he was hiding the fact that he was drug addicted, everything crumbled.	[a person who looks disillusioned]
	3.6	The shop assistant convinced me that the computer I wanted to buy in his store was actually the cheapest in the whole city.	I bought it but after two weeks I bumped into the same model in a different shop whose price was shockingly low.	[a person who looks cheated]
	3.7	During the oral exam I really wanted to behave naturally and relaxed.	I suddenly forgot what to say next and I wasn't saying anything for more than a minute – I wanted to run away from there.	[a person who looks embarrassed]
	3.8	I've been working in this firm for two months now.	Whereas others are doing really well here, I still haven't succeeded in any undertaking – it doesn't help me think highly of myself.	[a person who looks discouraged]
	3.9	Yesterday my girlfriend's beloved dog died in an accident and she needs my support.	I don't understand her hysterical behaviour and try to calm her down by saying that we'll buy another one.	[a person who looks unfeeling]
	3.10	On my way to work I was engaged in listening to the radio breaking news.	I was thinking about the political situation in Poland when I almost hit a car having right of way.	[a person who looks inattentive]

3.11	My boyfriend left me yesterday without explanation.	I suspect our new beautiful neighbour seduced him – she seemed so helpful and friendly.	[a person who looks heartbroken]
3.12	For five months I was sure I was going on an Erasmus trip in September.	But in June out of the blue it turned out that my application was rejected although so far all the plans had been proceeding well.	[a person who looks resigned]
3.13	I went to the cinema with my girlfriend to see a romantic comedy.	My girlfriend was crying at the final scene but I was at that moment checking my Facebook account.	[a person who looks bored]
3.14	For months I was saving money for the newest version of a smartphone.	I finally have the sum of money I need and have just ordered the model I want – it's so exciting!	[a person who looks as if he/she couldn't wait]
3.15	I am supposed to write my first chapter of my MA thesis for tomorrow.	When I only think about looking for relevant information in the materials I have collected, I prefer to watch another episode of my favourite TV programme – and I do it.	[a person who looks lazy]
3.16	For a long time I was sure my boss would appreciate my work and was going to get promotion.	Today I found out that my colleague I competed against for the boss's appreciation and he got the promotion I strived for.	[a person who looks defeated]
3.17	For two weeks I slept only two hours per night because at that time I was working on my MA thesis before deadline.	When I passed I did not even think about celebrating my success but I came back home and was sleeping for hours instead.	[a person who looks powerless]
3.18	My son's teacher ensured me he is going to pass to the next class.	When one week before the end of the semester I found out otherwise, I realized the teacher was not fair with my son.	[a person who looks betrayed]
3.19	Yesterday I met a friend from childhood whom I haven't seen for many years.	We were talking happily when my friend suddenly saw my sister and I felt as if he forgot about the whole world then.	[a person who looks abandoned]
3.20	I am 26 years old but my mother is still ridiculously motherly towards me.	I didn't want to believe it was true when during the date with a beautiful girl she called me and said I was allowed to come back only till 10 p.m.	[a person who looks ashamed]

Table 3. Sentences used in the experiment on novel metaphors

Multiple *Wh*-Questions and the Root-Embedded Asymmetry

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Abstract: Italian has traditionally been classified as a language not displaying multiple *wh*-constructions. In this article, I show that this generalization is factually imprecise: whereas Italian matrix questions cannot indeed feature multiple interrogative constituents, such a restriction does not hold for embedded questions, which also appear to be immune to Superiority restrictions. I argue that this is evidence in favor of a sharper distinction between the *wh*-fronting operation occurring in embedded interrogatives and that occurring in matrix questions. In particular, I suggest, contra Den Dikken (2003), that only the latter structures feature movement of a WH to the Focus projection.

Keywords: multiple *wh*-questions; Superiority; root-embedded asymmetry; Italian

1. Introduction

A common claim in the literature on *wh*-questions is that embedded interrogatives are essentially a subtype of matrix questions. Indeed, in most languages, the two constructions bear clear structural and semantic similarities. These similarities have led many linguists to treat embedded and root questions in the same way, and thus to formulate a unified account for both.

In this article, I argue that this approach is incorrect. In particular, I claim that, at least in singular *wh*-movement languages, the *wh*-fronting operation taking place in matrix questions is different and distinct from that occurring in embedded questions. As a matter of fact, whereas the former is motivated by pure focus movement, the latter is not, nor does it ever feature movement of any of the *wh*-words through or to the Focus projection. I base my argumentation on a particular set of Italian data; the data, which have so far gone unnoticed, show how Italian matrix and embedded questions display different behaviors with respect to both the possibility of featuring multiple WHs and that of violating Superiority.

The article is structured as follows: in Section 2, I present the Italian data and describe the root-embedded asymmetry existing between main and embedded questions, focusing in particular on the formal differences between the two constructions. In Section 3, I discuss a series of analyses which suggest a unified treatment of matrix and embedded questions, and use the Italian data to show how they cannot be correct. In the same section, I also discuss in detail how Italian provides strong counterevidence to the claim, originally formulated in Den Dikken (2003), that WHs in situ always move to the specifier of the Focus projection. In section 4, I present my conclusions.

2. Multiple *Wh*-Questions in Italian

Traditionally, Italian has been classified as a non-multiple-WH language. The original observation belongs to Rizzi (1978), who observed that questions featuring two *wh*-elements, such as the one below, are ungrammatical in Italian:

(1)	??**Chi**	ha	mangiato	**cosa**?
	??**Who**	has	eaten	**what**?
	"Who ate what?"			

According to Calabrese (1984, 1992), the ungrammaticality of sentences like (1) is due to a ban on the presence of more than one focalized constituent in Italian. More specifically, Calabrese argues that *wh*-elements are a type of informational focus, as both interrogative constituents and foci introduce – or request, in the case of WHs – for new information. In Italian, the position for information foci is however unique and non-recursive, as can be seen by the ungrammaticality of (2), where both the subject and the object are focalized:

(2)	*MARIO	ha	scritto	UNA	LETTERA.
	*MARIO	has	written	A	LETTER.
	"MARIO has written A LETTER"				

It thus follows that sentences featuring more than one focus will always be ungrammatical in Italian, be they simple declaratives or interrogative sentences.

The judgements on the ungrammaticality of (1) are not shared by all native speakers of Italian: some speakers do in fact find acceptable questions where two WHs are present. What no speaker appears to deem acceptable are however structures like the following:

(3)	***Cosa**	ha	pagato	**chi**?
	***What**	has	paid	**who**?
	Intended meaning: "Who paid for what?"			

In (3), the *wh*-object *cosa* has been fronted across the *wh*-subject *chi*, in violation of the canonical relative order of these two constituents (see in particular Example 1). Quite interestingly, even those speakers who found structures like (1) to be unacceptable perceive a contrast between structures violating Superiority and structures not violating it, with the former being perceived as significantly less acceptable that the latter.

2.1 The Root-Embedded Asymmetry

The claim that Italian does not allow multiple *wh*-constructions is not entirely correct: something which has gone unnoticed is that the ban on the occurrence of multiple WHs only applies to matrix questions. Indirect questions are immune to such a restriction, as can be seen in (4).

(4)	Non	so	**chi**	abbia	letto	**cosa**.
	Not	I-know	**who**	has	read	**what**.
	"I don't know who read what".					

In fact, embedded questions can easily feature up to three *wh*-constituents[1]. In this respect, consider (5), where the subject, the object, and the indirect object of the embedded interrogative are replaced by interrogative operators:

(5) Non so **chi** abbia dato **cosa** **a** **chi.**
Not I-know **who** has given **what** **to** **whom.**
"I don't know who gave what to whom".

Not only are embedded interrogatives capable of hosting more than one *wh*-constituent, they are also immune to Superiority. Consider in particular the pair in (6): no matter what the relative order between the two *wh*-constituents is, the resulting sentence will always be perfectly acceptable:

(6) (a) Non so **a** **chi** tu abbia dato **cosa.**
Not I-know **to** **whom** you have given **what.**
"I don't know what you gave to whom"

(b) Non so **cosa** tu abbia dato **a** **chi.**
Not I-know **what** you have given **to** **whom.**
"I don't know what you gave to whom"

Note that the acceptability of (6) is in clear contrast with the ungrammaticality of superiority violations in matrix questions; whereas (3) is deemed ungrammatical by all speakers, even by those who accept multiple *wh*-constructions in root questions, (6) is unanimously considered to be acceptable.

The surface dissimilarities exhibited by matrix and embedded questions appear to correlate with deeper structural differences between the two constructions. One such difference relates to the landing site of the fronted *wh*-constituent; in root questions, this appears to be the specifier of the Focus projection, [Spec, FocP].[2] As already observed in Rizzi (1997, 2001a), evidence in favor of this analysis comes from the incompatibility of matrix questions with fronted foci:

(7) ***Chi** MARIO ha visto?
***Who** MARIO has seen?
Intended meaning: "Who has seen MARIO?"

Embedded questions are on the other hand perfectly compatible with a fronted focus, as can be seen in (8). This suggests that whatever the landing site of the fronted WH is, it cannot be the specifier of the Focus projection:

(8) Non so **cosa** GIANNI abbia detto **a** **chi.**
Not I-know **what** GIANNI has said **to** **whom.**
"I don't know what GIANNI said to whom"

[1] Having more than three *wh*-words in a single embedded interrogative is possible, but the question then becomes rather complex and is hard to process.

[2] In this article, I am adopting a split-CP analysis of the Left Periphery; see Rizzi (1997; 2001a; 2001b; 2004).

If not [Spec, FocP], what is the position targeted by embedded WHs? At first sight, this might appear to be the specifier of ForceP, the highest functional projection in the Left Periphery (Rizzi 1997; 2001a; 2004). Support for such an analysis comes from varieties of Italian which are not subject to the Doubly-Filled COMP Filter (Chomsky and Lasnik 1977), such as Trevisan. In Trevisan, we see that the fronted WH precedes the overt complementizer *che*:

(9) Non so **chi** che ga ditto **cossa.**
Not I-know **who** that he-has said **what.**
"I don't know who has said what"

On the assumption that the declarative complementizer *che* is merged as the head of Force (Rizzi 1997), example (9) seems to suggest that the target of the *wh*-fronting operation in embedded clauses must be [Spec, ForceP]. Note, however, that in Trevisan, topics can intervene between the WH and the matrix verb:

(10) Non so *el libro* **a chi** che te ghe o ga dato.
Not I-know *the book* **to whom** that you to-him to-him it you-gave
"I don't know to whom you gave the book"

Example (10) shows that the WH cannot possibly be landing in [Spec, ForceP]; if it did, we would expect nothing to be able to intervene between the *wh*-phrase and the matrix verb. The question of which position is targeted by the *wh*-constituent in embedded interrogatives is thus rather irksome. For reasons of space, and given that this is outside of the scope of this paper, I will leave this issue open and limit myself to assume that the position targeted by an embedded *wh*-phrase is one *other* than [Spec, FocP]. I refer the interested reader to van Craenenbroeck (2006) for a possible analysis of this issue for Venetian, a variety of Italian very similar to Trevisan.

3. Focus Movement vs. *Wh*-Movement

In the literature on multiple *wh*-questions and *wh*-fronting, the sweeping assumption is that embedded questions and matrix questions are formally identical: both are claimed to feature the same type of A-bar movement and to be motivated by the same type of syntactic trigger (cf., inter alia, Den Dikken 2003, Diesing 2003, Grohmann 2003, Pesetsky 2000, Stepanov 1998, Stjepanovic 2003, Takahashi 2002).

The standard analysis of *wh*-fronting goes as follows. The first *wh*-constituent is fronted (whether overtly or covertly) in order to check the strong [+ *wh*] feature present on the C head. This type of operation is necessary to type the clause as being a question (Cheng 1997). All remaining *wh*-constituents are also fronted;[3] this additional set of movements will however no longer arise from the need to type the clause as being interrogative, as the movement of the first WH already fulfilled that requirement. All additional WHs will front as a result of focus movement, once again on the assumption that *wh*-constituents and foci share the property of being focalized. According to this analysis, both root and embedded questions are thus the result of the application of focus

[3] Again, whether this movement is overt or takes place at LF depends on the syntax of the language.

movement and *wh*-movement; *wh*-movement applies to the first WH and is motivated by typing requirements. Focus movement applies to all remaining interrogative constituents, and is due to their inherently focalized nature.

Any analysis which argues in favor of formal identity between matrix and embedded questions, however, has trouble accounting for the fact that matrix and embedded questions display very different behaviors in many languages. We already saw this to be the case for Italian; whereas matrix questions can only marginally allow for multiple *wh*-constructions and must obey Superiority, embedded questions are compatible with multiple WHs and are immune to Superiority restrictions. Another case in point is represented by Serbo-Croatian. As observed by Bošković (1997; 2002), in Serbo-Croatian, Superiority effects surface in embedded or embedded-like contexts, but they are absent in main questions. To account for this asymmetry while still maintaining that the mechanisms underlying the formation of root and embedded questions are identical, Bošković (1997; 2002) is forced to resort to the notion of 'lexical insertion'. He suggests that, in Serbo-Croatian, interrogative C, whose presence triggers overt *wh*-movement, is inserted at LF in root questions. Given that, according to Bošković, only *wh*-movement is sensitive to Superiority, the lack of Superiority effects in Serbo-Croatian matrix interrogatives is then accounted for. In Serbo-Croatian, all WHs in root questions will front as a result of focus movement, a type of movement which is not subject to Superiority. It must however be noted that Italian presents a strong empirical counterargument to a *lexical insertion* analysis of the selective absence of Superiority effects: Italian lacks Superiority precisely in those contexts – embedded domains – in which C must be inserted overtly according to Bošković.

3.1 Singular *Wh*-Movement Languages and WHs in Situ

In the previous section, we saw that the standard analysis of *wh*-movement maintains that the first *wh*-constituent moves overtly, whereas all others move as a result of Focus movement. This kind of joint focus/*wh*-movement account of multiple *wh*-questions might work for multiple-*wh*-fronting languages, where all WHs front overtly, and for which an explanation must thus be provided to account for the movement of all WHs other than the first. The question is whether it can also work for singular *wh*-movement languages such as English and Italian.

Den Dikken (2003) provides an affirmative answer to such a question. In his article, he explores the syntax of singular *wh*-movement languages such as Dutch, Hungarian and English, and claims that WHs in situ are necessarily focused. Because they are focused, he argues, WHs in situ are required to front all the way up to the Focus projection in order to be licensed. Den Dikken suggests that this fronting operation is overt, even in languages where no WH other than the first appears to have moved. To account for these languages, the author suggests that this additional fronting operation is rendered vacuous by the subsequent movement of the rest of the IP to the left, across the apparently in situ WH.

Den Dikken's account thus heavily relies on the notion that WHs in situ move to Focus in order to be licensed. There are however strong reasons to believe that this is not the right analysis. Let us first consider how den Dikken's account would apply to a language like Italian. On a superficial analysis, den Dikken's account would appear to correctly predict the grammaticality of multiple *wh*-constructions in embedded questions: given that, in embedded questions, the first WH moves to a position other than [Spec, FocP], [Spec, FocP] is now available as a landing site for the movement of

the second WH. The reason why matrix questions cannot feature more than one WH would thus be due the impossibility for the second WH to be licensed, as the position to which the second WH should move in order to do so, [Spec, FocP], is already occupied by the first WH.

As already mentioned, however, there are reasons to doubt that WHs in situ ever move to or through the Focus projection. In fact, we have already indirectly seen all of them; all we have to do is to piece them together. First of all, if WHs in situ were indeed to move to [Spec, FocP], we would predict embedded questions featuring three WHs to be ungrammatical. This is because, as already pointed out, Italian has a unique focus position: if the second WH were to move to [Spec, FocP], the third WH would be left with no Focus projection to front to. As already seen in (5), which is repeated below, embedded questions featuring three WHs are however perfectly acceptable:

(11) Non so **chi** abbia dato **cosa** **a** **chi.**
Not I-know **who** has given **what** **to** **whom.**
"I don't know who gave what to whom".

Another reason to doubt that WHs in situ ever move to or through Focus in embedded questions has to do with the compatibility of these constructions with fronted foci. Once again, the relevant example, first discussed in (8), is repeated below:

(12) Non so **cosa** GIANNI abbia detto **a** **chi.**
Not I-know **what** GIANNI has said **to** **whom.**
"I don't know what GIANNI said to whom".

The argument for (12) is essentially the same for (11). If the second WH were to move all the way up to [Spec, FocP], we would predict that the addition of a fronted focus to the structure would render the sentence ungrammatical. This is because there would be no empty position for the fronted focus to move to. As we can see by the grammaticality of (12), this is however clearly not the case.

A final argument against a focus-movement analysis of WHs in situ comes from I-to-C inversion, a type of inversion which is a standard indicator of the presence of movement to Focus. Crucially, I-to-C is mandatory in root questions (13a-b), but does not take place in embedded ones (13c):

(13) (a) **Cosa** ha letto Gianni?
What has read Gianni?
"What did Gianni read?"

(b) ***Cosa** Gianni ha letto?
***What** Gianni has read?
Intended meaning: "What did Gianni read?"

(c) Non so **cosa** Gianni abbia letto.
Not I-know **what** Gianni has read.
"I don't know what Gianni read"

3.2 A Split Analysis of *Wh*-Fronting

In his (2008) article on *wh*-movement in Hungarian, Cable takes an unconventional position and argues, contrary to a substantial amount of previous research on the topic (cf. Horvath 1986, Cheng 1997, Bošković 2002, Brody and Szendrői 2010), that the *wh*-fronting operation in Hungarian interrogatives cannot be reduced to focus movement. This article adopts a somewhat similar analysis for singular *wh*-movement languages; just like Cable, I argue against a focus analysis of *wh*-movement. Unlike Cable, however, I introduce a distinction between embedded and matrix questions.

More specifically, I claim that, whereas matrix questions are indeed the result of the application of focus movement, embedded questions never feature movement of any *wh*-constituent through or to the Focus projection, as claimed for example by den Dikken (2003). Several pieces of evidence were presented to substantiate this conclusion. First of all, we saw how the landing site of the fronted WH differs depending on the embedded/matrix nature of the interrogative clause. Secondly, we saw how embedded and root questions behave differently with respect to Superiority, including the possibility of featuring more than one WH constituent. Thirdly, whereas matrix questions are incompatible with a fronted focus, embedded questions are not. Finally, embedded interrogatives do not trigger I-to-C inversion, which is obligatory for matrix questions. What these observations essentially come down to is the following two considerations: (i) matrix *wh*-questions are significantly different from embedded *wh*-questions, something which strongly argues against a unified account for both; and (ii) matrix *wh*-questions feature the movement of the first WH to a Focus projection, whereas embedded *wh*-questions do not, substantiating a focus analysis for the former, but not the latter.

Note that a split analysis of matrix and embedded questions has the advantage of capturing the fundamentally different semantic and pragmatic nature of the two constructions. The WHs featuring in root questions are genuine requests for new information, and in this sense, are true foci. The interrogative constituents in embedded questions, on the other hand, are not. In this respect, consider the example in (14):

(14) Sarah does not know **who** ate **what**, but I do.

The embedded interrogative in the example above is not a "genuine" question, in that the speaker of (14) knows exactly which values the two interrogative expressions should be replaced with. (14) is simply a way of stating that Sarah's obliviousness as to what was eaten by whom is somehow relevant to the discourse. It is not an actual request for new information, for the simple reason that the bits of information for which the two operators stand are known to the narrator. These semantic differences are hard to explain if one assumes that matrix and embedded questions are formally identical, but find a straightforward explanation if a split analysis is adopted.

4. Conclusion

The aim of this paper was to argue in favor of a sharper distinction between the *wh*-fronting operation occurring in matrix questions and that occurring in embedded questions, at least for singular *wh*-movement languages. In particular, I have argued that root and embedded questions are the result of the application of two different types of A-bar movement, and that only in root questions can this be identified with focus

movement. That the two types of movement are fundamentally different is also substantiated by the different properties associated with the *wh*-fronting operation in Italian root and embedded questions. In root questions, this is sensitive to Superiority and is at most compatible with one *wh*-word. In embedded questions, on the other hand, the *wh*-fronting operation is unaffected by Superiority and bears no restrictions on the number of WHs which can occur in the clause. Finally, the compatibility of embedded questions with a fronted focus shows that at no point in the derivation is the WH in situ ever moved to [Spec, FocP], contra den Dikken (2003), who suggests that WHs in situ are necessarily focused and must thus be covertly moved to [Spec, FocP]. This is additional evidence in favor of a distinction between the movement operation occurring in matrix questions and that featuring in embedded questions: neither covert nor overt instances of the latter type of movement ever target the projection which is the target of the former type of movement, [Spec, FocP].

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The Distribution and Reference of Empty Pronouns in Formosan Languages*

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Abstract: This paper elaborates the distribution and reference of empty categories (henceforth ECs) in Atayal and Saisiyat. We argue that two types of ECs exist in Formosan languages: namely, pronominal ECs (including PRO and *pro*) and variable EC (viz., topic trace). Atayal allows for both types of ECs mentioned and is thus classified as a Chinese-type language while Saisiyat is categorized as a German-type language because it prohibits the usage of *pro*. Furthermore, the asymmetry in the behavior of different ECs in these two languages can have a unified account, in accordance with Huang's (2010) Generalized Control Rule and discourse binding theory.

Keywords: Empty category; topicalization; PRO; *pro*-drop; Formosan languages

1. Introduction

In the past few decades, previous studies have treated several issues regarding pronominal elements in some Formosan languages (Huang et al. 1999, Chang and Tsai 2001, Billings et al. 2004, and Liao 2005). However, few studies are dedicated to analyzing the nature of empty pronouns. The current study aims to elaborate the characteristics of various empty categories in Squliq Atayal (henceforth abbreviated as Atayal) and Saisiyat.[1]

In linguistics, an EC refers to nominal element which is null in phonological form. Two types of EC are involved in our study, namely, pronominal ECs (including PRO and *pro*) and variable EC (viz., topic trace). According to Carnie (2013), PRO ('big PRO') refers to the null subject of an infinitival clause and has no case. However, *pro* ('little pro') is the dropped subject of a finite clause and has case. Moreover, following Tsao (1977), the term 'topic trace' refers to the kind of EC which is discourse bound by a deleted NP (null topic) by means of a topic chain. As Huang (2010) points out, topic trace co-refers to a null topic while PRO/*pro* are co-indexed with overt subjects in matrix

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[1] If lacking notation, the examples in this study are from my own field work (2013–2015). Two languages, Taai Saisiyat in Wufeng, Hsinchu, Taiwan, and Squliq Atayal of Q'wilan in Fuxing, Taoyun, Taiwan, are investigated in this study. (N.b., Saisiyat comprises Taai and Tungho dialects while Atayal mainly has Squliq and Ci'uli dialects.)

clauses. The distribution and reference of various kinds of ECs can be illustrated by following examples:

(1) Mary$_i$ would like PRO$_i$ to go.
(PRO)

(2) Mandarin Chinese
(*pro*)

zhangsan$_i$	shou	*pro*$_i$	kanjien	lisi	le.
PN[2]	say	EC	see	PN	CS

"Zhangsan says that he (=Zhangsan) saw Lisi."

(3) Mandarin Chinese
(topic trace)

(a)

wangwu$_i$	kanjien	lisi$_j$	le	ma?
PN	see	PN	CS	Q

"Did Wangwu see Lisi?"

(b)

zhangsan	shou	t_i	kanjien	t_j	le.
PN	say	EC	see	EC	CS

"Zhangsan says that he (=Wangwu) saw him (=Lisi)."

Some previous studies show that the construal of PRO is productive in both Atayal and Saisiyat, as shown in (4–5).[3]

(4) Squliq Atayal (Lin 2005, 20)

s<m>oja	jel	m-usa	silaq	qu	tali.
<AV>like	very	AV-go	PN	NOM	PN

"Tali wants to go to Silaq."

(5) Saisiyat (Yeh 2000, 133)

baki'	'am=m-wa:i'	kanman	s<om>i'ael	ka	pazay.
grandfather	IRR=AV-come	1SG.LOC	<AV>eat	ACC	rice

"Grandfather will come to my place to eat rice."

[2] Leipzig glossing rules (2015) are employed in this paper. Abbreviations in the glossary are listed as follows. NOM: nominative, ACC: accusative, GEN: genitive, LOC: locative, NEU: neutral pronoun, AV: agent voice, PV: patient voice, I/BV: instrumental/beneficiary voice, LV: locative voice, AUX: auxiliary, PST: past, EXP: experiencer, PFV: perfective, ASP: aspect, IRR: irrealis, TOP: topic, 1: first person, 2: second person, 3: third person, SG: singular, PL: plural, NEG: negation, PN: proper noun, Q: question particle and CS: change of state. In addition, infixes are enclosed by angle brackets "< >", segmentable morphemes are separated by hyphens "–" and clitic boundaries are marked by equals sign "=", both in example and gloss. The phonetic transcriptions and glosses of data cited from other literature are modified for consistency.

[3] The word order of Atayal and Saisiyat is basically VOS and SVO, respectively. For more detailed discussion of grammar, readers are referred to Liu (2004), Lin (2005), Huang (2000),Yeh (2000), and Zeitoun and Chu (2015).

This study focuses on the behavior of PRO, *pro*, and topic trace.[4] Thus, in the following sections, we will detail the characteristics of different ECs in Atayal and Saisiyat and propose a typological classification.

2. The Distribution and Reference of ECs

In order to examine the properties of ECs in Atayal and Saisiyat, we employ eight logically sentential patterns in accordance with verb transitivity and the distribution of ECs, presented atheoretically in (6).[5] For example, the subject of an intransitive verb is deleted in A1, the object of antransitive verb is omitted in B1, and the object of a transitive verb in an embedded clause is null in C1. Moreover, D1 is a canonical control structure which has an infinitival clause with a null subject as its complement. The rest may be deduced by analogy.

(6)

Pattern	**Sentence**
A1	*e* came
B1	John saw *e*
B2	*e* saw Bill
B3	*e* saw *e*
C1	John said that Bill saw *e*
C2	John said that *e* saw Bill
C3	John said that *e* saw *e*
D1	John tried *e* to come.

In the remainder of the section, we will investigate the properties of ECs in Atayal and Saisiyat one-by-one using these patterns.

2.1. Saisiyat

The subject of an intransitive verb can be omitted in an AV construction. The null subject mentioned can only refer to a discourse-bound referent and thus functions as a variable EC (viz., topic trace), as shown in (7).

(7) (a) tala:o$_i$ m<in>owa:i=ila ay?
PN AV<PFV>come=CS Q
"Did Tala:o come?"

(b) 'ihi' e_i m<in>owa:i=ila. (A1)
yes EC AV<PFV>come=CS
"Yes, he(=Tala:o) came."

The argument(s) can be partially or fully omitted in a transitive construction, as given in (9a–c).

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[4] Kosta (1995) employs a binding feature to differentiate four types of EC: PRO, *pro*, NP-trace, and WH-trace. The distinction between PRO and *pro* is that PRO consists of [+p] and [+a] while pro is [+p] and [-a] ([+a] refers to an anaphoric feature and [+p] refers to a pronominal feature).

[5] Expressions like imperatives and exclamatives are not included in our discussion. For example,
(i) See it! (imperative/exclamative)
(ii) See! (imperative)

(8) tala:o_i ’ina=k<om><in>ita’ hi baonay$_j$ ay?
PN EXP=<AV><PFV>see ACC PN Q
“Did Tala:o see Baonay?”

(9) ’ihi’ tala:o ’ina=k<om><in>ita’ hi baonay ila.
yes PN EXP=<AV><PFV>see ACC PN CS
“Yes, Tala:o saw Baonay.”

(a) ’ihi’ tala:o ’ina=k<om><in>ita’ e_j ila. (B1)

(b) ’ihi’ e_i ’ina=k<om><in>ita’ hi baonay ila. (B2)

(c) ’ihi’ e_i ’ina=k<om><in>ita’ e_j ila. (B3)

Saisiyat lacks a C-pattern, which is different from its Chinese counterpart.[6] An EC referring to the matrix argument is forbidden in Saisiyat, as shown in (10). Huang (2010) notes that object ECs can’t co-refer to matrix arguments cross-linguistically. Saisiyat is subject to this principle without exception.

(10) ’oemin$_k$ k<om>osha: tala:o_i ’ina=k<om><in>ita’ hi
PN <AV>say PN EXP=<AV><PFV>see ACC
baonay$_j$.
PN
“’oemin says that Tala:o has seen Baonay.”

(a) ’oemin$_k$ k<om>osha: tala:o ’ina=k<om><in>ita’ $e_{j/*k}$
ila. (C1)

(b) ’oemin$_k$ k<om>osha: $e_{i/*k}$ ’ina=k<om><in>ita’ hi
baonay ila. (C2)

(c) ’oemin$_k$ k<om>osha: $e_{i/*k}$ ’ina=k<om><in>ita’ $e_{j/*k}$
ila. (C3)

However, in the D-pattern, the embedded subject EC can refer to the matrix subject, as shown in (11–12). Huang (2010) points out that the null subject of a control structure (i.e. PRO) is bound by the matrix subject cross-linguistically. Saisiyat conforms to this generalization without exception.

(11) tala:o_i ma: e_i talhaehael ’iakin. (D1)
PN try EC help 1SG.ACC
“Tala:o tries to help me.”

[6] The same construction in Chinese has dual readings. The empty category can refer to *Zhang-san* (matrix subject) or any referent other than *Lisi* in the discourse. For example:
(i) zhangsan shuo *e* kan-dao le lisi.
PN say EC see-ASP CS PN
“Zhangsan said that he (=Zhangsan or others) saw Lisi.”

(12) tala:o ma: e_i ki baonay talhaehael 'iakin.
PN try EC with PN help 1SG.ACC
"Tala:o tries to help me with Baonay."

2.2. Atayal

The subject EC of intransitive verbs in Atayal can be co-indexed with discourse referents, as shown in (13).

(13) (a) m<n>wah qu watan$_i$ la[7]?
AV<PFV>go NOM PN Q
"Has Watan gone?"

(b) e_i m<n>wah=la. (A1)
EC AV<PFV>go=CS
"He has gone."

The embedded object (15a), or both embedded object and subject (15c), can be omitted in Atayal. It is worth noting that though an embedded subject can be omitted singly, as in (15b), the reading is unexpected. That is, the theta role of *Rimuy* here is an agent rather than a patient. Thus, the reading in (15b), "yes, Rimuy beat him (=others)", is irrelevant for the question in (14), "Did Watan beat Rimuy?". We will discuss this special phenomenon later.

(14) wal=m-ihiy rimuy$_i$ qu watan$_j$ ga?
AUX.PST=AV-beat PN NOM PN Q
"Did Watan beat Rimuy?"

(15) aw, wal=m-ihiy rimuy qu watan.
yes AUX.PST=AV-beat PN NOM PN
"Yes, Watan beat Rimuy."

(a) aw, wal=m-ihiy e_i qu watan. (B1)

?(b) aw, wal=m-ihiy rimuy $e_{*i/*j}$ (B2)

(c) aw, wal=m-ihiy e_i e_j (B3)

As for the C-pattern, embedded EC(s) will be co-indexed with a discourse referent, as shown in (17a). In addition, (17c) can be multiply co-referred with either matrix subjects or discourse referents. Importantly, (17b) is ambiguous and consists of two potential readings: "Yumin says that Rimuy knew someone" and "Yumin says that he(=Yumin) knew Rimuy", though both are irrelevant to the answer of (16).

[7] The mood of a sentence in Squliq Atayal sometimes depends on the corresponding intonation: sentence-final raising tone for interrogative and falling tone for declarative.

(16) m<in>baq rimuy$_i$ qu watan$_j$ ga?
AV<PFV>know PN NOM PN Q
"Does Watan know Rimuy?"

(17) kmal yumin$_k$ mha: m<in>baq rimuy qu watan.
AV-say PN AV-say AV<PFV>know PN NOM PN
"Yumin says that Watan knowsRimuy."

(a) kmal yumin$_k$ mha: m<in>baq $e_{i/*k}$ qu watan. (C1)

?(b) kmal yumin$_k$ mha: m<in>baq rimuy $e_{*j/k}$ (C2)

(c) kmal yumin$_k$ mha: m<in>baq e_i $e_{j/k}$ (C3)

The dual reading in (17b) reflects two kinds of licensing mechanisms for ECs. On the one hand, the overt argument of the embedded clause is prioritized to get assigned the agent role if the *de facto* agent is omitted. This explains why speakers are misled by sentences like (15b) and (17b) and interpret the embedded argument, *Rimuy* (i.e. the *de facto* patient) as an agent. On the other hand, Atayal allows for the occurrence of *pro*. Thus, the EC in (17b) can be construed as bound by the matrix subject. More evidence supports the conclusion that Atayal, unlike Saisiyat, allows for *pro* and the specific case marking mechanism mentioned.

A dual reading is also produced in the construction of a Q-particle question, as shown in (19b–c). The embedded *de facto* patient will lose its priority to get assigned an agent role, as in (19b), if we insert a free clitic *hiya* '3SG.NEU' into the embedded subject position. Then the clitic will be co-indexed with a discourse referent, as shown in (19d).

(18) wal=m-ita rimuy$_i$ qu watan$_j$ ga?
AUX.PST=AV-see PN NOM PN Q
'Did Watan see Rimuy?'

(19) kmal yumin mha: wal=m-ita rimuy qu
AV-Say PN AV-say AUX.PST=AV-see PN NOM
watan la.
PN CS
"Yumin says that Watan saw Rimuy."

(a) kmal yumin$_k$ mha: wal=m-ita $e_{i/*k}$ qu watan la. (C1)

(b) kmal yumin$_k$ mha: wal=m-ita Rimuy $e_{*j/k}$ la. (C2)
"Yumin says that Rimuy saw him (=someone)."
"Yumin says that he (=Yumin) saw Rimuy."

(c) kmal yumin$_k$ mha: wal=m-ita e_i $e_{j/k}$ la. (C3)
"Yumin says that Watan saw Rimuy."
'Yumin says that he (Yumin) saw Rimuy."

(d) kmal yumin$_k$ mha: wal=m-ita rimuy hiya$_{j/k}$ la.[8]
"Yumin says that he (=Watan) saw Rimuy."
"Yumin says that he (=Yumin) saw Rimuy."

A dual reading is also found in the WH-question construction; however, the situation is somewhat different. First, ECs cannot be licensed by discourse WH-elements, cross-linguistically. Consequently, the matrix subject takes the role of the referent of the embedded subject EC, as shown in (21b-21c). Likewise, only overt arguments may be construed as actors, as shown in (21b). Finally, the inserted pronoun will be co-indexed with the matrix subject but not with a discourse WH-element, as shown in (21d).

(20) ima$_i$ (qu) wal=m-ita watan$_j$?
who NOM AUX.PST=AV-see PN
"Who saw Wantan?"

(21) kmal rimuy mha: wal=m-ita watan qu yumin.
AV-say PN AV-say AUX.PST=AV-see PN NOM PN
"Rimuy says that Yumin saw Watan."

(a) kmal rimuy$_k$ mha: wal=m-ita $e_{j/*k}$ qu yumin. (C1)

(b) kmal rimuy$_k$ mha: wal=m-ita watan e_k (C2)
"Rimuy says that Watan saw him (=someone)."
"Rimuy says that he (=Rimuy) saw Watan."

(c) kmal rimuy$_k$ mha: wal=m-ita e_j $e_{*i/k}$ (C3)

(d) kmal rimuy$_k$ mha: wal=m-ita watan hiya$_{*i/k}$.

In the D-pattern, the null subject of an infinitival clause is bound by the matrix subject, as shown in (22–23).

(22) m-usa q<m>arup e_i qu watan$_i$. (D1)
AV-go <AV>hunt EC NOM PN
"Watan goes to hunt."

(23) t<m>alam m-hkangi e_i qu watan$_i$. (D1)
<AV>try AV-walk EC NOM PN
"Watan tries to walk."

[8] I'm grateful to the anonymous reviewers from CECIL'S 5 for their helpful comments and suggestions. One of their valuable questions was why there are two similar predicates in a sentence. This looks a little redundant. However, in Formosan languages, it is common to find that the word *say* (here, *mha:* in Atayal or *komosha* in Saisiyat) sometimes functions as the complementizer of a sentence, especially in cognitive (e.g., with predicates like *know*, *believe*, *consider*, etc.) and descriptive structure (e.g., with predicates like *say*, *tell*, *ask*, etc).

2.3. Typological Classification

Both Atayal and Saisiyat show an asymmetry in the distribution of different ECs. First, Saisiyat only allows null elements in finite clauses to be construed as variable ECs (viz., tropic trace). Namely, they are bound by a discourse-bound referent (e.g., all of the A, B, and C patterns). However, Atayal permits the presence of both *pro* (e.g., C2 and C3) and topic trace (e.g., A, B1, B3, C1, and C3). Furthermore, the dual reading of Atayal is generated from two aspects: 'matrix binding' and the priority of case-marking for an overt argument (e.g., C2). In addition, 'discourse binding' in Atayal displays context dependency, e.g., Wh-elements do not function as discourse referents (e.g., C3). Finally, both languages allow for the occurrence of PRO. That is, the null subject of an infinitival clause can be bound by a matrix subject (e.g., D1). To summarize, the properties of the ECs in question can be summarized as follows in Table 1.

Sentence type	Atayal	Saisiyat
A1 *e* came	✓ variable	✓variable
B1 John saw *e*	✓ variable	✓variable
B2 *e* saw Bill	×	✓variable
B3 *e* saw *e*	✓ variable	✓variable
C1 John said that Bill saw *e*	✓variable	✓variable
C2 John said that *e* saw Bill	✓dual[9]	✓variable
C3 John said that *e* saw *e*	✓dual (context)	✓variable
D1 John tried *e* to come.	✓ pronominal	✓ pronominal

Table 1. The distribution and reference of ECs

Huang (2010) classifies languages into four types with regard to the 'zero topic' and '*pro*-drop' parameters, as shown in Table 2.

(Rearranged from Huang 2010, 249)

Languages	Zero-topic	*pro*-drop
English and French	No	No
Italian and Spanish	No	Yes
German	Yes	No
Chinese, Japanese, and Portuguese	Yes	Yes

Table 2. Four types of languages

Referencing the criteria proposed by Huang (2010), the distribution of different ECs in Atayal and Saisiyat can be summarized as follows in Table 3.

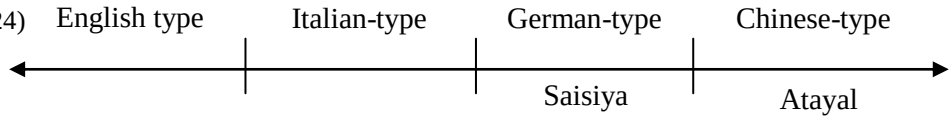
	Atayal	Saisiyat
Zero subject (PRO) in tenseless clause?	Yes	Yes
Zero subject (*pro*) in tensed clauses?	Yes	No
Zero object (*pro*)?	No	No
Zero topic?	Yes	Yes

Table 3. Types of ECs

[9] In Atayal, there are two kinds of licensing mechanisms for ECs. Thus, two corresponding readings are generated: matrix-*pro* for embedded null subjects and topic-variable for embedded null subjects. A special reading is also possible, in which the only overt argument gets an agent role and the EC refers to someone in the discourse.

The construal of zero topics is allowed in both Atayal and Saisiyat. However, the usage of null subjects (viz., *pro*) in finite clauses only exists in Atayal but is forbidden in Saisiyat. Chinese-type languages allow both '*pro*-drop' and 'zero topic'. As discussed, the 'matrix binding' or '*pro*-drop' is context dependent and relatively unproductive. Though Atayal is not a pure Chinese-type, we still classify it as a subtype under the Chinese-type. Finally, we classify Atayal and Saisiyat into the spectrum of typology proposed by Huang (2010), as sketched in (24).

(24)



3. Analysis

3.1. Saisiyat: ECs in Finite Clauses Are Variable

In this section, we will focus on the characteristics of variable ECs in Saisiyat. Based on the research of Li and Thompson (1976) and Tsao (1977), Huang (2010, 243) further proposes that object ECs do not function exactly like empty pronouns. For example, there is no object gap in (25). The embedded object has been topicalized and appears in the sentence-initial position, and nothing is *missing* in the sentence. An object is first topicalized (viz., movement) before it is deleted from the topic position.

(25) Mandarin Chinese (Huang 2010, 243)

[$_{TOP}$	e_i],	[zhangsan	shuo	[lisi	bu	renshi	e_i]].
	EC	PN	say	PN	NEG	know	EC

"Zhangsan says that Lisi doesn't know him (=someone)."

Furthermore, he considers subject ECs in embedded clauses (26–27) to be genuine zero pronouns, since there is no movement of any kind involved (viz., base-generation and gap).

(26) John$_i$ tried [e_i to come].

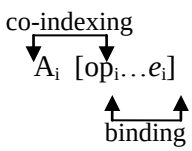
(27)

Zhangsan$_i$	shuo	[e_i	mingtian	yao	lai].
PN	say	EC	tommorow	IRR	come

"Zhangsan says that he is going to come tomorrow."

'Matrix-binding' is not allowed in Saisiyat (10). Thus, ECs in Saisiyat are bound by the referents fixed in the discourse. In other words, ECs in finite clauses are the traces of topicalization. The arguments first undergo topicalization and are then deleted from the topic position (7–10). Following Huang, the syntactic operation could be depicted by the schema in (28):

(28) The process of discourse binding



In (28), an empty operator ('op') is adjoined to the minimal S node dominating the subject/object EC (which need not be identified as a topic node). The empty operator binds the subject/object variable and is co-indexed with an external argument ('A') by predication. The external co-indexed argument does not c-command nor does it bind the EC. This property of being co-indexed with a non-c-commanding argument is consistent with the view that such an EC is a variable (i.e., not a pronominal). Moreover, following Chomsky (1982), Huang argues that ECs may derive from movement or base-generation. ECs from different sources display a fundamental distinction, as illustrated in (29).

(29) The distinction between variable and pronominal ECs (Huang 2010, 243)
(a) An EC is a pronominal if and only if it is free or locally bound by an element with an independent thematic role, and a non-pronominal otherwise.

(b) A non-pronominal EC is an anaphor if and only if it is locally A-bound, and a variable if locally Ā-bound.

According to above discussion, both embedded subjects and objects can undergo topicalization and then be co-indexed with their traces, as shown in (30) and (31), respectively. Moreover, if the topic element is further deleted, we can get a zero topic-variable binding in question (viz., the C-pattern).

(30)	hiza	mae'iyaeh$_i$,	tala:o$_j$	k<om>osha:	$e_{i/*j}$	'am	oka'	
	that	person	PN	<AV>say	EC	IRR	NEG	
	nanaw	talhaehael	hi	baonay.				(Subject EC=that person)
	manner	persuade	ACC	PN				
	"As for that person, Tala:o says that he(=that person) can't persuade Baonay."							

(31)	hiza	mae'iyaeh$_i$,	tala:o$_j$	k<om>osha:	baonay$_k$	'am	oka'	
	that	person	PN	<AV>say	PN	IRR	NEG	
	nanak	talhaehael	$e_{i/*j/*k}$.					(Object EC=that person)
	manner	persuade	EC					
	"As for that person, Tala:o says that Baonay can't persuade him (=that person)."							

3.2. Atayal: Dual Status of ECs in Finite Clauses

The behavior of ECs in Atayal is more complicated. First, the object EC can be bound by an overt topic (32), which can be explained by the mechanism proposed in (28).

(32)	squliq	qasa$_i$	ga,	kmal	rimuy	mha:	wal=m-ita	
	person	that	TOP	say	PN	say	AUX.PST=AV-see	
	e_i	qu	watan	la.				(C1)
	EC	NOM	PN	CS				
	"As for the person, Rimuy says that Watan saw him (=that person)."							

Moreover, the subject EC can also be bound by an overt topic (33). The result is different from its counterparts in (34=19) and (35=21). That is, the only overt arguments

(viz., Watan) in embedded clauses are not construed as agents, but the *de facto* agents are (viz., EC).

(33) squliq qasa$_i$ ga, kmal rimuy$_k$ mha: wal=m-ita
person that TOP say PN say AUX.PST=AV-see
watan $e_{i/*k}$ la. (C2)
PN EC CS
"As for the person, Rimuy says that he (=that person) saw Watan."

As shown in (34–35), a patient reading is present if an EC (variable) is bound by a covert operator (viz., zero topic). However, an agent reading is present when an EC (*pro*) is licensed by the matrix subject. Thus, an unwanted result is produced when the only overt argument in an embedded clause has case-marking priority and is interpreted as agent. Thus, both sentences are ambiguous because two kinds of case-marking mechanisms are involved.

(34) (a) wal=m-ita rimuy$_i$ qu watan$_j$ ga?
AUX.PST=AV-see PN NOM PN Q
"Did Watan see Rimuy?"

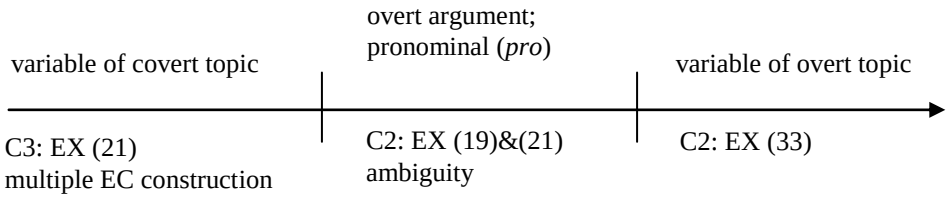
(b) kmal yumin$_k$ mha: wal=m-ita rimuy $e_{*j/k}$
AV-say PN AV-say AUX.PST=AV-see PN EC
la. (C2)
CS
"Yumin says that Rimuy saw him (=someone)."
"Yumin says that she saw Rimuy."

(35) (a) ima$_i$ (qu) wal=m-ita watan$_j$?
who NOM AUX.PST=AV-see PN
"Who saw Watan?"

(b) kmal rimuy$_k$ mha: wal=m-ita watan e_k (C2)
AV-say PN AV-say AUX.PST=AV-see PN EC
"Rimuy says that Watan saw someone."
"Rimuy says that he (=Rimuy) saw Watan."

It is of note that the variable EC of the overt topic in (33) rules out the possibility ofthe overt argument being construed as the subject, unlike (34b) and (35b). This shows that the overt topic has the highest priority in the operation of agent assignment, above that of the covert topic and pronominal. Accordingly, the schema in (36) illustrates the 'agent priority' among various ECs in Atayal.

(36) The priority of agent assignment



First, the usage of case markers is relatively flexible in Atayal, which illustrates the ambiguity or semantic obscurity in (19b) and (21b). According to Liu (2004: 15), in Atayal, the semantic and syntactic roles of a given argument can be specified even if unlabeled by a case marker because of its rigid VOS word order. However, the accusative case marker is null in Atayal. Thus, the overt argument is mistaken for the 'better' candidate for receiving the agent role when compared with the phonologically null EC by a speaker's intuition; this causes the unexceptional reading as discussed. In sum, this phenomenon firmly illustrates that phonological and morphological factors interfere with syntactic operations.

ECs in Atayal have dual properties. In addition to variables, they are also allowed to be construed as pronominal *pro* in finite structures with double ECs, as shown in (37=21c).

(37) kmal rimuy$_k$ mha: wal=m-ita e_j e_k.
AV-say PN AV-say AUX.PST=AV-see EC EC
"Rimuy says that he(=Rimuy) saw the person (=Watan)."

The former e_j is bound by a referent fixed in discourse under the mechanism of discourse binding, as stated in (28). The latter e_k refers to the matrix subject and functions as a pronominal *pro* with an agent role. Following Huang (2010), the licensing mechanism of *pro* can be accounted for by the GCR, as stated in (38).

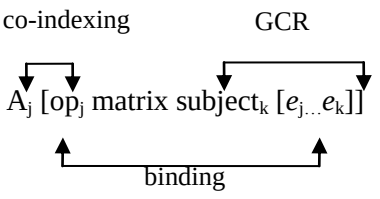
(38) Generalized Control Rule (GCR)
Co-index an empty pronominal with the closest nominal element.

Based on Chomsky's (1980) rule of control, Huang (2010) extended the GCR to cover both PRO and *pro*.[10] He argues that

> [an] empty pronominal takes the closest potential antecedent as its antecedent. A nominal element will be understood here to mean either NP or Agr. We will define "closest" in the following manner: following Chomsky (1980), A is closer to B than C if A c-commands B, but C does not c-command B. Furthermore, for two nodes A and C, both of which c-command B, A is closer to B than C if A, but not C, occurs within the same clause as B, or if A is separated from B by fewer clause boundaries than C is. (Huang 2010, 252)

In (37), the subject EC is the only candidate co-indexed with the matrix subject because object EC co-indexing with a matrix argument is cross-linguistically forbidden. We can employ the GCR in (38) to account for the licensing of subject ECs, with discourse bounding in (28) for object ECs. Thus, these two distinct operations could be sketched as in (39).

(39) The licensing mechanism for ECs in Atayal



[10] For more details, readers are referred to Huang (2010, 252).

The operation in (39) can be summarized as follows. First, according to the GCR, the empty subject (viz., e_k) is co-indexed with the closest nominal element, namely the matrix subject$_k$. Second, an empty operator (viz., op$_j$) is adjoined to the minimal S node dominating the e_j. The licensing of e_j involves a 2-step mechanism. On the one hand, op$_j$ binds e_j. On the other hand, op$_j$ is co-indexed with an external argument (viz., A_j) by predication. Thus, the interpretation of (37) can be successfully explained by (39).[11]

3.3. PRO of Control Structure

In control structures, both Atayal and Saisiyat allow the occurrence of PRO. The licensing mechanism can be successfully explained by GCR as well. According to the generalization in (29), EC in (40=11) is pronominal (viz., PRO) and base-generated in the embedded subject position. According to the GCR, it will be co-indexed with the closest nominal element, i.e., *Tala:o*.

(40) [tala:o$_i$ ma: [e_i talhaehael ’iakin]].
PN AV-try EC AV-help 1SG.ACC
“Tala:o tries to help me.”

Likewise, the ungrammaticality of (41) is accounted for under the GCR. The topic argument and the matrix subject compete for co-indexation with the EC (viz., PRO). It is ruled out by the GCR, which requires the EC to be co-indexed with the closest nominal element if the EC co-refers to a topic argument at a long distance. Moreover, the co-referent of the matrix subject and the EC means that the topic trace cannot enter a binding relation with its binder, and thus violates the ECP.[12]

(41) *hiza mae’iyaeh$_i$, tala:o$_j$ ma: $e_{i/j}$ talhaehael ’iakin.
that person PN try EC help 1SG.ACC

In terms of Atayal, PRO in control structures is co-indexed with the matrix subject by the GCR as well. The direction of co-indexation is linearly regressive, R-to-L, because of its VOS word order (it is progressive, L-to-R, in Saisiyat), as shown in (42=22) and (43=23).

(42) [m-usa [q<m>arup e_i] qu watan$_i$].
AV-go <AV>hunt EC NOM PN
“Watan goes to hunt.”

(43) [t<m>alam [m-hkangi e_i] qu watan$_i$].
<AV>try AV-walk EC NOM PN
“Watan tries to walk.”

---

[11] In fact, Atyal also allows the variable construal of null subjects (19c). In other words, the null subject in question may be construed as *pro* or a topic trace. Thus, such sentences are ambiguous. However, the processing of variable construal of null subjects is not shown in (39) for reasons of space.

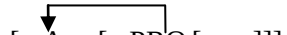
[12] According to Haegeman (1994, 42), the ECP states that traces must be properly governed. A properly governs B iff A theta-governs B or A antecedent-governs B. A theta-governs B iff A governs B and A theta-marks B. A antecedent-governs B iff A governs B and A is co-indexed with B.

Control structures maintain VOS word order, as in (44). Again, the base-generated PRO is linearly regressively co-indexed with the matrix subject under the GCR.

(44) [t<m>alam [m-rmaw kuzing e_i] qu watan$_i$].
<AV>try AV-help 1SG.NEU EC NOM PN
"Watan tries to help me."

Finally, the GCR states that an empty pronominal has to be co-indexed with the closest nominal element. However, the direction of co-indexation in our target languages is contrary, because Atayal and Saisiyat have the opposite word order. That is to say, in a SVO language like Saisiyat, PRO_i will be regressively co-indexed with the closest nominal element (viz., A_i). In a VOS language like Atayal, however, the direction of co-indexation is regressive. These two distinct operations can be sketched as in (45).

(45) (a)Saisiyat



(b) Atayal

4. Concluding Remarks

This paper elaborates the character of various ECs in Atayal and Saisiyat. First, ECs in these two languages have different distribution and reference. The usage of zero topics and PRO is productive in both languages, but only Atayal allows the construal of null subjects (viz., *pro*) in finite clauses. Although 'matrix binding' or '*pro*-drop' is context dependent and relatively unproductive in Atayal, we can take it as a subtype under the Chinese-type languages, which allow both '*pro*-drop' and 'zero topics'. Saisiyat, like German-type languages, doesn't permit the construal of *pro*. In other words, it only allows the occurrence of PRO and zero topics.

Furthermore, we assert that the corresponding asymmetry between these two languages can be successfully and consistently explained by Huang's (2010) description of the process of discourse binding (28) and GCR (38). One the one hand, variable ECs are subject to discourse binding, which involves a 2-step mechanism: an argument first undergoes topicalization and is then deleted from the topic position. On the other hand, the pronominal ECs (PRO and *pro*) conform to the GCR. The GCR states that an empty pronominal takes the closest nominal element as its antecedent.

Last but not least, the author hopes that this study can shed more light on the grammatical typology and syntactic behavior of ECs.

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Students' and Teachers' Perceptions on Writing Instruction Inspired by Genre-Pedagogy and Systemic Functional Linguistics

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Abstract: This study is a qualitative follow-up study of a quasi-experiment exploring whether a writing instruction approach based on systemic functional linguistics and genre-pedagogy supports students in improving their argumentative writing skills in English. Interviews were carried out to investigate how teachers and students perceived this type of approach in an ESL (English as a second language) context. In addition, much of the teaching in the quasi-experiment was observed to find out how the teaching intervention worked and how it was received by the students. The current study analyses the material from the observations and the interviews, and the findings suggest that both teachers and students appreciated the type of scaffolding instruction that genre-pedagogy offers. This article advocates introducing genre-pedagogy as a teaching approach in ESL-contexts to support students in learning how to write argumentative texts to prepare for requirements they will meet later on in their education.

Keywords: genre-pedagogy; systemic functional linguistics; explicit instruction; grammar teaching

1. Introduction

Whether or not grammar instruction has a positive effect on writing skills is a much debated issue, but in the context of second language learning, explicit instruction has generally been proven more efficient than implicit instruction (Norris and Ortega 2000, Spada and Tomita 2010). There is a parallel between attitudes to grammar instruction and writing instruction in general. Traditionally, students were taught how to structure texts (Nystrand 2008), and then in the 70s, a new approach emerged, a type of process-writing approach, in which the teacher was to interfere as little as possible, and rather facilitate the students' writing process (Pritchard and Honeycutt 2008). However, in more current process-writing approaches, some instruction is included.

Instruction and process-writing strategies are also applied in the genre-pedagogy for the teaching of writing developed in Australia (Cope and Kalantzis 2012). What separates this approach from other process-writing approaches is perhaps the focus on structural and linguistic features of genres, as this is a writing pedagogy developed from a linguistic theory, namely Haliday's SFL, or systemic functional linguistics (Halliday and Matthiessen 2014). This linguistic theory focuses on how language functions in context and describes language as consisting of systems of choices available for the language user. The aim of the current study is to investigate how teachers and students perceive writing instruction based on SFL and genre-pedagogy.

This study is a follow-up study of a quasi-experiment investigating whether SFL applied through a genre-pedagogical approach to the teaching of writing supports

students to develop their argumentative writing skills. Within genre-pedagogy, various teaching-learning cycles have been developed, meaning models of writing instruction that include various phases of the teaching and learning process. The teaching-learning cycle applied in the quasi-experiment was developed by Hyland in his book *Genre and Second Language Writing* (2004). There are five stages included in this teaching-learning cycle: 1) developing the context, revealing purpose and setting, 2) modelling and deconstructing the text, revealing the key features of the genre, 3) joint construction of the text, 4) independent construction of the text, including support through feedback, and 5) linking related texts, reflecting on similarities and differences (Hyland 2004, 129).

There are concerns that it may be too limiting to use the type of staging approach applied in genre-pedagogy, or using writing frames and templates based on example texts, to put it in other words (Wesley 2000, Moss 2002, Rorschach 2004, Kress 2012). The current study investigates how the teachers and students that participated in the quasi-experiment perceived this type of approach. The research question of this study is as follows: How do teachers and students in Norwegian upper secondary schools perceive English writing instruction inspired by genre-pedagogy and systemic functional linguistics? To answer this question, the quasi-experiment was followed up by individual interviews of the four participating teachers, who taught one group each, as well as a selection of 8 students, 2 from each of the four participating groups. Together with observation notes from the teaching intervention sessions, the material from the interviews were analysed thematically. The findings suggest that teachers and students find SFL applied through a genre-pedagogy approach to teaching argumentative writing to be useful to support students in improving their writing skills.

1.1. English Writing Instruction in a Norwegian Educational Context

The English subject curriculum for upper secondary students in Norway states that "The aims of the studies are to enable students to write different types of texts with structure and coherence suited to the purpose and situation" (Norwegian Directorate for Education and Training 2013). This is what is mainly tested in the exam, so the students will have to be prepared to write for example an argumentative text about a given topic. They have to learn about how to adjust their writing to "purpose and situation", which was the focus of the grammar-teaching in the quasi-experiment. A qualitative study preceding both the current study and the quasi-experiment revealed that this also seems to be something that is focused on in writing instruction in general (Horverak 2015a).

Regulations about how to use feedback have also been implemented recently, and the Norwegian Directorate for Education and Training has run programmes on "Assessment for Learning" in schools around the country (Norwegian Directorate for Education and Training 2014). When it comes to writing instruction, this implies that assessment should be integrated in the writing instruction process instead of being something that occurs after writing has taken place. Recent studies also reveal that some English teachers currently use this type of approach in upper secondary schools in Norway (Vik 2013, Horverak 2015b). This is in line with genre-pedagogy and the feedback practice implemented in the teaching intervention in the quasi-experiment.

2. Literature Review

In contexts where English is a first language (L1), grammar instruction generally has little effect on writing competence, except for sentence-combining exercises (Andrews,

Torgerson, Beverton, Locke, et al. 2004; Braddock, Lloyd-Jones, and Schoer 1963; Hillocks 1986; Andrews, Torgerson, Beverton, Freeman, et al. 2004; Andrews et al. 2006). In his meta-analysis, Hillocks even argued that grammar instruction is harmful for students' development of writing skills (1986). However, some more recent studies show different, more positive results of grammar instruction (Jones, Myhill, and Bailey 2013; Fogel and Ehri 2000).

In contexts where English is a second language (L2), explicit instruction has generally been shown to be more efficient than implicit instruction (Norris and Ortega 2000, Spada and Tomita 2010). Explicit instructional treatment includes rule explanation, i.e. explicit deduction, or involves students focusing on particular forms and arriving at generalisations themselves, i.e. explicit induction (Norris and Ortega 2000, 437). Implicit instruction includes neither deductive nor inductive explanations of rules. As implicit L2 instruction has generally been demonstrated to be less effective, this type of approach was not included in the teaching intervention in the quasi-experiment which is followed up in this study.

In general, L2 writers have more difficulty organising material when they write when compared to L1 writers (Silva 1993). L2 writers are less effective in linking arguments and use more simple coordinate conjunctions and fewer subordinate conjunctions and lexical ties. In *A Synthesis of Research on Second Language Writing in English* (Leki, Cumming, and Silva 2008, 168), it is also pointed out that the more proficient L2 writers use more subordinate conjunctions and fewer coordinate conjunctions than the less proficient L2 writers. According to Silva, there is "a need to include more work on planning to generate ideas, text structure, and language" (Silva 1993, 670–1) in the teaching of L2 writers, and, there is a need for special theoretical and practical preparation for teachers of L2.

Organising argumentative texts seems to be a challenge in contexts where English is both L1 and L2 (Andrews 1995, Beard 2000, Freedman and Pringle 1988). Research from a Norwegian context reveals that the same is the case for Norwegian pupils writing in their L1 (Berge et al. 2005, 390–1). One of the main challenges seems to be creating coherence in texts and knowing how to structure the arguments reasonably. Another problem is an overuse of informal language (Berge and Hertzberg 2005, Hundahl 2010). These are elements central in genre-pedagogy, and were included in the teaching intervention in the quasi-experiment that is followed up in the current study.

In Graham and Perin's "A Meta-Analysis of Writing Instruction for Adolescent Students" (2007), we see positive effects of strategies like process-writing, strategy instruction like planning, revising and editing and peer assistance, which are all implemented in genre-pedagogy. This meta-analysis makes no conclusion concerning text structure instruction, which is a central element in genre-pedagogy, as the results of the studies included show diverging findings.

Genre-pedagogy developed in Australia in the 1980s as a means to ensure equal opportunities for everybody and to empower marginalized groups (Cope et al. 2012, 240). This approach has been shown to be useful in the teaching of writing factual texts (Walsh et al. 1990, Rose et al. 2008). The focus of the initial stages of genre-pedagogy was on revealing the key features of genres through working with model texts to help students to master genres necessary to succeed and climb in society. A teaching-learning cycle was developed to describe the main stages of writing instruction: deconstruction of model texts, joint construction of text and independent construction of text (Cope and Kalantzis 2012). In the deconstruction phase, there is a focus on revealing structural and linguistic features of model texts. In the joint construction phase, the teacher constructs a

text with the class. In the independent construction phase, the learners write texts with support through feedback.

The second phase of genre-pedagogy, in the 1990s, focused on mapping genres found in the school curriculum and in working life. The purpose of this project called *Write it Right* was to research the literacy demands of society, and a comprehensive overview of existing text-types and genres was developed (Martin and Rose 2008). In the third phase, in the late 1990s to the present, genre-pedagogy developed to focus on an integration of reading and writing development (Rose 2009). The original teaching-learning cycle was adapted to reading instruction in the programme called *Reading to Learn*, by including a methodology for how to approach a text with preparation tasks, detailed reading and note-taking. There have been *Reading to Learn* programmes around Australia, and in a number of countries in Europe as well.

The type of genre-pedagogy that was developed in the 80s has spread to other countries, and is among others included in the curricula in teacher training in the Scandinavian countries Denmark and Sweden. However, very few teachers in Norwegian contexts have been familiar with the methodology so far. There seems to be a resistance, and perhaps even fear, towards accepting a too rigid genre-view in the Norwegian educational culture, as it is not even allowed to include genre-terms in the exam exercises in Norwegian and English. Also, writing researchers in a Norwegian context have developed an alternative theoretical construct called *The Writing Wheel* for describing different types of writing acts and writing purposes, avoiding all genre-terms in general (Fasting et al. 2009). In this context, it is particularly interesting to investigate how students and teachers perceive a genre-pedagogical approach to the teaching of writing in an ESL-context (English as a Second Language). This is what the current study will shed light on.

3. Methodology

This study aims at finding out how teachers and students that participated in a quasi-experiment perceived a genre-pedagogy approach to the teaching of writing in an L2 context. This is a qualitative study carried out as a multiple-case study to get an in-depth understanding through looking at more cases (Creswell 2013, 99). The main material on which this study is based consists of interviews with the four participating teachers and eight students, two from each participating group. In addition, observation notes from the intervention sessions and reflections from teachers during the period of the teaching intervention are included. The project has been approved by the Data Protection Official for Research (NSD).

3.1. Procedure: Sampling and Data Collection

The teachers that participated in the teaching experiment and are interviewed were selected through convenience sampling by contacting the author's former acquaintances (Cohen, Manion, and Morrison 2011, 155), hence the sample may not be representative. There were four teachers in total, of which three had a master's degree in English. The fourth teacher had a year of English studies and a master's degree in Norwegian. Hence, all the teachers were highly educated. Three of the teachers had long teaching experience, whereas one of the teachers was newly educated. The teachers asked two students each to be interviewed, either students they expected would agree to do the interviews, or students they thought would give different types of reflections. Hence, the interviewed students cannot be said to constitute a representative sample, though they

may offer some useful insight into how a limited number of students perceive a genre-pedagogy approach to the teaching of writing.

The interviews were recorded and transcribed, and notes were taken during the observations. I have translated the quotations included in the article. The focus of both observations and interviews were the elements that were included in the teaching intervention. A semi-structured interview-guide with pre-formulated questions and keywords was used in the interviews (Silverman 2011, 162). The guide used when interviewing teachers included questions about how the teaching material worked, how the students responded, how the material might be adjusted and used in future teaching and what factors may have influenced the effect of the teaching intervention. The guide used when interviewing the students included questions about what the students thought about this type of teaching approach, how they improved, and what could have been different. Some of these issues were also discussed with teachers during the period of intervention before or after observations, and some reflections expressed here are included in the observation notes.

3.1.1. Teaching Intervention

To make it more clear what the teachers and students reflected on in the interviews, the teaching intervention of the quasi-experiment is illustrated in detail in Table 1 below.

Stage	Teaching-learning cycle	Content
First	Setting the context	Focus on different types of purposes and genres
Second	Modelling, revealing key features of genre	Global structure of essays/argumentative texts - Introduction with a question for discussion - Body, main arguments - Conclusion, summing up Local structure of main paragraphs in essays - Topic sentence - Supporting details - Counter-arguments - Closing comment
Third	Writing practice and grammar instruction	Exercise with topic: Values and social issues in the USA, sources given: - "Brenda's Got a Baby" by Tupac - Obama's Victory Speech of 2012 Sources: How to use and refer to sources Cohesive links: connectors and pronouns Modality: modal verbs and other modal expressions Formality level: features of formal and informal language Vocabulary work: using dictionaries

Fourth	Independent construction supported by the teacher	Revision of pre-test with - self-assessment - peer assessment - teacher comments and teacher support
Fifth	Comparing to other genres and contexts	Formal and informal genres Writing exercise: e-mail to a friend and report to a police department about Brenda's story (Tupac's lyrics)

Table 1. Teaching intervention (Table presented in Horverak forthcoming)

Stage 1 of the teaching-learning cycle focused on the context of different types of genres, with a particular focus on argumentative writing or essays. Stage 2 focused on how an essay is structured, which was followed up in Stage 3 with writing practice and grammar instruction of linguistic features relevant when learning to write formal, argumentative texts. The students were instructed in how to construct an essay by including necessary elements in all paragraphs. The grammar instruction was based on SFL and the students were presented with systems of choices within the language concerning how to express modality, how to create coherence and how to adjust the language to the correct formality level. In Stage 4, the students received feedback on various elements of structure, language and content in their pre-tests, and improved this to get a new evaluation as practice for the post-test. Finally, in Stage 5, the students compared different types of formal and informal texts.

Originally, there were two types of teaching material, each given to two of the four participating teachers. The two types of teaching material reflected various understandings of genre within the genre-pedagogy tradition, and this was supposed to result in a more and a less explicit approach. The more explicit approach was based on Martin and Rothary's understanding of genres as consisting of stages (Martin and Rothery 2012, Martin 2012), and included detailed descriptions of each element in the paragraphs in argumentative texts, like topic sentences, supporting details, counter-arguments and closing sentences. The less explicit approach was based on Kress' understanding of genres as consisting of elements that serve social purposes (Kress 2012), and detailed instruction, for example, of how paragraphs were structured, was left out in this material, because it was supposed to be more open for the students to find and make their own patterns. Another difference in the material was that the more explicit teaching intervention included deductive grammar teaching, while the other included inductive grammar teaching, again with the purpose of letting the students reflect on structures themselves rather than being told how to do things.

In terms of material, the two experimental teaching approaches differed very clearly, but in practice, when the teachers filled in with their own knowledge, the distinction was in a way blurred, and the less explicit teaching became just as explicit as the other. One difference was that the students with the more explicit teaching received more support on how to structure a text by using a template the teacher helped them to fill in, and in one of these groups, the teacher constructed a full text together with the students. Also in the grammar part, the teachers using the inductive material included some explanation of rules as the students worked with exercises, so there was not a clear contrast here either between the inductive and the deductive approach. Hence, in the quasi-experimental study, the teaching interventions are considered to be the same, and the four groups are treated as one experimental group (Horverak, forthcoming).

However, in this study, some of the subtle differences in the interventions are commented on in the analysis.

3.1.2. Measurement of Quasi-experiment

The measurement tools in the quasi-experiment were open writing exercises in which the students were to discuss American values and social issues in the USA. Different text excerpts from rap lyrics and official speeches were attached in the two exercises. There was a pre-test before the cycle was started and a post-test afterwards, and evaluations of these tests were the basis for the analysis of the students' improvement. The students were evaluated in relation to structure, language and content, and various subcategories in each main category (Horverak, forthcoming).

3.2. Analysis of Interviews and Observations

The data from the interviews and the observations are analysed to shed light on how the teaching intervention applied in the quasi-experiment worked. The material is categorised in a thematic analysis, identifying some patterned responses within the data (Braun and Clarke 2006, 82). The eight categories identified are "teachers' reflections on teaching material", "handling of material and adjustment of plan", "factors that may have influenced the outcome", "teachers' reflections on improvement", "students' positive reactions and reflections", "students' negative reactions and reflections", "students previous experience with genre" and "students' reflections on possible improvement of teaching". In the analysis, there is also focus on what the teachers and students felt about the more or less explicit instruction and the deductive and inductive approaches to grammar teaching.

3.3. Validity and Reliability

As this is a case-study, the analysis reveals something about what these particular teachers and students think about the type of genre-pedagogy approach applied in the quasi-experiment. This may not be representative of other teachers and students. However, one could argue that the findings are transferrable to other similar settings (Lincoln and Guba 1985). The current study has been carried out in the setting of ESL -classes in Norwegian upper secondary school. One might expect that learners in other ESL -settings also would appreciate an approach to L2 -learning that scaffold their development of L2 competence through clear instruction and feedback on structural and linguistic features of texts written in various contexts.

4. Results and Analysis

The focus of the current study is how teachers and students perceived writing instruction based on genre-pedagogy and SFL applied as part of a quasi-experiment. As the teaching intervention dealt with how to write five-paragraph essays, or formal, argumentative texts, the teachers' reflections presented here are related to teaching this type of genre. The results of the quasi-experiment preceding the current study showed that there was significant improvement in all the three main categories of structure, language and content. In the category of structure, the students used connectors to better organise their texts and wrote better introductions and conclusions. In the category of language, they improved in relation to adjusting to correct their formality level and using modal expressions. In the category of content, they particularly improved their use of sources.

The students improved regardless of gender, first language and level, or grade from lower secondary school (Horverak, forthcoming). In line with these findings, both teachers and students participating in the current study reported improvement in all the three main categories of the evaluation form used in the teaching experiment: structure, language and content.

There was generally a very positive attitude to the teaching intervention and the teaching material, both from students and teachers. The teachers appreciated the detailed instruction of how an essay is structured and the grammar instruction included in the material. The students also expressed that they appreciated learning this genre, how to adjust language to correct their formality level, and how to use connectors. However, there were some mixed responses from the students, as the material was a bit monotonous and the language was rather complicated at times. In the following, the first four subsections deal with the teachers' perspectives on the teaching approach and the students' improvement. The four final subsections deal with the students' perception of the teaching intervention, with a focus on positive and negative aspects they reflected on.

4.1. Teachers' Reflections on Teaching Material

Generally, the teachers reported that they appreciated the fact that the teaching material was clear and coherent. They also stressed that it was very useful for the students to learn about writing argumentative texts or five-paragraph essays. However, it was rather intense to continue with the same type of teaching project with a focus on writing instruction, and the same topic of the USA for the four weeks the teaching intervention lasted. Still, the teachers had a positive attitude to using much of the material in other contexts, and some of them had already started to do so. In one of the schools, the template used in the teaching intervention had been translated to Norwegian and it was given the students to use as support on the whole-day test in Norwegian before Christmas.

The teachers were also very positive about including grammatical elements that may help students adjust their writing to genre and context. The teachers who used the material with deductive grammar teaching were satisfied with this type of approach, though they felt there were too many complicated words for the students. The teachers who used the material with inductive grammar teaching had different opinions about this approach to grammar instruction. One teacher preferred this way of working, making the students intrigued by engaging them in exercises before explaining rules to them. The other teacher would have preferred it the other way around, as the students seemed somewhat frustrated by not being given answers immediately. Another aspect mentioned was that the inductive type of grammar teaching worked better early in the morning than later in the day.

4.2. Handling of Material and Adjustment of Plan

During the teaching intervention, the teachers had to adjust the plan, spend more time and give more support than suggested in the original material. The teachers repeatedly told the students what elements to include in the different parts of the text in all the four groups, as the students sometimes appeared confused about what to do when practicing writing. When being interviewed, the teachers who used the less explicit material commented that they felt the students needed more details about how to structure the individual paragraphs in the text:

> Maybe such modelling could have been more in focus throughout, that is, how to build an essay, that you are supposed to patch it together to a certain degree. There was not so much focus on what is to be in an introduction and what is to be in the following paragraphs and in the conclusion. There was at least not enough specific focus on it.

They solved this problem by including some of their own ideas about how to structure texts. The teachers who used the template were satisfied with this, and felt it was useful for the students. Also, when given the template, there was a need for more teacher support, and the teachers helped the students by discussing in the group what could be included in the different paragraphs. One of the groups wrote the whole text together in class, which seemed to be appreciated by the students.

4.3. Factors That May Have Influenced the Outcome

The teachers were asked whether there was something that happened during the teaching intervention that could have interfered with the students' development, for example, whether there had been any unusual incidents or personal issues that may have caused them not to respond to the teaching as usual. From the teachers' responses, nothing noteworthy happened during the period of the teaching intervention that could have affected the results and improvement of the students.

4.4. Teachers' Reflections on Improvement

When it comes to improvement, the teachers reported that they saw a difference in relation to structure and the use of sources, which many of them did not use in the pre-test: "They actually used the sources this time, I felt that was a big improvement, and generally how they wrote, the grammar was better, and I felt that the vocabulary also was better, I felt that the formality level was more appropriate…". One of the teachers expressed some disappointment though, in spite of the improvement. She thinks they should have improved even more as she had made it very clear to them how to structure the text, but some did not seem to care about this. However, all teachers reported a general improvement in the students' writing skills.

4.5. Students' Positive Reactions and Reflections

The students also reported that they felt they had become better at structuring texts and using sources. Language was another element that was mentioned repeatedly, namely, that they had learnt about using connectors, formal language, or just improved their language in general. As expressed by one of the students: "I have not really managed that before, to write factual texts in English in the same way as I do in Norwegian, now I actually manage that better." All the students reported having learnt something useful from the teaching, and there was a general positive attitude to peer assessment reported by both students and teachers, though some students hesitated to share their texts. One of the students reported: "That was very good, then I get ideas about how others think, and then I start thinking in a somewhat different way myself, so I like that."

When one of the students from the group with inductive grammar teaching was asked whether he would have preferred the grammar teaching the other way round, he answered:

> I think it was okay as it was, because then you can find out the rules for yourself, and you understand them better than if you were to memorise some rule that you perhaps don't understand when to use, if you understand it, you have it as your own rule, that you own it a little rather than memorising something on a paper.

This student had some grammatical knowledge to relate to, which might have influenced his preferences. Another student from the group that wrote a text together with the teacher was asked whether she found this type of approach useful. She was very positive about this, as it worked as a type of scaffolding for her to have such a model text available afterwards: "Yes, if I had any doubts about an exercise, I could check that and look, that is if I remembered how to structure the text, but was uncertain about how to write, then I could have checked the text and found examples." Generally, this relates to what the students reported as positive about the teaching, i.e., that they learnt how to write an essay, or an argumentative text, and what was expected of them.

4.6. Students' Negative Reactions and Reflections

Both the teacher interviews and the student interviews revealed that there were some complaints and frustration from some of the students, particularly in one of the schools. During the observations, a somewhat negative attitude was also expressed now and then, and some students asked if they could write about something else, for example themselves, rather than the USA. Others asked if they could do something more fun. One of the students being interviewed expressed a very clear negative attitude, which others also might have felt: "I think it was boring, to be honest. It was a bit heavy, and I feel that it was kind of a struggle to go to the English lectures." The teachers were at times worried that the teaching was too complicated for some of the students, and that the texts they used were too difficult. This might have been the case, but what the students say in the interviews is that this was mostly a problem in the beginning. As the course progressed, the teachers explained the concepts, and then it was not so difficult to understand.

4.7. Students' Previous Experience with Genre

The students generally reported that the argumentative writing, or the five-paragraph essay, was new to them in the context of learning English. They reported having worked with argumentative writing in Norwegian in lower-secondary school, but not much in English. They recognised the structure of the five-paragraph essay from the Norwegian genre "article". Another topic that was quite new to them was the difference between formal and informal language.

4.8. Students' Reflections on Possible Improvement of Teaching

What the students felt could be improved was the way the topics were taught. They would have preferred somewhat simpler language, and less text on the PowerPoint slides used and more variation. There were too many PowerPoint slides. Still, the students generally expressed a positive attitude to learning how to structure an essay, how to build and connect arguments and how to use formal language.

5. Discussion

This study set out to investigate how teachers and students perceive writing instruction based on SFL and genre-pedagogy. The genre the students were taught was the five-paragraph essay, or argumentative writing, and their reflections relate to how they perceived the teaching intervention in relation to learning how to write this type of text. It seems clear from the findings that there is a preference among teachers and students to get detailed formulae about how to do things. The fact that the teachers with the less explicit material had to include more details due to confusion among the students supports the idea that clear instruction is preferred when learning how to write different types of texts. Both teachers and students also reported improvement in writing skills, like improved structure, improved use of sources, connectors and formal language. Although there was some frustration during the intervention, partly due to complicated terminology, and partly due to the introduction of a new genre, both teachers and students seemed to appreciate that this type of approach could support students in improving their ability to write essays, or formal, argumentative texts in English.

As has been expressed by more sceptical voices though, it is important to be conscious of the risk of letting templates restrict students' creativity and individuality (Wesley 2000, Moss 2002, Rorschach 2004). These voices warn against letting the five-paragraph theme, which was used in the quasi-experiment followed up in the current study, prevent students from developing in general:

> It is my contention that teachers of the five paragraph theme, like the representatives of patriarchal society, have become complacent in their acceptance of a tool that purports to nurture but, in fact, stunts the growth of human minds. (Wesley 2000, 57)

There is a worry that using writing frames like the one for 5-paragraph essays makes students enter a state of "nonthinking automaticity" (Rorschach 2004, 25), and this may prevent them from drawing connections from their experiences.

In the present study, there was some dissatisfaction expressed by the students concerning the topic they had to write about. Some of them might have felt that social issues and values in the USA was not something they were personally engaged in, and they wanted to write about more personal topics. If the students are not motivated to write about a certain topic, there is a risk that their writing becomes sort of mechanical to adjust to the teachers' requirements. There is a risk that the individual voice disappears if the students do not find a topic engaging. In the long run, this sort of writing may stifle the students' motivation to write in general, and the development of creativity and an individual style. Although it is useful to learn how to write argumentative texts, it is important not to forget the students as individual, creative human beings, and give room for writing activities that might trigger their interest, both in terms of genre and content.

Another point in the criticism of the five-paragraph theme is that it causes students to write shallow essays limited to three main points without going into depth to develop their arguments. It is said that it "encourages teachers to focus on format and correctness, with little concern for content" (Rorschach 2004, 16), which again fails to prepare them for college. This type of criticism is written in an American context where students are instructed in how to write a successful five-paragraph theme to succeed on a specific test of academic skills they need to take to be accepted into college. The context in the current study is somewhat different, as the final exam in English in Norwegian upper secondary school is different from the type of tests referred to in the critical article

referred to above. Since the Knowledge Promotion of 2006, the students have been allowed to bring all types of sources for the exam, and this has led to a focus on preparing students to discuss issues by using examples and referring to sources. I would argue that the type of genre-pedagogy used in the current study, with a focus on going into depth by using examples from real speeches and lyrics, and contrasting these, is a good way of preparing students for college. What is important is perhaps to remind the students that the basic structure of a five-paragraph essay is a start, and that they may later elaborate on issues to make longer texts without being limited to writing exactly five paragraphs.

Another issue to take into consideration is that the culture of writing instruction is perhaps somewhat different in Norway than in for example the USA when it comes to how writing is taught. Pupils in primary and lower secondary school in Norway are generally encouraged to write texts with involvement and personal style in both Norwegian and English (Øgreid and Hertzberg 2009, 458). There is a clear preference for narratives, and the pupils find it difficult to master organising their ideas in argumentative texts, and to use formal language (Berge et al. 2005). The positive aspect of this type of writing culture is that the students are encouraged to make their own voice clear and be independent. Individual growth is in focus. The problem is that the students may be insufficiently prepared for upper secondary school and higher education. These conclusions from previous studies, that writing instruction is focused on personal accounts, are confirmed in the current study as the students themselves report that this type of five-paragraph essay genre is new to them. Some of them recognise the genre from the Norwegian "article" -genre, while others are quite frustrated because they have to write these types of texts. The students were used to choosing other types of texts in English in lower secondary school, and also in Norwegian, so when they have to learn to write this type of formal genre, it is perhaps not surprising that there is some resistance in the beginning.

With the precautions mentioned above in mind, using a genre-pedagogy approach with scaffolding activities may be a help for students to learn the type of argumentative writing that is expected and required in the educational system. The students need to learn, for example, how to adjust their language to the context of writing, and how to structure their ideas into proper paragraphs when writing argumentative texts. Upper secondary school is to prepare the students for higher education, at least for general studies, and letting the students write only personal texts according to their own wishes would probably not prepare them well enough. Learning to write argumentative texts seems to be a challenge in general (Andrews 1995, Beard 2000, Freedman and Pringle 1988, Berge et al. 2005), and there is a need for some type of instruction that can offer support to students in developing the competence to write these types of texts. One may conclude that writing instruction influenced by genre-pedagogy and systemic functional linguistics is one approach that may be useful in this context based on the quasi-experiment referred to in the current study. This conclusion is supported by the findings in this study, in that teachers and students found the teaching intervention useful for improving argumentative writing skills in English.

5.1. Validity

There are challenges to the validity of the findings in this study, as various factors may have influenced the responses of the informants. The teachers may, for example, express positive attitudes as a result of the attention they have received through participating in

the research project, or they may be positive to please the researcher. This might also be the case for the students, or they may think that their responses will have some influence on the way the teachers evaluate their work. These are confounding elements that are important to keep in mind. However, the fact that the students generally improved from the pre-test to the post-test makes it likely that there is a positive attitude towards this type of approach.

As students are individuals and the dynamics in different groups of students are different, it is perhaps difficult to generalise from the results. Still, there are some similarities in different ESL contexts. L2- writers generally have to learn about adjusting the language to the purpose and situation of writing according to expectations in the target language. Focusing on genre requirements in ESL teaching offers a way to identify features of different text-types that are frequent in the English-speaking culture (Christie 1999). The structure of argumentative writing in the form of five-paragraph essays is well established in the Anglo-American educational system. With a globalised world, mastering this type of writing in English is becoming increasingly important in order to succeed in the educational or academic system. Hence, a writing instruction approach as genre-pedagogy, specifying structural and linguistic expectations of texts through instruction and feedback, may be appreciated by teachers and learners not only in Norwegian upper secondary schools, but also across various L1 contexts.

6. Conclusion

This study has explored how ESL -students and teachers perceive English writing instruction influenced by genre-pedagogy and systemic functional linguistics. Interviews and observations revealed that scaffolding activities like instruction and feedback regarding text structure and linguistic features were appreciated by both the teachers and students that participated in the quasi-experiment followed up in this study. This supports the findings of the quasi-experiment, that genre-pedagogy may support students in developing writing skills. If it is true, as noted in this study, that students are not taught how to write argumentative texts in English before they start upper secondary school, then this is something that needs attention.

There is a need to follow up this study and investigate what type of writing pupils do on lower levels, and what English teachers in lower secondary school do to prepare the pupils for the requirements they will meet in upper secondary school. Based on the findings presented here, I would recommend writing instruction based on SFL and genre-pedagogy to teach ESL-learners how to write argumentative texts in English, with adjustments to context and level of learners. As previous research has shown, it is extra challenging for students to apply the correct language and organise their ideas into a coherent whole when writing in an L2. Hence a genre-pedagogy approach to the teaching of writing may offer the scaffolding ESL -learners need when learning how to write argumentative texts.

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Arguments against the Heterosyllabicity of /sC/ Clusters in Italian Phonology

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Abstract: In the phonology of Italian it is undecided whether /sC/ clusters are parsed as heterosyllabic or tautosyllabic. I claim that /sC/ is phonetically acceptable both as an onset and parsed into different syllables, but from a phonological point of view it is better to handle it in Italian as a tautosyllabic cluster. My paper is based on the analysis of 68 Italian speakers' foreign accent, who speak English, German, French and Spanish, and the data are analysed in classical Optimality Theory. My arguments concern, on the one hand, the pronunciation of ill-formed consonant clusters by Italian informants, with special regard to the repair strategies they apply; and on the other hand, the functioning (or rather malfunctioning) of regressive voicing assimilation in Italian.

Keywords: Italian phonology; /sC/ clusters; tautosyllabicity; coda condition; regressive voicing assimilation

1. Introduction

The issue of preconsonantal /s/ is a much-debated topic in linguistics, mostly in the phonology of Latin and Italian. The syllable structure of /sC/ clusters is not clearly identified, owing to the instability of /s/, which sometimes seems to prefer a syllable-final position (in this case /s/ and the following consonant belong to different syllables, so they are *heterosyllabic*), at other times it seems to appear at the beginning of the syllable (in this case /s/ and the following consonant belong to the same syllable, that is, they are *tautosyllabic*). Consequently, the syllabic status of preconsonantal /s/ is not straightforward in Italian phonology. Certain phonologists argue for the universal heterosyllabicity of /sC/ clusters (such as Kaye 1992; Morelli 1999; Krämer 2009; etc.); however, phonetic evidence occasionally interferes with this hypothesis (such as Bertinetto 1999, 2004; etc.). My aim is to share phonological evidence as well, slightly taking the shine out of the common opinion in phonology, which requires that /sC/ clusters be universally heterosyllabic.

1.1 Methodology: Foreign Accent Analysis

In this paper I intend to raise three phonological arguments in favour of the tautosyllabicity of /sC/ clusters in the synchronic phonology of Italian (Sections 2–4). My argumentation is based on the foreign accent of Italian speakers: 68 Italian informants were interviewed in three cities of Italy (Gorizia in the North-East, Florence in the centre of the Italian peninsula and Naples in the South), who were asked to read different sample phrases formulated in English, German, Spanish and French, choosing the foreign language they were more familiar with. The dataset contains approximately 12 hours of speech recordings (for details of the methodology, see Huszthy 2013).

The analysis of foreign accent is a recent experimental method in phonology: the aim is to measure the productivity of synchronic phonological processes in L1. Foreign accent is a product of phonetic and phonological interference of L1 in L2, which is unavoidable at least some of the time, and in this way it can reveal synchronic phonetic and phonological characteristics of the speakers' mother tongue.

The foreign accent of Italian speakers appears to be useful as far as the syllabic status of /sC/ clusters is concerned. Obstruent clusters are particularly rare in native Italian vocabulary: excluding /sC/ clusters they occur only in *cultisms* (e.g. latinisms), loanwords and proper names. However, foreign accent offers a way to observe the spontaneous behaviour of obstruent clusters in the pronunciation of Italian informants. There are also different experimental methods to find out about the productivity of phonological phenomena, such as loanword adaptation or the reading out of nonsense words. Nevertheless, foreign accent seems to bypass some weaknesses of these other strategies: on the one hand, it helps to avoid the domain of lexicalisation, which weakens the efficiency of loanword experiments; and on the other hand, foreign language speech creates a more authentic linguistic milieu than nonce-word reading, given that the source of the data is a natural language.

The data will be analysed in the framework of classical Optimality Theory, also used by Krämer (2009) in *The Phonology of Italian*. I use Optimality Theory because I aim to demonstrate that many times both a heterosyllabic and a tautosyllabic realisation of /sC/ can be the optimal choice on the part of Italian speakers.

1.2 The Status of /sC/ in the Past and at Present

From the point of view of historical linguistics it is undeniable that /sC/ clusters were heterosyllabic in Italian. Historical linguists usually highlight four facts to verify it: the blocking of open syllable diphthongisation (e.g. ***pie***-*de* 'foot' vs. ***pes***-*te* 'plague'); the word-initial *i*-prosthesis in Old Italian (e.g. *in* ***is***-*cuola* 'in school', *in* ***Is***-*pagna* 'in Spain'); the replacement of the definite article *il* with *lo* (e.g. ***il*** *conto* 'the bill' vs. ***lo s***-*conto* 'the discount'); and finally the lack of *raddoppiamento sintattico*[1] before /sC/ clusters (cf. Bertinetto and Loporcaro 2005; Krämer 2009; etc.). However, the phonological productivity of these processes is thoroughly questionable in synchrony, because they are fully or partly lexicalised in Italian phonology.[2] Bertinetto and Loporcaro (2005) propose as a possible solution that the syllabification of /sC/ clusters be undetermined in contemporary Italian. My proposal will be similar; I would like to claim that with the aid of OT the optimal syllabification of /sC/ clusters can be tautosyllabic as well, and at the surface level vacillation is possible and probable.

A comparable form of vacillation is also traceable in the phonology of Latin (Cser 2012): in Classical Roman poetry, the scansion of hexameter lines clearly shows that the resyllabification of "extrasyllabic" /s/ was not phonologically determined, and the combination of a vowel and an /sC/ cluster could result in both long and short syllables (for detailed examples, see Cser 2012).

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[1] Lengthening of word-initial consonants by phono-syntactic patterns in Central and Southern Italian, e.g. *a* [pp]*alermo* 'in Palermo' vs. *a* [s]*poleto* 'in Spoleto'.

[2] The processes of spontaneous diphthongisation in open syllables and vowel-prosthesis have been closed (moreover, the less marked vowel is not /i/ anymore in Italian phonetics, but schwa); definite article selection has been lexicalised as a conscious rule, and raddoppiamento sintattico has been in part lexicalised (there are no new productive triggers of the phenomenon any longer, e.g. in Italian foreign accent raddoppiamento sintattico is totally absent).

In the following section I present three different patterns which stem from the foreign accent of Italian speakers, and all show a connection with the synchronic phonological status of /sC/ clusters. My arguments will concern the Italian pronunciation of ill-formed and well-formed but non attested consonant clusters, and finally, the behaviour of regressive voicing assimilation in Italian foreign accent, the dysfunctions of which is a phonological argument for the tautosyllabicity of /sC/.

2. Well-Formed but Non-Existent Fricative Plus Consonant Clusters

As my first argument against the heterosyllabicity of /sC/ clusters in Italian phonology, I appeal to the Italian accented pronunciation of fricative plus consonant clusters (henceforth for these clusters I will use the FC abbreviation, where F stands for all fricatives and C for all consonants). The only FC clusters in native Italian vocabulary are /sC/ clusters, but other combinations of a fricative and a consonant also seems to be well-formed in Italian phonotactics, since the informants did not apply any repair strategies during the pronunciation of FC clusters in L2 (e.g. [ft, çt, xt]). So FC clusters, apart from /sC/, are acceptable in Italian phonology, even if they are not attested in the native lexicon.

The phonetic length of a stressed vowel before an FC cluster is a clear clue to the syllabic structure. It is a widely accepted fact that a stressed syllable in Italian has to be heavy, but its weight cannot exceed two moras (Muljačić 1969; Nespor 1993; Schmid 1999; Bertinetto–Loporcaro 2005; Krämer 2009). This means that the syllable rhyme cannot contain a long vowel and a coda-consonant at the same time; namely, FC clusters cannot be heterosyllabic if they appear after a long vowel.

As for the /sC/ clusters, Bertinetto (2004) claims that in the synchronic phonology of Italian both long and short stressed vowels occur before /sC/ clusters, e.g. the (It.) word *pasta* has two well-formed pronunciations: [ˈpas.ta] and [ˈpaː.sta], including intraspeaker variation. This observation is confirmed by the corpus of my study: stressed vowel length vacillates before /sC/ clusters in Italian foreign accent as well, but it seems regular in the case of other FC clusters. Consider the examples in (1).

(1)

	Target words →	Italian accented
a.	(Eng.) *after*	[ˈaːfter]
b.	(Eng.) *prosper*	% [ˈprɔːsper]
c.	(Ger.) *Nacht* ‘night’	[ˈnaːxtˀ]
d.	(Ger.) *Geschichten* ‘stories’	[gəˈʃiːçten]
e.	(Ger.) *gedacht* ‘thought’	[gəˈdaːxtə]
f.	(Sp.) *busco* ‘to search, S1’	% [ˈbuːsko]

According to the examples in (1), the vowel before FC clusters is regularly lengthened in Italian foreign accent if it carries main stress, and it can be lengthened before /sC/ clusters (variation is indicated by the percent sign). Conversely, if the vowel before FC is unstressed (or it carries only a secondary stress),[3] it remains short, e.g. the word in (1a) was pronounced as [after] in unstressed positions. Example (1c) better illuminates this situation: the target word comes from the German Christmas song “Stille Nacht, heilige Nacht”. This sample passage contains the target word two times, and the second time it appears at the end of the verse, so it definitely carries main stress. In fact, the informants

[3] Secondary stress does not imply the heavy syllable requirement in Italian (cf. Krämer 2009).

who read this passage generally lengthened the stressed vowel at the second occurrence, while at the first one the vowel remained short, influenced by the lack of stress or by a secondary stress: [ˌnaxt].[4]

Italian foreign accent proves that the optimal syllabic distribution of FC clusters is tautosyllabic in Italian phonology, even if /sC/ clusters may vacillate. Since /sC/ is a subset of FC clusters, the optimal syllabification of /sC/ is supposed to be tautosyllabic as well. The situation is represented with an initial OT analysis in Tableau 1.

/naxt/	MAX-IO	NON-FINAL	FOOT=μμ	PARSE-σ	CODA CONDITION	DEP-IO
a. (ˈnaxt)		*!	*		**	
b. (ˈnax).tV				*	*!	*
c. ☞ (ˈnaː).xtV				*		**
d. (ˈnaːx).tV			*!	*	*	**
e. nax.tV				**	*!	*
f. ☞ na.xtV				**		*

Tableau 1. OT analysis of the Italian accented pronunciation of *Nacht* ‘night’

In Tableau 1, I analyse the Italian accented optimal (or the more potential) pronunciation of the German word *Nacht* ‘night’ (the *input* is referred to here as the usual concept in OT, the phonetic input in Tableau 1 is /naxt/, the Standard German pronunciation; I assume that the potential stressed vowel lengthening is possible only in the surface form). Candidates (a–d) are realisations assigned with main stress, while (e) and (f) are unstressed. Brackets indicate the domain of the foot, and the capital V stands for any vowel which can be resyllabified at the right edge of the word (inside a sentence), or it stands for a schwa as an intrusive vowel in final position.

The high ranking of the MAX-IO constraint (“no deletion of any segment from the input”) means that the Italian accent is extremely conservative, that is, it is characterised by a solid defence of the input segments (in this manner every candidate with deletion or assimilation, e.g. [nat], would be eliminated up front). Contrariwise, the other main faithfulness constraint DEP-IO (“no insertion of any new segment in the output”) is low ranked, and this fact allows epenthetic processes (such as schwa-epenthesis and vowel-lengthening) in Italian foreign accent. The three stress-related markedness constraints NONFINAL (“the final syllable takes no part of the foot”), FOOT=μμ (“the weight of the foot is exactly two moras”) and PARSE-σ (“every syllable is part of a foot”) were previously used by Krämer (2009), and they concern the phonological effects of the main stress in Italian. On this analysis they prohibit every kind of pronunciation ending in a consonant (like NONFINAL in candidate *a*), as well as the occurrence of stressed syllables which do not reach or exceed the weight of two moras (e.g. FOOT=μμ in an output form like [(ˈna).xtV] and in candidates [a] and [d]. Moreover, they punish the occurrence of syllables which are not footed (e.g. an output like [(ˈnaː).xə.tV] would be eliminated by PARSE-σ, because it would violate the constraint three times).

The addition of the CODA CONDITION to the set of constraints is justified by the fact that Italians normally lengthen the stressed vowel before an FC cluster. This constraint

[4] The usual pronunciation was [ʃtile ˌnaxt ajlige ˈnaːxtˢ]; (the sentence was pronounced the same way also by a bilingual German-Italian speaker of Bolzano, probably by Italian interference).

absorbs the three obligations related to the phonotactics of the Italian coda (see Section 4): a coda consonant in Italian can be only a sonorant (e.g. /l, r, n, m, j/ like in *ma**n**-to* 'mantle'), part of a geminate (e.g. *ma**t**-to* 'crazy'), or according to Krämer (2009) the /s/ phoneme. Hence, the stressed vowel lengthening can be expressed here by the introduction of the Italian coda condition as a complex constraint. As a result, we can see that the optimal syllabification of the FC cluster in Tableau 1 is tautosyllabic, in both stressed and unstressed positions, in the former case by the lengthening of the stressed vowel, in the latter by the CODACOND constraint, which eliminates candidates (b) and (e), because of the singleton obstruents in the coda.

If we consider the target word (1b) (*prosper*) as the input form to the OT analysis, we see an interesting development: the winning candidate would be [(ˈprɔs).per], which does not violate the coda condition, unlike [(ˈnax).tV]. The other attested output form – the variant [(ˈprɔː).sper] – would fall out of the analysis, because it violates the DEP-IO constraint. A way to solve this problem is, for instance, not to consider /s/ as a possible subject of the Italian coda condition. But in this case the other vacillating form, the former winning candidate would be eliminated because of the CODACOND constraint (in the following section I will return to the problem of the /s/ in coda condition). Another possible answer may be the specification of the DEP-IO as a sub-constraint: if the dependence between input and output was dissolved inside the domain of the foot (only due to the increase of available elements, e.g. stressed vowel lengthening does not violate the constraint), there would be two optimal candidates, [(ˈprɔs).per] and [(ˈprɔː).sper], and the vacillation is expressed as the speaker's spontaneous choice between the two optimal candidates.

In conclusion of this section, my proposal is that FC clusters are fundamentally tautosyllabic in Italian phonology, because of the long stressed vowels which usually anticipate them in Italian foreign accent. Furthermore, stressed vowel lengthening is also typical for a few loanwords in Italian which contain an FC cluster, e.g. *grivna* [ˈgriːvna] 'hryvnia', *sovchoz* [ˈsɔːvkots] 'sovkhoz', and *nafta* [ˈnaːfta] 'naphta'. I claim that /sC/ is a subset of FC clusters, and even if /s/ vacillates, its optimal syllabification before a consonant is tautosyllabic as well. In the following section, I present other two phonological arguments in favour of my proposal.

3. The Ill-Formedness of Stop Plus Consonant Clusters

In contrast with FC clusters, the combination of a stop and a consonant is not allowed in Italian phonotactics. Henceforth I will refer to the stop+consonant clusters as TC, where the capital T stands for plosives, and C stands for any other consonant except liquids.[5]

In diachrony, several repair strategies acted to solve TC clusters in Italian phonology, but Italian foreign accent manifests only a few of these that have remained active in synchrony. The two most popular diachronic strategies, deletion and assimilation, barely occur in the corpus recordings; instead, we encounter a large number of schwa epentheses between the members of the ill-formed TC clusters, e.g. *out*[ə]*door*, *up*[ə]*grade*, *back*[ə]*slash*, (Ger.) *Sing*[ə]*spiel*, etc. The rife occurrence of epenthetic processes, rather than deletion or assimilation, confirm the idea, presented in the OT analysis of Tableau 1, that the ranking of the basic faithfulness constraints has changed in the last century of Italian phonology: the MAX-IO obtained a very high rank, while the DEP-IO had a very low one. As a consequence, Italian phonology seems to be

[5] Stop+liquid clusters like [pr, pl, pj] are well-formed in Italian, as in *prato* 'lawn', *più* 'plus'.

conservative in synchrony, that is, it seems to prefer the conservation of every segment of the input, even at the cost of allowing intrusive segments in the output.

In the case of Southern Italian informants, another very interesting repair strategy was discovered: the gemination of the initial stop in TC clusters. On my approach, it would be seen as another conservative epenthetic process which aims to avoid the lenition of the highly marked cluster, and therefore allows its fortition by gemination. In (2), I present a few examples from the foreign accents of Southern Italian informants (2a–f) and of the pronunciation of certain loanwords (2g–l).[6] (For detailed examples, spectrogram images and statistical analyses see Huszthy 2015).

(2)

	Target word	*South. It. acc.*		*Target word*	*South. It. pron.*
a.	(Eng.) ***kept***	[ˈkɛpːtə]	g.	(It.) ***sudc****oreano*	[sudːəkoreˈaːno]
b.	(Eng.) *sele****ct****ed*	[seˈlɛkːtid]	h.	(It.) ***opt****a*	[ˈɔpːta]
c.	(Eng.) *corre****ct****ly*	[korˈrɛkːᵊtli]	i.	(It.) ***tecn****ico*	[ˈtɛkːᵊniko]
d.	(Sp.) ***obs****tentoso*	[obːᵊstenˈtoso]	j.	(It.) ***abs****ide*	[ˈabːside]
e.	(Ger.) *gi****bt*** *es*	[ˈgibːtes]	k.	(It.) *cri****pt****ato*	[kripːᵊˈtaːto]
f.	(Ger.) *Do****kt****or*	[ˈdɔkˑtor]	l.	(It.) *Et****n****a*	[ˈɛtːəna]

In (2) several schwa epentheses occur, but there are also several occurrences without the schwa. My hypothesis is that schwa epenthesis and preconsonantal stop gemination are two independent repair strategies for solving a TC cluster, which sometimes appear together. The gemination can be interpreted as a solution for the ill-formed cluster, despite the fact that it seems to be a complication: the gemination as a fortition process resists the contingent deletion of the segment, and supports its conservation.

The preconsonantal stop gemination process is an argument for the tautosyllabicity of /sC/ clusters in Italian phonology. Let me clarify this statement with an OT analysis. In Tableau 2, I present the Southern Italian accented optimal pronunciation of the English verb *kept* (2a), which comes from the sample phrase "The post-opening period is expressed in months and concerns the product correctly kept." Six of the eight Southern Italian informants (two females and four males, between 18 and 25, from Campania, Basilicata and Calabria) who pronounced this sentence used a long /p/ in the word *kept*, and in three of these recordings there is a remarkable schwa epenthesis as well (such as [ˈkɛpːətə]), in the other three cases the gemination occurs without a schwa.

/kɛpt/	MAX-IO	FOOT MIN	*TC (ONS)	CODAC (GEM)	DEP -IO	CODAC (SON)	CODAC (SIB)
a. (ˈkɛp).tə				*!	*	*	*
b. (ˈkɛt).tə	*!				**	*	*
c. (ˈkɛ).ptə		*!	*		*		
d. (ˈkɛp).ptə			*!		**	*	*
e. ☞ (ˈkɛpp).tə					**	**	**
f. (ˈkɛp.pə).tə					***!	*	*

Tableau 2. OT analysis of the Southern Italian accented pronunciation of *kept*

[6] Glosses: d. 'ostentatious', e. 'there is', f. 'doctor', g. 'South Korean', h. 'opt for' S3, i. 'mechanic', j. 'apse', k. 'coded', l. 'Mount Etna'

A candidate identical to the input, [kɛpt], would fail by violating the NONFINAL constraint (and this also would be the only duty of NONFINAL), therefore neither the candidate nor the constraint is present in the analysis of Tableau 2. Similarly, the PARSE-σ constraint is missing as well, because it is currently irrelevant (it is violated once by all of the candidates). Apart from these modifications, there are other developments in Tableau 2: the subdivision of the FOOT=μμ and the CODACOND constraints.

It seems that the preconsonantal gemination is analysable only by splitting up these complex constraints. In Tableau 1 FOOT=μμ meant that the weight of the foot is minimum and maximum two moras; now we have two constraints expressing the two requirements, FOOT MIN and FOOT MAX. The first one has the same position in the ranking as the former FOOT=μμ, while the second is very low ranked (lower than the other constraints of Tableau 2, so it had no place in this analysis). There are several motivations supporting this subdivision in the phonology of Italian, because the domain of the foot often seems to exceed the weight of two moras, e.g. in the case of falling diphthongs (such as It. *euro* [(ˈɛːw).ro]), prenasal stressed vowels (such as It. *standard* [(ˈstaːn).dar.də]), or both (such as Eng. *painting* → It. acc. [(ˈpeˑjn).tiŋ.gə]). The preconsonantal gemination is a similar case as well.

The CODA CONDITION of Tableau 1 expresses that a coda consonant must be a sonorant, part of a geminate, or /s/. CODACOND is now divided into three sub-constraints depending on its individual requirements: CODACOND (SONORANT) means that the coda can be occupied by sonorants only, CODACOND (GEMINATE) means that only geminates or a part of a geminate can stay in the coda, and CODACOND (SIBILANT) allows only /s/ in the coda. In Southern Italian pronunciation the first ranked coda condition constraint is the one concerning the geminates, while in Northern Italian pronunciation it is the one concerning the sonorants. As we will see, the coda condition for sibilants results in a redundant constraint in all Italian varieties.

The winning candidate in Tableau 2 is (e), an output with gemination and without schwa epenthesis. Candidate (a) fails because it contains a singleton obstruent which, incidentally, violates all CODACOND constraints. Candidate (b) does not violate the CODACOND (GEMINATE), but it falls out because of the higher ranked MAX-IO, which punishes regressive place assimilation. Candidates (c) and (d) contain a TC cluster in the syllable onset, and this is not allowed by the newly introduced *TC(ONSET) constraint (which is responsible for the heterosyllabicity of TC clusters). In addition, candidate (c) violates the FOOT MIN constraint. In candidate (f) too much insertion happens compared to the other outputs, so it is eliminated because of the DEP-IO constraint. Finally, candidate (e) can win, since gemination happens in the coda, and the geminate is not resyllabified, so the output does not violate the *TC(ONSET) constraint.

As mentioned above, the fact that preconsonantal stop gemination occurs only in Southern Italian varieties can be explained by the different order of the CODACOND sub-constraints. In Northern varieties the CODACOND (SONORANT) precedes the CODACOND (GEMINATE), and this way the winning form of the analysis would be candidate (a), an ill-formed but attested output in the dataset of the Northern Italian informants' foreign accent. In these analyses the potential schwa epenthesis is seen as a following phonetic step, which derives from the accidental explosion of the plosive before another consonant, and from the phonological point of view it is irrelevant here.

However, the CODACOND (SIBILANT) subconstraint is a redundant constraint in both Southern and Northern Italian varieties, and it has no role in the OT analyses. For

this reason I conclude that the introduction of /s/ as a possible coda segment is useless in Italian phonology from an optimality theoretical approach.

4. About the Lack of Voicing Assimilation in Italian Phonology

My third argument for the possible tautosyllabicity of /sC/ clusters in Italian phonology regards regressive voicing assimilation (hereinafter RVA). From the perspective of *laryngeal realism* (Iverson–Salmons 1995; Honeybone 2002, 2005; Balogné Bérces–Huber 2010; Cyran 2014) Italian is a voice language, as are Romance languages in general, which means that the [voice] feature of obstruents is both distinctive (voiced and voiceless obstruents are in phonological opposition) and active ([±voice] spreads leftwards, so it provokes RVA). However, RVA appears to be defective in Italian phonology, since it is limited only to the /s/ phoneme. As I mentioned in Section 2, /sC/ clusters are the only obstruent clusters in Italian native vocabulary, so the deficiency of RVA could be justified by this fact. But if the [voice] feature of obstruents were really active, it would contribute to RVA in loanwords and in the foreign accent as well (the control of laryngeal activity is one of the less conscious phases in articulation). Since voiced obstruents do not provoke RVA in Italian foreign accent, I assume that Italian is a specific voice language, in which the [voice] feature is distinctive, but inactive.

In Italian phonology, the voicing of /s/ before voiced consonants is a more complex phenomenon than RVA in general; following Krämer (2003; 2005) I will call this kind of assimilation *s-voicing*. Preconsonantal s-voicing in Italian shows many common characteristics with typical RVA in voice-languages, but also other ones, which makes it a partially different phenomenon. For instance, s-voicing is triggered not only by obstruents, but sonorants and glides as well, e.g.: (Eng.) *snake* → (It.) [ˈ**zn**eːjk], (Fr.) *franchement* 'honestly' → (It. acc.) [fʁɑ̃ˈ**ʒm**ɔ̃ː], (Ger.) *Lebensmittel* 'food' → (It. acc.) [ˈleːbən**zm**itel], (Eng.) *kalashnikov* → (It.) [kaˈlaˑ**ʒn**ikov]; (Eng.) *swimming* → (It. acc.) [ˈ**zw**iːmiŋgˀ], *(Dafne) Basjad* → (It. acc.) [baˈ**zj**adːə] 'fictive name', etc. However, if sonorants and glides are unspecified for [voice], they could not act as triggers of RVA.

At the same time, s-voicing is inactive in sandhi position, which distinguishes it from traditional RVA, because it does not seem to be a postlexical process; e.g.: (Eng.) *silence drive* → (It. acc.) [sajlen**s** ˈ**d**rajv], *Pierce Brosnan* [pir**s** ˈ**b**rɔːznen], *Thomas Mann* (It.) [ˈtɔːma**s** ˈ**m**annə], *Champion*[**s**] *League*, (Sp.) *la*[**s**] *banda*[**s**] *mu*[**z**]*icales* 'the music bands', etc. Italian foreign accent reveals that in other obstruent clusters RVA remains completely inactive, and in Italian pronunciation can appear as a fully voiced obstruent immediately next to a completely voiceless one. In (3) I present a few examples of the lack of RVA in Italian foreign accent.

(3)

	Target words →	Italian accented
a.	(Eng.) *catgut*	[katˈgatːə]
b.	(Eng.) *upgrade*	[apˈgrejdə]
c.	(Eng.) *backslash*	[ˌbekˈzlɛʃˑˀ]
d.	(Ger.) *Singspiel*	[ˈsiŋʃpil]
e.	(Ger.) *glaubt* 'believe S3'	[ˈglawbtˀ]

Apart from the examples of Chart 3 there are some loanwords in the Italian lexicon which contain an obstruent cluster with consonants of different voice values, e.g. *vodka* [ˈvɔː**dk**a], *afgano* [aˈ**fg**aːno] 'Afghan', *gangster* [ˈgaˑŋ**gs**ter], *eczema* [e**k**ˈ**d͡z**ɛːma].

Furthermore, in some recent borrowings s-voicing seems to be inactive even before voiced consonants, e.g. *iceberg* [ˈaj**sb**ɛrgə], *kashmir* [ˈkaːʃ**m**ir], *krishna* [ˈkriːʃ**n**a].

A very interesting target word in (3) is *backslash*, where the crucial point is the triple consonant cluster /ksl/: the expected realisation was [kzl], where /s/ gets voiced before /l/, but /k/ conserves its voicelessness. The word was pronounced 42 times by 10 Italian informants; however, less than one third of the informants applied s-voicing in the recordings, and there were many partly voiced occurrences of [s] as well. I assume that the (often intraspeaker) variation of voicing or devoicing in the case of /sl/ is due to the vacillation of /sC/ as a tautosyllabic or as a heterosyllabic cluster. I suggest that s-voicing is possible only if the /sC/ cluster is parsed into the onset.

In Tableau 3, I propose an OT-analysis for the optimal Italian accented pronunciation of *backslash*. The input form is the usual English pronunciation /ˈbækslæʃ/, but, since vowel quality is irrelevant in this analysis, the vowels are indicated with a capital V in the output (the informants used three vowels to replace the [æ] of the input: [a, ɛ, e]). My proposal is that the optimal appearance of the /sl/ cluster is [zl], even if [z] is preceded by a voiceless /k/.

/ˈbækslæʃ/	ID(VOI) [–SIB]	CODAC (SON)	CODAC (GEM)	AGREE (tautosyll.)	IDENT (VOICE)	AGREE
a. ˈbVk.slVʃ		**	**!	*		
b. bVks.ˈlVʃ		***!	***	*		
c. bVk.ˈslVʃ.ʃə		**	*	*!		
d. ☞ bVk.ˈzlVʃ.ʃə		**	*		*	*
e. bVg.ˈzlVʃ.ʃə	*!	**	*		**	

Tableau 3. OT analysis of the Italian accented pronunciation of *backslash*

The newly introduced constraints in Tableau 3 derive from the optimality theoretical framework of RVA (Ringen–Helgason 2004; Siptár–Szentgyörgyi 2013). IDENT (VOICE) is a constraint family of faithfulness, which guards the correspondence of the [voice] feature between input and output. For Italian phonology I use a sub-constraint of IDENT (VOICE) that is limited to the non-sibilant consonants; with the high ranking of ID(VOI) [–SIB] only the sibilants may change their voice value in a consonant cluster. This way the voicing of /k/ before [z], as in candidate (e), is impossible (and it never occurs among the dataset). The other innovation is a markedness constraint family, AGREE, which requires that adjacent consonants share their voice value. I use a sub-constraint of AGREE as well, which punishes the tautosyllabic clusters of voiced and voiceless consonants.

Candidates (a) and (b) fall out from the analysis by violating the coda condition constraints (among which the ranking is currently unspecified, since we are talking about the Italian accent in general). Since Italian does not have branching codas, /s/ cannot appear in the first syllable after /k/, and it has to be tautosyllabic as in candidates (c-e). Another possibility for /s/ is to constitute a separate syllable alongside a schwa and /k/ (such as [beˌkəzˈlɛʃ.ʃə]), but in this case it would be eliminated because of too much insertion (by DEP-IO or PARSE-σ, when the foot will considered relevant). A further possibility is to deal with /s/ as with an extrasyllabic element, [bek.sˈlɛʃ.ʃə], but this treatment leaves many questions unanswered. Nevertheless, this probably happens when /s/ does not get voiced. In a few of the recordings the informants omit /s/ completely, *ba*[kl]*ash*, while in others they leave a very small silence (about 2–5 milliseconds) after

/s/ in the cluster (without introducing a schwa). In the latter case /s/ never gets voiced. But if we adopt [bVk.*s*.ˈlVʃ.ʃə] as a candidate in Tableau 3, it would win the analysis, and the output with s-voicing would fail.

However, the analysis of Tableau 3 can be developed with the refinement of the two further complex constraints: ID(VOI) [–SIB] and AGREE(tautosyll.). If instead of ID(VOI) [–SIB] we use two more general constraints which compound the two most important [feature] of sibilants, [fricative] and [coronal], our problem can be resolved, and we may also ignore the AGREE(tautosyll.) constraint. Therefore, I propose to introduce two new constraint of the IDENT(VOICE) family: ID(VOI) [–FRICATIVE] (only fricatives may change their voice value) and ID(VOI) [–CORONAL] (only coronals may change their voice value). The new ranking of constraints is in (4) below.

(4) Ranking of constraints about preconsonantal s-voicing in Italian
ID(VOI) [–COR.] » CODACOND (SON), CODACOND (GEM) » ID(VOI) [–FRIC.] » AGREE

With the set of constraints in (4), all consonant clusters are analysable in Italian (and in Italian foreign accent) from the point of view of RVA. The analyses reveal that /sC/ clusters are tautosyllabic in Italian phonology, otherwise preconsonantal s-voicing would be blocked. For instance, if we consider a stop+liquid cluster as the input – such as (It.) *apro* ‘open, S1’ – the winning candidate will be [ˈaː.pro] and not [ˈaː.bro], which violates the ID(VOI) [–COR.] constraint, or [ˈap.ro], which falls out because of the coda condition. Similarly, an input with a coronal stop – such as *litro* ‘litre’ – cannot generate the voicing of /t/ because of the ID(VOI) [–FRIC.] constraint. Nonetheless, /s/ will change its voice value before a voiced consonant, e.g. the winning candidate of (It.) *asma* ‘asthma’ will be [ˈaː.zma], and not [az.ma] or [aː.sma].

The analysis of *backslash* will be slightly modified with the use of the constraints in (4). There will be two winning candidates, (c-d) of Tableau 3 (with s-voicing and without; if we used the hypothetical output with extrasyllabic /s/, that would also win). The explanation is probably the excessive complexity of the triple cluster /ksl/, where the voiceless /k/ can block s-voicing in the /sl/ group; there are more optimal forms in this case, and the choice between the winning candidates is up to the speaker. However, the /sC/ cluster is parsed as tautosyllabic in both cases, or it can be extrasyllabic as a third possibility, but this treatment would raise several other problems. For example, with these OT-settings an extrasyllabic /s/ cannot be the subject of s-voicing.

5. Conclusions

In this paper I described three phonological arguments against the widespread treatment of /sC/ clusters as universally heterosyllabic. My arguments concerned exclusively the phonology of Italian, since Italian seems to be a special language, which proves that a basically heterosyllabic sequence as /sC/ can get reanalysed in certain phonological contexts, or in certain languages. Notwithstanding, I suppose that the tautosyllabic behaviour of /sC/ clusters is a highly marked phenomenon. All the same, Italian is a language that is able to support even highly marked phonological phenomena, because the phonology of Italian is conservative in synchrony. It aims to maintain ill-formed sequences as well, instead of appealing to their reduction, which is well illustrated by the case of stop+consonant clusters (see Section 3).

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The Role of Semantic Transparency and Prosody in the Processing of Compounds: The Interface between Linguistics and Psycholinguistics

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Abstract: This study aims at determining what factors influence the processing of English ambiguous compound nouns by native speakers of Polish. This L2 community is particularly interesting because there is a systematic stress placement in the Polish language. The following L2-related questions were addressed. Are collocations produced with an end-stress pattern more semantically transparent than the ones with fore-stress? Is there a significant difference between processing Noun-Noun and Adjective-Noun collocations? My results showed that there is an overall tendency among L2s to produce fore-stress regardless of the item's classification. Additionally, there is a relatively clear link between semantic transparency and prosody in the part of the experiment involving perception.

Keywords: compound words; semantic transparency; stress patterns; Noun-Noun constructions; Adjective-Noun constructions; prosody

1. Introduction

In this paper, I concentrate on two particular characteristics of compounds, namely their stress pattern and semantic transparency, and their influence on compound processing. I present a study on the production and perception of stress doublets by testing an L2 population with regard to their hemispheric dominance. The choice of L2 speakers (of Polish origin) to test stress patterns in English compounds may seem problematic. However, while the literature on processing compounds provides much evidence for L1s, it neglects L2s, with some exceptions, for example Zubizarreta et al. (2013). In their study, the processing of English compound words is tested on L2s of Spanish origin.

I compare the results of the two experiments and address the question of whether the processing of compounds by non-natives is strictly related to their internal structure by testing prosody and semantic transparency.

The paper is constructed as follows. In Section 2, I provide some theoretical background on the syntactic analysis of compound words; in Section 3, I present my experiments and the results; in Section 4, I draw some essential conclusions.

2. Background

Giegerich (2006) discusses in detail the properties of English Noun-Noun and Adjective-Noun collocations that are stress-doublets and challenges various theoretical accounts which postulate the correlation between the categorial status (lexical vs. syntactic) of particular combinations and their stress pattern. He argues extensively that neither end-stressed items nor semantically transparent collocations necessarily have a phrasal nature. Importantly, the distribution of fore-stress and end-stress is far from regular, and clearly independent from lexicalization, at least in the sense that end-stress does not necessarily indicate phrasal status. Moreover, he notes a general tendency of fore-stress

in the production of all these collocations. Giegerich argues that both modules (syntactic and lexical) can produce the semantic relationship of attributiveness, that semantic opacity is disconnected from the syntax and that fore-stress is connected to the lexicon. Therefore, both semantic transparency and end-stress can be observed in the lexicon. As a consequence, the categorial distinction between English words and phrases is fuzzy. On the other hand, El-Bialy et al. (2013) postulate that the semantic transparency of compounds influences their processing. They found, by means of semantic priming, that pre-activation of the non-head's meaning is beneficial for fully transparent and fully opaque compounds, but not for partially opaque ones. El-Bialy et al. (2013) argue that semantic transparency emerges as a result of differences in processing, not in representation, which seems to be compatible with Giegerich's proposal.

The famous examples *Madison Street* (fore-stressed) and *Madison Avenue* (end-stressed) lead to a conclusion that the end-stress/fore-stress distinction is not clear-cut. In fact, no construction is to be assessed, based merely on its stress pattern, as either lexicalized or not. More clearly, the end-stress pattern does not indicate that the construction is solely of a phrasal type; conversely, the fore-stress pattern does not necessarily characterize compounds exclusively (i.e., whereas *súnflower òil* or *córn òil*, due to its fore-stress pattern, may be successfully interpreted as compounds, *òlive óil*, with its end-stress pattern, following the overgeneralized rule that compounds are only fore-stressed, should not be analysed as such). It can be assumed, therefore, that attribute-head constructions may become lexicalized (with or without any change in form and/or meaning) and that they may further evolve into non-attributive constructions, whose meanings are more specific. This process is not a general principle, although such transition may occur as a result of repetitive usage of a particular phrase. The attribute-head constructions thus reflect some kind of competition between the lexicon and the syntax. In some types of constructions there is an unclear distinction between a phrase and a compound, just as there is an unclear distinction between the lexicon and the syntax (i.e., *olive oil*, though regarded as end-stressed, should not be interpreted as a phrase, and other names of oils, e.g., *avocado oil*, being fore-stressed, should not be treated as lexical). And just as there is only a vaguely outlined border between the lexicon and the syntax, the distinction between attribute-head compounds and phrases is equally so (Giegerich 2006).

Polish is a language with fixed stress. As far as Adjective-Noun collocations are concerned, they may appear in both orders, i.e., A-N and N-A, depending on the semantic relation between the constituents. The phrasal stress in both types is always on the rightmost constituent (Anusiewicz 2010, 52). Most of those collocations are head-final, e.g., *złota*$_{[adj]}$ *rączka*$_{[n]}$ 'handyman'; however, head-initial ones, though rare, can also be found, e.g., *panna*$_{[n]}$ *młoda*$_{[adj]}$. In the two examples, *rączka* and *panna* are nouns which function as the head. There are also doublets, which vary in meaning depending on the order. For example, in addition to the fixed, listed, opaque collocation *panna*$_{[n]}$ *młoda*$_{[adj]}$ 'bride' there is a fully transparent phrase *młoda*$_{[adj]}$ *panna*$_{[n]}$ 'young lady'. The stress is always on the rightmost constituent, so on the head in fully transparent A-N phrases with attributive relation, or on the non-head in non-attributive N-A collocations. Thus, we can observe a correlation between Polish and English. The difference between the two languages lies in word order, in Polish the components swap places and in English they do not. We can thus address some questions concerning stress placement in A-N collocations, predicting that L2s will be more accurate in the case of phrases since these obtain a similar stress-pattern in both languages, i.e., the head noun is stressed. A-N opaque compounds, on the other hand, are dissimilar in these languages because in Polish the rightmost component is stressed and in English the leftmost one; yet, in both cases it is the non-head that is stressed.

According to Giegerich (2006), there are several phenomena which may give rise to fore-stress patterns, i.e., lexicalisation, reccurent usage or analogy. Attributive collocations are characterised by their end-stressed nature, whereas non-attributive ones by their fore-stressed nature. Attributive collocations used in my experiments are semantically transparent. However, among the non-attributive ones, I employ both semantically transparent and semantically opaque compounds. Therefore, the absence of accuracy in the case of arg-head compounds (whose nature is non-attributive, yet semantically transparent) and its presence in the case of the remaining three collocations (namely phrases) would indicate that ST is defined by end-stress pattern.

Presumably, right-hemisphere dominant (RHD) and left-hemisphere dominant (LHD) speakers have different strategies concerning language processing. RHD subjects have immediate access to listed items (e.g., opaque compounds) – therefore, they either retrieve memorized meaningful chunks of language or they forget them and do not attempt to recall them in any other way. They do not follow step-by-step rules while parsing a given item. On the other hand, LHD subjects are more analytical and do not learn potentially analysable items by heart. Instead, they seek certain principles which govern the structure of a given collocation.

3. My Study

Considering the above, the link between prosody and semantic transparency is very weak, regardless of the division into different classes of compounds. This study aimed at determining the relationship between prosody and semantic transparency by means of experimental verification of various and often contradictory theoretical approaches (see Libben 1998, Bell and Schafer 2013). To achieve this, I employed end-stressed collocations (a compound in 1a and a phrase in 1b), which illustrate the relationship of attributiveness, and fore-stressed collocations (such as those in 2), which illustrate various non-attributive interpretations belonging to lexical processes rather than syntactic ones.

(1) (a) When I was a child I used to share my **toy fáctory** with my siblings.

(b) I am allergic to cats, so when I'm too close to one, I've got **red éyes**.

(2) (a) We visited a **tóy factory** located in the lush mountains of western North Carolina.

(b) I hate alcohol, especially cheap; that's why I never drink **réd eye**, which is a kind of cheap whiskey.

The layout of my study involved four types of collocations: three types of compounds and a phrase. The aim of such organization of experimental items was to capture three kinds of properties: (i) the influence of hemispheric dominance on the processing of different types of collocations (i.e., accuracy and reaction time), (ii) the spectrum concerning lexicalization as determined in terms of semantic transparency, and (iii) the distinction between argument-head and attribute-head relations.

I tested stress placement in the above types of collocations among 25 English L2s of Polish origin. Moreover, I investigated whether there are any differences in processing prosody between LHD and RHD participants. Hemispheric dominance of participants was measured by means of the Brain Dominance Test (available at http://www.ipn.at/ipn.asp?BHX), which indicated that there are 11 participants with LHD and 14 with RHD. The experiment consisted of two parts: production and

perception. The production part was a reading protocol – a task which gauged the stress pattern in English collocations, whereas the perception part was a lexical decision task which measured the stress pattern and the response time for the token items.

3.1. Experiment 1: Production

In this experiment, two types of stress doublets (Noun-Noun and Adjective-Noun) were embedded in sentences which provided a clear context for one of the meanings. The Noun-Noun collocations consisted of semantically transparent compounds of two different relations: attribute-head and argument-head. The stimuli consisted of 40 sentences containing the chosen compounds (20 with fore- and 20 with end-stress), as well as 20 filler sentences, which were similar in length to the target sentences so that they were not recognisable as such. The target items were counterbalanced in a way that the participants were exposed to only one of the two possible items from the stress doublets.

Collocations	**LHD fore**	**LHD end**	**RHD fore**	**RHD end**	**Familiarity**
N-N argument-head	correct	incorrect	correct	incorrect	[1-10]
French teacher	6 (75%)	2 (25%)	2 (66.7%)	1 (33.3%)	9.52
toy factory	4 (50%)	4 (50%)	2 (66.7%)	1 (33.3%)	9.29
paper bag	6 (75%)	2 (25%)	3 (100%)	0 (0%)	9.29
man killer	4 (50%)	4 (50%)	3 (100%)	0 (0%)	8.19
woman doctor	3 (37.5%)	5 (62.5%)	2 (66.7%)	1 (33.3%)	7.87
steel warehouse	3 (37.5%)	5 (62.5%)	2 (66.7%)	1 (33.3%)	7.26
robot mechanic	2 (25%)	6 (75%)	1 (33.3%)	2 (66.7%)	7.03
glass case	6 (75%)	2 (25%)	3 (100%)	0 (0%)	6.90
metal box	2 (66.7%)	1 (33.3%)	3 (42.9%)	4 (57.1%)	6.60
iron crate	2 (66.7%)	1 (33.3%)	5 (71.4%)	2 (28.6%)	6.00
dragon healer	8 (100%)	0 (0%)	2 (66.7%)	1 (33.3%)	5.84
apprentice welder	2 (66.7%)	1 (33.3%)	3 (42.9%)	4 (57.1%)	3.13
Total	**48 (59.3%)**	**33 (40.7%)**	**31 (64.6%)**	**17 (35.4%)**	**7.24**
N-N attribute-head	incorrect	correct	incorrect	correct	
woman doctor	2 (66.7%)	1 (33.3%)	6 (85.7%)	1 (14.3%)	8.52
man killer	3 (100%)	0 (0%)	5 (71.4%)	2 (28.6%)	8.23
paper bag	2 (66.7%)	1 (33.3%)	4 (57.1%)	3 (42.9%)	7.65
robot mechanic	0 (0%)	3 (100%)	2 (28.6%)	5 (71.4%)	7.62
glass case	3 (100%)	0 (0%)	6 (85.7%)	1 (14.3%)	7.42
steel warehouse	3 (100%)	0 (0%)	1 (14.3%)	6 (85.7%)	7.42
iron crate	4 (50%)	4 (50%)	2 (66.7%)	1 (33.3%)	6.52
toy factory	1 (33.3%)	2 (66.7%)	4 (57.1%)	3 (42.9%)	6.45
dragon healer	2 (66.7%)	1 (33.3%)	6 (85.7%)	1 (14.3%)	5.43
apprentice welder	1 (12.5%)	7 (87.5%)	1 (33.3%)	2 (66.7%)	3.48
Total	**21 (52.5%)**	**19 (47.5%)**	**37 (59.7%)**	**25 (40.3%)**	**6.87**
A-N opaque	correct	incorrect	correct	incorrect	
greenhouse	3 (100%)	0 (0%)	6 (65.7%)	1 (14.3%)	9.00
blackbird	1 (33.3%)	2 (66.7%)	7 (100%)	0 (0%)	7.94
plastic money	6 (75%)	2 (25%)	3 (100%)	0 (0%)	7.48
redwood	3 (100%)	0 (0%)	7 (100%)	0 (0%)	6.45
greenhorn	2 (66.7%)	1 (33.3%)	7 (100%)	0 (0%)	5.77
bluebottle	1 (33.3%)	2 (66.7%)	5 (71.4%)	2 (28.6%)	5.29
bluebell	3 (100%)	0 (0%)	6 (85.7%)	1 (14.3%)	5.29
red-eye	1 (33.3%)	2 (66.7%)	2 (28.6%)	5 (71.4%)	4.13
Total	**20 (69.0%)**	**9 (31.0%)**	**43 (82.7%)**	**9 (17.3%)**	**6.42**

Table 1a. Production

Collocations	LHD fore	LHD end	RHD fore	RHD end	Familiarity
A-N phrases	incorrect	correct	incorrect	correct	
red eye	1 (12.5%)	7 (87.5%)	0 (0%)	3 (100%)	9.58
blue bottle	3 (37.5%)	5 (62.5%)	3 (100%)	0 (0%)	9.29
French teacher	1 (33.3%)	2 (66.7%)	6 (85.7%)	1 (14.3%)	9.16
metal box	2 (25%)	6 (75%)	0 (0%)	3 (100%)	8.67
green house	5 (62.5%)	3 (37.5%)	2 (66.7%)	1 (33.3%)	8.60
plastic money	3 (100%)	0 (0%)	4 (57.1%)	3 (42.9%)	8.45
blue bell	5 (62.5%)	3 (37.5%)	2 (66.7%)	1 (33.3%)	8.06
red wood	7 (87.5%)	1 (12.5%)	1 (33.3%)	2 (66.7%)	7.97
green horn	3 (37.5%)	5 (62.5%)	3 (100%)	0 (0%)	7.26
black bird	5 (62.5%)	3 (37.5%)	2 (66.7%)	1 (33.3%)	6.45
Total	**35 (50.0%)**	**35 (50.0%)**	**23 (60.5%)**	**15 (39.5%)**	**8.35**

Table 1b. Production

The order of sentence presentation was randomized with an online sentence randomizer so that consecutive participants would not find the algorithm. One sentence at a time was presented on the screen, centred horizontally, with each successive sentence replacing the previous one. Each sentence's presentation duration was adjusted to individual participants (until they finished reading). The participants were instructed to read the sentences in silence and grasp the presented context before reading them out loud. The data was recorded manually with the use of scientific software package for prosodic analysis called Praat (available at http://www.fon.hum.uva.nl/praat/download_win.html).

3.2. Experiment 2: Perception

In this experiment, two types of stress doublets (the same as in Experiment 1) were presented in isolation followed by two definitions. One of the definitions was true and the second one, defining their respective stress-counterparts, was not true (e.g., the oral presentation of *stéel warehouse* was followed by two definitions: 'warehouse made of steel' and 'warehouse that contains steel'). The order of the two definitions was random. The lexical decision task was designed to gauge stress identification and reaction time. The participants who took part in the perception experiment were the same as in the production part. The target items were counterbalanced so that the participants saw only one of the two possible items from the stress-doublets. The outcomes suggested that the change in meaning resulted in the stress-placement. Therefore, the perception part was always before the production part which eliminated the likelihood of finding the essence of the experiment when it had to be unknown. This knowledge could have significantly blurred the results from the production experiment.

The perception experiment was conducted by means of PsychoPy software (available at http://www.psychopy.org). There was a trial session to acquaint L2s with the rules of the experiment. The compounds were presented along with two possible meanings marked as 1 and 2. The definitions were taken from an online dictionary found on the website www.macmillandictionary.com. Once they heard the compound with fore or end-stress, they needed to press button 1 on the keyboard for the meaning presented in 1 and button 2 for the meaning presented in 2. The programme automatically measured the reaction times in the lexical decision task.

The order of item presentation was automatically randomized with the software PsychoPy so that consecutive participants were not able to detect the algorithm. One target item at a time was presented on the screen, centred horizontally, with each successive item replacing the previous one.

Collocations	**LHD fore**	**LHD end**	**RHD fore**	**RHD end**	**Familiarity**	**Time**
N-N argument-head	correct	incorrect	correct	incorrect	[1-10]	[sec]
French teacher	3 (100%)	0 (0%)	4 (57.1%)	3 (42.9%)	9.52	4.10
toy factory	7 (87.5%)	1 (12.5%)	3 (100%)	0 (0%)	9.29	1.60
paper bag	2 (25%)	6 (75%)	0 (0%)	1 (100%)	9.29	2.83
man killer	7 (87.5%)	1 (12.5%)	3 (100%)	0 (0%)	8.19	2.80
woman doctor	2 (25%)	6 (75%)	0 (0%)	3 (100%)	7.87	2.45
steel warehouse	4 (50%)	4 (50%)	2 (66.7%)	1 (33.3%)	7.26	3.02
robot mechanic	5 (62.5%)	3 (37.5%)	1 (33.3%)	2 (66.7%)	7.03	2.41
glass case	0 (0%)	3 (100%)	1 (14.3%)	6 (85.7%)	6.90	2.67
metal box	0 (0%)	8 (100%)	0 (0%)	3 (100%)	6.60	2.33
iron crate	0 (0%)	3 (100%)	0 (0%)	7 (100%)	6.00	3.27
dragon healer	3 (100%)	0 (0%)	2 (28.6%)	5 (71.4%)	5.84	4.35
apprentice welder	2 (66.7%)	1 (33.3%)	3 (42.9%)	4 (57.1%)	3.13	4.41
Total	**35 (49.3%)**	**36 (50.7%)**	**19 (33.9%)**	**37 (66.1%)**	**7.24**	**2.94**
N-N attribute-head	incorrect	correct	incorrect	correct		
woman doctor	0 (0%)	3 (100%)	0 (0%)	7 (100%)	8.52	1.48
man killer	1 (33.7%)	2 (66.7%)	2 (28.6%)	5 (71.4%)	8.23	3.36
paper bag	1 (33.3%)	2 (66.7%)	1 (14.3%)	6 (85.7%)	7.65	2.88
robot mechanic	2 (66.7%)	1 (33.3%)	3 (42.9%)	4 (57.1%)	7.62	4.61
glass case	1 (12.5%)	7 (87.5%)	1 (33.3%)	2 (66.7%)	7.42	2.88
steel warehouse	1 (33.3%)	2 (66.7%)	4 (57.1%)	3 (42.9%)	7.42	3.49
iron crate	0 (0%)	8 (100%)	0 (0%)	3 (100%)	6.52	2.46
toy factory	3 (100%)	0 (0%)	6 (85.7%)	1 (14.3%)	6.45	2.49
dragon healer	7 (87.5%)	1 (12.5%)	3 (100%)	0 (0%)	5.43	2.95
apprentice welder	0 (0%)	8 (100%)	1 (33.3%)	2 (66.7%)	3.48	3.49
Total	**16 (32.0%)**	**34 (68.0%)**	**21 (38.9%)**	**33 (61.1%)**	**6.87**	**3.01**
A-N opaque	correct	incorrect	correct	incorrect		
greenhouse	3 (100%)	0 (0%)	6 (85.7%)	1 (14.3%)	9.00	2.10
blackbird	3 (100%)	0 (0%)	7 (100%)	0 (0%)	7.94	1.88
plastic money	8 (100%)	0 (0%)	3 (100%)	0 (0%)	7.48	1.78
redwood	7 (87.5%)	1 (12.5%)	3 (100%)	0 (0%)	6.45	1.37
greenhorn	3 (100%)	0 (0%)	7 (100%)	0 (0%)	5.77	2.64
bluebottle	3 (100%)	0 (0%)	7 (100%)	0 (0%)	5.29	2.17
bluebell	3 (100%)	0 (0%)	6 (85.7%)	1 (14.3%)	5.29	2.38
red-eye	3 (37.5%)	5 (62.5%)	1 (33.3%)	2 (66.7%)	4.13	3.09
Total	**33 (84.6%)**	**6 (15.4%)**	**40 (90.9%)**	**4 (9.1%)**	**6.42**	**2.18**
A-N phrases	incorrect	correct	incorrect	correct		
red eye	3 (100%)	0 (0%)	7 (100%)	0 (0%)	9.58	1.79
blue bottle	1 (12.5%)	7 (87.5%)	1 (33.5%)	2 (66.7%)	9.29	2.32
French teacher	6 (75%)	2 (25%)	3 (100%)	0 (0%)	9.16	2.35
metal box	0 (0%)	3 (100%)	1 (14.3%)	6 (85.7%)	8.67	2.39
green house	6 (75%)	2 (25%)	3 (100%)	0 (0%)	8.60	2.94
plastic money	2 (66.7%)	1 (33.3%)	4 (57.1%)	3 (42.9%)	8.45	2.39
blue bell	7 (87.5%)	1 (12.5%)	2 (66.7%)	1 (33.3%)	8.06	2.81
red wood	3 (100%)	0 (0%)	6 (85.7%)	1 (14.3%)	7.97	1.58
green horn	3 (37.5%)	5 (62.5%)	0 (0%)	3 (100%)	7.26	2.78
black bird	7 (87.5%)	1 (12.5%)	3 (100%)	0 (0%)	6.45	2.03
Total	**38 (63.3%)**	**22 (36.7%)**	**30 (65.2%)**	**16 (34.8%)**	**8.35**	**2.34**

Table 2. Perception

3.3. Analysis of the Results

The results obtained in the current experiments are as follows. Highlighted sections indicate where a particular collocation should be stressed:

Type of collocations		PRODUCTION				PERCEPTION			
		Fore-stress		End-stress		Fore-stress		End-stress	
		LHD	RHD	LHD	RHD	LHD	RHD	LHD	RHD
Attributive	N-N compounds	52.5%	59.7%	47.5%	40.3%	32.0%	38.9%	68.0%	61.1%
	Adj-N phrases	50.0%	60.5%	50.0%	39.5%	63.3%	65.2%	36.7%	34.8%
Non-attributive	N-N compounds	64.6%	40.7%	35.4%	59.3%	49.3%	33.9%	50.7%	66.1%
	Adj-N compounds	69.0%	82.7%	31.0%	17.3%	84.6%	90.9%	15.4%	9.1%

Table 3. The results

The juxtaposition of the results from the first and second experiment show the differences between language output and input as far as compounds and phrases are concerned. Here, I want to pay special attention to the comparison of the accuracy of stress placement within and across L2s. One of the striking observations is the similarity of stress production and stress recognition in Noun-Noun attributive compounds. A similar situation concerns Adjective-Noun opaque and Noun-Noun arg-head compounds, but it is less prominent. Adjective-Noun phrases, on the other hand, elicit a huge disproportion of accuracy between production and perception. L2s are more or less equally accurate in the case of Adjective-Noun opaque compounds. For the other three types of collocations, the results of production and perception are not consistent with one another. To sum up, there is an overall tendency to correctly recognize Adjective-Noun opaque and Noun-Noun attributive compounds (idiomatic vs. attribute-head), and to correctly produce Adjective-Noun opaque and Noun-Noun arg-head compounds (idiomatic vs. arg-head).

In the case of production, semantically transparent collocations elicited 55.28% end-stress patterns and semantically opaque collocations elicited 81.55% fore-stress patterns. Such a disproportion for semantically transparent constructs is due to arg-head compounds which are semantically transparent despite their fore-stress nature. As I have previously indicated, putting them aside will show us the end-stress nature of semantic transparency unless the amount of end-stress patterns decreases. Indeed, semantically transparent collocations without arg-head compounds elicited 65.16% end-stress patterns. Interestingly, these semantically transparent collocations include A-N phrases and N-N compounds, both attributive.

In the case of perception, semantically transparent collocations elicited 51.70% end-stress patterns and semantically opaque collocations elicited 87.63% fore-stress patterns. The above remark concerning arg-head compounds is also true here, so after rejecting the results obtained from these, the remaining semantically transparent collocations elicited 51.33%. This means that arg-head compounds do not significantly change the production of end-stress patterns for semantically transparent collocations. Judging from the above percentages, we can observe that semantic opacity is clearly defined by a fore-stress pattern, whereas for semantic transparency the picture is not so clear-cut (even for phrases exclusively). The clarity of the results for semantic opacity indicates that, unless there is a third option, the lack of semantic transparency is defined by a fore-stress pattern.

4. Conclusion

The above results have the following implications for L2 speakers:

(i) the dependence of the results on hemisphere-dominance is rather fuzzy, which undermines the assumption put forward by Traxler (2012) that LHD speakers are more accurate and quicker in their decisions concerning stress-placement in compounds;
(ii) in tasks concerning perception, there is a tendency to identify end-stress in the case of Noun-Noun compounds (of both types) and fore-stress in the case of Adjective-Noun collocations, which is just the opposite of what could be expected;
(iii) there is an overall tendency to produce fore-stress regardless of the item's classification, thus providing empirical support for Giegerich's claims.

The results contribute to the current experimental research agenda on language interrelations between prosody and semantic transparency; second, they question the importance of hemispheric dominance as far as accuracy and response time in relation to stress-placement in compounds are concerned; third, they offer an inspiration for linguists who investigate second language acquisition (after a certain reevaluation, e.g., the one presented below). A further consequence of the analysis is that the strength of the link between prosody and semantic transparency may vary with regard to the type of experiment, production or perception. Unlike production, perception showed a relatively clear link which consists of placing end-stress on semantically transparent compounds and fore-stress on semantically opaque ones.

The present paper has outlined some significant areas for future research on L2 prosody. Certainly, there are many more problematic issues in this yet under-studied area of L2 acquisition. Our experiments should be treated as a pilot study which may function as an inspiration for further studies. The limitations of this study are as follows: first, a higher number of compounds having different kinds of morphological endings should be studied and more participants (L1s and presumably L2s) should be tested; second, there should be more attention paid to the role of analogy regarding prosody – both in the case of L1s and L2s. This could be done by using priming experiments (e.g., eliciting target compounds with an oral presentation of analogical compounds varying with respect to frequency and the extent of lexicalization). This would indicate whether priming of these frequent analogical compounds increases the number of fore-stress placements for unfamiliar compounds (by L1s and L2s).

Experimental Material

In my experiments, I used different types of A-N and N-N collocations. They are listed in (3)–(4) below.

(3) Semantically transparent collocations
(a) N-N compounds with attributive relation, i.e., the 'is a' relation with respect to the head (end-stressed)
woman doctor, toy factory, apprentice welder, man killer, robot mechanic, dragon healer, glass case, paper bag, steel warehouse, iron crate

(b) N-N compounds with argument-head relation (fore-stressed)
French teacher, woman doctor, toy factory, apprentice welder, man killer, robot mechanic, dragon healer, glass case, paper bag, steel warehouse, iron crate, metal box (for the last five examples expressing a "contains" relation, cf. Zubizaretta et al. 2011)

(c) fully compositional A-N phrases with attributive relation (end-stressed)
French teacher, black bird, blue bottle, green house, red wood, blue bell, red eye, green horn, metal box, plastic money

(4) semantically opaque A-N compound words (fore-stressed)
blackbird, bluebottle, greenhouse, redwood, bluebell, red eye, greenhorn, plastic money

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Wide-Scope Indefinites and Topicality: A Novel Account of Quantifier-Induced Intervention in Mandarin Chinese A-not-A Questions

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Abstract: This paper revisits quantifier-induced intervention effects in a Mandarin Chinese alternative question type, the A-not-A question. I present new data, which show that the ability for quantifiers to induce intervention hinges upon their monotonicity and their ability to be interpreted as topics. I then develop a semantic account that correlates topicality with monotone properties. Furthermore, I propose that an A-not-A question is an idiosyncratic yes-no question that expresses a yes-no function over propositions but simultaneously requires the yes-no function to take a VP scope. Combining the semantic idiosyncrasies of A-not-A questions with the theory of topicality, I conclude that my account explains a wide range of intervention phenomena in terms of the interpretational component of grammar.

Keywords: Alternative Questions; Intervention Effects; Generalized Quantifiers; Illocution; Choice Function; Mandarin Chinese

1. Introduction

This paper presents a semantic account of intervention effects in Mandarin Chinese A-not-A questions. An A-not-A question is a special alternative question type that is named after its reduplicative predicative component (termed the A-not-A form). [1] The predicative part includes two copies of the same predicate (e.g. V or A), with a negative morpheme inserted in between, illustrated as follows:[2]

(1) Ni xihuan-bu-xihuan paobu?
you like-NEG-like run
"Do you like running or not?"

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[1] The reduplication process need not always provide two identical copies of the same predicate. If the predicate being reduplicated is a multi-syllabic word, only the second copy (i.e. the negative predicate) needs to be a full word. The first copy need only contain the initial syllable of the word.

[2] The glossing in this paper follows the Leipzig Glossing Rules (LGR) https://www.eva.mpg.de/lingua/resources/glossing-rules.php.

By intervention effects, I refer to the unacceptability induced when a scope-taking element c-commands an in situ *wh*-element In this paper, I focus on quantifier-induced intervention effects, schematized in the following (Beck and Kim 1997; Beck 2006; Beck and Kim 2006; Mayr 2013).[3]

(2) *[$_{Q}$ [Quant Wh]]

The A-not-A form carries an interrogative feature. This feature is widely assumed to come from a silent interrogative operator that is initially merged to the A-not-A form. As such, A-not-A questions are predicted to pattern with *wh*-in situ questions in Chinese. Among other things, A-not-A questions should be subject to the same constraint as characterized in (2). Examples such as (3a-b) have been cited to corroborate this prediction (Hagstrom 2006). When a quantified expression c-commands the A-not-A form, unacceptability arises:

(3) *Meiyou ren xi-bu-xihuan paobu?
no person like-NEG-like run
Intended:# "For nobody, do they like running or not?"

In Huang's (1991) influential analysis, intervention effects in A-not-A questions are caused by covert movement of the silent interrogative operator at LF. In later approaches, intervention effects are further characterized as minimality effects. The presence of a scopal element along the route of covert movement creates a relativized minimality-based intervention à la Rizzi (1990; 2004). More specifically, under the configuration where a scopal element is closer to the scope position of a question than the in situ interrogative operator, the scopal element qualifies as a more viable candidate for taking scope, thereby preempting the covert movement of the interrogative operator.

This paper proposes an alternative explanation for why A-not-A questions induce intervention. I show that the A-not-A form interacts with quantifiers in a more fine-grained manner than previously assumed. Specifically, intervention is sensitive to the monotonicity of quantifier, as well as whether the A-not-A question is a root clause or embedded. The subtle patterns of intervention, I argue, are readily accounted for if we assume that an A-not-A question requires all the scopal elements c-commanding the predicative A-not-A form to be topics, and hence prevents all non-topicalizable expressions from c-commanding the A-not-A form.

The rest of this paper is structured as follows. Section 2 presents quantifier-induced intervention data in detail, and discusses the problems such data raise for a structural account of intervention effects; Section 3 formulates a semantic proposal that achieves full empirical coverage; Section 4 provides further evidence that intervention receives a

[3] By using unacceptability, I follow Tonhauser et al. (2013) and Tonhauser and Matthewson (2015) in distinguishing structural ill-formedness from semantic oddness. Both lead to low acceptability ratings, therefore in this paper I use unacceptability in a pre-theoretical way to avoid committing myself to whether intervention is structural or semantic. As a matter of fact, I end up proposing that the intervention we see in the A-not-A question should be a case of uninterpretability. Throughout the paper, the translations I provide for the unacceptable A-not-A questions are not good English sentences. This serves to illustrate my point that the reason for the intervention in the Chinese A-not-A question is because no coherent interpretation arises.

neat explanation if we subscribe to a correlation between quantifier monotonicity and topicality; Section 5 concludes the paper.

2. Data

2.1 Patterns of Intervention

In this section, I present new data showing that intervention effects are sensitive to the types of quantifiers. To start with, when c-commanded by monotone decreasing quantificational DPs, the A-not-A form induces intervention. In (3), we already see that *no one* induces intervention in an A-not-A question. (4) demonstrates that other monotone decreasing quantificational DPs also induce intervention.[4]

(4) *{Henshao ren/ budao wu-ge ren} qu-bu-qu?
{few person/ less than five-CLF person} go-NEG-go
"For {few people/ less than five people}, do they go or not?"

Non-decreasing monotone DPs display some gradability in terms of intervention; simplex quantificational DPs that do not bear a numeral determiner, such as *duoshu ren* 'most people', are the most acceptable when preceding the A-not-A form, as shown in (5).

(5) Daduoshu ren qu-bu-qu?
most person go-NEG-go
"For most people, do they go or not?"

Meanwhile, judgments are more degraded when a monotone increasing DP with a modified numeral determiner c-commands the A-not-A form. Similar decrease in acceptability(decrease in acceptability) is witnessed in the presence of a non-monotonic bare numeral DP. This is illustrated by (6).

(6) (a) ??{Zhishao wu-ge ren/ chaoguo wu-ge ren} qu-bu-qu?
{at least five-CLF person/ more.than five-CLF person go-NEG-go
"For {at least five people/more than five people}, do they go or not?"

(b) ??Wu-ge ren qu-bu-qu?
five-CLF person go-NEG-go
"For five people, do they go or not?"

[4] A monotone increasing quantificational determiner, such as *most*, is 'monotone increasing' because when the predicate in the body of the quantified expression is made less restrictive, the truth value is preserved (Westerstahl 2015). Thus, *Most men work hard* entails *Most men work*. Alternatively, this is called 'right upward monotone' in the literature.

By contrast, for monotone decreasing quantifiers, when the predicate in the body of the quantified expression is made less restrictive, the truth value is not necessarily preserved. Quite the opposite, it is preserved when the body is made more restrictive: *Few men work* entails *Few men work hard*.

(7) Wo yijing zhidao {zhishao wu-ge ren/ chaoguo wu-ge ren/ wu-ge ren} qu-bu-qu.
I already know {at.least five person/ more.than five person/ five-CLF person} go-NEG-go
"I already knew whether {at least five people/more than five people will go or not."

Finally, for the same set of monotone increasing and non-monotonic quantifiers with numeral components, intervention effects may be ameliorated under embedded contexts. By contrast, no amelioration is witnessed for monotone decreasing quantifiers:

(8) *Wo yijing zhidao {meiyou ren/ henshao ren/ budao wu-ge ren/ zuiduo wu-ge ren} qu-bu-qu.
I already know {no person/ few person/ less.than five-CLF person/ at.most five-CLF person} go-NEG-go
"I already knew whether {nobody/ few people/ less than five people/ at most five people} will go or not."

In sum, intervention effects in A-not-A questions exhibit a complex overall pattern as follows:

(9) (a) Monotone decreasing quantifiers induce intervention effects in both matrix and embedded contexts;

(b) Monotone increasing, non-numeral quantifiers don't induce intervention effects in all environments;

(c) (Monotone increasing) modified numerals and (non-monotonic) bare numerals induce weak intervention in matrix A-not-A questions, which is ameliorated under embedded contexts.

2.2 Previous Accounts

In his classic account, Huang proposes (Huang 1991) that, in an A-not-A question, a null interrogative operator (termed NQ by Huang) initially merges with the regular predicative element in surface syntax and forms a phrasal unit. After the initial merge, NQ undergoes covert movement at LF to check off the interrogative feature at [Spec, CP]. When the LF component feeds into the semantic representation module, NQ is interpreted as taking the predicative element as its argument and returns a disjunctive set out of it. The LF structure and the semantics of an A-not-A question are represented as follows (Huang et al. 2009):[5]

[5] Furthermore, Huang assumes that the level of surface syntax also feeds input to the PF component, and he proposes that the reduplicated form of the A-not-A part is a matter of Spellout. That is, the instruction PF receives requires that the [Predicate + NQ] chunk to be spelled out phonologically as a positive and a negative predicate copy. As a consequence, this account claims that both the reduplication and the negative morpheme are inserted as something completely arbitrary, and does not bear on the interpretation process.

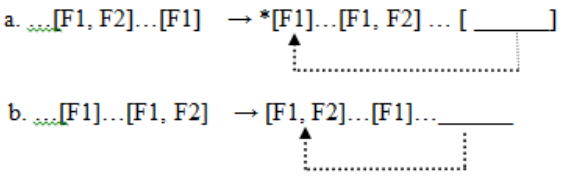
(10) (a) Ni qu-bu-qu?
you go-NEG-go

(b) LF: [$_{CP}$ NQ$_i$[+A-not-A] [$_{IP}$ *Ni* t$_i$[+A-not-A] *qu*]]

(c) Semantics: "For x, x ∈{go, not go}, you x?" = {you go, you not go}

Intervention effects can be accounted for if relativized minimality is incorporated into Huang's theory of covert movement. For example, Yang (2011) assumes a recent formulation of the relativized minimality framework (Starke 2001; Rizzi 2004), in which only features undergo movement and movement is subject to the following constraint:

(11) MAXIMAL MATCHING FILTER (Yang 2011, 63)
Let X and Y be bundles of features in a sequence of […X…Y…]; Y cannot cross X when Y is maximally matched by X.



In other words, if another scopal element is closer to the landing site than the interrogative operator and bears at least as much featural information as the interrogative operator, that scopal element would be an intervener. A quantifier is assumed to carry a superset of the set of features needed to trigger covert movement of the interrogative operator (Rizzi 2004). As such, covert movement is blocked when a quantifier c-commands the interrogative phrase, since the quantifier would then be closer to the landing site.

The above theories face both empirical and conceptual problems. Empirically, the formulation of relativized minimality in terms of feature matching fails to predict how a fine-grained distinction within quantifier types would make any differences during intervention. If quantifiers in general possess enough features to maximally match the interrogative operator, then by including monotonicity as a further dimension in the feature geometry, we only increase the inventory of the feature set for the quantifiers. Therefore, both monotonic increasing and decreasing quantifiers are supposed to maximally match the interrogative operator and block its covert movement. Furthermore, it is rather unclear whether we should bring monotonicity, a semantic primitive, into our feature geometry, especially since we find no independent evidence that monotonicity plays a role in creating intervention for environments other than A-not-A questions.

Furthermore, assuming that NQ initially merges in situ and then moves to take scope, we would expect that, in embedded questions, NQ still moves to take scope at the embedded clause's [Spec, CP]. As such, it will have to cross the quantificational intervener along the way, therefore falsely predicting that the intervention in embedded

contexts does not differ from that in matrix contexts. In other words, even assuming that quantifier types can be fine-tuned to accommodate the monotonicity issue, it is unclear how a relativized minimality account handles the selective amelioration phenomenon (as in 7–8) in a principled manner.

Conceptually, the current version of NQ movement does not derive the right interpretation for A-not-A questions. According to Huang's analysis in (10), NQ in (12) ranges over two opposing predicates. As NQ moves to take scope, an operator-variable pair is formed where NQ associates with its gap position, yielding the semantics in (12b):

(12) (a) Daduoshu ren hui-bu-hui qu?
most people will-NEG-will go

(b) "x∈{*hui qu*, *bu-hui qu*}, *daduoshu ren* x? (= "x∈{will go, will not go}, most people x?)"

This in turn derives two alternative propositions:

(13) {p_1= Most people will go, p_2= Most people won't go.}

In p_1, the positive predicate is within the nuclear scope of the quantifier *most*. In p_2, the negative predicate is also within *most*'s nuclear scope, which means negation scopes under *most*. The problem with this interpretation is that the two alternative propositions are not exhaustively carving up the logical space. In addition to the situations expressed by p_1 and p_2, there is a third situation that belongs to neither of the two, represented by p_3:

(14) p_3 = Neither most people will go, nor most people won't go.

For example, imagine a situation where exactly half of the people will go. This situation instantiates p_3, and does not instantiate p_1 or p_2. This result is undesirable, because various studies have shown that speakers use A-not-A questions when presented with two alternatives that exhaustively carve up the logical space (McCawley 1994; Wu 1997; Schaffar and Chen 2001). A natural way to address this problem is to change p_2 by making sentential negation scope above *most*, yielding the proposition: "It is not the case that most people will go." This guarantees exhaustivity. However, the semantics still does not quite fit with our intuition of what this quantified A-not-A question is about. This problem becomes evident when we consider the meaning of a negative answer to the question in (12a), given below:

(15) A: Daduoshu ren hui-bu-hui qu?
"The majority of people, will they go or not?"
B: Bu. 'No.'
= "The majority of people, as a group, they will not go."
≠ "It is not the case that most people will go."

That is, in the negative answer, the quantifier does not fall within the scope of sentential negation. In fact, the question is interpreted in a context where there exists a plurality of

individuals. They constitute the majority of all the contextually relevant individuals, and they either will collectively go as a group, or will collectively not go.

3. A Semantic Account

3.1 Intervention as a Speech Act Constraint

The ability for *most people* to be interpreted at the widest scope (as witnessed in its ability to outscope sentential negation) is characteristic of plural indefinites. The interpretation we get in (15) would receive a natural explanation if the quantificational DP is indeed a plural indefinite, by means of denoting a choice function variable (Reinhart 1997; Winter 1997). Both Reinhart and Winter have proposed that quantificational determiners such as *some* or *many* need not denote a relation between predicates, in the traditional sense of Barwise-Cooper (1981). Rather, they may be analyzed as a choice function variable—a function of type <<e,t>,e> that, given a property (type <e,t>) as input, returns some plurality (type e) that has that property. I argue that *most people* also receives a choice functional interpretation here: *most people* is of type e, and denotes a particular plurality of people. Specifically, I deviate slightly from Reinhart and Winter's proposal and assume that a choice function variable f is adjoined next to *most* in the DP head position, yielding the structure $[_{DP}\ [_{D'}\ [\mathbf{f}\ \textit{most}]_F\ [_N\ \textit{people}]]]$. In this analysis, **f** itself is a (silent) determiner and the quantificational *most* is a presuppositional modifier of the choice function variable that adds a cardinality restriction on the choice function. This enables us to allow both *most* and the choice function variable to vary among alternatives, while leaving the restrictor of the quantifier *people* constant. Based on this analysis, the denotation of *most* is as in (16).

(16) $[[\textit{most}]] = \lambda f_{<<e,t>,e>} \lambda P_{<e,t>}\ \lambda x_e\ [P(x) \wedge (f(P)\ \text{if}\ |\text{Atoms}\ (x)| > ½\ |\{y\text{: atom}\ (y) \wedge P(y)\}|)]$

The alternatives generated by "[**f** *most*] *people*" are computed by substituting different choice function variable values in the position of [**f** *most*]. Combining these with the restrictor *people*, we produce contrasting pluralities of individuals.

To go one step further, I argue that the plural indefinite *most people* is a topic when it c-commands the A-not-A form. This is possible because a referring expression may serve as a topic if it is individual-denoting. Importantly, I argue that topicalization is also necessary, because the A-not-A form obligatorily carries the illocutionary force. Therefore, for any sub-sentential expression to scope above the A-not-A form, it needs to scope above the illocutionary operator, and among individual-denoting expressions, only topics are able to do so.

Below I will provide motivations for the claim I just made. The argument I will put forward is two-pronged. On one hand, I show that topics scope out of the illocutionary force. On the other hand, I propose that the interrogative operator NQ is merged high in its base position, and the illocutionary force always directly attaches to it.

Various authors have pointed out that if any part of a proposition is capable of scoping out of a speech act, it will have to be a topic (Krifka 2001; Ebert et al. 2014). This is because topic establishment is a separate speech act by itself. The idea that topics are assigned illocutionary operators of their own was first proposed by Jacobs (1984). Jacobs points out that introducing a topic is an act of frame setting. As such, it is an initiating speech act that selects an entity, and then requires a subsequent speech act,

such as an assertion, question, or command about the entity being selected. As Krifka (2001) notes, this sequential, conjoined speech act is manifested overtly in English:

(17) (a) As for Al, Bill and Carl, which dishes did they make?

(b) The hamburger, please hand it to me.

(c) This guy, he should go to hell!

Krifka further points out that topics even have to scope out of speech acts, given that they perform a separate speech act.

According to Reinhart (1981), the act of frame setting establishes an address for a new discourse referent x, such that a proposition in which the referent x serves as the argument can be updated/stored to that address (see also Heim 1982). For both Jacobs/Krifka and Reinhart/Heim, it is necessary that topic establishment is interpreted prior to the proposition's act. More formally, if we assume that asking a question is performing a basic imperative speech act (that is, a request), then the illocutionary force of a question is structured as follows:

(18) Given a topic-comment $<\phi_{topic}, \psi_{comment}>$
$\text{REQUEST}\,(<\phi_{topic}, \psi_{comment}>) \rightarrow \text{REF}_x\,(\phi_{topic})\ \&\ \text{REQUEST}\,(\psi_{comment}\,(x))$

In a moment, I will elaborate on my claim that the illocutionary force of an A-not-A question is directly attached to the A-not-A form. Based on this claim, topics have to c-command the A-not-A form, because they must take scope outside the illocutionary force of an A-not-A question. This predicts that all the expressions that may serve as topics in Chinese may occur to the left of the A-not-A form without inducing intervention. This prediction is borne out. As (19) demonstrates, proper names, pronouns, and temporal/locative adverbs can legitimately c-command the A-not-A form. These are expressions that have long been known to allow for a topic reading (Ernst 1994; Law 2006).

(19) (a) Zhangsan xiang-bu-xiang qu paobu?
Zhangsan want-NEG-want go run
"(As for) Zhangsan, does he want to go running or not"

(b) Jintian ni xiang-bu-xiang qu paobu?
today you want-NEG-want go run
"(As for) today, you want to go running or not?"

(20) additionally shows that when multiple topics are co-occurring, they can all precede the A-not-A form. There seems to be a functionally based cognitive constraint preventing more than three topics from co-occurring in the same sentence in Chinese. But a sentence with three topics is marginally acceptable (Xu 2006). In such cases, we also find an A-not-A question with three preceding topics:

(20) ?Zhe-chang yinyuehui ni mingtian zhun-bu-zhunbei qu?
This-CLF concert you tomorrow plan.to-NEG-plan.to go
"This concert, tomorrow, you plan to go or not?"

Another prediction is that if an element is by nature not topical, it must not precede the A-not-A form. This would readily explain the fact that focus-sensitive expressions, such as the *only*-NP or the *even*-NP, induce intervention in A-not-A questions, since they are known to be strongly anti-topical (Tomioka 2007). This is illustrated in (21).

(21) (a) *Zhiyou Lisi qu-bu-qu?
only Lisi go-NEG-go
Intended: #"For only Lisi go-NEG-go?"

(b) *Lian Lisi ye qu-bu-qu?
even Lisi also go-NEG-go
Intended: #"For even Lisi does he go or not?"

3.2 The A-not-A Form

In this subsection, I turn to the scopal behavior of the A-not-A form. I depart from Huang's original proposal that an A-not-A question is a disjunctive question, and the null interrogative operator NQ denotes a disjunctive connective over two opposing predicates. Rather, I adopt an alternative view on the semantics of the A-not-A question that was articulated in McCawley (1994) (see also Cole and Lee 1997; Romero and Han 2004). Namely, an A-not-A question is a yes-no question. Correspondingly, NQ expresses a yes-no operator, i.e. a function from a proposition to binary truth values or sets of propositions (f: $p \rightarrow \{0,1\}/\{p, \neg p\}$). In a yes-no question, the speech act operates over yes-no alternative truth values (Farkas and Bruce 2009; Roelofsen and Farkas 2015). Once the NQ operator, as a function defined on propositions, outputs a binary set of truth values, the speech act operator will take the binary value in its scope and attach the illocutionary force to it.

Crucially, I propose that NQ merges directly to its scope position, rather than undergoing merge-and-move. Following the standard philosophical traditions, we can capture the intuition that an illocutionary act is performed on the locutionary content by assuming that an illocutionary operator combines with a propositional radical. Here I follow a Wittgensteinian view of speech act, in which the propositional radical can be seen as unsaturated unless attached to an operator expressing speech act. As a function that turns a propositional radical to its truth values, NQ is mediating between the propositional level and the illocutionary level. In terms of position, I argue that NQ is base-generated immediately below the illocutionary operator, and directly above a propositional radical, so that NQ does not bind a trace within the propositional radical. As such, it does not take part in scopal interactions and composes with the already scope-resolved propositional radical. This means that quantifier raising, the raising of focus operators, and other requisite operations for scope resolution all take place below the scope position of NQ. Independently, it has been proposed that proposition-level operators all tend to favor high merge. For example, *why* has been analyzed as a proposition-level modifier (Bromberger 1992; Ko 2005) that merges directly at [Spec, CP] and does not bind a trace (Rizzi 2001; Ko 2005; Thornton 2007). Ko (2005), in particular, argues that intervention effects induced in *why*-questions in Japanese, Korean,

and Chinese will be handled if we adopt a high merge approach to the equivalents of *why* in these languages. The Chinese *weishenme why*-questions indeed exhibit parallelism with A-not-A questions in terms of intervention, demonstrated in (22).

(22) (a) *{Meiyou ren/ henshao ren} weishenme mei lai?
{no person/ few person} why NEG come
#"For nobody/few people, why they haven't come?"

(b) Daduoshu ren weishenme mei lai?
most person why NEG come
"For most people, why they haven't come?"

(c) ??{Zhishao wu-ge ren/ wu-ge ren} weishenme mei lai?
{at least five-CLF person/ five-CLF person} why NEG come
Intended: #"For (at least) five people, why they haven't come?"

(d) Wo yijing zhidao {*meiyou ren/ zhishao wu-ge ren/ wu-ge ren} weishenme mei lai?
I already know no person at least five-CLF person/ five-CLF person why NEG come
"I already knew that, for {*nobody/(at least) five people}, why they haven't come."

Assuming NQ is merged high, the elements that are able to stay above NQ are limited to topics. The scopal possibilities of an A-not-A question are laid out in the configuration in (23). Following Krifka's (2001) practice, I am incorporating the illocution into sentential syntax by mapping the semantic scope of illocution to the sentential position of a Speech Act Phrase (SAP).

(23) Topic < SAP < NQ (A-not-A Op) < PredP

According to the above analysis, NQ would still ostensibly adjoin to the predicate phrase (PredP) after its initial merge, just as all the other theories of A-not-A questions have proposed. However, what NQ is combining with is a proposition, not just a predicate. The propositional content is manifested as predication over an empty variable argument, which coindexes with the referring expression that is established by a topic act that precedes the proposition's act.[6]

[6] In Japanese and Korean, generalized quantifiers are able to scramble across the CP periphery at surface syntax and reconstruct their scope at a trace position within the propositional radical (i.e. within IP) at LF (Kitagawa 1990). If scrambling is an option, a quantifier or other scope-taking element might still be part of the propositional content of the A-not-A form, if they scramble to the left of the A-not-A form, so that the A-not-A form is spelled out as an ostensibly predicative form.

Based on this view, if a quantificational element takes wide scope over the A-not-A form, it has to be a topic that scopes outside the A-not-A question's illocutionary force. Consequently, if a quantifier is construed as topical and hence is able to undergo topicalization, it may scope above the A-not-A form. On the other hand, if a quantifier cannot be construed as topical, outscoping would be impossible, and intervention effects arise in such cases, because for the non-topicalizable quantifier, the form [$_{\text{Topic}}$ Quant [$_{\text{SpeechActPhrase}}$ NQ PredP]] is uninterpretable, hence semantically anomalous. In the next section, I present evidence that the division of quantifiers in terms of topicality accords with the intervention data in Chinese.

4. Quantifiers and Topicality

In the previous sections, I show that quantifiers can receive a choice function reading and denote individuals, deviating from the Barwise-Cooper analysis where a generalized quantifier denotes a relation between predicates. Importantly, I claim that not all quantifiers can be of type e.

In the following, I adopt Reinhart's (1997) terminology and define a quantifier as 'witnessable' iff it entails the existence of a plurality that satisfies both the quantifier's restrictor and its nuclear scope, i.e. it entails the existence of its witness set.[7] Crucially, I claim that whereas monotone increasing and non-monotonic quantifiers are witnessable, monotone decreasing quantifiers are not witnessable.

This semantic distinction between decreasing and non-decreasing quantifiers also has firm backing from morphological marking. For example, in Japanese, monotone decreasing quantifiers resist topic marking with the *–wa* suffix, whereas increasing quantifiers tend to allow suffixation by *–wa* (Tomioka 2010).

The strongest evidence so far comes from Constant (2013), who provides a series of English diagnostics to support partitioning quantifiers in terms of their witnessability. The first diagnostic is that (only) witnessable quantifiers may serve as contrastive topics, as in the following:

(24) A: Where do the grads live?
B: [__]$^{\text{CT}}$ (of the) grads. . . live [in AMHERST]$^{\text{F}}$.
{most/ten/more than ten/*few/*none/*at most ten/*less than ten}

If CT-marked quantifiers such as *most* only have a standard GQ reading, they would be construed as answering one of the sub-questions of Question A. These sub-questions would be the alternatives in {Where did *most* grads live? Where did *a few* grads live? Where did *no* grads live? ...} (see Rooth 2005 for a discussion of how contrastive topic-marked answers are answering a sub-question of a preceding overall question). This does not accord with our intuition, in which B's answer means that B has information about where a majority subset of individuals live, as opposed to the rest of the individuals, about whom B has no information. If *most grads* denotes a specific plurality of individuals, then the contrasting alternatives will be between different individual grads.

This possibility has to be ruled out. This is because Chinese, unlike Japanese or Korean, is known to disallow scrambling and only allows topicalization (Soh 1998; Ko 2005).

[7] Witness set refers to the plurality determined by the intersection of the restrictor and the nuclear scope. That is, given a quantificational determiner D, one predicate P and another predicate Q, D(P)(Q) gives rise to the witness set W = P ∩ Q (Barwise and Cooper 1981; Szabolcsi 2010).

This seems to be exactly what (24) does. Furthermore, if CT-marked quantifiers are standard GQs, it would be mysterious why quantifiers such as *few* cannot form an answer. In my current approach, the reason is obvious, as *few* is not a witnessable quantifier.

Chinese echoes Constant's English pattern, as (25) exemplifies:

(25) A: Yanjiusheng-men zhu Zai naer?
graduate.student-PL live LOC where?
"Where do the grads live?"
B: [{Daduoshu/ Wu-ge/ *Henshao yanjiusheng}]^{CT}
most/ five-CLF *few grad.student
zhu zai [anhesite]^{F}
live LOC Amherst
"{Most/Five/*Few} grad students live in Amherst."

Constant's second diagnostics involves the use of quantifiers in apposition:

(26) {_} of my students, (namely) the ones who wanted to pass, came on time.
{most /more than ten/ten /*none /??few/??less than 20}

Here the nominal supplement *the ones who wanted to pass* is in apposition to the quantified DP. For the appositive relation to work, the two expressions need to have converging types. Since the nominal supplement is of type e, it follows that the quantifiers that make the sentence acceptable are also of type e. As (27) shows, the quantifiers in Chinese parallel their distribution in English:

(27) {Daduoshu xuesheng/ wu-ge xuesheng/ *henshao xuesheng}, jiushi
{most student/ five-CLF student/ few student} namely
conlai bu kuangke de nei-xie,
ever NEG miss.class REL DEM-CLF
kao de bu-cuo
take.exam NEG-bad
"{most/five/*few} students, namely those who never missed class, did well in the exam."

Therefore, evidence from apposition is consistent with contrastive topics.

One further piece of evidence given by Constant is that quantifiers differ in their ability to appear in equative constructions:

(28) Those girls standing over there are _ of my best students.
{?most/?more than 20 /?exactly 20/*few/ *no /*less than 20}

In an equative construction, the two-place copula *be* equates two individual-denoting expressions. On the left side, the first argument of the copula is a regular plurality DP. For the equative construction to be well-formed, the right argument needs also be an individual-denoting plurality DP. Therefore, the equative construction provides yet another diagnostic on which quantifier qualifies as type-e. As it turns out, the judgment

patterns in (28) match well with those in the previous diagnostics. Below we see that Chinese again echoes the English pattern.

(29)

[Zhan	zai	near	de	ren]
stand	LOC	there	REL	person
shi	[wo	de	xuesheng	li
COP	I	REL	student	inside
de	{daduoshu/	wu-ge/	*henshao}].	
REL	{most/	five-CLF/	*few}]	

"[Those standing over there] are [{most/five/*few} of my students]."

In sum, when we consider quantifiers in terms of topicality, we immediately explain why monotone decreasing quantifiers induce intervention effects in A-not-A questions; they cannot be topical, hence they cannot give rise to coherent readings in A-not-A questions. Non-decreasing quantifiers are unproblematic, because they denote individuals that serve as topics. For example, an A-not-A question with *most* is interpretable. In (30), I derive the syntax and semantics of a *most*-question in detail:

(30) (a)

Daduoshu	ren	hui-bu-hui	qu?
most	people	will-NEG-will	go

(b) $[_{\text{Topic}}$ *Duoshuren* $[_{\text{SpeechActPhrase}}$ NQ $[_{\text{IP}}$ $[_{\text{VP}}$ *qu-bu-qu*$]]]]$?

(c) $\text{REF}_y(y = \mathbf{f}(\lambda x_e [\text{people}(x) \wedge |\text{Atoms}(x)| > ½|\{z: \text{atom}(z) \wedge \text{people}(z)\}|)) \,\&$ REQUEST $(\{\text{go}(y), \neg\, \text{go}(y))$

(d) "(Speaking of/As for) the plurality returned by the choice function **f** when applied to the property of being a majority of all the context-relevant individuals, are they going or not?"

Furthermore, this theory claims that bare numerals and monotone increasing modified numerals can be topics. We still need to explain why these numeral quantifiers induce weak intervention, as seen in (6a-b). I believe the marginal judgment in (6) has a pragmatic reason. Following Kratzer (1998; 2003), I assume that choice function variables receive their values directly from the context of utterance. If contexts do not readily offer a particular plurality as the value for a choice function variable, the hearer won't know which plurality to pick out given the quantifier, and oddness arises. In the case of numeral quantifiers, we are required to pick out a particular plurality bearing a specific cardinal number, which would leave the hearers with no clues if there is no further information from the context. Krifka (2001) observes the same problem for the English example in (31):

(31) ??Which dishes did three boys make?
"For three boys that you select: Which dish did each of these boys make?"

Under a neutral context with no prior information, it is unclear which three boys are being picked out.

Finally, embedded questions may offer the contextual information to anchor a particular plurality (Szabolcsi 2010). I will illustrate with the example in (7) (repeated as 32).

(32) Wo yijing zhidao wu-ge ren qu-bu-qu.
I already know five-CLF person go-NEG-go
"I already knew that for five people, did they go or not?"

The indirect question that serves as the complement of *know* does not denote a question type, but rather a fact derived from a question. Specifically, the indirect question is construed as a true answer (true resolution) to the corresponding direct question (Ginzburg and Sag 2000; Lahiri 2002). So (32) is paraphrased as follows: "I already knew (the answer to the question of) whether five people went or not." Following Rooth (2005), this indirect question intuitively answers one sub-question of the overall question: "Did a contextually salient set of individuals go or not?" In order to answer this overall question based on the knowledge of the speaker, the question is partitioned into two contrasting sub-questions. The first asks about a plurality consisting of five people about whom the speaker has knowledge. The other asks about "the rest of the individuals", about whom the speaker lacks enough knowledge to provide an answer.

By contrast, monotone decreasing quantifiers can't be ameliorated in embedded contexts. (33) repeats an example from (8):

(33) *Wo yijing zhidao henshao ren qu-bu-qu.
I already know Few person go-NEG-go
#"I already knew for few people, did they go or not?"

There is still no way to answer the question "Did few people go or not?" by providing a choice-function-selected plurality based on the knowledge state, since there exists no witness set corresponding to the quantifiied phrase *few people*. As such, we can explain why monotone decreasing quantifiers consistently induce intervention.

Apart from quantificational DPs, adverbs of quantification also create intervention in an A-not-A question. The intervention pattern follows a similar monotonicity pattern. In (34), we see that monotone increasing adverbs of quantification (e.g. *normally*/*often*) are acceptable, whereas monotone decreasing ones are not:

(34) Ni {pingchang/ dabufen shijian/ henshao/ *congbu} kan-bu-kanqiu?
you normally/ most times/ seldom/ never watch-NEG-watch
"{Normally/often/*seldom/*never}, do you watch ballgame or not?"

If the adverbials in (34) quantify over times (Kamp 1971; Partee 1973) or situations (Heim 1990), then we can imagine treatments of *often* and *normally* as witnessable, in the sense of entailing the existence of a time or situation where the nuclear scope holds. *Seldom* and *never* would be non-witnessable, since they don't entail any such existence.

Before wrapping up, it is important to point out that a covert movement approach to the A-not-A question is originally and crucially motivated by the observation that the A-not-A question induces strong island effects. The current account would also explain why island effects should arise in the A-not-A question. Because the A-not-A form must carry illocutionary force directly, the NQ operator necessarily takes local scope and

cannot merge in an embedded clause and subsequently move to a higher clause to receive a matrix question reading. This property essentially makes the A-not-A question occur as a root clause only. In other words, I predict that the island effects for A-not-A questions are only apparent. Indeed, the semantic idiosyncrasies of A-not-A questions rule out the option of embedding altogether.

This claim predicts that the A-not-A form cannot occur in a complement clause either. In what follows, I want to briefly recapitulate McCawley's (1994) original argument that this is indeed the case. McCawley points out that certain extractions from complements should be more plausibly analyzed as extractions from a matrix clause with a parenthetical expression attached to it. To paraphrase McCawley, the gloss of (35a), an acceptable A-not-A question, would be as in (35b):

(35) (a) Ni renwei/juede ta ci-mei-cizhi?
you think/feel he resign-NEG-resign

(b) "Did he resign or not, do you think/feel?"

McCawley argues that, just as in English, where *you think*/*feel* often functions as a parenthetical clause, the corresponding Chinese clauses *ni renwei*/*juede* also receive a parenthetical reading. McCawley reasons that if we really want to tell a parenthetical expression from a matrix clause, we need to select a matrix predicate that does not easily lend itself to a parenthetical interpretation. This turns out, in general, to be a matter of how frequently a predicate is used parenthetically. As an illustration, it is natural to use *do you think* parenthetically, but it is much less common to use *do you suspect*, or *do you like* parenthetically, unless a specialized context provides explicit evidence for such use. Importantly, McCawley argues that if we choose to precede an A-not-A clause with such Chinese verbs as *huaiyi* 'doubt, suspect' or *xihuan* 'like' instead of *renwei* 'think' or *juede* 'feel', judgments are significantly degraded. This can be seen by comparing (36) with (35).

(36) (a) ??Ni xihuan ta qu-bu-qu?
you like he go-NEG-go
"Is he going or not, do you like?"

(b) ??Zhangsan huaiyi Lisi xiang-bu-xiang qu?
Zhangsan suspect Lisi want-NEG-want go
"Does Lisi want to go or not, does Zhangsan suspect?"

(c) *Ni hen yihan Lisi qu-mei-qu meiguo?
you DEG regret Lisi go-NEG-go America
"Did Lisi go to America or not, do you much regret?"

(d) *Ni jide Lisi qu-mei-qu meiguo?
you remember Lisi go-NEG-go America
"Has Lisi been to America or not, do you recall?"

Finally, many authors have postulated that although an overt tensed/tenseless distinction is not found in Chinese, verbs such as *shitu* 'try' or *shefa* 'manage' are control verbs that obligatorily take an infinitival complement clause (Grano 2014). In this sense, it is not possible to analyze an expression such as *ni shitu* 'you try' as a parenthetical supplement, as they must be integrated to the following complements. As (37) shows, an A-not-A clause co-occurring with *shitu* is judged very poor by native speakers:

(37) ??Deguo zhengfu shitu fenliu-bu-fenliu nanmin?
Germany government try.to distribute-NEG- distribute refugee
"(Faced with one of the two measures), does the German government try to distribute the refugees around or not? "

In sum, I propose that the A-not-A form cannot occur in an embedded complement clause. Hence, the A-not-A question's island-inducing behaviors are accounted for.

5. Conclusions

This paper revives and reinstates McCawley's (1994) informal proposal that an A-not-A question is a yes-no question that idiosyncratically attaches the illocutionary force of the question at the predicate level. This proposal enables us to account for the interplay between intervention effects and the topicality of quantifiers in A-not-A questions. The theory undermines the notion that there is a uniform source of intervention effects for both *wh*-in situ questions and A-not-A questions alike. Rather, I suggest that A-not-A questions do not induce "real" intervention, in the sense that there is no covert movement involved (Rizzi 2004), nor are there conflicts between the question operator and the focus operator in taking the same scope position (Beck 2006).

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Pied-Piping and Focus in Hungarian

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Abstract: According to the standard minimalist view, Hungarian focus marking involves movement to a designated functional head in the CP layer (É. Kiss 1998). Focus movement is triggered by a formal [focus] feature (Brody 1995, É.Kiss 1998). However, there is another approach to focus that assumes no formal feature, rather attributing focus to prosody and to the PF interface. Horváth (2000) claims that in syntax there is a null operator for exhaustive identification. The exhaustive identification operator adjoins to the edge of the focused phrase. Horváth's claims are based on the distribution of pied-piping in Hungarian. In this paper I would like to present an experiment that aims to validate Horváth's findings with respect to pied-piping in Hungarian. The tested constructions are questions, relativization, and focus constructions.

Keywords: pied-piping; focus-feature; wh-movement; relativization

1. Introduction

It has been observed cross-linguistically that certain movement operations may move a large constituent. Ross (1986) coined the term pied-piping to refer to constructions in which, as a result of a transformation rule, such a constituent is moved that contains the one targeted by the transformation rule (as in 1b-c).

(1) (a) reports [which] the government prescribes the height of the lettering on …
(b) reports [the covers of which] the government prescribes the height of the lettering on…
(c) reports [lettering on the covers of which] the government prescribes the height of…

The transformation rule targets the relative pronoun and as can be seen in (1), it may move alone or drag/ take other parts of the whole modified DP with it. Pied-piping refers to the cases of (1a–b) when something more than the wh-element is moved. The development of the theory of linguistics brought new perspective to the theory ofpied-piping as well.

Pied-piping can be observed in questions (in 2) and relative clauses (in 3–4) in English.

(2) [*Whose* picture]$_i$ did you buy t_i yesterday?

(3) This is the actress [*whose* picture]$_i$ I bought *t*i yesterday.

(4) This is the actress [the picture of whom]$_i$ I bought t_i yesterday.

Pied-piping has restrictions in different constructions. In Hungarian, focused elements can trigger pied-piping. Focus pied-piping shows no restrictions compared to the restrictions exhibited in wh-movement and relativization. Horváth (1997) suggests that the unrestricted nature of pied-piping in focus-constructions is an argument against the existence of a syntactic [focus]feature, since feature-driven pied-piping is restricted. In this paper, the restrictions on the given features (*wh*, *rel*, *focus*) will be empirically tested. The aim of the experiment is to compare pied-piping in focus-constructions to pied-piping in relativization and wh-constructions.

In this paper I present an experimental study of pied-piping in Hungarian. In Section 2, I will give an overview of some theoretical treatments of pied-piping, and the Hungarian facts provided by Horváth (1997; 2000). In Section 3, I present the experiment, give an overview of the results and draw conclusions from them. In Section 4, I summarize.

2. Approaches to Pied-piping

In this section, I am going to take a look at some theoretical approaches to pied-piping. First, I will consider the structural position of the pied-piper. Then I will turn to the restrictions on pied-piping by the different features. After that, I will briefly refer to two recent theories of pied-piping.

2.1 Restrictions on Pied-Piping

In this paper, pied-piping will refer to movements of phrases that properly contain feature-bearing elements (like the wh-feature in 5–7).

(5) (a) I wonder [*whose* articles] they read.
(b) *I wonder [articles by *whom*/*which* linguist] they read.

(6) (a) I wonder [*which* airport] is the busiest.
(b) *I wonder [the airport *where*/ in *which* city] is the busiest.

(7) (a) I wonder [*how* proud of his brother's achievements] John is.
(b) *I wonder [very proud of *whose* achievements] John is.

From the contrast in the (a–b) sentences in (5–7) a generalization can be drawn concerning the phrase internal position of the pied-piper. As has been observed (Webelhuth 1992, Koopman 1996), elements or features that are in the specifier or head position of a phrase can pied-pipe the phrase containing them, while complements and adjuncts cannot (8).

(8) Given a phrase XP,
(a)the head X and the specifier YP are pied-pipers for XP;
(b) complements of X and modifiers (adjuncts) are not pied-pipers for XP.

Apart from structural position, pied-piping has restrictions with regard to the construction as well. In English, non-restrictive relative clauses allow pied-piping (9a), restrictive relative clauses are less permissive regarding pied-piping (9b), while pied-piping is not allowed in wh-constructions (9c).

(9) (a) Most students are interested in Prof. Rotestern, [the security file on whom] the government won't release.
(b) ?We should only visit the city [a favorable report on which] Jack received.
(c) *I asked Bill [proud of whom] he always has been.

In the constructions where pied-piping is possible, the position of the feature-bearing element is essential, as stated above. The position of the feature-bearing element is crucial only in case movement of the phrase is motivated by the feature. Movement is necessary because feature checking is possible via spec-head agreement (Chomsky 1986). Koopman (1997) explicates a theory of pied-piping in which the feature of the pied-piped phrase is inherited from the feature bearing element in the specifier of the moved phrase. This way pied-piping is possible not only from the specifier position of a phrase but from the specifier of the specifier of a given phrase(10).

(10) (a) [Whose mother's brother's picture] is hanging on the wall?
(b) Mike is the boy [whose mother's brother's picture] is hanging on the wall.

The wh-feature has percolated upwards to the highest maximal projection. This way the feature can be checked by the highest projection.

Besides the structural position, Heck (2008) observes a restriction on the linear position of the pied-piper. Heck (2008) formulates a generalization concerning the position of the element that is the pied-piper. The Edge Generalization (11) states that the movement of a pied-piper is first to the edge of the phrase it pied-pipes, if grammatically possible.

(11) The Edge Generalization
If α pied-pipes β (and movement of α to the edge of β is grammatically possible), then α must be at the edge of β.

Pied-piping is possible in languages to rescue constructions from being ill-formed. Heck (2008) calls pied-piping a repair mechanism; that is, a construction containing pied-piping is possible if it can rescue the construction. Heck (2008) analyses pied-piping in Optimality Theory, where constraints are violable if this satisfies a more highly ranked constraint.

Cable (2010) provides another analysis of pied-piping in wh-constructions. Cable (2010) adopts Horváth's analysis of focus-constructions; he assumes a Q operator outside the phrase containing the Qfeature (i.e. the wh-feature). In cases of pied-piping, the technical pied-piper is always an element attached at the highest point,[1] namely, to the moving phrase itself.Depending on the language and construction, this element may or may not Agree with an element inside the moving phrase that bears the same feature. Cable derives certain restrictions on pied-piping from this basic analysis in ways we do not have the space to discuss here.

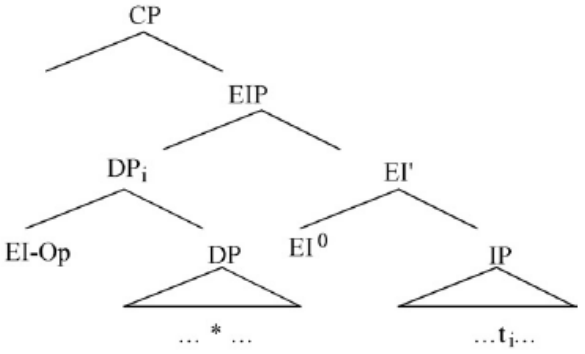
[1] See Horváth's analysis of focus-movement in (12) below for the same account.

2.2 Pied-Piping and Focus in Hungarian

Hungarian structural focus is analyzed as identificational focus (É.Kiss 1998),in which the focused element carries an exhaustive feature on it, or at least is understood exhaustively. The focused element is moved to the CP domain, into a unique FocP (Focus Phrase) where it checks its [focus]feature. Horváth (2000) claims that there is no FocP, but there is a separate operator for exhaustivity (EI-Op), which operator is the feature of those lexical items that the speaker wants to focus. The exhaustive operator, sitting in the CP domain, projects its own phrase (EIP), to which the focused element moves to check the exhaustive feature (12).

(12) EI-Op movement

The structure for EI-Op movement: (the asterisk indicates the position of main stress)



(Horváth 2010, 1361)

This means that pied-piping is possible with focus. The element that moves the whole phrase is one that bears a formal feature and checks it in the CP domain.

Hungarian allows pied-piping. The most common occurrence of pied-piping in Hungarian is in questions (13–14).

(13) Milyen színű szoknyát vettél fel a színházba?
how color skirt wear.PAST VM the theatre.to
'What color skirt did you wear to the theatre? '

(14) Kinek a kalapja maradt a széken?
whose the hat stay.PAST the chair.on
'Whose hat was left on the chair?'

In (14), the pied-piped phrase is a possessive, in which case pied-piping is optional. In Hungarian there are two positions for the possessive (Szabolcsi, 1981), the one in (14) is the dative possessive, which can move out of the DP adjoined to the DP where it receives Dative Case.

Horváth (2006, 2010) discusses focus movement as pied-piping and compares it to the same pied-piping in questions and relative clauses. As mentioned in the previous section, Horváth (2006, 2010) assumes an exhaustive identification operator (EI-Op) and an exhaustive identification [EI] feature. This feature, however, does not enter into an Agree relation with the focused element, as focus is only related to prosody. For Horváth

(2006, 2010), there is no focus feature in syntax that would need to Agree with a feature in the left periphery to be licensed. Pied-piping is not acceptable either in relative clauses (15a) or in questions (15b).

(15) (a) *az ital, amit követelő vendégektől fél a. the drink which-ACC demanding guests fear-3SG the pincer t waiter-NOM
'the drink customers demanding which the waiter is afraid of…'

(b) *mit követelő vendégektől fél a pincer? what-ACC demanding guests fear-3SG the waiter-NOM
'Customers demanding what is the waiter afraid of?'

(16) BARACKPÁLINKÁT követelő vendégektől fél a pincer t. apricot-brandy-ACC demanding guests fear-3SG the pincer t. waiter-NOM
'It is customers demanding APRICOT BRANDY that the waiter is afraid of.'
(Horváth 2010, 1354)

It seems that Hungarian does not behave uniformly with respect to pied-piping of wh-words and focused words. Focus seems to be more permissive than questions or relative clauses. Horváth (2010) claims thatfocus movemen, i.e. Ei-Op movement, is not triggered by Agree, as it is the operator that triggers the movement. This way, pied-piping appears freely,regardless of the position of the focused word in the phrase, be it adjunct (17) versus (18), complement or specifier.

(17) (a) *a filmszínésznő [[néhány akiről írt könyvet] the movie-actress some whom-about written book-ACC láttam t a polcon] saw-1SG the shelf-on
'the movie-star a few books written about whom I saw on the shelf…'

(b) *Néhány kiről írt könyvet láttál a polcon? some whom-about written book saw-2SG the shelf-on Some books writtenabout whom did you see on the shelf?

(18) [Néhány MARILYN MONROERÓL írt könyvet] láttam t some Marilyn Monroe-about written book-ACC saw-1SG a polcon. the shelf-on
'It's a few books written about MARILYN MONROE I saw on the shelf.'
(Horváth 2010, 1354)

Horváth (2010) claims that the insensitivity of focus towards pied-piping – that is, the insensitivity with respect to the position of the focused element – lies in the operator being situated outside the phrase being pied-piped. Cable's (2010) analysis applies to Hungarian inasmuch as it can describe pied-piping in questions and relative clauses.

Hungarian presents a problem for Cable's theory in that Q has to agree in questions and relative clauses – in this way being a limited pied-piping language according to his specification – while in focus it does not need to agree; at least, it is not the focused element that agrees with the pied-piping head but the operator alone that sits in the specifier position of the whole phrase, not just the one bearing main stress. Focus is signaled only by prosody at PF, while the exhaustive identification operator adjoins to the constituent earlier in syntax.

In focus, the pied-piper is not the wh-element but the exhaustive operator. The EI-Op is adjoined to the whole focused DP, and the EI-OpP(hrase) is a functional projection in the CP layerthat attracts the constituent it attaches to. In this way, syntax is blind to the position or category of the focused element, bearing main stress, inside the DP. Focus is more permissive with regards to pied-piping, as the trigger for syntactic movement is not a focus feature borne by the prosodically marked element but the exhaustive identification operator attached to the whole DP containing it.

3. Experiment

The aim of the experiment was to check Horváth's generalizations.The experiment was constructed based on the examples provided by Horváth (1997; 2000). Target sentences were from the three movement types in Horváth's examples. In the experiment, we tested the acceptability of pied-piping in adjuncts embedded in relativization, questions, and focused phrases.

3.1 Method

3.1.1 Subjects

The experiment was done by 54 adult native Hungarian speakers. Every subject saw all the sentences. The experiment was sent to the subjects via e-mail, and they did the experiment online.

3.1.2 Procedure

We tested the acceptability of pied-piping in different structures using an Acceptability Judgment Task test. The sentences had to be judged on a 7-point Likert scale, 1 being unacceptable and 7 being acceptable. At the beginning of the experiment, there were warm-up tasks to familiarize the subjects with the task. The warm-up task contained sentences with operator movement without pied-piping. The target and filler sentences were presented in pseudo-randomized order; every subject saw different orders of the sentences, but each of them saw all the sentences. The experiment was built and run with the Inquisite software (http://www.millisecond.com/).

3.1.3 Design

There were 3 factors in the experiment: movement-type, discourse-linking, and pied-piping. The movement-type factor had three levels: relativization, wh-movement, and focus movement, corresponding to the movement-types in Horváth's examples. Discourse-linking means that the (wh-)expression has a set of individuals it refers to. Discourse-linking had two levels: discourse-linked and non-discourse-linked. Discourse-linking was added as a factor to investigate if it has an effect on pied-piping. The third

factor was pied-piping, that is, half of the 48 target sentences did not contain pied-piping. The sentences without pied-piping served as baseline sentences to ensure that the construction was acceptable without pied-piping.

3.1.4 Materials

There were 4 lexicalizations of the 3 factors with 12 conditions, which gave us 48 target sentences. Out of the 48 there was pied-piping in 24 target sentences. The operator item (*WH*, *REL*, *FOC*) was imbedded in a pre-nominal adjunct phrase. When constructing the sentences it was ensured that the target sentences were as uniform as possible across all conditions. The number of words was identical in all test sentences. The structure of the pre-nominal adjunct was the same across the pied-piping conditions. The structure of the target clause was identical except for the focused clauses, due to obligatory verb-modifier verb inversion in (structural) focus constructions in Hungarian. The feature-bearing element was always on the left edge of the clause (Heck 2008). All target clauses were embedded, as relativization is always embedded, and wh- and focus-movement needed to be embedded to maintain uniformity. Another reason for embedding wh-movement was to avoid an echo-question reading. In following I give an example of relativization (19), wh-movement (20), and focus movement (21) in the target sentences in the D-linked condition. In (22-24), I give examples of the target sentences in the non-D-linked conditions.

(19) Pied-piping: … [[REL_{obl} participle] Nacc]NP ADV Vparticle

(a) Ede elmondta, hogy melyik az az ország,
Ed said that which the the country
[ahonnan származó állatokat] szívesen
where.from originating animals gladly
örökbefogadnak.
adopt-2PL
'Ed told me which is the country [animals coming from where] people like to adopt __.'

Baseline (no pied-piping):

(b) Matt elmesélte, hogy melyik az az ország, [ahonnan] az
Matt said that which the the country where.from the
örökbefogadott állatok származnak.
adopted animals originate-3PL
'Matt told me, which is the country [where] the adopted animals are from __.'

(20) Pied-piping: ….[[WH_{obl} participle] Nacc]NPVparticleADV

(a) Laci megkérdezte, hogy [melyik országból származó állatokat]
Leslie asked that which country originating animals
fogadják örökbe leggyakrabban.
adopt most.often
'Leslie asked [animals coming from which country] people adopt __ most frequently.'

Baseline (no pied-piping):

(b) Kati kíváncsi volt, hogy [meliyk országból]származnak a
Kate curious was that which country originating the
leggyakrabban örökbefogadott állatok.
most.often adopted animals
'Kate wondered [which country] animals adopted most frequently are from __.'

(21) Pied-piping: …[[FOC$_{obl}$ particile] Nacc]NPVparticleADV

(a) Péter furcsállta, hogy [pont a Madagaszkárról származó
Peter surprised that precisely the Madagascar.from originating
állatokat] fogadják örökbe leggyakrabban.
animals adopt-3PL most.often
'Peter was surprised that it is [precisely the animals originating from Madagascar] that people adopt __ most frequently.'

Baseline (no pied-piping):

(b) József meglepődött, hogy [pont Madagaszkárról]
Jo surprised that precisely Madagascar.from
származnak az örökbefogadott állatok.
originate-3PL the adopted animals
'Jo was surprised that it was [Madagascar] that the adopted animals come from __.'

(22) Pied-piping: … [[REL$_{obl}$ participle] Nacc]NP ADV Vparticle

(a) Dóra elárulta, hogy milyen az az állapot, [amilyen
Dora said that which the the condition such
állapotban felvett betegeket] nehéz ellátni.
condition admitted patients difficult treat
'Dora told me what the condition is like [patients admitted in such condition] it is hard to treat __.'

Baseline (no pied-piping):

(b) Anna elárulta, hogy milyen az az állapot, [amilyen
Anna said that which the the condition such
állapotban] az éjjel beszállított betegeket felvették
condition the night.at in.taken patients admitted
'Anna told me what is the condition like that [in such condition] they admitted patients __ who were brought in during the night.'

(23) Pied-piping: ….[[WH$_{obl}$ participle] Nacc]NPVparticleADV

(a) János kíváncsi volt, hogy [mennyi pénzzel rendelkező
John curious was that how.much money having
befektetőket] hívtak meg a pályázatba.
investors called the application
'John wondered [investors having how much money] they invited __ for the application.'

Baseline (no pied-piping):

(b) Viki érdeklődött, hogy [mennyi pénzzel] rendelkeztek a
Viki asked that how.much money had the
tavaly elutasított befektetők.
last.year rejected investors
'Viki wondered [jow much money] the investors rejected last year had __.'

(24) Pied-piping: …[[FOC_{obl} particile] Nacc]NPVparticleADV

(a) Mari meglepődött, hogy [kifejezetten súlyos állapotban felvett
Mary surprised that especially serious condition.in admitted
betegeket] tesznek utcára időnként.
patients put street.to sometimes
'Mary was surprised that it is [patients admitted in especially serious condition] they discharge __ sometimes.'

Baseline (no pied-piping):

(b) Viki meglepődött, hogy [kifejezetten jó állapotban]
Viki surprised that especially good condition
vettek fel betegeket az osztályra.
admitted patients the floor.to
'Viki was surprised that it is [in especially good condition] that they admitted patients __ to the hospital.'

3.2 Results

The scores of judgments are transformed into z-scores so that statistical analyses may be conducted on them. After statistical tests (paired ANOVA), the results were Bonferoni-corrected. First I will present the results of pied-piping with respect to the baseline sentences. Then I will turn to the results of comparing the structures themselves. I separate the discourse-linked conditions from the non-discourse-linked conditions.

Pied-piping has a statistically significant effect in relativization ($p<0.01$) and wh-movement ($p<0.05$) in the Discourse-linked condition (Figure 1). That is, the target sentences containing pied-piping were judged worse both in relativization and wh-movement, while pied-piping had no effect on focus movement.

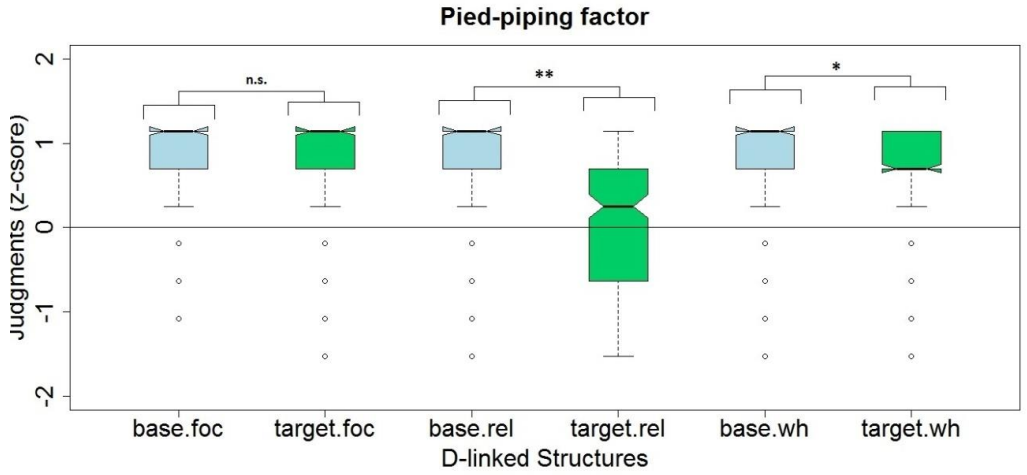


Figure 1: The effect of pied-piping in D-linking

Pied-piping shows no effect in the non-discourse-linked condition. The baseline sentences in the non-discourse-linked condition were judged lower on the scale – except for the focus construction, the median of which was at the top of the scale. Statistically no significant difference can be observed.

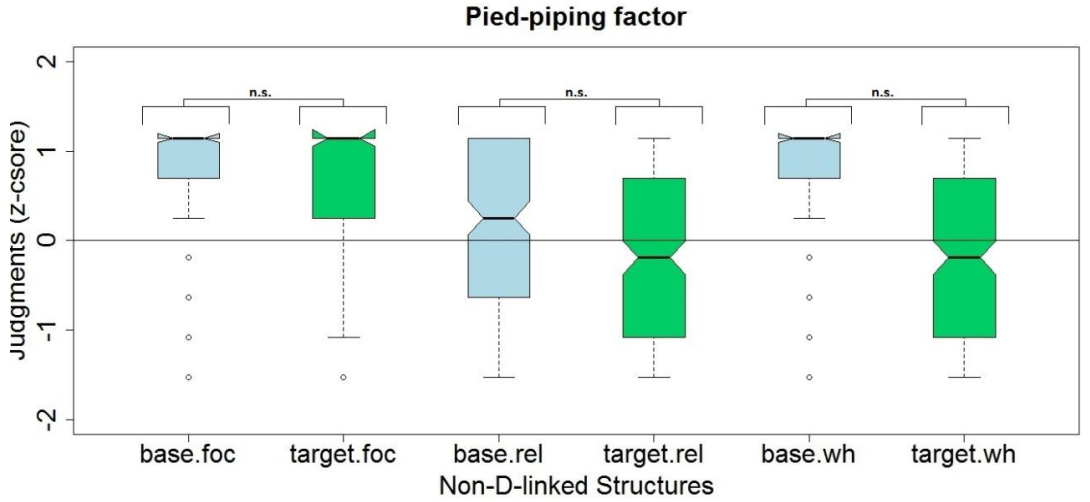
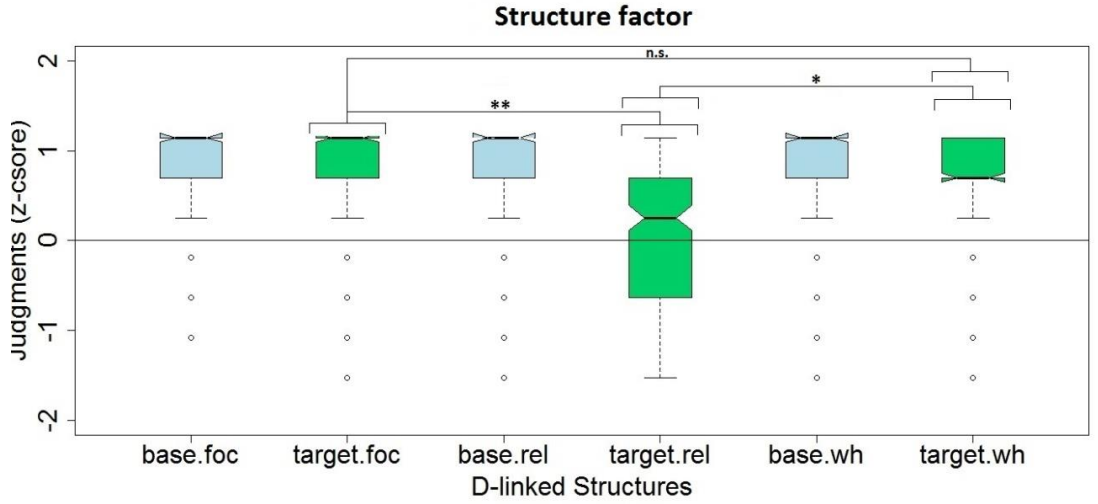


Figure 2: The effect of pied-piping in non-D-linking

Now I turn to the comparison of movement types in the target sentences (Figure3). In the discourse-linked condition relativization was significantly worse than both focus movement ($p<0.01$) and wh-movement ($p<0.05$). The difference between wh-movement and focus movement was not statistically significant.



In the non-discourse-linked condition (Figure 4), the difference between focus movement and relativization was marginally significant (p=0.05). The other structures did not differ from each other.

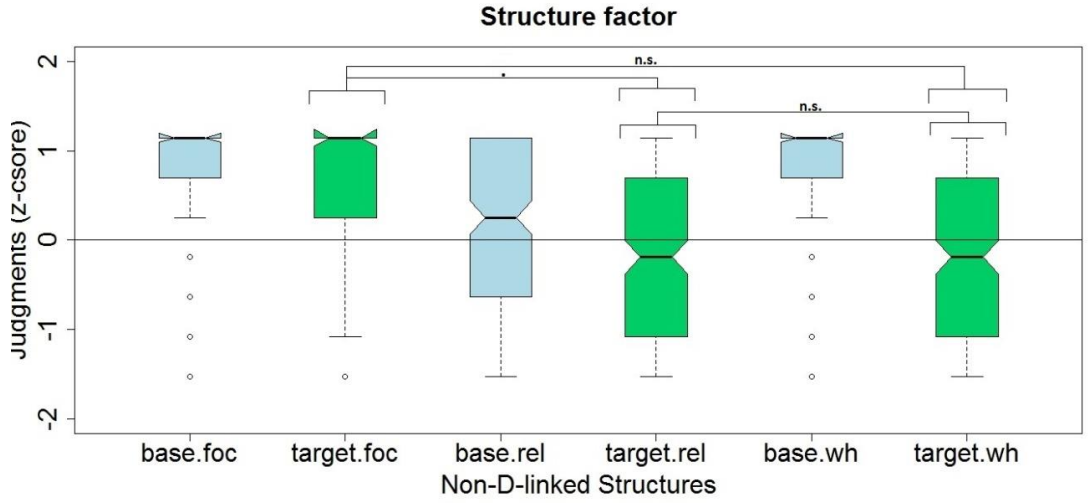


Figure 4: Differences in movement-type in non-D-linking

3.3 Discussion

Horváth's empirical claim has been partially verified by the findings. Focus exhibits unrestricted pied-piping behavior, while relativization exhibits restrictions with respect to pied-piping. Focus pied-piping is not sensitive to the tested (locality) restrictions. However, wh-movement in pied-piping is acceptable, contrary to Horváth's claim. The effect of the violation of the pied-piping restriction in the discourse-linked condition is

too small to be modeled as a grammatical violation. In the D-linked case, wh-movement, though violating pied-piping restrictions, is just as acceptable as focus movement. Relativization is worse than the other two types of operator movement; however, the judgments were higher than the median, which means that they were acceptable rather than not.

There is a clear difference between discourse-linked and non-discourse-linked phrases in the acceptability of pied-piping. Focus movement is unrestricted both with discourse-linked and non-discourse-linked phrases. In the non-discourse-linked cases, wh-movement patterns with relativization in that both their acceptability is lower on the scale. The target sentences are always degraded compared to the baseline sentences; however, the baseline sentences in non-discourse-linked relativization are questionably acceptable themselves. Focus movement differs from relativizationin both the discourse-linked and non-discourse-linked condition. There must be a grammatical difference between focus movement and relativization, while focus movement does not differ from wh-movement in either of the cases suggesting there not to be a difference in grammaticality.

The findings also raise questions about the wh-construction, which seems to be similar to focus movement syntactically. The question arises if wh-movement is structurally focus movement in Hungarian. The second question concerns the difference between discourse-linked and non-discourse-linked operators. How is it possible that the wh-operator can undergo pied-piping if it is discourse-linked while it cannot when it is non-discourse-linked?

4. Conclusion

In this paper I have presented an experiment on pied-piping in Hungarian. The results of the experiment based on Horváth's (2000) empirical evidence showed that Horváth was partially right: pied-piping is unrestricted in focus movement. However, it turned out that pied-piping in wh-movement patterns with focus movement; that is, pied-piping in questions is acceptable. Relativization exhibits restrictions in pied-piping in Hungarian, although the acceptability of pied-piping in relativization was in the middle of the scale making it marginally acceptable. Adding the discourse-linking factor to the experiment resulted in differences between wh-operators. Further questions have arisen from the results: (i) what is the reason for the difference in acceptability between discourse-linked and non-discourse-linked operators; and (i) what is similar between wh-movement and focus movement in Hungarian.

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Difficulties with Language Acquisition in Autism Spectrum Disorder

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Abstract: According to the emergentist coalition model (Hollich et al. 2000; Golinkoff and Hirsh-Pasek 2006a, 2006b, 2007) children utilize three major cues in the course of lexical acquisition: perceptual, socio-pragmatic and linguistic. As Reboul et al. (2012) point out, children with autism spectrum disorder (ASD) have difficulties with all of these cues in the entirety of language acquisition; they do not seem to acquire language as neurotypicals. In this paper my aims are to inquire regarding the connection between theoretical background and personal accounts of people with ASD (e.g. Grandin [1995] 2006; Joliffe et al. 2001) as well as to present the difficulties with language acquisition using narratives of affected people (Kisföldi and Ivaskó 2015).

Keywords: autism spectrum disorder; language acquisition; personal accounts; central coherence; linguistic stimuli processing

1. Introduction

In the course of language acquisition children have to learn highly complex systems (sound system, vocabulary, meanings and constructions), i.e. structural elements as well as the functions related to these elements (e.g. when and where to use something). To start talking at around age one, children have to develop in numerous areas (Clark 2003).

One essential part of learning a language is lexical acquisition. According to Hollich et al. (2000) and Golinkoff and Hirsh-Pasek (2006a, 2006b, 2007), children utilize three major cues to learn new words: perceptual (attentional), socio-pragmatic and linguistic. Reboul et al. (2012) draw attention to the difficulties with all of these cues during the entirety of language acquisition in case of autism.

In this paper my aims are to inquire regarding the connection between the theoretical framework of Hollich et al. (2000) and Golinkoff and Hirsh-Pasek (2006a, 2006b, 2007), and personal accounts of affected people (e.g. Grandin [1995] 2006; Joliffe et al. 2001), as well as to present the difficulties with language acquisition via these narratives (Kisföldi and Ivaskó 2015). Nine autobiographical writings and other personal accounts from six people with ASD were used.

In this paper a usage-based linguistic model, the emergentist coalition model (Hollich et al. 2000; Golinkoff and Hirsh-Pasek 2006a, 2006b, 2007) is used because within this framework the characteristics of atypical language development can be well explained.

2. Autism Spectrum Disorder

In the 1940's an American child psychiatrist Leo Kanner described eleven cases of a unique syndrome and used the term "autistic" and "autism" to specify it (Kanner 1943). This neurodevelopmental disorder – known as autism spectrum disorder (ASD) – is affecting 1% of the population, males four times more often than females. Genetic and environmental risk

factors (e.g. advanced parental age, low birth weight) contribute to ASD (APA 2013; Sandin et al. 2013).

Based on the description of Lorna Wing and Judith Gould (1979), ASD is strongly associated with three major fields of difficulties known as the "Triad of Impairments": social, communicative and behavioural. These features are also used as diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) (although social and communicative impairments are merged): "persistent impairment in reciprocal social communication and social interaction (Criterion A), and restricted, repetitive patterns of behavior, interests, or activities (Criterion B)." (APA 2013, 53).

Besides the triad there are other characteristics closely related to ASD that serve as cognitive explanations for this disorder. These features are impaired theory of mind (Baron-Cohen et al. 1985), weak central coherence (Frith 1989), and disorder of executive functions (Ozonoff 1995).

3. Emergentist Coalition Model

The emergentist coalition model (ECM) is a hybrid model integrating the complexity of factors that contribute to word learning. According to this model children utilize three major cues to link words to objects, events and actions: perceptual (attentional), socio-pragmatic and linguistic. These multiple inputs are always available, but they change their weight and are not equally utilized over development. At an early stage children rely on attentional cues, especially perceptual salience, while socio-pragmatic cues, like social eye-gaze, become more important later (Hollich et al. 2000; Golinkoff and Hirsh-Pasek 2006a, 2006b, 2007).

This framework is able to explain the features of atypical language development, e.g. autism spectrum disorder. According to Golinkoff and Hirsh-Pasek (2006b), children with ASD have known difficulties with socio-pragmatic cues, although they are capable of learning new words via attentional and linguistic inputs. This concept is acceptable in the sense that children with ASD are more dependent on attentional processes (e.g. perceptual salience) than on attending to social intention (Parish-Morris et al. 2007).

However, Reboul et al. (2012) draw attention to the general difficulties with each of the three cues not only at the level of word learning, but also in other areas of language acquisition. These features are described in the sections below (see Section 3.1, 3.2 and 3.3).

3.1 Perceptual Difficulties

For learning a language, attentional factors like perceptual salience and temporal contiguity are crucial. According to Golinkoff and Hirsh-Pasek (2006a, 2006b), children utilize perceptual cues in the first phase of lexical acquisition. This view is supported by several experiments demonstrating that 10 month old infants are completely dependent on attentional cues, while this dependence gradually becomes weaker until 24 months of age, when children rely on social cues. Therefore, these two cues are conceivable as the two ends of a continuum: at one end are the younger infants who use perceptual cues, and at the other end are older children who understand social intentions.

According to the experiments of Parish-Morris et al. (2007), children with ASD – like younger infants – rely more on attentional cues than on attending to the speaker's intention. Although these results could suggest that the attentional processes of children with ASD are intact, there are known difficulties with perceptual areas in this population. Moreover, it is clear that these experiments were conducted in artificial situations, where children with ASD can perform better (e.g. because of the lack of other distracting stimuli).

The difficulties with perceptual areas are connected with the above mentioned weak central coherence capacities, causing detail-focused processing style (Frith 1989, Happé and

Frith 2006). Compared with neurotypicals, people with ASD pay attention to the constituent elements instead of the coherent entity. The weak central coherence has a great effect on language acquisition, learning processes and on other cognitive areas as well (Happé and Frith 2006, Joliffe and Baron-Cohen 1999).

Perceptual salience is one of the most influential cues for word learning in early childhood and for children with autism (Hollich et al. 2000; Golinkoff and Hirsh-Pasek 2006a, 2006b, 2007; Parish-Morris et al. 2007). However, it is not clear what is considered perceptually salient for people with ASD because of their atypical information processing and weak central coherence capacities.

The next two quotations from Naoki Higashida and Tito Rajarshi Mukhopadhyay demonstrate the difficulties with perceptual areas, especially their reflections on what are salient stimuli for them.

> For people with autism, the details jump straight out at us first of all, and then only gradually, detail by detail, does the whole image sort of float up into focus. What part of the whole image captures our eyes first depends on a number of things. When a colour is vivid or a shape is eye-catching, then that's the detail that claims our attention, and then our hearts kind of drown in it, and we can't concentrate on anything else. (Higashida 2013)

> Things that calmed my senses were easier to see, while things that stressed my vision were not easy to look at. So perhaps I could not see things as people expected me to see. (Mukhopadhyay 2013)

There is another parallel between children with ASD and younger infants: they are characterized by associative word learning. According to Golinkoff and Hirsh-Pasek (2006a) 10-month-olds map new words onto the most interesting objects for them, independently of the speaker's labeling. That is exactly what is happening in the case of autism. It has already been described by Kanner (1943) that children with ASD link words to unusual references. "Donald learned to say 'Yes' when his father told him that he would put him on his shoulders if he said 'Yes'. This word then came to 'mean' only the desire to be put on his father's shoulders." (Kanner 1943, 244)

In addition to these difficulties, people with ASD have deficits in extracting prototypes; they remember each and every example (Happé and Frith 2006). According to the above mentioned features (atypical information processing, weak central coherence and deficit in prototype extraction) a hyper-specific representation can be assumed, which could cause a general categorization problem (Church et al. 2010).

The next quote from Temple Grandin is an expressive example of the general categorization problem. When Grandin thinks of a concrete dog breed, she recalls each and every dog she has ever seen; consequently she is not capable of prototype extraction and generalization.

> If I think about Great Danes, the first memory that pops into my head is Dansk, the Great Dane owned by the headmaster at my high school. The next Great Dane I visualize is Helga, who was Dansk's replacement. The next is my aunt's dog in Arizona, and my final image comes from an advertisement for Fitwell seat covers that featured that kind of dog. My memories usually appear in my imagination in strict chronological order, and the images I visualize are always specific. There is no generic, generalized Great Dane. (Grandin [1995] 2006, 12)

3.2 Socio-Pragmatic Difficulties

In ECM the social aspects of word learning are also emphasized. The role of eye gaze, pointing and social context during language acquisition is highlighted by the authors. Although infants are capable of detecting social information very early and show social behaviours as well, these abilities are not equal with the ability to use social information in the course of word learning. As the above mentioned experimental results of Golinkoff and Hirsh-Pasek show (see Section 3.1), the impact of social cues is increasing until the 19-month-olds and especially the 24-month-olds are not under the influence of perceptual salience; they primarily rely on the social intention of the speaker (Hollich et al. 2000; Golinkoff and Hirsh-Pasek 2006a, 2006b, 2007).

Treating ourselves as intentional agents is required as a prior condition of understanding others' intentions. The development of self-representation at around 9 months of age is followed by the recognition that others are intentional beings as well. This maturation is necessary for joint attention, being one of the most essential parts of language acquisition (Tomasello 1999, 2009).

Because the emergence of joint attention is a crucial milestone in the course of language acquisition, children with ASD can have great difficulties since they do not work well in joint attentional scenes (Tomasello 1999). They have other remarkable issues in social areas, e.g. with the use of proto-declarative pointing (Frith 1989), perspective-taking or gaze following (Tomasello 1999).

The difficulties with gaze following not only appears in the recognition that it is a social sign, but in the uncomfortable feeling of looking into or just looking toward others' eyes. The authors of the personal accounts describe this inconvenience as in this quote from Henriett F. Seth.

> All my life it was very difficult for me to look into anyone's eyes. (Seth 2005, 21)

Perspective-taking is an important process in communication and social cognition as well (Tomasello 1999). For people with ASD it is hard to understand that there are multiple perspectives enabling them to treat an entity as an element of various conceptual categories for different purposes. The knowledge that other perspectives exist which can be different than their own can be a source of difficulties as well.

Most of the authors relate remarkable anxiety because they are not capable of understanding others' behaviour properly. Comprehending social patterns is required in everyday life, therefore the lack of "social intuition" – as Grandin calls it – for people with ASD greatly complicates their way in life.

> Since I don't have any social intuition, I rely on pure logic, like an expert computer program, to guide my behaviour. I categorize rules according to their logical importance. It is a complex algorithmic decision-making tree. There is a process of using my intellect and logical decision-making for every social decision. (Grandin [1995] 2006, 108)

> Normal people, finding themselves on a planet with alien creatures on it, would probably feel frightened, would not know how to fit in and would certainly have difficulty in understanding what the aliens were thinking, feeling and wanting, and how to respond correctly to these things. That's what autism is like… Social life is hard because it does not seem to follow a set pattern. When I begin to think that I have just started to understand an idea, it suddenly does not seem to follow the same pattern when the circumstances alter slightly. (Jolliffe et al. 2001, 49–50)

There are cases where not only the understanding of social behaviours is impaired, but the ability to separate human beings from the environment. Therefore, for some children with ASD the source of social difficulties can be the inability to recognize others (Tomasello 1999). This phenomenon can be seen in Therese Jolliffe's quote.

> I never thought about how I might fit in with other people when I was very young because I was not able to pick people out as being different from objects. Then when I did realise that people were supposed to be more important than objects and became more generally aware, things began to take on a new and more difficult light. (Jolliffe et al. 2001, 50)

3.3 Linguistic Difficulties

The third type of cue is the linguistic stimuli itself. To learn new words from the stream of sounds, infants have to separate the linguistic stimuli from the non-linguistic ones as a first step. The second task is segmentation, finding distinct words in the speech stream with the help of prosody and syllabic sequences. Finally, morphology and syntax, the carriers of grammatical information are involved during word learning as well (Hollich et al. 2000).

In case of autism the first step (differentiating linguistic and non-linguistic stimuli) is already impaired. While typically developing children have a preference toward human vocal stimuli, children with ASD do not have this sensitivity and they often ignore adults' "child-directed speech" (Kanner 1943; Watson and Flippin 2008).

In Therese Jolliffe's quotation can be seen an example of the phenomena when the main difficulty is the lack of knowledge that human voices are relevant stimuli.

> When I was very young I can remember that speech seemed to be of no more significance than any other sound. (Jolliffe et al. 2001, 45)

Even if there is the knowledge that human vocal stimuli are relevant, people with ASD have difficulty in separating these relevant stimuli from the non-linguistic ones. This difficulty connects with the perceptual problems (see Section 3.1) influencing the recognition and processing of relevant stimuli in general. In this context the question arises: to what extent is the utilization of linguistic cues possible if the path is impaired?

Naoki Higashida and Temple Grandin relate two different experiences. While for Higashida it is not easy to notice that somebody is talking, for Grandin it is obvious, although the differentiating of multiple human voices from each other or from other noises requires huge effort for her.

> A person who's looking at a mountain far away doesn't notice the prettiness of a dandelion in front of them. A person who's looking at a dandelion in front of them doesn't see the beauty of a mountain far away. To us, people's voices are a bit like that. It's very difficult for us to know someone's there and that they're talking to us, just by his or her voice. (Higashida 2013)

> When two people are talking at once, it is difficult for me to screen out one voice and listen to the other. My ears are like microphones picking up all sounds with equal intensity. Most people's ears are like highly directional microphones, which only pick up sounds from the person they are pointed at. In a noisy place I can't understand speech, because I cannot screen out the background noise. (Grandin [1995] 2006, 64)

4. Conclusion

"In general, if a child were born into a world in which the same event never recurred, the same object never appeared twice, and adults never used the same language in the same context, it is difficult to see how that child – whatever her cognitive capabilities – could acquire a natural language" (Tomasello 1999, 109). Tomasello writes about a hypothetical world to demonstrate what circumstances are crucial for language acquisition. A world without patterns is meaningless, therefore for a person without the ability of pattern recognition the understanding of environment and language acquisition is almost unavailable. Although this quote is not about people with ASD, this description is very close to what is happening with them. Perceptual problems, atypical stimuli processing and pattern recognition difficulties create a sense of a disintegrated world for people with ASD, where language acquisition is probably not impossible but greatly inhibited.

All cues of ECM are present in all writings of the corpus, therefore, besides theoretical and experimental evidence, narratives also support the difficulties with language acquisition in ASD. Atypical perception and attention, poor social skills and difficulties with recognition of human vocal stimuli cause atypical, inhibited language acquisition. Five out of six writers explicitly claim language acquisition problems, the sixth author does not write about this topic.

In summary, the difficulties with all of the three cues were identified as problems by the authors. However, the greatest difficulties are caused by sensory problems which are most strongly connected with perceptual cues (see Section 3.1) pervading not only language acquisition but the whole life of people with ASD. This conclusion is also supported by oral accounts of affected people (e.g. Ari Ne'eman 2015). As a result of this, a shift can be assumed in the utilization and availability of cues in case of autism because of the impaired path.

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Slavic Prenominal Possessive Structure in a Cross-Linguistic Perspective

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Abstract: The derived possessive in Slavic languages is a semantic counterpart to prenominal Germanic phrases expressing possession. Both language families employ two types of constructions – 1-word and phrase constructions – in different languages. I argue that in Slavic both of them are first generated as a right-hand sister to the modified N, but occupy different positions in the final structure. The bare word has a very small number of nominal features and therefore it can be pre-modified in a very restricted way or it cannot be pre-modified at all. Bare derived possessives and phrasal derived possessives move to occupy D^0 and DP positions respectively. In case the nominal features are fully specified, the phrase surfaces as a post-nominal genitive phrase.

Keywords: derived possessive; N-to-D movement; pre-nominal modification; Slavic noun phrase; Germanic noun phrase

1. Derived Possessives

Possession can be expressed in various manners in prenominal positions. This paper focuses on phrases employing the derived possessive, exemplified below in Czech (1) and Russian (2). The term derived possessive encompasses any lexical word in a prenominal position inside an NP which

- expresses possession, or
- is derived from a nominal stem by a possessive suffix.

Other types of prenominal possessive constructions are consciously omitted for reasons of space.

(1) tatínk -ov- a hra /CZ/
daddy POSS FEM $game_{FEM}$
"my daddy's game"

(2) babušk -in- a mašina /RU/
grandma POSS FEM car_{FEM}
"my grandma's car"

The derived possessive in Slavic languages can be considered a counterpart to prenominal genitive possessive forms in Germanic languages, as I show in the Dutch example below.

(3) Koning -s dochter /DU/
King POSS daughter
"the king's daughter"

The resemblance is not only semantic but also morphosyntactic. First, both of them are prenominal and can be created only from animate nouns. Second, across both language families two types of derived possessive are employed. These are bare-word (Dutch, Czech) and phrasal derived possessives (English, Upper Sorbian). In Slavic languages these two structures occupy different positions. In the light of the resemblances presented above, I suppose that this is true also for Germanic languages but I will not argue further for it in this paper.

The cross-linguistic point of view also reveals a generally present relation between the postnominal genitive construction, which is often used in possessive contexts, and the prenominal construction. Consider the following examples:

(4) (a) (de dochter van) de koning van Irak (*dochter) /DU/
the daughter of the king of Iraq daughter
"the king of Iraq's daughter"

(b) (dům) naší babičky z Německa (?/ *dům) /CZ/
house our$_{GEN}$ grandma$_{GEN}$ from Germany house
"our grandma from Germany's house "

There is a very clear general tendency to place phrasal genitives into the postnominal (not the pre-nominal) position, as opposed to one-word possessive constructions, which are placed before the nouns in both Germanic and Slavic languages (as exemplified in [1] –[3]). This tendency cannot be explained only by independent syntactic mechanisms, for example heavy-NP shift, because the tendency is salient even with less complex phrases which are not part of a larger unit.

This paper is concerned with the structural status of the Slavic derived possessive (treated in Section 2) and with its base-generation position which I argue to be post-nominal. If that is so, the pre-nominal position must be reached by movement (treated in Section 3).

2. Structural Status of Derived Possessives

There is no clear consensus in the literature about the structural status of derived possessives. In this section, I will explore their categorial status. As will be briefly shown in this section, derived possessives exhibit properties of different categories. In this paper they will be classified in two ways. Bare words or simple phrases which show the behaviour of bare words (that is, which allow highly restricted pre-modification) will be considered a complex D^0. Phrasal constituents will be analysed as headed by an internal D^0 and occupying a phrasal position (see Section 3).

Corbett (1987) widely exemplifies the derived possessive in all Slavic languages and shows that besides the possessive morpheme, it is necessary to add an agreement suffix which always follows the possessive suffix (exemplified in [1] and [2]). Agreement is an example of the adjective-like properties of derived possessives, mentioned both by Veselovská (1998) for Czech and Babyonyshev (1997) for Russian. Nevertheless, at least in Czech, the adjectival agreement is not identical with the agreement appearing on derived possessives; the contrasting suffixes are in bold.

(5) (a) matč -in- **-y** krásn **-é** boty /CZ/
mother POSS FEM.PL beautiful FEM.PL. $\text{shoe}_{\text{FEM.PL}}$
"my mother's beautiful shoes"

(b) bratr -ov- **-i** mal **-í** přátelé /CZ/
brother POSS MASC.PL little MASC.PL $\text{friend}_{\text{MASC.PL}}$
"my brother's little friends"

Czech derived possessives exhibit adjectival agreement only under instrumental for both plural and singular nouns and genitive, dative, and locative for plural. In all of these cases, colloquial spoken Czech allows either the '–ovo' or '–iny' suffix, which employs a short vowel:

(6) Cases showing adjectival endings for masculine and neuter agreement in Czech

(a)	má	-in	-ým/ -y	(d)	tát	-ov	-ým/ -o
	mu	POSS	INSTR.SG		dad	POSS	INSTR.SG
(b)	má	-in	-ých/ -y	(e)	tát	-ov	-ých/ -o
	mu	POSS	GEN./ LOC.PL		dad	POSS	GEN./ LOC.PL
(c)	má	-in	-ými/ -y	(f)	tát	-ov	-ými/ -o
	mu	POSS	DAT./ INTR.PL		dad	POSS	DAT./
	"my mum's"				"my dad's"		

The alternative invariant paradigm exemplified above cannot be used with adjectives in these morphological cases. The presence of the possessive morpheme seems to be the trigger for its usage. The distinction between adjectives and derived possessives is a morphological argument against derived possessives being considered in the adjective class, counter to the practice of traditional Czech grammar.

This conclusion is further supported by syntactic evidence from Germanic languages where the phrasal derived possessive competes for the determiner position. In other words it is in complementary distribution with determiners but not with adjectives.

(7) (*those/ *all) old man's blond daughters /EN/

The phrasal Germanic genitive competes for the position of determiner, not only in English but also in Dutch (3), which is considered to be part of the functional projection above NP. This fact leads to a hypothesis that this element must be different from As. If we consider the Czech derived possessive not an A but a counterpart to the Germanic genitive in English, the hypothesis is even more plausible:

(8) (a) (*stateční) čtyři (stateční) vojáci /CZ/
brave four brave soldiers
"four brave soldiers"/ intended: "brave soldier of the four soldiers"

(b) (královi) čtyři (královi) vojáci /CZ/
king's four king's soldiers
"king's four soldiers" (total number or only four of them)

Whereas As can be placed only in SPEC(N) position and never enter the D-layer[1] as shown in (8a), the distribution of the Czech POSS is more varied and its placement in the D-layer is not problematic. For this reason and for its morphological characteristics which differ from As, the derived possessive should not and will not be considered an element of adjectival category.

In spite of Corbett´s (1987) exhaustive list of examples and an accurate description of several properties of these constructions, he accounts neither for the 1-word/ multiple-words alternation for the derived possessive in greater detail, nor for the nature of the lexical word/root/stem which takes the possessive suffix before or after suffixation.[2] As stated in the first section, the derived possessive is derived from a nominal stem. The nominal base leaves the derivate with several nominal properties described in the literature, for example the ability of the base noun to serve as an antecedent to personal pronouns described in Corbett (1987), in (9) from Belorussian, or the possibility in some languages of pre-modification typical for a noun (Cowper and Hall, 2010), in (10) from Upper Sorbian.

(9) Perad nami mamin dom. /BLR/
in front of us mother's house
"This is my mother's house.
Jana xoča jaho pradac´.
She want it sell
She wants to sell it."

(10) star eho wucerj ow a žona /UP-SO/
old MASC.GEN teacher POSS FEM.NOM. $\text{wife}_{\text{FEM.NOM}}$
"old teacher's wife"

There are two relevant questions in this matter. The first one is whether the possessive suffix is what determines the position and derives the final word or whether it is only an inflection added to an already positioned derived word. The table below shows which properties listed in Corbett's (1987) article belong to the possessive suffix:

[1] A reviewer asks about examples in (1)–(3) where the adjectives precede the numeral:

(1)	horní	tři	řádky	/CZ/	(1´)	?/*horní	tři	dlouhé	řádky
	upper-NOM	three	lines-NOM			upper	three	long	lines
(2)	blbých	sto	tisíc	/CZ/	(2´)	?blbých	čistých	sto	tisíc
	stupid-GEN	hundred	thousand-GEN			stupid	clean	hundred	thousand
(3)	dlouhé	tři	roky	/CZ/	(3´)	kolik?	(*dlouhé)	tři...	(*dlouhé)
	long-NOM	three	years-NOM			how many	long	three	long

At first sight, they are placed in D-layer, nevertheless this is not entirely right. (1) shows that if an adjective follows a numeral, it is highly marked (if not ungrammatical) to insert another adjective into a position higher than the numeral. The construction with multiple adjectives in the higher than Q position in (2) comes out marked as well. (3) shows that the adjective cannot act in the same way as elements in the D-layer. Those elements can modify a numeral standing independently, *ty tři* (those three). Therefore I assume that in cases where the A precedes the numeral, it is placed higher than Q but lower than the D-layer. Also, it is important to note that these cases are highly restricted.

[2] He is more concerned with the distinction between derivational and inflectional suffixes and highlights some interesting properties of these, which help us to exclude nouns as a category which can encompass the derived possessive in Slavic languages.

May be non-productive and irregular	Derivational
May change word-class membership	Derivational
Opaque to syntax	Derivational
Depends on inherent features	Derivational
Marks words	Derivational

Table 1. Typical properties of derivational and inflectional morphology on possessive suffixes in Slavic languages

Most of the properties are uncontroversially derivational, which is clear from the data already presented by others (Veselovská 1998; Babyonyshev 1997; Trávníček 1951). I will not enter into further debate on this matter here, even though whether the above properties all divide derivation from inflection is debatable.

The second question is whether derivation changes the category of N to another category, or it stays the same. Veselovská (1998) and Babyonyshev (1997) argue that it stays in the same category, that is N, but this does not explain all its special behavior. For example, consider

- the typical impossibility of pre-modification;
- agreement with the possessed noun or the possibility of adding an agreement suffix; and
- the absence of standard nominal case endings in Slavic.

Furthermore, in Germanic languages that employ a derived possessive and do not have morphological case on nouns, namely English and Dutch (3), there is also a marker (-s) appearing on the derived possessive.

In light of these arguments, I thus conclude that derivation changes the category of the derived possessive; in other words, that the derived possessive is not an N.

Another category that can be taken as a candidate is a Q that alternates with numerals. In (8), I already showed that the derived possessive and numerals do not compete for the same position. I also showed that as opposed to an adjective, the derived possessive can occupy a higher position than the numeral. This position is prototypically occupied by quantifiers that are distributed like D and which cannot be placed in any position after the numeral.

(11)	(a)	(all)	four	(*all)	boys	/EN/
	(b)	(every)	two	(*every)	years	/EN/
	(c)	(všichni) all	čtyři four	(*všichni) all	chlapci boys	/CZ/
	(d)	(každé) every	dva two	(*každé) every	roky years	/CZ/

Furthermore, the semantic characteristics of quantifiers do not fit the derived possessive. There is at least one similarity and that is the partitive reading which is present both in

existential quantifiers and in derived possessives.[3] However, this fact does not provide enough evidence to be able to classify a derived possessive as a Q.

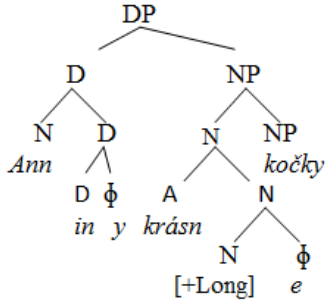
We are thus left with only one choice for the category of derived possessives, namely D. The derived possessive in fact bears properties which are prototypically connected with determiners, i.e. definiteness in at least English (commented on by Lyons 1986 and others). Having discarded all the other options, D is the only category which can accommodate the derived possessive.[4]

At this point, it is necessary to take a closer look at the possessive suffix. The literature to my knowledge does not offer any analysis which can account for the morphosyntactic behaviour in Slavic of the derived possessive after suffixation; that is, an analysis which clearly states which category the derived word belongs to.

The first obvious point is that the gender suffix agrees with the gender of the head noun, and such suffixes are not typical of either Q or N pre-modifiers of nouns. (As seen above, the agreeing gender suffixes on As are different from those on derived possessives.)

Second, I propose to extend an idea of Emonds (2013), who analyses agreeing adjectives as derived nominals. I propose the same type of pattern for Slavic POSS, which is to be analysed as a complex D^0. I label this the "derived determiner hypothesis".

(12) Anniny krásné kočky /CZ/
"Anna's beautiful cats"



There are at least two competing analyses of the Slavic DP/NP. One is the universal DP hypothesis (Pereltsvaig 2007; Veselovská 2014) and the other is the differentiated DP/NP hypothesis (Szabolcsi 1987; Stanković 2014). Nevertheless my hypothesis for derived possessives is compatible with both of them, because the derived possessive in my analysis is in the D-field and thus the D-field is always present when analysing the derived possessive.

At this point, I leave the matter of a universal DP vs. DP/NP variation to another discussion. Under either point of view, the fact that the derived possessive agreement is realized by different suffixes than adjectival agreement in most of morphological cases is given by its structural position, which is of the same character as other prenominal Ds (as mentioned in [5]–[6]).

Another issue mentioned earlier was referentiality, which is a nominal property, but more precisely a property of D. It appears that the nominal stem of the derived possessive can serve as an antecedent, but it maintains only a limited set of nominal

[3] This aspect of derived possessives is not discussed here for reasons of space.
[4] It is of no interest to establish a new ad hoc category.

properties.[5] The derived determiner hypothesis for derived possessives solves this problem, since some Ds can serve as an antecedent.

(13) On_i to dostal, tak je to $jeho_i$. /CZ/
He_i it $get_{PAST.SG.3RD}$ so $be_{PRES.SG.3RD}$ it his_i
"He_i has got it, so it is his_i."

Ds cannot be pre-modified by prototypical modifiers of nouns. But the pre-modifiers of Ds are allowed with the derived possessive as well (14), which suggests again that there is a parallel with Ds. The parallel is not perfect since post-modification is strictly prohibited in derived possessives, but not with pronouns:

(14) (a) (*ten/ *můj/ *milý) on
the my nice he

(b) jen on
only he
"only he"

(c) jen Pavl-ův
only Pavel-POSS
"only Pavel's"

(d) on sám /CZ/
he alone
"he alone"

(e) *Pavl-ův sám
Pavel-POSS alone

(f) *$sám_i$ $Pavl\text{-}ův_i$
alone Pavel-POSS

The arguments presented here should not lead to a conclusion that the derived possessive is identical to a prototypical D. Nevertheless they should support the hypothesis that the derived possessive cannot fit into the categories A, N, or Q. Therefore I conclude that both Slavic derived possessives and Germanic pre-nominal genitives as their counterpart should be classified as determiners. The fact is, my hypothesis is similar to the hypothesis of Stowell (1981), to the effect that –'s in English spells out the category D.

In the next section, their position in the structure is analysed and specified.

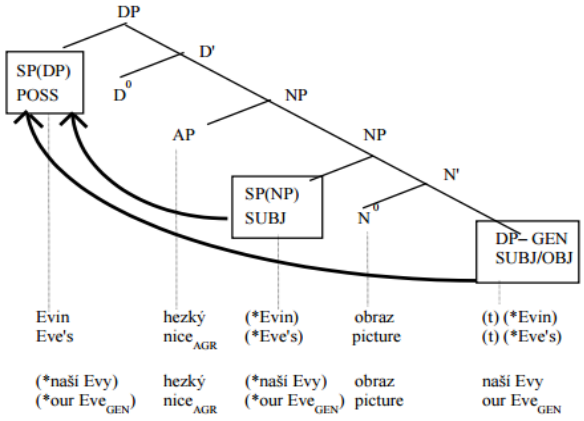
3. Base-Generation Position and Placement by Movement

In this section, I argue that the possessive N enters a derivation as the right-hand sister of the NP in Slavic languages. Case is assigned in situ only to those elements which acquire the internal structure of nouns. In that case they do not undergo further movement and surface as post-nominal genitive phrases across Slavic languages. Movement to D or SPEC(D) is employed as a rescue operation if and only if the element does not have enough nominal features throughout the derivation.

The previous section showed that the derived possessive in Slavic languages should be classified as a D. Veselovská (1998) also argues that the derived possessive in Czech is generated in an adnominal position but that it moves to SPEC(D), not D:

[5] I leave the specification of these properties to further discussion for reasons of space. A reviewer suggests these properties are animacy and gender because in Czech the possessive suffix and insertion are conditioned by these two features. However, this might be right only for some Slavic languages, since not all of them condition the possessive suffix with the presence/value of animacy/gender respectively.

(15) The movement proposed for the Czech structures (Veselovská, 1998)



She accepts the adnominal base-generation of a lexical word in Slavic languages as uncontroversial (not only in the present analysis) at least for two reasons:

- a parallel with verb phrases, thematic roles for their complements; and
- post-nominal genitive phrases in Slavic and Germanic are synonymous with derived possessives.

On the other hand, Veselovská (1998) provides only indirect evidence for the placement of the derived possessive in the final structure and does not give an explicit reason why it cannot occupy a D position which remains empty in the final structure.

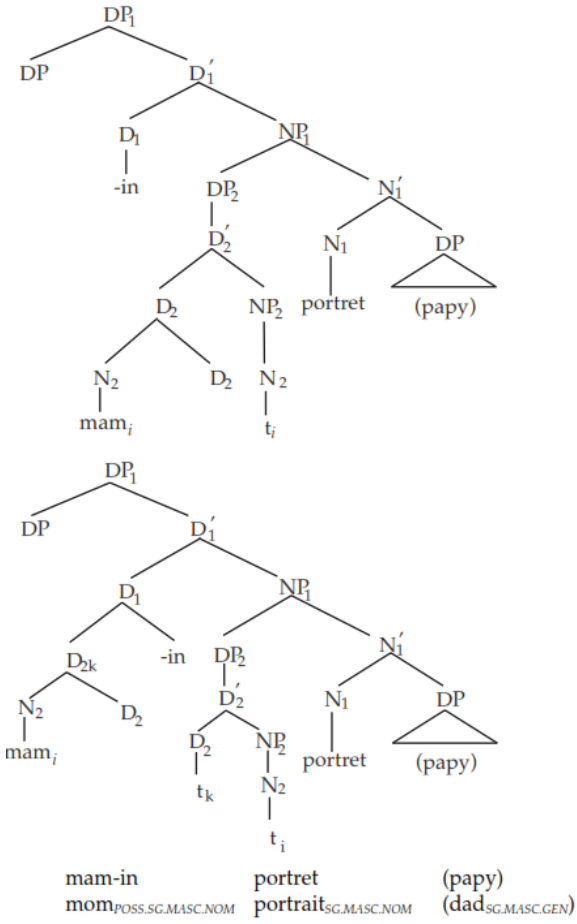
The present analysis fills the D position with the derived possessive immediately after it is generated (that is, before the noun is pre-modified with other Ds) and thus it explains why the derived possessive cannot be higher than other elements in the D-field. (17) illustrates this analysis: an element on SPEC(D) cannot follow the derived possessive which is in D^0.

(16)	Evin	(*ten)	hezký	obraz	/CZ/
	Eva POSS	the	nice	picture	
	"Eva's nice picture"				

Following this model, the issue of the head/phrase distinction arises. Babyonyshev (1997) places the Russian derived possessive into a complex D^0 position in the final structure (16). I cannot agree with the entire derivation process, which starts in SPEC(N) position. SPEC(N) is the base-generation position of As and the derived possessive is not an A as argued in the previous section.

However, her analysis brings up one interesting point, which I adopt in my account of the prenominal structure of the Slavic DP. I believe that Babyonyshev is right in placing the derived possessive into the D position in the final structure. I also agree with her view of multiple-word derived possessives, which she considers to be one word (or being in one-word position).

(17) The movement proposed for the Russian structures (Babyonyshev, 1997)



There is at least one reason which supports this hypothesis. The structure of these phrases is the same in all Slavic languages which allow this construction:

(18) (a) ded -a Tol -in -a komnata /RU/
grandpa GEN.SG.MASC Tolja POSS SG.FEM. room$_{SG.FEM.}$
"Grandpa Tolja's room"

(b) moj -eho bratr -ow -e dieci /UP-SO/
my GEN.SG.MASC brother POSS PL.NEUT. child$_{PL.NEUT.}$
"My brother's children"

(c) star -eho otc -ov dom /SLOVAK/
old GEN.SG.MASC father POSS house$_{PL.MASC.}$
"My grandpa's house"

In all constructions presented above, the true derived possessive (that is, the one bearing the possessive suffix) is pre-modified by a word with a genitive suffix. These pre-modifiers are semantically closely connected with the derived possessive. (18a) expresses the relation of the possessor to the speaker, (18b) specifies this relation, and (18c) is a part of idiomatic phrase for "grandpa". No other type of modifier can be inserted in the middle or in front of these names. In other words, the pre-modification of the true derived possessive is highly restricted, and post-modification is not allowed at all (as already illustrated in 14).[6]

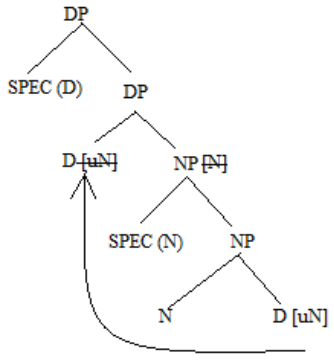
Morphosyntactically, these pre-modifiers do not agree with the word they clearly modify. Rather, they are similar to partitive N+N constructions, where the partitive noun loses some of its lexical features and becomes a quantifier. In (19a –c), the noun does not become a quantifier but loses some lexical features and does not show agreement with the final POSS, which is a D with the underlying N. How does this process fit into the presented analysis?

First, it supports the hypothesis that the derived possessive is base-generated as a post-nominal complement of the possessed N. In this position, it can be assigned genitive case unless the possessor does not maintain nominal features, as happens in the case of the true derived possessive. Genitive case can be seen on the pre-modifier of the derived possessives in (18a–c), which have moved.

As to the head/phrase character of the derived possessive, under the bare phrase theory (Chomsky, 1995) an item can be both an X^0 and an XP. Therefore I conclude that the derived possessive in its base-generation position is a complex D^0. If pre-modified, the derived possessive undergoes movement as D^0-max to check its uninterpretable selection feature uN, in other words, to take the NP as its complement. This formal step is similar to that in Veselovská (1997).

The placement in the final structure leaves us with two options: SPEC(D) (with an empty D) or D position. The evidence presented above leads to the conclusion that in Slavic languages the D position is always filled with the true derived possessive and if the language allows pre-modification of the derived possessive, these pre-modifiers fill the SPEC(D) position(s) as well:

(19) The movement proposed for the Slavic structures



[6] The fact that in Slavic languages demonstratives are allowed with the derived possessive is not surprising under this analysis, because Slavic specifiers are recursive. Nevertheless, the complementary distribution of these elements in Germanic languages seems to be due to the non-recursive nature of Germanic specifiers.

4. Summary

In the first part, I presented some evidence to show that derived possessives should be categorized as Ds. In the second part, I described the mechanics of derivation and placement in the final structure. I showed that in Slavic both 1-word and phrasal POSS are generated as a right-hand sister to the modified N, but occupy different positions in the final structure. The bare word maintains a small number of nominal features and therefore it can be pre-modified in a very restricted way or it cannot be pre-modified at all. Bare derived possessives and phrasal derived possessives move to occupy D^0 or DP positions respectively. In case nominal features are preserved, the phrase surfaces as a post-nominal genitive phrase.

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L2 Influence on L1 with Respect to Constituent Order in Translations from English into Danish

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Abstract: As its primary theme, this paper explores the influence that English as an L2 exerts on Danish as an L1 with respect to syntax in the translations from English into Danish of Danish university students of English Business Communication. Deviations from Standard Danish syntax are classified into types, and it is inspected whether they can have been caused by transfer from English. Second, the paper investigates whether committing syntactic mistakes in L1 correlates with other metrics of linguistic performance, and whether it can thus serve as a predictor of overall success in the learning and acquisition of English. It is found that students who make syntactic mistakes in their L1 consistently score lower in all the linguistic metrics considered than students who manage to avoid such mistakes.

Keywords: second language acquisition; syntax; contrastive hypothesis; error analysis

1. Introduction

The main purpose of my PhD project is to document and analyse the challenges that Danish university students (primarily freshmen) face in their acquisition of written English and in their learning of theoretical grammar. The project has its point of departure in the interlanguage and contrastive hypotheses (Selinker 1972; Lado 1957, Corder 1981), and instances of L1 (Danish) influence on L2 (English) in students' writings are indeed ubiquitous (Madsen 2014, 2015, forthcoming).

Since the students who have served as the informants for this paper must sometimes also write translations from English into Danish, there is also an opportunity to investigate whether and, if so, to what extent L2 influences L1 (Pavlenko and Jarvis 2002, Jarvis 2008, 2011). Indeed, a superficial analysis already reveals transfer from English into Danish. In the present paper, the discussion is limited to transfer from English concerning the order of clause constituents.

The reason for singling out deviations in constituent order from Standard Danish is that this type of errors constitutes an unsaturated variable (Virtuelle Lernräume im Studium 2015); it is neither the most nor the least frequent type of error, which makes it a potentially excellent co-variable in correlation analyses. Furthermore, students who make syntactic mistakes in their mother tongue are expected to have generally weaker language awareness or even language aptitude since syntax is such a central part of language (Ellis 1997, Odlin 1989). It is therefore hypothesized that constituent-order mistakes in the students' mother tongue correlate well with other types of mistakes, and thus make a good predictor of overall success in acquiring English and theoretical grammar (Elbro and Scarborough 2003).

2. A Concise Comparison of Danish and English

Before describing the methodology and data used in this paper, this section briefly explicates the major syntactic differences between Danish and English. These languages are closely related, hence their surface syntaxes are similar. Nevertheless, there are some systematic differences (Huddleston and Pullum 2002, Togeby 2003, Hjulmand and Schwarz 2012). Below are seven differences whose possible influence has been indicated by the data. They are listed in decreasing order of frequency.

(1) Danish is universally and obligatorily v2, meaning that the finite verb must be the second constituent in all matrix clauses (sentences/independent clauses), whereas English is only v2 in direct questions and when certain types of adverbial constituents are fronted.

(2) Danish distinguishes between matrix and subordinate clauses in their internal structures. In Danish subordinate clauses, fronting is not allowed, so they must always start with the subject. Moreover, adverbials must be placed between the subject and the finite verb; hence Danish subordinate clauses are not v2. English does not make such a syntactic difference between matrix and subordinate clauses.

(3) Danish allows (even requires as it is v2) adverbials between the finite verb and its nominal complements in matrix clauses when the VP is simple, whereas English does not usually allow adverbials in this position.

(4) Danish does not employ do-support whereas English does.

(5) Danish does not use split infinitives whereas English allows them.

(6) Danish allows the adverbial parts of phrasal verbs to appear only after the complement whereas English also allows their placement before the complement.

(7) In Danish, negative objects have a different position than positive ones both in matrix and subordinate clause. Negative objects appear where negative adverbials do. There is no such difference in English.

The table below exemplifies the differences described above. The English sentences are word-for-word translations of the corresponding Danish sentences except where the constituent orders in the two languages deviate from each other. The colours red and blue highlight the constituents that are positioned differently in the two languages.

	Danish	English
1	Sidste uge var han i Olomouc.	Last week he was in Olomouc.
2	Han var ikke i Aalborg. [Det var klart] at han ikke var i Aalborg.	He was not in Aalborg. [It was obvious] that he was not in Aalborg.
3	Hun læser ofte aviser.	She often reads newspapers.
4	Dansk har ikke do-support.	Danish does not have do-support.
5	Modigt at færdes hvor ingen har været før	To boldly go where no one has gone before
6	Slå noget op	Look up something Look something up
7	Hun har intet hørt. Hun har ikke hørt noget.	She has heard nothing. She has not heard anything.

Table 1. Danish vs English surface syntax

3. Data and Method

The data consist of three English texts translated into Danish by Danish freshmen studying English Business Communication. The number of informants is 233 altogether. The informants are grouped according to the text they translated and will henceforth be referred to as Groups 1, 2 and 3. Groups 2 and 3 are overlapping sets of informants in their first and second semester, respectively. Some students left after the first semester, and a few new ones entered in the second semester. Thus, Group 3 is a subset of Group 2 with a few new members. For this reason, it can be argued that time is also a variable in the equation. However, as will be shown in the analysis, it strengthens the hypothesis.

The translations have been subjected to error analysis, sorting all deviations from Standard Danish into 30 different error types, covering orthographical, grammatical and semantic mistakes. Deviations from the rules of constituent order have then been further analyzed into 11 subtypes.

Apart from simply documenting the constituent-order deviations from Standard Danish, this paper attempts to place this error type into a wider perspective. As mentioned in the introduction, the hypothesis is that students who make constituent-order mistakes in their mother tongue are generally weaker concerning the study of a foreign language. In other words, it is expected that constituent-order mistakes correlate well with other types of mistakes, and are thus a good predictor of overall success in acquiring English and theoretical grammar.

To test this hypothesis, four different metrics have been selected. The data for the metrics have been obtained from the courses English Grammar (theoretical grammar) and Production of Written Texts. In the former course, the students have to pass an exam in theoretical grammar, which consists of 100 questions, and in which the students have to determine the morphological or syntactic nature of various elements in English words, phrases and clauses. In the latter course, the students have to produce three texts during one semester: a summary in English of a text in English or a short composition in English, a translation from Danish into English, and a translation from English into Danish. The last one is the text type that has been scrutinized for constituent-order errors. The summaries, free compositions, and translations into English have been analyzed in the same way as the translations into Danish.

Thus, the four metrics used are the performance at the exam in theoretical grammar, the overall performance in translating into Danish, the overall performance in summarizing or writing a short composition, and the overall performance in translating into English.[1] The performance at the grammar exam has been measured as the number of incorrect answers, and the overall performance in writing the texts has been measured by taking all mistakes detected together without regard to their precise nature. Groups 2 and 3 have been measured against the same exam in theoretical grammar since it is administered only once, namely in the first semester.

For all four metrics, each of the three groups of students has been divided into two subgroups: those who made constituent-order mistakes in their translation into Danish, and those who did not. Then, the members of these 12 pairs of subgroups have been compared with each other with respect to their averages (arithmetic means) in the respective metric. The statistical significance of the comparisons has been computed by

[1] For the first group, the third metric was overall performance in summarizing, and for the second and third group, it was overall performance in writing a short exposition. The reason for this difference was simply a difference in the curricula in the academic years concerned.

using the two-tailed heteroscedastic t-test (Hatch and Farhady 1982, Urdan 2012, Carlberg 2014).

The four pairs of subgroups within one group of informants are not entirely homogeneous because data are not necessarily available on all metrics from all students within the given group of students. It happens that some students do not hand in all the assignments required or do not take the grammar exam. Thus, the comparisons with respect to the four metrics have been done on somewhat varying subsets of those students who made the translation into Danish. That is why the most robust version of the t-test has been used for assessing statistical significance. That is also why the subtypes of constituent-order mistakes have not been singled out for correlation analysis individually; the resulting subsets of data would have been far too small for making meaningful inferences.

4. Analysis

4.1 Descriptive Analysis

Table 2 shows the basic statistics of the data. As can be seen, the constituent-order error type fairly consistently ranks as the 10th most frequent error type and constitutes 1–1.5% of all mistakes detected. Incidentally, these figures are very similar to those that have been found regarding constituent-order mistakes in the students' production in English (Madsen forthcoming). In Text 3 many students neglected to convert a US date in the mm-dd-yyyy format into the Danish format of dd-mm-yyyy even though it is very unlikely that something could happen on the 7th day of the 29th month. These mistakes were originally classified as the 12th subtype of constituent-order mistakes; however, they are ignored in this paper since they are not strictly linguistic mistakes.

	Text 1 (386 words)	Text 2 (199 words)	Text 3 (299 words)
total informants	89	79	65
informants with constituent-order mistakes	15 (17%)	30 (38%)	25 (38%)
total mistakes	1,697	2,525	1,365
constituent-order mistakes	20 (1.18%)	35 (1.39%)	18 (1.32%)
rank of constituent-order error type out of the 30 error types	10th	10th	11th

Table 2. Basic statistics of the translations into Danish

Table 3 lists the subtypes of the constituent-order error type with their frequencies. As can be seen, the two most frequent error subtypes are the violation of the v2 rule in matrix clauses and the non-use of the special constituent order in subordinate clauses. Mistakes are labeled miscellaneous if their characteristics do not lend them to a classification in neat syntactic terms.

		Text 1	Text 2	Text 3
1	v2 word order not used in matrix clause	5 (25%)	20 (57%)	1 (6%)
2	sub-clause word order not used in sub-clause	7 (35%)	14 (40%)	11 (61%)
3	Miscellaneous	1 (5%)	0	4 (22%)
4	two constituents before the finite verb	2 (10%)	0	0
5	const. order typical for spoken language	1 (5%)	0	0
6	split infinitive	1 (5%)	0	0
7	negative object positioned as positive object	1 (5%)	0	0
8	sub-clause word order used in matrix clause	1 (5%)	1 (3%)	0
9	adverbial between non-finite verb and object	1 (5%)	0	0
10	verbal particle misplaced	0	0	1 (6%)
11	v2 used erroneously in matrix clause (conjunction mistaken for adverbial)	0	0	1 (6%)

Table 3. Subtypes of constituent-order errors

Subtypes 1, 2, 3, 7, 8, 9 and 11 can be easily explained on the basis of a contrastive analysis of Danish and English, as in Section 2. If this explanation is valid, then the vast majority of constituent-order errors (in the case of Text 2, all of them) are due to transfer from English.

Interestingly, the inverses of the two major types of deviations from Danish constituent order are the same as the two major types of deviations from English constituent order when Danish students write English (Madsen forthcoming). That is, Danes tend to overuse v2 in English matrix clauses and tend to place adverbials in English subordinate clause as in Danish subordinate clauses. Thus, there seems to be an intriguing cross-transfer between the two languages.

4.2 Correlational Analysis

Table 4 shows the performances of the three times four pairs of subgroups of students, as described in Section 3. For each pair of subgroups, red indicates that member of the pair which contains the students having made at least one constituent-order mistake in their translations into Danish, and blue indicates the member containing the students that did not commit constituent-order mistakes in their translations into Danish. The number of informants in each member is given in parentheses.

Since the texts have been subjected to error analysis, all metrics are in terms of errors. As for the grammar exams, the figures show the average number of wrong answers, and as for the translations, summaries, and free compositions the figures indicate the average number of all the errors per 100 words of text. The unit of errors/100 words has been necessary to introduce because the length of the texts that the students write naturally fluctuate within the preset margins, and it would not be a fair comparison if a student who made fewer mistakes but in a shorter text were automatically considered better than a student with more mistakes but in a longer text.

P-values below 0.05 are highlighted in bold. The reason for the anomalously high p-values in the case of Group 1's summary and translation into English is probably that data on these metrics were obtainable from considerably fewer students. For some reason, so many students within this group did not make the summary and translation-into-English assignment besides the translation into Danish and the grammar exam, or their texts have been lost during the years.

	Group 1		Group 2		Group 3	
Metrics	Mean error	p	Mean error	p	Mean error	p
grammar exam	30.1 (15)	0.169	35.1 (25)	**0.018**	32.9 (23)	0.214
	23.7 (71)		27.4 (43)		28.8 (38)	
translation from English into Danish	6.31 (15)	**0.043**	17.83 (30)	**0.004**	7.69 (25)	**0.019**
	4.66 (74)		13.72 (49)		6.02 (40)	
summary and free composition	5.15 (9)	0.492	6.18 (30)	**0.043**	3.90 (25)	0.173
	4.33 (58)		4.82 (48)		3.17 (38)	
translation from Danish into English	8.54 (7)	0.333	10.85 (29)	**0.008**	9.22 (23)	0.126
	7.38 (51)		8.58 (47)		8.06 (38)	

Table 4. Performance of students with and without constituents-order mistakes in their translations into Danish; number of students in parentheses

As can be seen, those students who did not have any constituent-error mistakes in their translation into Danish consistently outperformed the students in the corresponding subgroups with constituent-order mistakes in all the metrics; i.e., they made fewer mistakes in general. In other words, making constituent-error mistakes in translations into Danish positively correlates with making mistakes in other areas. This strongly corroborates the hypothesis put forward in this paper, even if the differences between the subgroups are not always statistically significant. The fact that the positive correlation persists over time (from Group 2 to Group 3), even if less significantly, further strengthens the hypothesis.

Hence, constituent-order mistakes in Danish, the students' mother tongue, seem to be a good predictor of overall success in mastering English and theoretical grammar. For making constituent-order mistakes in one's mother tongue may be indicative of a low level of metalinguistic awareness, and a low level of such awareness is likely to be detrimental to one's advances in studying a foreign language in an academic setting.

5. Conclusion

It has been demonstrated that influence on L1 by L2 does occur, in fact quite substantially as the vast majority of constituent-order mistakes can be explained by transfer from the English L2 to the Danish L1. It has furthermore been shown that the presence or absence of this transfer is a rather good indicator of the students' overall academic performance. Students who can resist the influence of an L2 on their L1, and who are therefore likely to possess a stronger language awareness, tend to be generally more successful in mastering the L2, whereas students who succumb to the L2's influence tend to make significantly more mistakes generally. Hence, the hypothesis offered in this paper can be considered verified.

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On Nominal Gradability in (Colloquial) Serbo-Croatian[1]

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Abstract: In this paper, I explore the possibilities for a better understanding of nominal gradability though observing a new type of nouns found in colloquial Serbo-Croatian, mostly in posts and comments on Twitter. These nouns are modified with the prefix *pre-* ("too much") and have the reading of a characteristic understood as over the maximum (*preriba,* "too attractive girl", *preidiot,* "too much of an idiot"). Note that these all refer to humans, and they express a behavior-based or a physical appearance-based stereotypical quality, given to an individual by a subjective observer. They can be understood as the result of ellipsis in degree phrases like *predobra (*adj. "too big") *mačka* (n., "attractive girl, cat-like") > *premačka* (n., "too attractive girl, cat-like"). By adding nouns with same bases, but modified with prefixes *naj-* (superlative), *polu-* ("half-") and *ne-* ("non-"), I propose a unified scale for this new class of nouns in Serbo-Croatian. The results show that nominal gradability in Serbo-Croatian is a function of a noun's semantic structure (+/- property) and that there is a deep connection between a noun's polarity and the degree reading of an adjectival mediator.

Keywords: pre-modification; nominal gradability; prefixes *pre-*, *naj-*, *polu-* and *ne-*; ellipsis; adjectival mediation

1. Introduction

This paper examines mechanisms of grading nouns in colloquial speech and writing in Serbo-Croatian on social networks. It has been noted by Klajn (2002), and Mitić and Manojlović (2014) among others, that speakers of Serbo-Croatian use the prefix *pre-* to express values of a notion that exceeds an imaginary non-specified limit of acceptability on a certain scale. The prefix *pre-* is commonly used to pre-modify adjectives and verbs, adding the same meaning of exceeding limits of the adjectival or verbal predicate.

However, in posts, comments, status updates (on various social networks such as Twitter, Facebook, Tumblr, LinkedIn etc.), and increasingly in colloquial speech, this prefix *pre-* is being used for adding the same meaning to nouns. Commonly adjectival prefixes as *naj-*, *polu-* and *ne-* are also being used with certain classes of nouns. This indicates that we are dealing with a specific type of gradability, a nominal type.

In general, gradability is defined as the "ordering of predicates along dimensions, which mediate the interpretation of predicates that, for the most part, are derived from a combination with a gradability morpheme" (Sasoon 2013, 4–7, 22–25). This characteristic is inherent to adjectives, as (1) shows, and it is commonly known as the

[1] I use this name to refer to the language formerly known as Serbo-Croatian, which is spoken in today's Bosnia and Herzegovina, Croatia, Montenegro, and Serbia. The name Serbo-Croatian can be changed to Bosnian, Croatian, Montenegrin, Serbian or BCMS with no effect on the results or generalizations that this paper offers.

comparison of adjectives and adverbs. A gradability morpheme is a grammatical and semantic marker of a degree reading (bolded in [1a–c]). The same scale of degrees can be made with pre-modified nouns.

(1) (a) English adjectives:
slow – slow**er** – **the** slow**est – too** slow

(b) Serbo-Croatian adjectives:
spor – spor**iji**– **naj**spor**iji** – **pre**spor

(c) Serbo-Croatian nouns:
neriba – riba –...?...–**naj**riba – **pre**riba

According to McNally (2005), Sassoon (2013), nouns cannot be graded all by themselves, but their meanings can get a degree modification via adverbial or adjectival mediation. That is, nominal gradability is indirect because an adjective or an adverb in a nominal phrase is being graded instead. This happens because nouns don't express dimensional meanings, but objective ones, so their gradability is more understood in terms of boundedness: mass vs. count nouns (Fabregas 2014).

On the other hand, Morzycki (2009, 2013, 2014), De Vries (2010) and Sassoon (2013) argue that nouns can express dimensional meanings, and by any means, be graded in several ways. According to Sassoon (2013), a prototype is an important component of nominal gradability, because "nominal predicates are associated with a dimension set which is by default processed as a prototype (i.e. by averaging)" (Sassoon 2013, 47).This is why phrases like (2) are possible, where Tweety is being compared to two sets of typical properties; one of them represents a chair, and the other one represents a bird. As long as Tweety's properties are more bird-like than chair-like, Tweety will be referred to as a bird.

(2) Tweety is more of a bird than a chair.

Unlike dimensions of nouns that need an existence of prototype, dimensions of adjectives can be accessed by grammatical operators, claims Sassoon (2013), like in (1a, b). But in Serbo-Croatian, similar grammatical markers can be used with both nominal and adjectival dimensions, like in (1c) and (3). The grammatical gradability morpheme is bolded in both.

(3)

neka	neriba	stavi	sliku	neke	preribe
some	'non-hot girl'	post.pres.3sg	photo	some	'too hot girl'

"A non-hot girl posts a photo of a too-hot girl."

Morzycki (2009, 2013, 2014) and De Vries (2010) consider two types of indirect nominal gradability: conceptual (grading by nouns' similarity to the prototype, by adjectives like *real*, *true* etc.) and linguistic (seen with nouns with no prototype, graded by *big*, *huge*, *enormous* etc.). According to these authors, the type of gradability depends on a noun's prototypicality. Dimensional nouns (with a clear prototype) are graded conceptually, and multidimensional nouns (no prototype) are graded linguistically. Non-dimensional nouns cannot be graded (4).

(4) (a) Non-dimensional
This is a big sportscar. (No degree reading!) – This is a real sportscar.

(b) Unidimensional
You're acting like a real idiot. – You're acting like a big idiot.

(c) Multidimensional
Clyde is a big smoker. – *Clyde is a real smoker.

In (4), interpreted from Morzycki (2013, 2014), the difference between gradability types according to a noun's dimensionality is shown. Multidimensional nouns (4c) have a real degree scale only with size adjectives, while unidimensional nouns (4b) have the ability to employ conceptual grading as well as linguistic. Non-dimensional nouns cannot have a degree reading in English if they're modified with a size adjective, but modifying with *real* gives us the reading of "how close *this* is to the prototype of a sportscar", which is similar to (2).

In order to conclude the introduction, I have some questions to propose. First, how dependent is grading of nouns of their prototype in Serbo-Croatian and how does it affect the scale? Second, nouns are supposed to use adjectival or adverbial mediation in order to be graded, but in Serbo-Croatian, this can be done with prefixes – in other words, with gradability morphemes. This implies that nouns in Serbo-Croatian do not need mediation. Stojković (2015) argues that nouns pre-modified with the prefix *pre-* are in fact a result of ellipsis – is this the case with other degrees of nominal gradability as well?

2. What Kind of Nouns Are Being Graded?

In Serbo-Croatian, it seems that nouns can be graded with prefixesas gradability morphemes are not typical for nouns or appear very rarely with nouns (Klajn 2002), so perhaps adjectival or adverbial mediation is not needed.

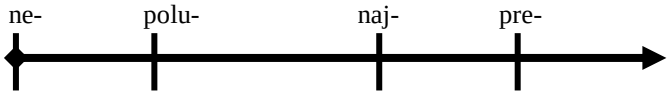

Figure 1. The introductory scale

As the introductory scale (Figure 1) shows, nouns in colloquial Serbo-Croatian can have four degree modifications made only using prefixes with specific meaning (5):

(5) ne- = "absence of a property"
polu- = "half of a property is present"
naj- = "the biggest amount of a property (compared to other values) is present"
pre- = "the amount of property has exceeded its limits"

The corpus of some collected examples given in (6)[2] shows that the existence of a prototype does not affect whether the noun will be graded, because both nouns with and without a clear prototype have the same values expressed with the same gradability morphemes.

(6) More examples with the values examined

ne-Q (non)	**polu-Q (half)**	**naj- (the most)**	**pre-Q (too big)**	**Standard Value**	**English**	**+/– prototype**
*nebolesnik	polubolesnik	najbolesnik	prebolesnik	bolesnik	mtp[3]. *mentally challenged person*	-
nefrajer	polufrajer	najfrajer	prefrajer	frajer	mtp. *hot guy*	+
*nefuksa	polufuksa	najfuksa	prefuksa	fuksa	*slut*	+
*neidiot	poluidiot	najidiot	preidiot	idiot	*idiot*	-
*nekurva	polukurva	najkurva	prekurva	kurva	*whore*	+
nelepotica	polulepotica	najlepotica	prelepotica	lepotica	*beautiful girl*	-
nepička	polupička	najpička	prepička	pička	mtp. *attractive female,*	+
neriba	poluriba	najriba	preriba	riba	mtp. *good looking girl*	+
neseks	poluseks	najseks	preseks	seks	mtp. *sexually attractive person*	-
*nesranje	polusranje	najsranje	presranje	sranje	*bullshit*	-
*nesmor	polusmor	najsmor	presmor	smor	*boredom*	-

As the table in (6) shows, it seems as if the prototype does not affect whether the noun is graded or not in Serbo-Croatian, and also the same pre-modifiers are used in both cases, with the exception that some nouns haven't got the *ne-* forms (marked with "*****"), independently of the existence of a prototype. The absence of the degree of absolute zero level of a property can be interpreted as a consequence of polarity: only negative nouns don't have a *ne-* degree.

Gradability of these nouns in (6) is possible because of their semantic structure: they all possess a [+property] semantic component in their lexical entry, and also a [+/– polarity] component. Or, in the terms of Sassoon (2013), a dimension is being associated with the noun's meaning so it can be graded. These components make these gradable nouns very similar to adjectives, so their gradability is not very surprising. But grading

[2] Due to space limitations, the corpus for this paper has been reduced to the most prominent examples.
[3] The abbreviation "mtp." stands for "metaphorically".

nouns is impossible when they do not refer to a human (or a social event, note e.g. "*smor*", "boredom"), and easier if the same noun receives a (secondary) [+property] (etc.) component (7). This allows the same sentence to have two different readings depending on whether the [property] / [polarity] / [human] components are present.

(7) Ana je kokoška.
Ana be.PRES.3SG hen
(a) "Ana is the name of the hen."
(b) "Ana acts like a hen." (clucking of a hen = talking rubbish)

(8) Ana je prekokoška.
Ana be.PRES.3SG too much of a hen
"Ana acts too much like a hen."

However, if the noun is pre-modified with a gradability prefix, it can only refer to a human (8). These semantic components may or may not be inherent to a noun: in many cases (such as [8]), their presence is a consequence of using metaphor – in other words, a consequence of a speaker's intentionality. The origin of the [property] component does not affect a noun's gradability, as the table in (6) shows.

(9) Lexical structure of gradable nouns
(a) *riba* ("hot girl") = [+property] < [appearance], [+prototype], [+polarity], [+subjective], [+human]
(b) *rugoba* ("ugly person") = [+property] < [appearance], [+prototype], [–polarity], [+subjective], [+human]
(c) *kurva* ("whore") = [+property] < [behavior], [+prototype], [–polarity], [+subjective], [+human]
(d) *idiot* ("idiot") = [+property] < [behavior], [–prototype], [–polarity], [+subjective], [+human]

In order to have the possibility of grading, a noun needs to inform about a person's main characteristic, or a number of characteristics regarding their social behavior or physical appearance (9). Also, the polarity of this property determines whether the Standard Value (StV) finds its place above or below an average, imaginary neutral value, as shown in (10). If the noun is positive, the StV would be above zero and below zero if the noun is negative. Note how the ½ level is dependent on the place of StV, so it always stays between StV and zero. As the degree of the property increases, so does the degree of a noun's positive or negative connotation.

(10) The place of the Standard Value (StV) on a scale depends on a noun's polarity

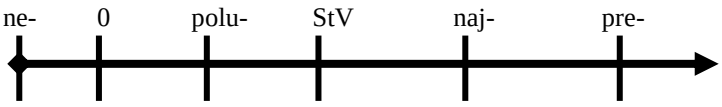

Figure 2. A proposed scale for positive polarity nouns

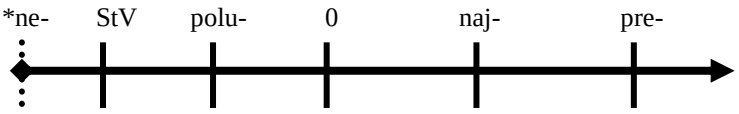

Figure 3. A proposed scale for negative polarity nouns

3. The Pre-Modifiers beyond Prefixes

The semantic component of [polarity] seems to have much larger effects on nominal gradability if we leave the surface and dig a little deeper into the structure of pre-modified nouns. While collecting examples for this paper, all four prefixes were confirmed as a nominal degree phrase (DegP) in the surface structure with the same values on the scale as nouns pre-modified with prefixes, which means that this prefixal pre-modification is actually a result of ellipsis (11).

(11) Grading of *frajer* ("attractive boy"), *seljak* ("peasant") (Serbo-Croatian)

(a) [+polarity] grading

nefrajer			polufrajer			frajer	najfrajer		prefrajer	
nimalo	dobar	frajer	upola	dobar	frajer	**StV**	najbolji	frajer	predobar	frajer
Adv	Adj	N	Adv	Adj	N	N	Adj	N	Adj	N
none	good	hot	half	good	hot	hot	good	hot	good	hot
		guy			guy	guy	SUPERLATIVE	guy	ELATIVE	guy
"non-hot guy"			"half hot guy"				"the hottest guy"		"too hot guy"	

(b) [–polarity] grading

seljak	poluseljak			najseljak		preseljak	
StV	upola	veliki	seljak	najveći	seljak	preveliki	seljak
N	Adv	Adj	N	Adj	N	Adj	N
peasant	half	big	peasant	big	peasant	big	peasant
				SUPERLATIVE		ELATIVE	
"behaving like a peasant"	"behaving occasionally like a peasant"			"behaving the most like a peasant"		"behaving too much like a peasant"	

Note that on the ½ level of a property (and on the *ne-* level for [+polarity] nouns), the degree modifier has to be graded with the help of an adverb, because the adjective itself has positive polarity and therefore cannot state a level below the adjective's own degree. Furthermore, other degrees can be added to complete the scale (12), but there will be no ellipsis in all cases. By looking into the full scale, I note that in Serbo-Croatian it is not the StV that is graded, because it needs an adjectival mediator; so in fact it is the +1 value (*dobar frajer, veliki seljak*) that makes nominal gradability happen. This is more evident if we look at the [–polarity] part in (12b).

(12) Grading of *frajer* (“hot guy”), *seljak* (“peasant”), full scale (Serbo-Croatian)

(a) [+polarity] grading

nefrajer			polufrajer			frajer
nimalo	dobar	frajer	upola	dobar	frajer	**StV**
Adv	Adj	N	Adv	Adj	N	N
none	good	hot guy	half	good	hot guy	hot guy
“non-hot guy”			“half hot guy”			

(+1)				najfrajer		prefrajer	
dobar	**frajer**	bolji	frajer	najbolji	frajer	predobar	frajer
Adj	N	Adj	N	Adj	N	Adj	N
good	hot guy	good	hot guy	good	hot guy	good	hot guy
POSITIVE		COMPARATIVE		SUPERLATIVE		ELATIVE	
“pretty hot guy”		“hotter guy”		“the hottest guy”		“too hot guy”	

(b) [–polarity] grading

seljak		poluseljak			**(+1)**	
StV		upola	veliki	seljak	**veliki**	**seljak**
N		Adv	Adj	N	Adj	N
peasant		half	big	peasant	big	peasant
					POSITIVE	
“behaving like a peasant”		“behaving a bit like a peasant”			“behaving a lot like a peasant”	

		najseljak		preseljak	
veći	seljak	najveći	seljak	preveliki	seljak
Adj	N	Adj	N	Adj	N
big	peasant	big	peasant	big	peasant
COMPARATIVE		SUPERLATIVE		ELATIVE	
“behaving more like a peasant”		“behaving the most like a peasant”		“behaving too much like a peasant”	

The same nouns will have a completely different reading when pre-modified with *veliki* (“big”) and *dobar* (“good”), as shown in (13), so that a [+polarity] noun will not be perceived as graded if pre-modified with *veliki*, and the adjective *dobar* will not modify the same property of a [–polarity] noun as the adjective *veliki*.

(13) Different readings of *veliki*(“big”) and *dobar* (“good”) depending on a nouns’ polarity

(a) Tina je velika mačka.
Tina be.PRES.3SG big.POSITIVE.FEM cat
“Tina is a cat and she is large.”

(b)	Tina	je	dobra	mačka.
	Tina	be.PRES.3SG	good.POSITIVE.FEM	cat
	"Tina is a very attractive girl."			
(c)	Marko	je	veliki	seljak.
	Marko	be.PRES.3SG	big.POSITIVE.MASC	peasant
	"Marko is behaving a lot like a peasant."			
(d)	Marko	je	dobar	seljak.
	Marko	be.PRES.3SG	good.POSITIVE.MASC	peasant
	"Marko is good at being a villager/farmer."			

This brings me to the conclusion that in Serbo-Croatian, nouns with negative polarity are graded in a linguistic manner and nouns with positive polarity are graded conceptually. Thus, the concept for grading of a noun is not tightly connected to its gradability if it is a [–polarity] noun; and it is the concept that is being graded when it comes to nouns with [+polarity]. The examples in (13) show that this difference is lost when the adjective itself is graded in a [+polarity] DegP (13a–c), but not if the noun has a [–polarity] reading (13d–e).

(1) Degree readings of *veći*, *bolji* ("bigger", "better") with [+polarity] nouns

(a)	Da vidimo	koja	od	nas	je	veća	mačka.
	see. PRES.SUBJ.1PL	which. FEM	of	we.ACC	be. PRES.3SG	big. POSITIVE .FEM	cat
	"Let's see which one of us girls is more attractive."						
(b)	Da vidimo	koja	od	nas	je	veća	mačka.
	see. PRES.SUBJ.1PL	which. FEM	of	we.ACC	be. PRES.3SG	big. POSITIVE .FEM	cat
	"Let's see which one of us girls is more attractive."						

(c)	Meni	si	ti	najveća	preriba	ovde.
	I.DAT	be.PRES.2SG	you. NOM	big. SUPERLATIVE	too hot girl	here.Adv
	"You are the hottest of the too hot girls here in my opinion."					

(d)	Kako	vreme	prolazi	ti	si	sve	veći	bolesnik
	As	time	pass. PRES.3SG	you. NOM	be. PRES.2SG	all	big. COMPA-RATIVE	patient
	"As the time passes, you are becoming a bigger and bigger sicko."							
(e)	Kako	vreme	prolazi	ti	si	sve	bolji	bolesnik
	As	time	pass. PRES.3SG	you. NOM	be. PRES.2SG	all	good. COMPA-RATIVE	patient
	"As the time passes, you are becoming a better and better patient."							

Why are some of the DegPs affected by ellipsis, and some are not? Note that the comparative *bolji frajer* ("hotter guy"), *veći seljak* ("behaving more like a peasant")

remains unaffected. Considering that these nouns are reserved for colloquial speech and writing, I presume that due to linguistic economy, the speaker takes only the most salient parts of a construction. In *većі seljak* ("behaving more like a peasant"), *veća / bolja mačka* ("more attractive girl"), the degree operator is inside the adjective, so there is no part that can be thrown away. But in *preveliki seljak* ("behaving too much like a peasant"), *predobra / prevelika mačka* ("too attractive girl") the degree operator is the prefix itself, so the rest of the degree modifier is thrown away as redundant.

Having entities that have reached beyond values considered common (the meaning of *pre-* in Serbo-Croatian according to Mitić and Manojlović [2014]) raised to higher and higher degrees (as in 14c) makes the original concept so distant that it becomes rather irrelevant, and gradability transforms from conceptual to linguistic, so the property value can go higher and higher on the scale, but it never exceeds its maximum. With further grading, the *pre-*(noun) entry is being graded. Parallel grading actually tells us that the *dobar* ("good") adjective has a degree reading, and furthermore, that grading a noun conceptually has a limit in contrast to linguistic grading. Phrases like *(naj)bolja preriba* ("the most attractive too attractive girl") have not been confirmed on social networks, nor in spoken language.

I propose a scale for nouns with positive polarity (Figure 4). This scale is open-ended on the + side, and it has a conceptual minimum value. Linguistic gradability (in blue) is secondary to these nouns and functions in parallel with conceptual gradability at one part of the scale. This stops with the *pre-* level, as the maximum reach of conceptual gradability. Every next degree is a result of linguistic grading only, because there is a new dimension that needs to be graded.

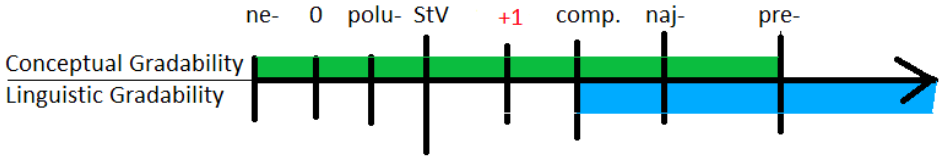

Figure 4. Scale structure for [+polarity] nouns in Serbo-Croatian

For [–polarity] nouns, the situation is a bit different (Figure 5). Their StV is below average and they have no clear minimum value. These nouns are graded only linguistically, using the size adjective *veliki* ("big"), so they have a much clearer [property] component in their lexical entry, possibly because they are more prominent in the discourse thanks to their negative connotation. No matter on what level, another degree adjective *dobar* ("good") doesn't have a degree reading, as shown in (14e).

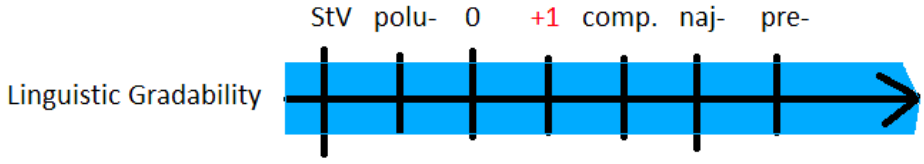

Figure 5. Scale structure for [–polarity] nouns in Serbo-Croatian

The similarity in gradability of positive nouns above the *pre-* level and negative nouns may indicate that in some manner exceeding properties beyond the *pre-* level is not

considered positive, but rather negative, so that a noun may receive a negative reading if further modifications are made. Such a presumption needs to be thoroughly examined.

4. Conclusion, or: What Can We Learn about Nominal Gradability from This Data?

In order to grade a noun in Serbo-Croatian, a speaker needs to use a [+property] noun, or a noun that can be associated with the metaphorical properties of a human being, determine its [polarity] (and thereby its standard value), add [+subjective], and then grade it all the way they want, but only using the right adjective. The property can be inherent or secondary; using metaphor, but a noun cannot be graded without it. It is the polarity of a noun's properties (in colloquial Serbo-Croatian) that determines the type of scale and the type of gradability: [–polarity] demands linguistic grading, and [+polarity] demands conceptual grading, but also linguistic grading after a certain level. While conceptual gradability seems to "know its limits", linguistic gradability is monotonic, recursive and limitless.

When grading a noun in Serbo-Croatian, no matter where the StV is, it is the +1 value that is the base for grading, not the standard value; that is, the noun is not being graded itself, but only adjoined to an adjective with a possible degree reading. Ellipsis causes all the confusion in Serbo-Croatian; adjectival and adverbial mediation is necessary, at least in the deep structure, in order to grade a noun. In cases where ellipsis is possible, we have nouns with prefixal pre-modification on the surface.

A specific relation exists between the degree modifier and the gradable noun: the polarity and the type of the adjective are mutually dependent. The type of polarity demands a size adjective or goodness adjective, but in some moments this demand is erased step by step. The adjective in this DegP brings in the meaning of "… having a certain amount of the properties associated with being (a noun)" (De Vries 2010).

I am aware that this paper is only the tip of the iceberg when it comes to nominal gradability (in Serbo-Croatian, and gradability in general). I presume that all these nouns could also be graded with antonyms of the degree modifiers (*veliki* / *mali*, *dobar* / *loš*), but I will leave this for another paper.

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Experimental Data for the Licensing of PPIs in Romanian

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Abstract: The aim of this paper is to present experimental results obtained in experiments with native Romanian speakers with respect to the speakers' sensitivity to positive polarity phenomena. With respect to the licensing of PPIs the study investigates the class of triggers and possible configurations of PPIs. Thus, we analyze the occurrence of PPIs in the scope of the antimorphic operator *nu* (not) and in the scope of downward entailing operators like *puțini* (few). The present paper concludes that PPIs in Romanian, just like the some-type PPIs discussed by Szabolcsi (2004), are doubly marked negative polarity items (NPIs), thus confirming the hypothesis put forward by Szabolcsi (2004).

Keywords: positive polarity item; experimental data; antimorphic operator; downward entailing

1. Introduction

The present paper analyzes lexical PPIs in Romanian as doubly-marked NPIs, on the basis of the distributional properties of someone-type PPIs. As shown by Szabolcsi (2004) PPIs, whose licensing implies the checking and activation of two negative features, together with the semantic operator that normally anti-licenses them, form a non-lexical NPI, subject to familiar constraints on NPI-licensing. In other words, "whatever property is desired by some NPI will turn out to be detested by some PPI and/or to function as a rescuer thereof" (Szabolcsi 2004, 430).

Following the argumentation presented by Szabolcsi (2004) we argue that when the PPI occurs in a positive context or in the scope of a downward-entailing operator, the two negations incorporated in the PPI (*something* = ¬¬∃thing) remain in situ cancel each other out and the sentence acquires an existential interpretation.

(1) (a) Am întâlnit un Prieten oarecare.
have-1.p.sg met a Friend whatsoever
"I met some friend."
¬¬∃x [friend(x) & I met(x)]

(b) Puțini studenți Au scris un articol
few-pl student-pl have-3.p.sg written an article
oarecare.
whatsoever
"Few students wrote some article or other."
Few x[student(x)]&[¬¬∃ [article(y) & wrote(y)(x)]]."

The intuition is that in the previous contexts the semantically negative contexts incorporated in the PPI remain inactive. Whenever the PPI occurs in the immediate scope of clausemate negation, the two semantically negative features incorporated in the

PPI get activated, but the problem is that only one of the negative features can be licensed by resumption with the higher operator not, and this is the reason why the sentence is considered ungrammatical. The only way to rescue the sentence is to embed the configuration in a context where there is another NPI-licenser. Thus, the following sentences are grammatical because the doubly-marked PPIs occurs in the scope of two licensers, specifically: in the scope of *puţini* ('few') or *cel mult* ('at most') – the downward-entailing operators and in the scope of *nu* ('not') – the antimorphic operator – at the same time.

(2) (a)

Puţini	studenţi	nu	Au	ajuns
few-pl	student-pl	not	have-1.p.sg	got
în	sala	de	examen	în
to	room	of	exam	in
doi	timpi	și	trei	mișcări
two	times	and	three	moves

"Few students didn't get to the exam room in a jiffy."
Few x[student(x)] & [¬ [¬¬∃y [time(y)]]]

(b)

Cel	mult	cinci	Copii	nu	plâns
at	most	five	child-pl	not	cried
în	doi	timpi	Și	trei	mișcări
in	two	times	and	three	moves
în	prima	zi	De	grădiniță	
in	first-the	day	of	kindergarten	

"At most five children did not cry in their first day of kindergarten."
At most x [child(x)] & [¬ [¬¬∃y [time(y)]]]

In conclusion this paper proposes that the adequate semantic mechanism in the interpretation of PPIs in Romanian is similar to the one proposed by Szabolcsi (2004), through resumptive quantification.

In the following sections of this paper we first try to describe lexical positive polarity items according to the hierarchy of negative strength, then we elaborate on the syntactic distribution of lexical PPIs and in the last two sections of the paper we discuss the proposal that lexical PPIs in Romanian are doubly-marked NPIs and provide experimental data to sustain this hypothesis.

2. Lexical PPIs and the Hierarchy of Negative Strength

This section aims at providing a description of different types of negation with the purpose of commenting on examples of lexical PPIs within the scope of *nu* (not) – the antimorphic operator and within the scope of *puțini* (few) and *cel mult* (at most) – downward-entailing operators.

Zwarts (1998) discusses the occurrence of positive polarity items in the scope of downward entailing operators, anti-additive operators[1] and anti-morphic operators.

[1] In this paper we do not deal with anti-additive operators because we do not aim at providing a classification of positive polarity items in Romanian or discuss their occurrence within the scope of anti-additive operators. We will only deal with downward-entailing and anti-morphic operators

As claimed by Zwarts (1998) the three licensing conditions are downwards applicable in the sense that they hold for PIs that are members of a class with a weaker condition. For example, if we were to talk about with the licensing of NPIs, anti-morphic environments (classical negation) should license in addition to strong NPIs, also medium-strength NPIs. Following the line of arguments proposed by Zwarts (1998) we see that anti-additive environments (minimal negation) should license, in addition to medium-strength NPIs, also weak NPIs. With respect the occurrence of PPIs in the scope of different types of negation, as claimed by Van der Wouden (1997), strong PPIs are incompatible with all monotone decreasing contexts, PPIs of medium strength are compatible with downward monotone contexts but incompatible with anti-additive ones, while weak PPIs are compatible with downward monotonic and anti-additive contexts, but incompatible with antimorphic ones.

The following examples show that *puțini* ('few') and *cel mult n* ('at most N') are downward entailing operators. As expected, they license inferences from sets to subsets. If *few children eat green vegetables* is true then *few children eat broccoli* is also true, as *broccoli* is a subset of the larger category *green vegetables.* Thus, we can conclude that *puțin* (few) is a downward-entailing operator in Romanian. The same type of reasoning applies to *cel mult n* (at most n)and if *at most five guests drank alcohol* is true then *at most five guests drank wine* is also true because *wine* is a subset of the larger group *alcohol.*

(3) (a) Puțini copii mănâncă legume verzi.
few-pl child-pl eat-3.p.pl vegetable-pl. green-pl→
Puțini copii mănâncă broccoli.
few-pl child-pl eat-3.p.pl broccoli
"Few children eat green vegetables."→ "Few children eat broccoli."

(b) Cel mult cinci Invitați au băut
at most five guest-pl. have-3.p.pl drunk
alcool.→
Cel mult cinci Invitați au băut
at most five guest-pl. have-3.p.pl. drunk
vin.
wine
"At most 5 guests drank alcohol." → "At most 5 guests drank wine."

The following examples show that *anything* is a negative polarity item that can occur in the scope of downward-entailing operators and with respect to Romanian *dau doi bani* (give a damn) and *o iota* (an iota) are negative polarity items which are felicitously licensed in the scope of the downward-entailing operators *puțini* (few) and *cel mult n* (at most n).

(4) (a) Few students ever said anything from. (Gajewski 2008)

(b) At most 5 students ever said anything.(Gajewski 2008)

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in this section and in this paper as they serve the purpose of our claim that lexical PPIs in Romanian are doubly marked NPIs.

(5) (a)

Puțini	studenți	Dau	doi	bani
few-pl	student-pl	give-3.p.pl	two	money
pe	noul	regulament.		
on	new-the	regulations		

"Few students give a damn on the new regulations."

(b)

Cel	mult	cinci	Colegi	cred	o
at	most	five	colleague-pl	believe-3.p.pl	a
iotă	din	ce	Spune	Maria	
iota	from	what	says-3.p.sg	Mary	

"At most 5 colleagues believe an iota of what Maria is saying."

As shown by Van der Wouden (1997), strong PPIs are incompatible with all monotone decreasing contexts, PPIs of medium strength are compatible with downward monotone contexts. The following examples show that *o fărâmă* (a bit/ a little) can happily scope below the downward-entailing operators *puțini* (few) and *cel mult n* (at most n) which leads us to the conclusion that they are PPIs of medium strength and not strong PPIs.

(6) (a)

Puțini	politicieni	au	o	fărîmă
few-pl	politician-pl	have-3.p.pl	a	crumb
de	bun	simț.		
of	good	sense		

"Few politicians have a bit of decency."

(b)

Cel	mult	cinci	locatari	au	o
at	most	five	tenant-pl	have-3.p.pl	a
fărâmă	de	bun	simț.		
crumb	of	good	sense		

"At most 5 tenants have got a bit of decency."

An operator Op is anti-morphic if and only if Op(A) and Op(B) is equivalent to Op(A or B) and Op(A) or Op(B) is equivalent to Op(A and B). For example, *Jane did not sing and Jane did not dance* is equivalent to *Jane did not sing or dance* and *Jane did not sing or Jane did not dance* is equivalent to *Jane did not (both) sing and dance.* The following example shows that *nu* (not) is an anti-morphic operator in Romanian.

(7) (a)

Maria	nu	a	cumpărat	flori
Maria	not	have-3.p.sg	bought	flower-pl
și	cadouri.↔			
and	gift-pl.			
Maria	nu	a	cumpărat	flori
Maria	not	have-3.p.sg	bought	flower-pl
sau	Maria	nu	a	cumpărat
or	Maria	not	have-3.p.sg	bought
cadouri.				
gift-pl				

"Maria didn't buy flowers and presents."↔ "Maria didn't buy flowers or Maria did not buy presents."

(b) Maria nu A cumpărat flori sau
Maria not have-3.p.sg bought flower-pl or
cadouri.
gift-pl
Maria nu a cumpărat flori și
Maria not have-3.p.sg bought flower-pl. and
Maria nu a cumpărat cadouri.
Maria not have-3.p.sg bought gift-pl
"Maria didn't buy flowers or presents." ↔ "Maria didn't buy (both) flowers and Maria did not buy presents."

The following examples show that the negative polarity item *yet* and *in years* are felicitously licensed under the scope of the anti-morphic operator *not* and that *deloc* (at all) and *dă doi bani* (give a red cent) are negative polarity items in Romanian and are felicitously licensed within the scope of the anti-morphic operator *nu* (not).

(8) (a) Bill isn't here yet. (Giannakidou 2011)

(b) I haven't seen Bill in years. (Giannakidou 2011)

(9) (a) Nu Înțeleg deloc această problemă.
not understand-1.p.sg at all this problem
"I don't understand this problem at all."

(b) Blaga nu dă doi bani pe
Blaga not give-3.p.sg two money-pl on
sondaje
poll-pl
"Blaga doesn't give a red cent on the polls."

As shown by Van der Wouden (1997) no PPIs are compatible with antimorphic operators. The following example shows that *o fărâmă* (a bit/ little) cannot scope below clausemate negation.

(10) *Nu Are o fărâmă de bun simț.
*not have-3.p.sg. a crumb of good sense
*"He/She has not got a bit of decency."

In this section we have shown that *puțini* (few) and *cel mult n* (at most n) are downward-entailing operators in Romanian and that *o fărâmă* (a bit/ little) can scope below such operators, a fact that led us to the conclusion that *o fărâmă* (a bit/ little) is a PPI of medium strength. We have also shown that *nu* (not) is an anti-morphic operator and that *o fărâmă* (a bit/ little) cannot scope below it, a fact which led us to the conclusion that *o fărâmă* (a bit/ little) is a PPI.

2.1 More on the Distribution and Syntactic Licensing of Positive Polarity Items in Romanian

The aim of this section is to show that items like *o fărâmă* (a bit/ little), which cannot scope below clausemate negation, can nevertheless scope below superordinate negation can occur in the scope of negation if there is another operator, like *fiecare* ('every') and *întotdeauna* ('always') intervening between negation and the PPI. Such an analysis follows the line of argumentation proposed by Szabolcsi (2004) who discusses the case of *some*-type PPIs.

Research on the distributional properties of lexical PPIs in Romanian started with the studies proposed by Szabolcsi (2004) and Falaus (2008), where it is claimed that PPIs cannot scope below clausemate negation. We claim that the analysis Szabolcsi proposed extends to Romanian lexical PPIs as well, and thus the example under (11c) is just as infelicitous as (11a, b).

(11) (a) *I didn't call someone. Szabolcsi (2004)* not > some

(b) *Nu m- am înscris la un
*not refl-1.p.sg have-1^{t}.p.sg registered to a
curs oarecare.
course whatsoever
"I didn't register for any course." (Falaus, 2008) not > oarecare

(c) *Tomșani, locul unde nu s-
*Tomșani, place-the where not CL-refl.
a născut o fărâmă de
have-3.p.sg born a crumb of
eternitate.
eternity *not > o fărâmă
*"Tomșani is the place where you cannot find a bit of eternity."

The following examples show that besides *someone*-PPIs and *un N oarecare*, which can scope below superordinate negation, lexical PPIs like *o fărâmă* (a bit/ a little) can scope below superordinate negation, as well. Each of the following examples show that it is sufficient for negation be located in a distinct clause for PPIs happily scope under it, otherwise, as shown before, the examples would not be grammatical. Therefore, we need to emphasize again the idea that lexical PPIs are clearly sensitive to the position of the probable anti-licenser.

(12) (a) I don't think that you
will invite someone. Szabolcsi (2004) √ not > [$_{CP/IP}$ some

(b) Nu Cred că s- a înscris
not believe-1.p.sg that refl-3.p.sg have-3.p.sg registered
la Un curs oarecare.
to a course whatsoever
"I don't think that he has registered for any course."
(Falaus, 2008) √ not >[CP/IP oarecare

(c)	Nu	Cred	ca	i-	a
	not	believe-1.p.sg.	that	CL-3.p.sg	have-3.p.sg
	ramas	O	fărâmă	de	bun
	left	a	crumb	of	good
	simț.				
	sense				

"I don't think that he has a bit of decency." √ not >[CP/IP o fărâmă

Someone – type PPIs, un N oarecare and lexical PPIs can occur in the scope of negation if there is another operator, like *fiecare* ('every') and *întotdeauna* ('always') intervening. Thus, the following examples show that the relation between PPIs and negation is subject to the phenomenon known as 'shielding'.

(13) (a) I don't always call someone
before my arrival. Szabolcsi (2004) √ not > always >some

(b)	Mircea	Nu	a	plecat	de	la
	Mircea	not	have-3.p.sg	refl-3.p.sg	from	at
	fiecare	Ședință	sub	un	pretext	oarecare
	every	meeting	under	whatsoever	pretext	whatsoever

"Mircea hasn't left every meeting under some pretext."
(Falaus, 2008) √ not>every>oarecare

(c)	Ioana	Nu	a	arătat	la
	Ioana	not	have-3.p.sg	shown	at
	fiecare	Întâlnire	o	fărâmă	de
	every	meeting	a	crumb	of
	bun	simț.			
	good	sense			

"Ioana didn't show at every debate a bit of decency."
√ not>every>o fărâmă

In this section we showed that PPIs like *o fărâmă* (abit/ a little) in Romanian have a similar behavior to *some*-type PPIs and to *un N oarecare* (a/ an N whatsoever) being able to scope below superordinate negation and being able to scope below negation if there is another operator intervening between negation and the PPI.

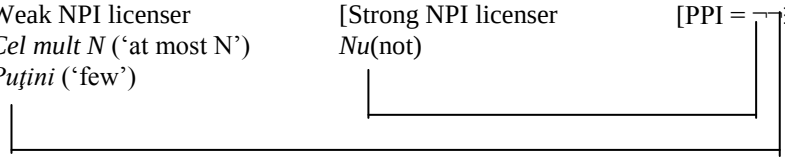
3. PPIs in Romanian as Doubly-Marked NPIs

The purpose of this section is to present an analysis of lexical PPIs in Romanian showing that they qualify as doubly-marked NPIs, having a similar behaviour to the *some*-type PPIs discussed by Szabolcsi (2004). "PPIs – together with the semantic operator that normally anti-licenses them – form a non-lexical NPI, subject to familiar constraints on NPI-licensing" (Falaus 2008, 107)

Following the work of Szabolcsi (2004) we believe that the licensing of PPIs in Romanian implies the checking and activation of two negative features. Each of the two negative features incorporated in the PPI represents one negation. Whenever the PPI occurs in the immediate scope of clausemate negation, the two semantically negative features incorporated in the PPI get activated and the problem is that only one of the

negative features can be licensed by resumption[2] with the higher operator *not* and thus the sentence is considered ungrammatical. One solution would be to embed the configuration in a context where there is another NPI-licenser. This proposal can be easily summarized with the help of the following diagram that is a copy of the diagram proposed by Szabolcsi (2004).

(14) Weak NPI licenser — [Strong NPI licenser — [PPI = ¬¬∃]]
Cel mult N ('at most N')
Puțini ('few')
Nu(not)

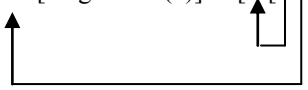


What makes the following example grammatical is the fact that the PPI occurs in the scope of two NPI licensers: the weak, downward-entailing licenser *puţini* ('few') and the strong, antimorphic licenser *nu* (not).

(15)	Puțini	magistrați	nu	au	avut
	few-pl	magistrate-pl	not	have-3.p.pl	had
	o	fărâmă	de	bun	simț.
	a	crumb	of	good	sense

"Few magistrates didn't have a bit of decency."

Few x [magistrate (x)] & [¬ [¬¬ ∃ y [quantity(y)]]]



Following Szabolcsi (2004) we assume that we need to factor out the negative components of the two licensers and to allow each of these licensers to form a binary quantifier with the two negations incorporated in the PPI (negations corresponding to each of the NPI-features incorporated in the PPI). What happens, when we absorb the licenser negation and the licensee negation in one single negative quantifier, is that we eliminate the licensee and the two negations incorporated in the PPI disappear.

In conclusion, the semantically negative contexts incorporated in the PPI remain inactive whenever the PPI occurs in an assertive context or in the scope of a downward entailing operator. Whenever the PPI occurs in the immediate scope of clausemate negation or, in the case of some lexical PPIs in Romanian, in the scope of antiadditive operators, the two semantically negative features incorporated in the PPI get activated. In this case, we are confronted with the situation that only one of the two negative features can be licensed by resumption with the higher operator *not.* The only way to rescue the sentence, from being ungrammatical, is to embed the configuration in a context where there is another NPI-licenser.

[2] As described in Falaus (2008), the semantic mechanism of interpretation for positive polarity is resumptive quantification. The main characteristic of resumptive quantification that makes it important for polarity is that it presupposes quantification over pairs of variables.

3.1 Experimental data

The aim of this section is to present experimental results that we obtained in experiments with native Romanian speakers in order to demonstrate that PPIs like *o fărâmă* (a bit/ a little) are doubly marked NPIs.

In the first experiment we tested the hypothesis that PPIs like *o fărâmă* (a bit/ a little) can scope below weak, downward-entailing licensers like *puțini* (few) and *cel mult n* (at most n). In the second experiment we tested the hypothesis that PPIs like *o fărâmă* (a bit/ a little) cannot scope below the strong, antimorphic licenser *nu* (not). The third experiment tested the hypothesis whether PPIs like *o fărâmă* (a bit/ a little) can be rescued in Romanian whenever they scope below antimorphic operators by further embedding the respective PPI under the scope of a downward-entailing operator. All of the three experiments were designed in the same way.

For each of the experiments we chose two-factorial designs. In the first experiment, where we tested whether PPIs like *o fărâmă* (a bit/ a little) can scope below the strong, antimorphic licenser *nu* (not), the two factors of the design were: PPI-hood (presumed PPI or non PPI) and Context (positive or negative), which, crossed with each other yielded 4 conditions/ situations that we tested:

- The occurrence of the PPI in negative contexts (anti-licensed)
- The occurrence of the PPI in positive contexts (licensed)
- The occurrence of a Non polarity sensitive item (PSI) in negative contexts
- The occurrence of Non polarity sensitive item (PSI) in positive contexts

In the second experiment, where we tested whether PPIs like *o fărâmă* (a bit/ a little) can scope below weak, downward-entailing licensers like *puțini* (few) and *cel mult n* (at most n), the two factors of the design were: PPI-hood (presumed PPI or non PPI) and Context (downward-entailing or non-downward-entailing context), which, crossed with each other yielded 4 conditions/ situations that we tested:

- The occurrence of the PPI in contexts that is not downward-entailing
- The occurrence of the PPI in contexts that is downward-entailing
- The occurrence of a Non polarity sensitive item (PSI) in contexts that is not downward-entailing
- The occurrence of Non polarity sensitive item (PSI) in contexts that is downward-entailing

In the third experiment, where we tested the possibility of rescuing a PPI from an ungrammatical environment, where the PPI scoped below clausemate negation, by further embedding the PPI below a downward-entailing operator, the two factors of the design were: PPI-hood (presumed PPI or non PPI) and Context (rescuing context, where the PPI scoped below two negative licensers, the downward-entailing licenser and the antimorphic licenser and a non-rescuing context, where the PPI only scoped below clausemate negation), which, crossed with each other yielded 4 conditions/ situations that we tested:

- The occurrence of the PPI in rescuing contexts, where the PPI scoped below two negative licensers, the downward-entailing licenser and the antimorphic licenser and a non-rescuing context

- The occurrence of the PPI in negative contexts (anti-licensed)
- The occurrence of a Non polarity sensitive item (PSI) in rescuing context, where the PPI scoped below two negative licensers, the downward-entailing licenser and the antimorphic licenser and a non-rescuing contexts
- The occurrence of Non polarity sensitive item (PSI) in negative contexts

As for the choice of the non-polarity sensitive item, we chose the non-polarity sensitive item (PSI) from the same category with a meaning as close as possible to the PPI we used in the other sentences. As fillers, we used sentences which featured unlicensed NPIs counterparts of the PPIs used before. The following example is an example of an unlicensed NPI.

(16) (a) *Această cămașă este deloc scumpă.
*This shirt is at all xpensive.
*"This shirt is at all expensive."

(b) *Această cămașă este nicidecum scumpă.
*This shirt is not-at-all expensive.
"This shirt is not-at-all/ in the least bit expensive."

Participants in the experiment were asked to judge the naturalness of sentences based on the following scale: <completely odd, quite odd, a bit odd, completely natural>. In case they found the sentences 'completely odd or quite odd' they were asked to rewrite the sentences to make them sound natural.

In the first experiment testing the occurrence of PPIs in the scope of antimorphic *nu* (not), the participants were asked to perform grammaticality judgment tasks, evaluating 156 sentences, out of which 39 were assertive contexts and 39 were negative contexts and 78 were filler sentences. The aim of the experiments was to see if native speakers of Romanian can rule out the negative contexts that contained examples of PPIs and can attest that the assertive contexts containing PPIs are grammatical. In the second experiment, a control experiment, the participants were asked to perform grammaticality judgment tasks, evaluating 56 sentences, out of which 14 were assertive contexts and 14 were negative contexts and 28 were filler sentences. The aim of the experiments was to see if native speakers of Romanian can rule out the negative contexts that contained examples of PPIs. With respect to the PPIs' sensitivity to antiadditive operators like *fără* ('without') and to the sensitivity of PPIs to downward-entailing operators like *puţini* – 'few', *cel mult N* – 'at most N' we tested items/ phrases like '*într-o clipită* ('in a jiffy'), *cât ai clipi* (before you could say Jack Robinson'), *cam* ('sorta') in 36 sentences, out of which 9 sentences contained PPIs in the scope of antiadditive operators and 9 sentences in the scope of downward entailing operators and 18 filler sentences. The instructions were provided on the questionnaire, and the participants had to mark Yes or No, if the sentences seem correct/ acceptable or not in Romanian. The aim of the last experiment was to see whether speakers of Romanian judge as grammatical or rule out the configurations where lexical PPIs in Romanian are doubly marked NPIs. In other words, the aim is to see whether Romanian speakers consider grammatical configurations where the PPI occurs in the scope of two licensers, specifically: in the scope of a downward entailing operator – *cel mult N* ('at most N') and *puțini* ('few') – and in the scope of the clausemate antimorphic operator - *nu* ('not') – at the same time. The hypothesis was that

lexical PPIs in Romanian are felicitous in the scope of the clausemate antimorphic operator only if they are embedded in a configuration that features a downward entailing operator, as well. We tested items/ phrases like '*într-o clipită* ('in a jiffy'), *cât ai clipi* (before you could say Jack Robinson'), *cam* ('sorta') in 24 sentences, out of which 6 sentences contained PPIs in the scope of *cel mult N* ('at most N') and in the scope of the clausemate antimorphic operator – *nu* ('not') – at the same time, 6 sentences contained PPIs in the scope of *puțini* ('few') and in the scope of the clausemate antimorphic operator – *nu* ('not') – at the same time, and the rest of 12 sentences were filler sentences. All of the above mentioned experimental data were tested on 90 participants – 40 students of English philology (Faculty of Foreign Languages and Literatures, University of Bucharest) and 50 other native speakers (friends, family), aged 19–70 (mean age – 20 for the 50 students of English philology; mean age – 40 for the 50 other native speakers), with a ratio approximately 50/ 50 male – female participants.

We will now only present one example from each of the experiments due to reasons of space. The following example was tested in the first experiment we conducted. In this experiment we tested the hypothesis that PPIs in Romanian cannot scope below clausemate negation. The results show that 85% of the participants considered the example infelicitous while only 15% considered it grammatical.

(17) *Mondenii nu au suflat premiul ATPR într- o
*Mondenii not have-3.p.pl. blown prize-the ATPR in a
clipită.
moment
*"The T.V. show 'Mondenii' didn't snatch the APTR prize in a jiffy."
*not > într-o clipită

The next example was tested in the second experiment we conducted. The purpose of this experiment was to test the occurrence of lexical PPIs in the scope of downward-entailing operators. The results show that 96.6% of the participants considered this sentence grammatical and 3.3% judged it as ungrammatical**.**

(18) Puține secretare dactilografiază 100 de cuvinte într- o
few-pl secretary-pl type-3.p.pl. 100 of word-pl in a
clipită.
moment
"Few secretaries type 100 words in a jiffy."
√few > într-o clipită

The following example was tested in the third experiment where we tested the possibility of rescuing a PPI from a context where it is in the scope of only an antimorphic operator by further embedding the PPI below a downward-entailing operator. The results show that 77% of the participants considered the example grammatical and 23% judged it ungrammatical.

(19) Puțini concurenți nu au semnat contractul
few-pl contestant-pl not have-3.p.pl. signed contract-the
într- o clipită.
in a moment
"Few contestants didn't sign the contract in a jiffy."

4. Conclusions

The aim of this paper was to analyze the occurrence of PPIs in the scope of the antimorphic operator *nu* (not) and in the scope of downward entailing operators like *puțini* (few). We first demonstrated that *nu* (not) is an antimorphic operator and then we commented on the occurrence of NPIs and PPIs under the scope of this licenser. Then we demonstrated that *puțini* (few) and *cel mult n* (at most n) are downward-entailing operators in Romanian and we commented on the occurrence of NPIs and PPIs under the scope of these licensers. We first came to the conclusion that a PPI like *o fărâmă* (a bit/ a little) qualifies as a medium strength PPI as it can occur under the scope of downward-entailing operators, an environment from which strong PPIs are excluded. The following section of the paper dealt with the analysis of the syntactic distribution of PPIs. We concluded that PPIs, like *o fărâmă* (a bit/ a little) have a similar behavior to *some*-type PPIs described by Szabolcsi (2004) and *un N oarecare* (a/ an N whatsoever) described by Falaus (2008) with respect to occurrence below superordinate negation and with occurrence below negation in case there is another operator, like *întotdeauna* (always), intervening between negation and the PPI. The last two sections of the paper dealt with the analysis of PPIs in Romanian as doubly-marked NPIs, confirming the hypothesis proposed by Szabolcsi (2004). We proposed that the adequate semantic mechanism in the interpretation of PPIs in Romanian is similar to the one proposed by Szabolcsi (2004), through resumptive quantification.

Thus, the semantically negative contexts incorporated in the PPI remain inactive whenever the PPI occurs in an assertive context or in the scope of a downward entailing operator. But, by contrast, whenever the PPI occurs in the immediate scope of clausemate negation or, in the case of some lexical PPIs in Romanian, in the scope of antiadditive operators, the two semantically negative features incorporated in the PPI get activated. In this case, we are confronted with the situation that only one of the two negative features can be licensed by resumption with the higher operator *not.* The only way to rescue the sentence, from being ungrammatical, is to embed the configuration in a context where there is another NPI-licenser.

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