From Verb to Noun: Deverbal Nominalizations in English, Hungarian, and Serbian

Radić, Angela

From Verb to Noun: Deverbal Nominalizations in English, Hungarian, and Serbian

Angela Radić
Research Master Linguistics
June 15, 2024
27.000 words

Supervisor: Dr. A. K. Lipták
Second reader: Prof. dr. L.C.J. Barbiers

Universiteit Leiden

Acknowledgments

Before you delve into my work, I want to express my sincerest gratitude to you, the reader, for your interest and potential contribution to the field.

Firstly, I would like to express my gratitude to my supervisor, Dr. Anikó Lipták, for providing me with exceptional guidance and support throughout my entire project. Her unwavering positivity and encouragement helped me produce the best possible work. I would also like to thank Prof. Dr. Sjef Barbiers for his willingness to be the second reader and for his insightful feedback. Many thanks to my study advisor, Ms. Noortje van Swieten, for giving me great tips on completing the thesis and taking care of myself.

I extend my heartfelt thanks to my Hungarian and Serbian colleagues for their invaluable help in designing the test items. Special thanks to Dr. Alberto Frasson, Dr. Ana Bosnić, and Dr. Nada Vasić for their efforts in ensuring the suitability of the test items. This research would not have been possible without their collaboration and expertise, which greatly enriched this study.

Last but not least, I would like to thank my soulmate, Job; my father, Slaviša; my mother, Snežana; my sisters, Milica and Emilija; my best friends, Elise and Deborah; and countless other family members and friends who provided continuous support and care for me during this journey – *volim vas.*[1]

[1] 'I love you (all)' in Serbian.

Abstract

This thesis investigates the distribution and syntactic structures of deverbal nominalizations in English, Hungarian, and Serbian. Deverbal nominalizations are distinct from regular nouns in that they are derived from verbs and thus contain both nominal and verbal properties. The significant work by Grimshaw (1990) established specific diagnostics advocating a strict dichotomy between event and result nominals: event nominals emphasize the action denoted by the verb, and result nominals focus on the outcome of the event denoted by the verb. However, ample cross-linguistic evidence shows that the distinction between these two types of deverbal nominals is less clear-cut than thought before, and a lot of this variation is found in forming the plural of these nominals. There is also no uniform syntactic structure for these kinds of nominals. This means that all the existing syntactic proposals in the literature deviate from one another in multiple ways. Therefore, the primary objective of this study was to bridge the gaps in the literature on the usage of deverbal nouns and their syntactic structures. This thesis presents acceptability judgment data on deverbal nouns that occurred in the singular and plural alongside an additional diagnostic by Grimshaw (1990): type of reading, adverbial modification, argument structure, and aspectual modification. The results indicate that Hungarian and Serbian allow plural event nominals in all contexts, while English only allows them without any modifiers. These findings are contra Grimshaw (1990) and underscore the crucial role of contextual factors in (dis)allowing plurality with event nominals. In addition to its empirical contributions, this thesis evaluates the applicability and generalizability of Grimshaw's (1990) theorem by analyzing languages from different language families, thereby enriching the understanding of deverbal nominalizations across diverse linguistic contexts.

Keywords: deverbal nominalizations, event nouns, result nouns, syntax, cross-linguistic study

Contents

List of abbreviations

AP	Adjectival Phrase	DET	determiner
AS	Argument Structure	F	feminine
ASPQ	quantity-Aspect	GEN	genitive
ATK	'*-ation* and kin' nominalizations	INDF	indefinite
CP	Complementizer Phrase	INS	instrumental
DP	Determiner Phrase	IPFV	imperfective
EI	Encyclopedic Item	LOC	locative
L-D	Lexical Domain	M	masculine
NP	Noun Phrase	N	neuter
PP	Preposition	NEG	negation
SQA	Specified quantity of argument (A)	NMLZ	nominalizer
VP	Verb Phrase	NOM	nominative
1	first person	OBJ	object
2	second person	PASS	passive
3	third person	PFV	perfective
ACC	accusative	PL	plural
ADJ	adjective	POSS	possessive
ADV	adverb(ial)	PREF	prefix
AGR	agreement	PRS	present
ART	article	PST	past
AUX	auxiliary	PTCP	participle
COP	copula	SBJ	subject
DAT	dative	SG	singular
DEF	definite	SI	imperfective suffix
DEM	demonstrative		

?/??--- Single or double question marks indicate awkward, marked structures;

*--- an asterisk marks ungrammatical structures;

*(---) an asterisk outside parentheses indicates that the parenthetical material is necessary;

(*---) an asterisk inside parentheses indicates that the parenthetical material cannot be included in the structure;

(---) parentheses include optional material. (Melloni, 2007, p.7).

1. Introduction

The linguistic phenomenon of deverbal nominalization is a process of deriving nouns from verbs. The term nominalization refers to a linguistic process where any word category, in this case, verbs, can become the base for a noun (e.g., *investigate*.V → *investigation*.N). This process typically involves adding affixes or other grammatical markings to the verb stem to create a noun that refers to the meaning of the original verb. English mainly creates deverbal nouns via affixation, such as with the suffix *-er* (e.g., *writer*) or *-ation* (e.g., *demonstration*). Some English nouns are derived without overt affixation and instead formed via zero or null derivation (e.g., *address*). Deverbal nouns can be viewed as non-prototypical nouns as they often denote more abstract concepts (e.g., *fear*) rather than concrete entities (e.g., *cat*). This is because nominalized verbs are more complex than simple nouns since they often express abstract concepts and ideas that cannot be easily conveyed through simple words. In short, deverbal nominalizations play a crucial role as they allow for the expression of events or actions in nominal form.

In linguistics, several attempts have been made to classify and understand the role of deverbal nominals. In particular, there has been a debate about the precise forms the deverbal nominals can take and the contexts in which they can be used. One of the most influential contributions to this debate is by Grimshaw (1990). According to Grimshaw (1990), there are two types of deverbal nominals: event nominals, which emphasize the event denoted by the verb (1), and result nominals, which refer to the end or resultant state of the action denoted by the verb (2) (Sleeman & Brito, 2010, p.200):

(1) The translation of the book took ten years = EVENT
(2) John's translation has been published recently = RESULT

Grimshaw (1990) focuses on the argument structure of deverbal nouns to distinguish between (complex) event and result nouns. An argument structure indicates the number of arguments the (argument-taking) lexical item takes, how they are syntactically represented, and their semantic relation to this item (Levin, 1999). For instance, the argument *of the book* in (1) is obligatorily preserved by the event nominal, in contrast to the result nominal in (2), where it has been left out. Grimshaw (1990) argues that event nominals have obligatory arguments, whereas result nominals do not. Thus, Grimshaw (1990) believes that result nominals are more nominal and thinks that they do not have an event structure analysis, meaning that their complements are optional. Furthermore, Grimshaw (1990) argues that while result nominals can pluralize (*two exams*), event nominals cannot (**two examinations*). In her view, event nominals resemble mass

nouns, and result nominals resemble count nouns. In essence, Grimshaw (1990) takes a formalistic approach to deverbal nominals, meaning that deverbal nouns resemble their original verb and carry their properties to their nominalized form.

Even though Grimshaw's (1990) theory was published over three decades ago, it is still held as the standard in the domain of nominalizations. However, her theory, which also exclusively focuses on English, is not supported by empirical evidence. Instead, there is ample evidence from Romance and Germanic languages for constructions that contradict Grimshaw's (1990) theory. For instance, Sleeman and Brito (2010) contest Grimshaw's (1990) strict dichotomy between event and result nouns by showing that Dutch event nouns can be pluralized. Furthermore, deverbal nominalizations in Romance languages were also found to differ from Grimshaw's (1990) classification (Meinschaefer, 2005; Roodenburg, 2006; Bisetto & Melloni, 2007; Iordăchioaia & Soare, 2008). Meinschaefer (2005) investigated adverbial modifiers such as *frequent* in English, Spanish, and French and concluded that "all deverbal nouns . . . can be modified by *frequent* when they occur in the plural" (p.8), thereby also acknowledging plural event nouns. The study by Bisetto and Melloni (2007) looked at Italian deverbal nominals and discovered that plural deverbal nominals can still be eventive. Additionally, Iordăchioaia and Soare (2008) focused on Romanian and found that infinitival event nominals can unproblematically be pluralized. Heinold (2010) questions the validity of Grimshaw's (1990) properties by showing that they cannot be applied to French. The discoveries of these studies show some significant issues with Grimshaw's (1990) theory. These findings indicate that Grimshaw's (1990) dichotomy is incomplete and lacks cross-linguistic validity. This calls for further research from a cross-linguistic perspective into the nature of deverbal nominalizations.

The evidence of these studies raises the question of whether in other language families, for example, Slavic languages such as Serbian and non-Indo-European languages like Hungarian, deverbal nominals also do not behave according to Grimshaw's (1990) definition. Research on deverbal nominalizations in these languages is limited and does not address all the potential interpretations deverbal nouns can have and all the constructions they can appear in. Consequently, there is a need for additional research that would accurately explain the uses and occurrences of deverbal nouns in not only English but also in more morphologically complex languages such as Hungarian and Serbian. The current research will, therefore, investigate deverbal nouns in English, Hungarian, and Serbian, focusing on their distribution as well as the pluralization abilities of these nominals across different linguistic contexts. Studying this

phenomenon in these languages makes it possible to measure the generalizability and applicability of Grimshaw's (1990) theorem.

Moving beyond the lexico-semantic and contextual factors surrounding deverbal nouns and their acceptability, this thesis also considers the syntactic representation of deverbal nouns in English, Hungarian, and Serbian. A syntactic representation, or syntactic tree, is essentially "a diagram, representing the structure of a clause and the relationship between the elements in it" (D'Alessandro, 2019, p.3). Several studies provide syntactic representations of event and result nominals that predominantly align with Grimshaw's (1990) predictions (Alexiadou, 1999, 2001; Borer, 2003, 2005; Harley, 2009). In her syntactic trees, Harley (2009) rules out the presence of plurality in event nouns altogether. In contrast to Harley (2009), the premise of Alexiadou's (2001) structures is that the projection of a number layer is linked to aspect: plurality in event nominals is allowed only if certain features of deverbal nominals are present (telicity, perfectivity, and boundedness). Alexiadou's (2001) syntactic structures also capture the optionality of arguments in result nominals while ensuring the obligatory realization of arguments with event nominals, which aligns with Grimshaw (1990). Similar to Grimshaw (1990), Borer (2003, 2005) assumes that the type of configuration (or structure) determines the count or mass interpretation of noun phrases (NPs). Specifically, the presence of number is closely related to the type of determiner and quantifier it combines with, meaning that structures that lack a classifier phrase are interpreted as mass by default (Borer, 2005). Kornfilt and Whitman (2011) argue for four possible levels of nominalization, thereby considering both the nominal and verbal properties of the noun: CP, TP, *v*P, and VP. Kornfilt and Whitman's (2011) four-way structure accounts for exploring the syntactic behavior of deverbal nouns, as well as their inherent features, in a hierarchical manner. However, the syntactic structures by Alexiadou (2001), Borer (2003, 2005), Ramchand (2008), Harley (2009), and Kornfilt and Whitman (2011) lack uniformity and compatibility. Therefore, this thesis aims to propose a new and uniform syntactic structure for deverbal nouns to facilitate the comparison of languages and to illustrate which syntactic projections ensure plurality in deverbal nouns and which factors constrain it.

This thesis contributes to the understanding of how word derivation works in language and how different word forms relate. Furthermore, this thesis aims to uncover the processes behind deverbal nominalizations, identify the factors contributing to their acceptability, and explore the similarities and differences of the newly retrieved data for the current linguistic phenomenon. While Grimshaw (1990) attributes the difference between types of deverbal nouns to their distinct argument structures, others attribute this to their dissimilar underlying

syntactic structures and derivations (Alexiadou, 2001; Borer, 2003, 2005; Harley, 2009; Kornfilt & Whitman, 2011). As such, there is currently no consensus on or accepted standard for deverbal nominalizations other than Grimshaw (1990), which also holds for the domain of syntax. This thesis aims to assess both perspectives and contribute to the current discussion by setting out to answer the following research questions:

1. How and when is plural marking used in deverbal nominalizations?
   1.1 What is the grammatical status of plural event nouns?
   1.2 What is the relative impact of semantic factors, including the type of reading, adverbial modification, argument structure, and aspectual modification, on the grammaticality of plural event nouns?
2. What are the syntactic structures underlying English, Hungarian, and Serbian plural deverbal nominalizations?

The general structure of this thesis is as follows: Chapter 2 begins with a brief introduction to the process of nominalization and Grimshaw's (1990) theory. The second half of Chapter 2 explains concepts relevant to deverbal nominalization, such as aspect and plurality. Chapter 2.4 contains a discussion of key literature on deverbal nominalization in English, Hungarian, and Serbian, relating to Grimshaw's (1990) diagnostics. Chapter 3 states the research questions and summarizes the main points of the discussed studies. Chapter 4 describes the characteristics of the research design and the way the data has been collected. Then, Chapter 5 deals with the analysis of the data and contains the results. Chapter 6 contains the discussion and implications of the findings, and Chapter 6.2 discusses different syntactic frameworks for deverbal nouns. Moreover, a new syntactic proposal can be found to illustrate event and result nouns across these languages in Chapter 6.3. Chapter 7 contains some concluding remarks, and Chapter 8 closes this work with recommendations and ideas for future research.

2. Theoretical background

2.1 The process of nominalization

Nominalization is the linguistic process in which complex nouns are derived from words from other classes, such as adjectives, verbs, and sometimes even from nouns. This thesis is primarily interested in the derivation of nouns from verbs, otherwise known as deverbal nominalizations. The resulting nouns are often referred to as deverbal nominals. The formal operations

underlying nominalized forms include conversion, compounding, and affixation (Lieber, 2016). Conversion is the derivation of words of different word classes without overt affixes, as with the English word *construct*. This process often involves phonological changes to the word's stress pattern and syllable structure: *construct* as a verb bears the primary stress on the second syllable, whereas the noun variant contains the primary stress on the first syllable. Compounding involves the combination of two (or more) independent lexical items to create a single item, like *history teacher.* Affixation involves using a bound grammatical morpheme (i.e., prefix or suffix) to derive a new word, as with the suffix *-(a)tion* in *meditation*. Deverbal nominals can thus be categorized according to the type of formal operation used.

Following Lieber (2016), nominalizations can also be classified according to their morphological, semantic, and syntactic structure and properties. Firstly, nominalizations can be categorized according to their morphological form or type. Lieber (2016) categorizes English deverbal nominals into three types: nominals derived from verbal bases with an *-ing* affix are *-ing* nominals (e.g., *writing*, *falling*); affixes other than *-ing* such as *-ment* and *-al* are ATK ('*-ation* and kin') nominalizations (e.g., *destruction*, *refusal*); and finally, nouns with no overt affix are conversion nouns (cf. Borer, 2013: 'zero derivations') (e.g., *attack*, *kick*). The affixes differ in terms of their degree of productivity and polysemy. For instance, nominalizers such as *-th* (e.g., *growth*) are unproductive, and evaluative affixes, such as diminutives and augmentatives, are not subject to polysemy, at least in English (Lieber, 2016).

Secondly, nominalizations can also be categorized on the basis of their semantics. Lapesa et al. (2018, p.277) provide a list of the available readings of English deverbal nominalizations, given in Table 1:

Table 1

Readings of English nominalizations

Semantic category	paraphrase	examples
Event	'the event of V-ing'	*production, training*
Result	'the outcome of V-ing'	*acceptance, alteration*
Product	'the thing that is created by V-ing'	*pavement, growth*
Instrument	'the thing that V-s'	*seasoning, advertisement*
Location	'the place of V-ing'	*dump, residence*
Agent	'people or person who V-s'	*administration, cook*
Measure	'how much is V-ed'	*pinch, deceleration*
Path	'the direction of V-ing'	*decline, direction*
Patient	'the thing affected or moved by V-ing'	*catch, acquisition*
State	'the state of V-ing or being V-ed'	*alienation, disappointment*
Instance	'an instance of V-ing'	*belch, cuddle*

Table 1 illustrates that deverbal nominals contain inherently unspecified semantic features, such as that of [+path], which depends on other information available in the sentence (Lapesa et al., 2018). Lapesa et al. (2018) mention that in order to disambiguate the meaning of the nominal, listeners or readers may use strategies of contextual coercion or rely on the syntactic context of derived words. Furthermore, the authors show how derived words in English can be interpreted as alternating between an eventive and non-eventive reading. This is illustrated by ATK ('*-ation* and kin') nominalizations, in which *destruction* bears an eventive reading in (3a) but a referential (resultative) reading in (3b):

(3) a. The destruction of the city by the Romans.
b. The destruction took place yesterday.

Thirdly, both Lieber (2016) and Lapesa et al. (2018) stress the importance of syntactic cues for disambiguating deverbal nouns. Since most nominalizations can have different readings, the syntactic configuration in which they are found is essential to give rise to an eventive or referential reading. For instance, deverbal nominals can have an eventive reading with *by*-phrases containing (agentive) arguments, as in (4a), whereas result nouns combine with either possessors or *by*-phrases that are non-argumental, as in (4b), according to Borer (2003, p.44):

(4) a. The examination of the papers by the instructor
b. The instructor's exam

In (4a), the agent *instructor* is optional, while in (4b), the *instructor* cannot be the agent, as this leads to the following ungrammatical string: **the exam by the instructor*. Contrary to event nominals, result nominals do not assign semantic roles to the verb's arguments and do not license an argument structure like their base verb. Importantly, it is not always possible to determine whether a particular English affix automatically has an event or a result reading. Revisiting the deverbal noun *examination*, example (4c) exhibits a resultative reading since there are no arguments, yet it is modified in a way to denote some event:

(4) c. The examination took a very long time.

The nominal *examination* in example (4c) is also known in the literature as a simple event nominal (Grimshaw, 1990). Simple event nominals, albeit denoting some event, pattern with

result nominals by not realizing an argument structure. The difference between simple and complex event nominals is that only the latter exhibit robust eventive characteristics, for instance, by allowing for different types of modifiers and by having a complete argument structure (Roy & Soare, 2014; Wasak, 2020). Alexiadou (2001) groups event nouns (with argument structure) on the one hand and result nouns (without argument structure) on the other. Therefore, like Alexiadou (2001), the current thesis also groups simple event nominals and result nominals as a single nominal since they share numerous syntactic and morphological characteristics and properties. The following sections expand on the two types of nominals and readings.

2.1.1 Event nominals

The previous section highlighted ways to categorize a deverbal nominal's form by means of semantic and syntactic cues. Ample research exists on deverbal nominalizations, primarily relying on Grimshaw (1990) as the standard reference (Szabolcsi, 1992; Zlatić, 1997; Schoorlemmer, 1998; Borer, 2003; Heinold, 2010; Villalba, 2013; Gondra, 2014; Ignjatović, 2016). These studies demonstrate that the interpretation of deverbal nouns is influenced by the argument structure of the underlying verb from which they are derived. This is illustrated in the following example (5):

(5) The destruction *(of the museum) in three hours

One of the points raised by Grimshaw (1990) is that the pattern in example (5) implies that the argument *of the museum*, of the verbal base *destroy* in the nominal *destruction*, must be realized. According to Grimshaw (1990), the eventive interpretation of a deverbal noun is directly influenced by the presence of arguments.

Several studies have examined the correlation between an eventive interpretation and the obligatory realization of argument structure and how this precisely differs from the result counterpart. According to the syntactic approach by Borer (2003), which complements Grimshaw (1990), the structure of event nominals features a fully developed internal verbal projection. Additionally, result nominals do not express events and lack arguments, consisting solely of a nominalized morphological structure (Borer, 2003). In line with Borer (2003), Roy and Soare (2014) conclude that "[n]ominalizations may thus inherit verbal properties, when

(and only when) they involve a verbal/aspectual structure" (p.124).[2] Other properties that account for the eventive reading of nominals include the possibility of combining with aspectual modifiers and the obligatory realization of arguments (Roy & Soare, 2014). For example, research has demonstrated that the presence of aspectual modifiers is positively associated with an eventive interpretation, as shown with the deverbal noun *destruction* (6b) derived from its verbal counterpart in example (6a) (Roy & Soare, 2011, p.10):

(6) a. they destroyed the house in 3 hours
b. the destruction of the house in 3 hours

The possibility for event nominals to combine with aspectual modifiers indicates that their syntactic structure includes verbal and aspectual layers, unlike result nominals. Roy and Soare (2014) conclude that result nominals are "simple, root-derived nominals" (p.128) with a significantly different structural representation than event nominals. The main features of event nominals, as described by Grimshaw (1990) and adhered to by many studies, are the presence of an eventive reading, the obligatory selection of arguments, and the ability to combine with different types of modifiers.

2.1.2 Result nominals

Result nominals are non-eventive, meaning that they cannot license an argument structure (Sleeman, 2021). Deverbal result nouns emphasize the outcome or effect of the event, which is expressed by the base verb (Melloni, 2015). Bekaert and Enghels (2019) show that result nominals exhibit more nominal than verbal properties due to their ability to pluralize, as shown in (7), and to combine with different kinds of determiners, as illustrated in (8):

(7) The frequent exams
(8) A(n)/the exam

In contrast, Grimshaw (1990) claims that event nominals only combine with definite articles. Result nominals thus lack an eventive reading and have no internal arguments or agent modifiers. As a consequence, Grimshaw (1990) states that "any predicate lacking an aspectual

[2] Roy and Soare (2014) claim that event nominals encode not only the inner aspect of the verbal base (lexical aspect) but also the outer aspect (grammatical aspect). This internal aspectual structure is what accounts for the obligatory projection of arguments, different types of modifiers, and eventive control.

analysis will also lack an argument structure and will never take any grammatical arguments at all" (p.49). Since deverbal nouns can be ambiguous between an eventive or resultative reading, especially with *-ation* nouns such as *examination*, it is insufficient to consider the morphological behavior of deverbal nouns solely. Therefore, Grimshaw's (1990) diagnostics can be helpful (Heinold, 2010). A complete overview of Grimshaw's (1990) features for deverbal nouns is illustrated in the following Table 2 (Melloni, 2011, p.25):

Table 2

Diagnostics for separating event nominals from result nominals

COMPLEX EVENT NOMINALS	RESULT NOMINALS
have event reading can be located in time	have referential reading denote (concrete) entities
assign theta-roles have obligatory (internal) arguments	do not assign theta-roles do not have obligatory arguments
allow modifiers as *frequent*, *constant*	allow modifiers as *frequent*, *constant* only when plural
only take the determiner *the* or none	determiners as *this*, *that*, *the*, *one*, *a*, etc.
are mass nouns do not pluralize	are count nouns pluralize
take agent-oriented modifiers (e.g., *intentional*)	do not take agent-oriented modifiers
admit only subject-like possessives	admit non-thematic possessives
admit aspectual modifiers	do not admit aspectual modifiers
by-phrases denote arguments (adjuncts)	*by*-phrases are non argumental
allow implicit argument control	do not allow implicit argument control
cannot occur predicatively	can occur predicatively (or with the equational *be*)
take an external *Ev* argument	take an external *R* argument

From Table 2, it becomes evident that the characteristics of event and result nominals differ considerably.[3] For instance, event nominals cannot occur predicatively, as opposed to result nominals. Furthermore, these properties cannot be combined, according to Borer (2003). Borer (2003, p.45) exemplifies that if an argumental *by*-phrase is present, then adverbial modifiers like *frequent* or *constant* cannot appear with a plural noun (9):

[3] Although Grimshaw (1990) claims that both event and result nominals are derived in the lexicon, each nominal has its distinct non-thematic argument in their structures: *Ev* in event nominals, *R* in result nominals (Engelhardt, 2000). Concretely, *Ev* represents the external argument of event nominals, while the external argument of result nominals is *R* (Grimshaw, 1990). Thus, all nouns have an argument structure; if it is non-argument taking, it has R as its external one.

(9) The constant examination/*examinations of the papers by the students

Moreover, omitting the object while including an argumental *by*-phrase also results in ungrammaticality, as shown in example (10) (Borer, 2003, p.45):

(10) *The constant examination by the students

The same conclusion from example (10) can be drawn for the following example in which eventive and aspectual modifiers appear without the event's obligatory arguments (11) (Borer, 2003, p.45):

(11) *The destruction in a day

Thus, Borer (2003) restricts the combinability of the properties of event and result nominals and provides examples where these combinations are disallowed within the linguistic structures.

In closing, event nominals license external arguments due to the presence of an argument structure inherited from their base verbs. In contrast, result nominals lack such an argument structure and thus do not select arguments since they have a non-eventive reading (Gondra, 2014). Grimshaw (1990) has provided cues to identify or to separate event nouns from result nouns, ranging from the grammaticality to combining with indefinite determiners for result nouns to the impossibility of event nouns appearing as predicates (see Table 2). The following section discusses Grimshaw's (1990) four most relevant diagnostics to the present study, as they, according to the literature, cue an eventive reading.

2.2 Grimshaw's (1990) theory of deverbal nouns

Many researchers have used Grimshaw's (1990) division of deverbal nominalizations into event and result nominals for their own research purposes and languages. This section focuses on the most prominent diagnostics of Grimshaw's (1990) theory, as the form and use of deverbal nominals have been shown to correlate with various semantic and syntactic properties. These diagnostics include the type of reading, adverbial modification, argument structure, and aspectual modification. These four diagnostics were all distinguishing cues of deverbal nouns,

as Russo et al. (2012) found.[4] They concluded that the presence of arguments and modifiers behaved as successful lexical cues in identifying the eventive status of the deverbal noun.

2.2.1 Type of reading

The context in which deverbal nouns occur without any modification or argument present is known as the type of reading. This unmodified context is illustrated in example (12) for event nominals and in example (13) for result nominals (Russo et al., 2012, p.1):

(12) The building of the bridge lasted three years.
(13) The building of the bridge was expensive.

Grimshaw (1990) takes the syntactic properties of deverbal nominals as the basis for an eventive or resultative reading. The eventive reading of a deverbal noun primarily arises from its argument realization, and the deverbal noun itself pertains to the process or progression of the action (Grimshaw, 1990; Schoorlemmer, 1998). As Bloch-Trojnar (2020) mentions, result nominals can exhort different readings, albeit typically denoting the result or end state of the event.[5]

2.2.2 Adverbial modification

A second diagnostic that distinguishes event nominals from result nominals is adverbial modification, which in Borer's (2003) terms are known as event-related modifiers. Grimshaw (1990) points out that these modifiers combine with singular deverbal nouns to which they add an eventive interpretation. Whereas event nominals always allow these adverbial modifiers (14), result nominals do not (15), except for when they occur in the plural (16):

(14) The frequent examination of the students by the teachers

(15) *The frequent exam

(16) The frequent exams

[4] The research by Russo et al. (2012) tested the detection of event nominals in Italian with specific affixes that are responsible for polysemous alternation.
[5] For an overview of the different readings that deverbal event and result nominals can express, consider Bloch-Trojnar (2018).

The question that arises is what allows adverbial modifiers such as *frequent* to be combined with plural result nominals since they lack an event reading. Meinschaefer (2005) argues that other aspectual properties are at play: the reason that adverbial modifiers can pair with plural result nominals is that these modifiers select unbounded entities ([-b]), which is a property of mass nouns. Crucially, Meinschaefer (2005) rejects Jackendoff's (1991) explanation of boundedness by claiming that event nouns can also pluralize. As to the behavior of adverbial modifiers like *frequent,* Meinschaefer (2005) concludes that they combine with unbounded expressions in the form of a mass noun or plural noun. Concretely, event nouns can be mass nouns (17a), meaning that they can combine with such modifiers (17b), just like plural result nouns (18a); in contrast, event nouns that have count properties (19a) can only co-occur with these modifiers in the plural (19b) (Meinschaefer, 2005, p.14):

(17) *Event (count+mass properties) noun*
a. The frequent debate/debates of this issue raised much interest.
b. Much debate of the issue was going on.

(18) *Plural result noun*
a. The frequent ??discussion/discussions take several hours.

(19) *Event (count-only properties) noun*
a. Their frequent *fight/fights scared everyone.
b. *Much fight over this issue was going on.

Crucially, the focus of Meinschaefer (2005) is different from Jackendoff (1991): Whereas Jackendoff (1991) claims that event nouns that express unbounded events cannot pluralize, Meinschaefer (2005) asserts that modifiers such as *frequent* select such events, which can pluralize. Therefore, Meinschaefer (2005) does not confirm that boundedness allows or disallows plural event nouns – it is solely the case that unbounded plural events pair with modifiers like *frequent.* The possibility of modifiers combining with singular result nominals is not discussed by Meinschaefer (2005). A possible explanation could be that adverbial modifiers like *frequent/constant* can only be combined with nouns denoting iterative readings, which are not evoked by singular result nominals (Roy & Soare, 2013).

2.2.3 Argument structure

The focal distinction that Grimshaw (1990) makes for the difference between event and result nominals is argument structure. Event nominals inherit the properties of the verb from which they are derived, therefore closely resembling the argument structure of verbs. If the base verb selects complements or arguments, then the event nominal must also satisfy this requirement. For example, the gerundive nominals *felling* in (20) and *destroying* in (21) behave similarly to their corresponding verb forms, meaning that they are both required to realize their objects (Grimshaw, 1990, p.50):

(20) The felling *(of the tree)
(21) The destroying *(of the city)

Melloni (2011) further specifies that the difference between event and result nominals is that result nominals cannot have an agentive reading, thus disallowing the presence of arguments altogether (22) (Grimshaw, 1990, p.51):

(22) (*)The instructor's examination took a long time.

The construction in (22) is only grammatical if *the instructor's examination* is interpreted as a possessive noun phrase. However, if this noun phrase is interpreted as the subject, meaning that it is agentive and thus requires an internal argument, the construction becomes ungrammatical. Also, no internal argument is present in example (22), and the addition of agentive modifiers such as *intentional* and *deliberate* further confirms this fact (23) (Grimshaw, 1990, p.51):

(23) *The instructor's intentional/deliberate examination took a long time.

Another test is the addition of a subject-like *by*-phrase, which makes objects obligatory. As shown in (24), the addition of a *by*-phrase proves that event nominals require complements since the *by*-phrase itself is also licensed by an argument structure (Grimshaw, 1990, p.52):

(24) The examination *(of the papers) by the instructor

Therefore, the claim is that only event nominals can host and require internal arguments in line with their verbal counterparts. Result nominals are thus non-argument-taking and less verbal

than event nominals. Substantial data from Russian provides further support for Grimshaw's (1990) claims on argument structure (25) (Schoorlemmer, 1998, p.211):

(25) Russian[6]

Otaplivanie	**(doma)*	*zanjalo*	*neskol'ko*	*dnej.*
o-tap-l-iva-ni-e	doma	zan-jal-o	neskol'ko	dn-ej
PREF-heat-?-IMPF-NMLZ-NOM.SG	house-GEN.SG	take-PST.SG.N	several	day-GEN.PL

'Heating up (the house) took a couple of days.'

Omitting the argument *doma* 'the house' in (25) leads to the ungrammaticality of the sentence. The event nominal *otaplivanie* 'heating up' must realize its argument *doma* 'the house' to be acceptable. Simply put, event nominals must realize the arguments of their verbal base – hence, they are also known in the literature as Argument-Supporting Nominals (ASNs) (Borer, 2003). Regarding the realization of argument structure, the same distinction between event and result nouns has also been found to apply to Spanish (Carme Picallo, 1991) and German (Ehrich, 2002).

In contrast, Hull and Gomez (2000) show that English event nouns often do not meet Grimshaw's (1990) criteria for having an argument structure. They show how English deverbal nouns are disambiguated by modifying the deverbal noun with definite articles and specific prepositional phrase rules. To exemplify, in example (26), not all of the deverbal noun's obligatory arguments are present (Hull & Gomez, 2000, p.159):

(26) He saw that city's destruction by British and American bombing in 1945.

The deverbal event noun *destruction* selects *city* as its theme argument. However, the agent or external argument is not present since Hull and Gomez (2000) view the *by*-phrase as an optional element, meaning that the argument structure of the derived verb is not fully nor obligatorily retained. Analyses such as the one conducted by Hull and Gomez (2000) are crucial because they apply Grimshaw's (1990) criteria to the language she primarily focused on: English. This demonstrates that some tests already do not hold for English, which has consequences for the conclusions that Grimshaw (1990) has drawn. Therefore, this thesis will also further consider English, but before doing so, the final diagnostic is discussed: aspectual modification.

[6] All of the glosses throughout the thesis are my own. See pp. 19-72.

2.2.4 Aspectual modification

The final diagnostic to disambiguate the different nominals is using aspectual modifiers or temporal constituents, such as the phrase *in three hours.* These *in/for*-prepositional phrases (*in/for*-PPs) only combine with event nominals, as shown in example (27) (Roy & Soare, 2013, p.127):

(27) The examination of the students in three hours

According to Grimshaw (1990), event nominals resemble their verbal origin by allowing the same aspectual modifiers. Event nominals can thus be situated in a particular moment in time or refer to a specific duration of time, such as in example (28), which also accounts for the eventive reading (Bašić, 2010, p.42):

(28) The signing of the documents took a long time.

Result nominals cannot combine with aspectual or temporal modifiers, which appear to correlate exclusively with an eventive interpretation (29) (Roy & Soare, 2013, p.127):

(29) The exam (*in three hours)

The eventivity inside nominals is what allows for them to be modified aspectually as well as adverbially. Even though event and result nominals have related lexical meanings, only event nominals have an event structure and exact argument structure like their verbal counterparts (Grimshaw, 1990). Result nominals do not license or require arguments and thus cannot license aspectual modifiers either.[7] As Grimshaw (1990) explains, event nominals contain an internal aspectual structure, which is necessary for licensing aspectual modifiers – result nominals lack such an internal analysis altogether.

This section has covered four of Grimshaw's (1990) diagnostics to learn more about the behavior of deverbal nominals and what helps to distinguish them. While the majority of studies have shown that they rely on Grimshaw's (1990) categorization, it is crucial to realize that not

[7] A study by Haas et al. (2007) focuses on the semantic properties that deverbal nominals inherit from their base verbs. Specifically, they tackle the question of how deverbal nouns can be located in time and space and thus be modified aspectually, whereas others cannot. To show this, Haas et al. (2007) adopt and combine the frameworks by Vendler (1967), Dowty (1979), and Verkuyl (1989): states, processes, accomplishments, and achievements.

all her diagnostics are valid, as exemplified by Hull and Gomez (2000) for argument structure and Meinschaefer (2005) for adverbial modification. Nevertheless, the four discussed diagnostics are still considered prominent in the analysis of deverbal nouns (Russo et al., 2012). Consequently, this thesis evaluates these diagnostics to investigate event and result nominals in different languages and in different contexts.

2.3 Levels of nominalization: The focus on plurality

The theory presented by Grimshaw (1990) has several far-reaching consequences regarding event and result nominals, such as what they can be combined with and in what kind of contexts they can appear. As previously discussed, research on deverbal nominals has primarily focused on the properties of Grimshaw (1990), such as argument structure, type of reading, and the different modifiers (Carme Picallo, 1991; Schoorlemmer, 1998; Ehrich, 2002; Borer, 2003, 2005; Meinschaefer, 2005; Russo et al., 2012; Roy & Soare, 2013, 2014). Most counterevidence pertaining to Grimshaw (1990), however, comes from studies that have explicitly looked at deverbal nominals and plurality. These studies have demonstrated that Grimshaw's (1990) assertions do not fully hold. This body of evidence needs to be revisited in order to reveal how these languages encode the event and result readings in nominal forms and why they behave the way they do when it comes to number marking. Moreover, by considering Grimshaw's (1990) diagnostics in the present study, it will be possible to see whether and what kind of impact they have on allowing plurality in deverbal nouns.

2.3.1 Cross-linguistic studies on deverbal nominalizations

This section first discusses studies that build on Grimshaw's (1990) generalization regarding plurality. Unlike event nominals, as shown in example (30a), result nominals can pluralize, as illustrated in example (30b) (Grimshaw, 1990, p.54):

(30) a. *The assignments of the problems took a long time.
b. The assignments were long.

Semantically, the nominal in (30a) gives rise to an event reading and takes the argument *of the problems*. Both these properties prohibit event nominals from being pluralized. The result nominal in (30b) does not select arguments and can thus be pluralized. This also means that result nominalizations yield a more lexicalized output of the process, whereas event nouns firmly inherit the arguments of their base verb, thus disallowing pluralization (Iordăchioaia et

al., 2016). Furthermore, Grimshaw (1990) explains that event nominals cannot appear in the plural since the properties of the plural morpheme only select the non-thematic argument *R* which result nominals exclusively have, as shown by Lieber (2016). In other words, plural morphemes have specific selectional properties that enable them to combine with result nouns only (Engelhardt, 2000). The standard assumption is that event nouns behave like mass nouns, whereas result nouns behave like count nouns (Grimshaw, 1990). In Grimshaw's (1990) words, "the head noun of a complex event nominal behaves like a non-count noun" (p.55), meaning that it cannot be pluralized. Moreover, event nominals are said to have no dedicated layer in their syntactic structures to host number morphology (Iordăchioaia & Soare, 2008), which is more elaboratively discussed in Chapter 6.2.

However, there are studies that have found considerable variation within the interaction between deverbal nouns and plurality. For instance, Bisetto and Melloni (2007) have found mixed evidence regarding plural nominalizations in Italian. On the one hand, Bisetto and Melloni (2007) find support for the claim that pluralization only occurs when the nominal is non-argument-taking. Consider the following Italian example (31) (Bisetto & Melloni, 2007, p.397):

(31) Italian

La	*creazione/*creazioni*	*di*	*quella*	*scultura*
the.DEF.ART.F.SG	creation.SG/creation.F.PL	of	that	sculpture.F.SG
(da parte dell' artista)	*fu*	*lunga*	*e*	*difficoltosa.*
(by the artist.F.SG)	was.3SG.PST	long.F.SG	and	troubled.F.SG

'The creation of that sculpture (by the artist) was long and troubled.'

The nominal *creazione* 'creation' has an eventive interpretation, and its pluralized form would, therefore, be ungrammatical, in line with Grimshaw (1990). The event nominal is accompanied by the argument *of that sculpture*, and the insertion of the *by*-phrase would, as expected, still be grammatical as it is also agentive. Similarly, the noun *creazione* 'creation' in (32) has a result reading (Bisetto & Melloni, 2007, p.397):

(32) Italian

Questa	*splendida*	*creazione/creazioni*		*rappresenta*
this.F.SG	wonderful.F.SG	creation.F.SG/creations.F.PL		represents.PRS.3SG
un	*ensempio*	*dell'*	*architettura*	*del*

a.INDF.ART.M.SG	example.M.SG	of the.F.SG	architecture.F.SG	of the.M.SG
XIX	*secolo.*			
19th	century.M.SG			

'This wonderful creation represents an example of 19th C architecture.'

In this context, *creazione* 'creation' in (32) is non-argument-taking; it can be pluralized, and it can be combined with a demonstrative determiner (*questa* 'this') (Bisetto & Melloni, 2007). These examples are thus in support of Grimshaw (1990). On the other hand, Bisetto and Melloni (2007, p.401) show that Italian event nominals can also pluralize (33):

(33) Italian

Ripetute	*correzioni*	*hanno*	*modificato*	*il*
repeated.F.PL	corrections.F.PL	have.AUX.3PL	modified.PTCP	the.M.SG
testo	*originale.*			
text.M.SG	original.M.SG			

'Repeated corrections modified the original text.'

The event nominal *correzioni* 'corrections' is plural and exhibits an event reading. Such examples or patterns in Italian, as found by Bisetto and Melloni (2007), are not in support of Grimshaw (1990).

Another study by Villalba (2013) analyzed eventualities in deadjectival nominalizations in Spanish, which are nouns derived from adjectives. Similar to deverbal nouns, deadjectival nouns also come in two types: abstract and neuter nominalizations. The difference between abstract and neuter nominalizations is that only the former encodes an eventive reading. Villalba (2013) found that, in line with Grimshaw (1990), abstract nominalizations permit pluralization when no argument structure is present, similar to deverbal result nominals. The following example (34) illustrates this precisely (Villalba, 2013, p.249):

(34) Basque

las	*capacidades*	*(*de matar)*	*por*	*parte*	*de*	*al-Assad*
the.DEF.ART.F.PL	abilities.F.PL	of kill.INF	by	part.F.SG	of	al-Assad

'The abilities of kill by part of Al-Assad'

In example (34), the abstract nominalization *las capacidades* 'the abilities' prohibits pluralization since the argument *de matar* 'of kill' is present. Combined with frequency or adverbial modifiers such as *constant* and *frequent,* nominalizations can only be pluralized when no event reading is present (Villalba, 2013). Lastly, event nominals strictly prohibit pluralization in Basque (35) (Gondra, 2014, p.5):

(35) Basque

**Francoren*	*Gernikaren*	*suntsiketak*	*beldurgarriak*	*izan.*
Franco.GEN	of Gernika.GEN	destroying.PL	scary	were.3PL.PST

'Franco's destroyings of Gernika were scary.'

The plural *suntsiketak* 'destroyings' in example (35) renders the whole phrase ungrammatical as the singular counterpart, *suntsiketa* 'destroying,' should have been used.

Contrary to Grimshaw (1990), which states that event nominals can not pluralize, several studies, like Bisetto and Melloni (2007), have found that event nominals can, in fact, pluralize. Among the literature dealing with plurality in deverbal nouns, Roodenburg (2006) shows this for French event nominals (36) (Alexiadou et al., 2007, p.1):

(36) French

Les	*désamorçages*	*de*	*bombes*	*lourdes*	*par*
the.DEF.ART.M.PL	dismantlement.M.PL	of	bomb.F.PL	heavy	by
les	*recrues*				
the.DEF.ART.PL	young soldiers.M.PL				

'The dismantlements of heavy bombs by the young soldiers'

The event nominal *désamorçages* 'dismantlements' is acceptable and grammatical in its plural form. Furthermore, Iordăchioaia and Soare (2008) found that in Romanian, event nominals that have the form of an infinitive can pluralize, while event nominals that have the form of a supine cannot (37) (p.194):

(37) Romanian

*demolările/*demolaturile*	*frecvente*	*ale*	*cartierelor*	*vechi*	*de*
demolitions.INF.F.PL/demolitions.F.PL	frequent	of the	quarter.PL	old.PL	by
către	*comunişti*				

to communists.M.PL
‘the frequent demolitions of the old quarters by the communists’

The supine form in Romanian is similar to past participles. According to Iordăchioaia and Soare (2008), these forms are defective in the plural. These findings imply that plural event nouns are not specific to any particular language and that both singular and plural forms can be found within the same language, such as Romanian.

For Germanic languages, Alexiadou (2001, p.72) illustrates how German event nouns can also appear in the plural form (38):

(38) German

Die		*Besteigungen*	*der*	*beiden*	*Gipfel*
die		besteigung-en	der	beiden	gipfel
the.DEF.ART.NOM.F.PL		climbing-PL	the.DEF.ART.GEN.M.PL	both	mountain-peak.PL
dauerten	*6*	*Wochen.*			
dauert-en	6	woche-n			
take-PST.PL	six	week-PL			

‘The climbings of the two tops took 6 weeks.’

Likewise, Sleeman and Brito (2010, p.202) correctly imply that the following Dutch example (39) is acceptable:

(39) Dutch

Tijdens	*de*	*martelingen*	*van*	*de*	*politieke*	
tijdens	de	marteling-en	van	de	politiek-e	
during	the.DEF.ART	torture-PL	of	the.DEF.ART	political-ADJ	
gevangenen	*door*	*de*	*zwarte*	*brigades*	*moesten*	*alle*
gevangen-en	door	de	zwart-e	brigade-s	moest-en	alle
prisoner-PL	by	the.DEF.ART	black-ADJ	brigade-PL	have.PST.3SG-PL	all
journalisten	*het*	*gebouw*	*uit.*			
journalist-en	het	gebouw	uit			
journalist-PL	the.DEF.ART	building	out			

‘During the tortures of the political prisoners by the black brigades all the reporters had to leave the building.’

More radically, certain Greek event nouns can only inflect for plural number (40) (Alexiadou, 2001, p.41):

(40) Greek

**I*	*afiksi*	*/I*	*afiksis*
i	afksi	i	afiksis
the.F.NOM.DEF.ART.SG	arrival.F.NOM.SG	the.F.NOM.DEF.ART.PL	arrival.F.NOM.PL

turiston	*oli*	*ti*	*nihta*	
turist-on	oli	ti	nihta	
tourist.M.GEN-PL	all.F.ACC.SG	the.F.ACC.SG.DEF.ART	night.F.ACC.SG	

'The *arrival/arrivals of tourists during the whole night'

What Alexiadou (2001), Roodenburg (2006), Bisetto and Melloni (2007), Iordăchioaia and Soare (2008), and Sleeman and Brito (2010) have shown is that both Romance and Germanic languages allow event nominals to pluralize. There are several reasons why event nouns can be pluralized in these languages. Roodenburg (2006) claims that the language-specific properties of, in this case, Romance languages allow for plural event nominals, whereas Germanic does not (Iordăchioaia & Soare, 2008). Knittel (2011) further specifies Roodenburg's (2006) findings by attributing plural morphology to the aspectual properties of the nominal. Specifically, Knittel (2011) states that pluralization is closely connected to perfectivity for languages like French: only event nominals with perfective aspect can be plural. Nevertheless, Alexiadou (2001) and Sleeman and Brito (2010) show that even Germanic languages that express aspectual distinctions differently than Romance languages can have plural event nominals, such as Dutch.[8] Iordăchioaia and Soare (2008) theorize that in Romanian, infinitive event nominals pattern with count nouns and supines resemble mass nouns, claiming that the aspectual properties are responsible for this plural marking contrast. In addition, Van Hout (1991) argues that certain types of nouns can express representations that may be repeated more easily than other deverbal nouns. Consequently, this analysis allows event nouns to realize their arguments and allow plurality simultaneously. In her words, "a relevant context may permit certain 'singular-only' nominals to appear as a plural" (Van Hout, 1991, p.80). For instance, deverbal nouns that denote novels and theatre pieces, such as *translation*, unproblematically allow for

[8] There is a debate about the Dutch language marking aspect, namely, via the periphrastic *aan-het* construction. For an elaborate discussion, see Lemmens (2005). More recent research is also available; for this, see Bogaards et al. (2022).

several representations, thus also for the selection of arguments and plurality (Sleeman & Brito, 2010). Nonetheless, event nouns beyond the semantic kind identified by Van Hout (1991) have also been shown to pluralize: German *besteigungen* 'climbings' and Portuguese *destruições* 'destructions' (Sleeman & Brito, 2010).

Numerous studies have thus far shown that event nominals can take the plural form (Roodenburg, 2006; Bisetto & Melloni, 2007; Alexiadou et al., 2008; Iordăchioaia & Soare, 2008; Sleeman & Brito, 2010). Notably, Melloni (2007) is right in mentioning that pluralization is the most controversial topic in Grimshaw's (1990) classification. So far, various studies have focused on a widespread of Germanic and Romance languages (Roodenburg, 2006; Bisetto & Melloni, 2007; Alexiadou et al., 2008; Iordăchioaia & Soare, 2008; Sleeman & Brito, 2010). The ability of event nominals to pluralize is the most remarkable change or modification to Grimshaw's (1990) original theory: not only is there an observable change in the semantics of event nominals, namely that there must be something else going on than solely the role of argument structure that was argued to be decisive, but also a change in the syntax, namely that event nominals must be capable of hosting plural morphology. The following section discusses the most probable reasons behind this change, which are all aspectual in nature.

2.3.2 Aspectual properties of event nominals: telicity, (im)perfectivity, and (un)boundedness

Looking at deverbal nouns, it is essential to consider the verb's aspectual properties. As shown by Iordăchioaia and Soare (2008), event nouns can pattern differently within a single language: the infinitive event noun in Romanian can be plural, but the supine cannot.

Borer (1994) and Cornilescu (2001) relate the behavior of deverbal nominals, such as regarding the projection of arguments, to the telicity of the corresponding base verb. Telicity refers to the inherent temporal characteristics of an event: verbs that inherently denote a natural, specific endpoint are known as telic verbs, involving a final state, while those that do not are atelic verbs (Filip, 1997). If event nominals project arguments, they must be telic, but if the theme is not projected, the event nominal is atelic. What characterizes English event nouns is that they can pluralize as soon as they are telic (Alexiadou et al., 2010). In Alexiadou et al.'s (2010) words, "count nouns are similar to telic and perfective events in being bounded, and mass nouns to atelic and imperfective events in being unbounded" (p.538). This is illustrated in example (41) for telic nominal gerunds (Alexiadou et al., 2010, p.553):

(41) In my many/frequent readings of this book I failed to see its structure.

Example (41) also shows that plural event nominals can occur with their event-oriented modifiers in English, as is, in this case, *frequent*. Still, San Martin (2009, p.838) claims that not all telic event nominals pluralize (42):[9]

(42) There was *a destruction/*17 destructions of the volcano by Taro.
(cf. There was destruction of the volcano by Taro.)

Moreover, atelic event nouns pattern with Grimshaw's (1990) theory by disallowing pluralization. A similar pattern is found in Greek: since telic event nominals qualify as count nouns, they can license pluralization (Alexiadou, 2001). Borer (2005) further specifies that atelic event nouns have less syntactic structure than telic event nouns since atelic event nouns are qualified as mass nouns. This atelic inner aspect disallows the realization of plural morphology since it lacks a semantic [+count] feature to project number (Alexiadou et al., 2010).

Another layer of the aspectual properties of the verb is aspect. Aspect refers to the relationship between events and time. Specifically, grammatical aspect comes in two types: the imperfective aspect shows the processes or development of the event (e.g., *She was writing*), while the perfective denotes the action as being completed (e.g., *She wrote*). In the literature, a well-known occurrence dealing with grammatical aspect is the *imperfective paradox.* It is not the case that perfective verbs are always telic, nor that imperfective verbs are always atelic. Telic predicates can be modified by imperfective aspect, as shown in (43) by (Van Hout, 2016, p.7):

(43) John was making a chair, and he may still be making a chair.

Modifying the telic predicate with *making a chair* and perfective aspect would lead to a contradiction of the event (44) (Van Hout, 2016, p.7):

(44) ??John made a chair, and he may still be making a chair.

[9] There must be an alternative assumption that uncovers what is responsible for event nominalizations to pluralize across languages. For this occurrence alone, Kamiya (2001) reasons that the difference within telic event nominals lies in their internal structure: telic event nominals that can pluralize contain a [+count] ClassP layer in their internal structure, as opposed to telic event nominals that cannot pluralize.

The perfective aspect refers to an event occurring within a designated time interval, including its initial and final boundaries. Consequently, telic predicates modified by the perfective aspect entail completion, while atelic predicates have no inherent, natural endpoint. In contrast, the imperfective aspect asserts a part of the event's duration without implying completion or termination (Van Hout, 2016). Example (44) is odd because it creates a conflict between the perfective aspect and a telic predicate. The perfective aspect emphasizes the entirety of an action, while the telic predicate *making a chair* implies an ongoing process with a specific endpoint. This creates a mismatch in the way temporal and aspectual information is presented, and to resolve this, the imperfective aspect should be used. Besides, this paradox does not hold for atelic predicates. Atelic predicates can be modified by both imperfective and perfective aspect, meaning that "incompleteness of an event matters only for telic predicates and not atelic ones" (Van Hout, 2016, p.7). Relating this to the Romanian examples, the supine introduces something known as *aspect shift*, meaning it abandons the aspectual value of its base verb. As a result, supine event nominals project an aspect phrase (AspP) in the syntax, which blocks the projection of number (NumP): no morphological plural marking is available anymore (Alexiadou et al., 2008). As discussed below, the precise aspect shift maps bounded [+b] events into unbounded [-b] events.

A final reason why, according to some scholars, event nominals are able to pluralize is the role of boundedness. Boundedness refers to the temporal boundaries of a particular situation or event (Depraetere, 1995). According to Jackendoff (1991), *until*-phrases force a bounded event reading: *John slept* expresses an unbounded process, whereas *John slept until noon* forces a termination of this process. In other words, *until* "bounds an unbounded event (its first argument) with a time (its second argument), producing a bounded event" (Jackendoff, 1991, p.18). The conjecture is as follows: Event nouns, such as supines in Romanian, do not pluralize because they express unbounded events. Simultaneously, the function of the plural only maps with bounded events: "The plural morpheme cares only that the noun to which it applies designates a bounded entity" (Jackendoff, 1991, p.22). Furthermore, it is vital to distinguish boundedness from telicity (Depraetere, 1995). Whereas telicity concerns the inherent endpoint of the situation, boundedness is about reaching a specific temporal boundary (Depraetere, 1995).

In short, the studies mentioned above show how the imperfective aspect, atelicity, and unboundedness block the pluralization process of event nominals. Likewise, Grimshaw's (1990) framework does not fully account for how deverbal nominalizations pattern and behave in different languages. As such, there is a need to consider a broader and more diverse range of

languages and linguistic contexts when evaluating frameworks like Grimshaw (1990) to capture the variability in the pluralization of deverbal nominalizations and to see whether the aspectual features are what is responsible for plurality in deverbal nouns.

2.4 Exploring deverbal nouns across languages

Some studies have examined the verbal and nominal systems of English, Hungarian, and Serbian (Szabolcsi, 1992; Laczkó, 1997; Zlatić, 1997; Hull & Gomez, 2000; Meinschaefer, 2005; Bašić, 2010; Heinold, 2010; Simonović & Arsenijević, 2014; Szabó et al., 2016; Gatarić et al., 2021; Kovačević, 2021). As previously mentioned, these studies did not investigate the pluralization of event nominals in specific contexts or under certain conditions. In addition, these studies have yet to determine the precise factors that may govern this pattern and consequently develop diagnostics to test the pluralization of deverbal nominals across different languages. It is unknown whether Grimshaw (1990) can still be held as the starting point for analyzing the pluralization of event nominals in these languages. Therefore, the current study will examine both the contexts in which pluralization is permitted or restricted and explore the interaction between factors that account for this. This study is novel because it will be based on empirical data, whereas previous literature has only focused on theoretical linguistic analyses.

The following section first outlines what is already known about the pluralization of event nominals in these languages and illustrates that substantial research is lacking. To analyze the deverbal nominals of the languages being studied effectively, it is crucial to establish their language-specific properties. This will allow for a better understanding of how closely they align with Grimshaw's (1990) theory and any ways in which they may already deviate from it.

2.4.1 Studies on English deverbal nouns

Among the studies discussing and disagreeing with Grimshaw (1990) is Heinold (2010). Her dissertation concerns a cross-linguistic analysis of deverbal nouns in English, French, and German. Heinold's (2010) research provides an extensive list of English deverbal nouns that can function as event and result nouns, a pattern also observed by Lieber (2016). This primarily pertains to *-(a)tion* nouns, which is why they are included in this thesis. Besides, Heinold (2010) argues, like Hull and Gomez (2000), that the diagnostic of argument structure is less evident than what has been intended by Grimshaw (1990). According to Heinold (2010), the aspectual properties of deverbal event nominals are more relevant than the presence or absence of the (object) argument. For example, compare (45) with (46) (Heinold, 2010, p.51):

(45) The destroying of the city (by the enemy) resulted in its destruction.
(46) ?The destruction of the city (by the enemy) resulted in its destroying.

Both the deverbal event noun *destroying* in the example (45) and the deverbal result noun *destruction* in the example (46) have realized the argument *of the city*. In addition, both nouns are derived from the same verb, *destroy* (Heinold, 2010). To explain this, Grimshaw (1990) attributes the difference to the interpretation of the nominal, in which the focus of example (45) is on the action itself, whereas the result of the action is the focus of example (46). Heinold (2010) argues that aspectual differences are relevant and that solely the presence or absence of arguments cannot explain this occurrence. For this, Heinold (2010) relies on Verkuyl's (1972) *Plus Principle*, which denotes the aspectual properties that a verb phrase expresses. Specifically, the features of temporality and boundedness can be positively or negatively set.

Concerning *-ation* nouns, this suffix is aspect-inducing, and as soon as the context exhibits an eventive reading, the *-ation* induces dynamic and temporal information in the feature of [+ADD TO], expressing complete situations from start to finish (Heinold, 2010). The SQA ('specified quantity of A(rgument)') specifies the argument, and as soon as it is positive, it also expresses boundedness (Heinold, 2010). These two features, [ADD TO] and [SQA], constitute terminative [+T] or durative [-T] events. Thus, following Verkuyl (1972), the value of the sum is minus if the temporal features of the verb are also minus: the verb and its arguments play an equally important role. As a result, the compositional structure of the sentences in (45) and (46) is as follows (47) (Heinold, 2010):

(47) Compositional structure of *destruction*
Verb: [+ADD TO] destroy
Suffix: -ation [+ADD TO]
Of the city [+SQA]
Sum: [+T]

Only result nominals have a positive value for the termination feature, [+T], and duration with event nominals are expressed with [-T]. This proposal by Heinold (2010) also implies that only event nominals with terminative aspect can be pluralized, as with infinitive event nominalizations in Romanian (Iordăchioaia & Soare, 2008). Following Heinold (2010), *-ation* nouns are identical to the Romanian infinitive. This also means that durative event nominals cannot pluralize – result nouns can always be pluralized since they are always terminative and,

hence, consistently denote a result or end state of the action. In sum, the studies by Hull and Gomez (2000), Meinschaefer (2005), and Heinold (2010) have shown that there are exceptions to Grimshaw's (1990) theory for English, including the feature of pluralization.

Regarding aspectual modification, the question of whether plural event nominals can be modified by prepositional phrases such as *in an hour/for an hour* has not been resolved. This is important to uncover because it will reveal whether Grimshaw's (1990) theory accounts for such exceptions or whether her remaining diagnostics also need alteration. Suppose the assumptions by San Martin (2009) and Alexiadou et al. (2010) are borne out. In that case, only telic event nouns in the plural can combine with the telic prepositional phrase, namely, *in*-PPs (Rosen, 1999).

2.4.2 Studies on Hungarian deverbal nouns

Deverbal nouns in Hungarian can be created with the derivational suffixes *-ás* and *-és* (Szabolcsi, 1992; Knittel, 2015; Szabó et al., 2016). Szabolcsi (1992, p.152) shows how Hungarian deverbal nouns containing the productive suffixes *-ás* in example (48) or *-és* in example (49) are ambiguous between an event and result reading:

(48) Hungarian
félreértés
félreért-és
misunderstand-NMLZ
'misunderstanding'

(49) Hungarian
bombázás
bombáz-ás
bomb-NMLZ
'bombing'

In their study, Szabó et al. (2016) focused on the nominal and verbal properties of Hungarian deverbal nominals. As illustrated in example (50), the deverbal noun *aláírása* 'signing' is an event nominal, while it carries a resultative reading in example (51) (Szabó et al., 2016, p.270):

(50) Hungarian

A	*levél*	*elnök*	*által*	*való*	.
a	level	elnök	által	való	
the.DEF.ART.SG.NOM	letter.SG.NOM	president.M.SG.GEN	by	to.ADJ	
aláírása	*meglepett*				
aláír-ás-a	meglep-ett				
sign.3SG-NMLZ-POSS	surprise-3SG.PST.INDF				

‘The signing of the letter by the president surprised me.’

(51) Hungarian

Az	*elnök*	*ezt*	*a*	*tollat*
az	elnök	ez-t	a	toll-at
the.DEF.ART.SG.NOM	president.SG.GEN	this-ACC.SG	the.DEF.ART.SG.NOM	pen-ACC.SG
aláírása	*használja.*			
aláír-ás-a	használ-ja			
sign.3SG-NMLZ-POSS	use-3SG.PRS.DEF			

‘The president uses this pen only for signing.’

In Hungarian, two primary plural suffixes exist in complementary distribution with one another: *-i* for possessors and *-k*, which is the general multiplicative suffix (Laczkó & Alberti, 2017). Concerning the nominal properties of deverbal nouns, Szabolcsi (1992), as well as Szabó et al. (2016), state that event nominals cannot pluralize, in line with Grimshaw (1990) (52) (Laczkó, 1997, p.427):

(52) Hungarian

Anna	*levizsgáztaása/* levizsgáztaásai*		*sok*	*időt*
Anna	levizsgáz-ta-ás-a/ levizsgáz-ta-ás-a-i		sok	idö-t
Anna	examine-PST-NMLZ-POSS/ examine-PST-NMLZ-POSS-PL		many	time-ACC
*vesz/ *vesznek*	*igénybe.*			
vesz/vesz-nek	igény-be			
take.INF/take-3PL.PRS.INDF	claim-ILLATIVE			

‘Anne’s examination/*examinations takes a long time.’

The deverbal noun in (52) occurs in a context where an eventive reading is expressed via *takes a long time.* Laczkó (1997) touches upon Grimshaw's (1990) generalization by corroborating that event nominals in Hungarian also resemble their verb's argument structure. In contrast, result nouns have no argument structure – they only have adjuncts (Szabolcsi, 1992). Therefore, the following example (53) is ungrammatical since the deverbal event nominal appears without any arguments (Laczkó, 1997, p.428):

(53) Hungarian

**A*	*levizsgáztatás*	*gyors*	*volt.*
a	levizsgáztat-ás	gyors	volt
the.DEF.ART.SG.NOM	examine-NMLZ	quick.ADJ	was.3SG.PST

'*The examination was quick.'

In Szabó et al.'s (2016) words, "ÁS-nouns practically inherit the argument and information structure of their verbal inputs" (p.283). These examples show that pluralizing the deverbal noun or omitting its arguments is a practical diagnostic for identifying event nominals in Hungarian. Knittel (2015) also concludes that Hungarian event nouns retain the aspectual values of their corresponding verbs, often via preverbs or as telicity markers.

The Hungarian data provided by Szabolcsi (1992) and Szabó et al. (2016) seem to corroborate Grimshaw's (1990) theory. The characteristics of Hungarian deverbal nouns thus far closely resemble those of English deverbal nouns, as Grimshaw (1990) analyzed. No studies have explored the possibility of plural event nouns in Hungarian and their acceptability within Grimshaw's (1990) contexts. Thus, it is currently postulated that Grimshaw's (1990) theory holds for Hungarian.

2.4.3 Studies on Serbian deverbal nouns

In Serbian, deverbal nouns are often created through the addition of various derivational suffixes, like *-ija* in *donacija* 'donation' and *-aj* in *pokušaj* 'attempt' (Gatarić et al., 2021). Among these derivational suffixes, the *-nje* suffix, as in *slikanje* 'painting' and *priznavanje* 'admitting,' is a common productive nominalizer. More often than not, Serbian deverbal nouns contain specific morphological markers that resemble their type, i.e., result or event. To elaborate, event nominals contain a perfectivity marker and an imperfective suffix (SI), which denotes their aspectuality (54) (Bašić, 2010, p.45):

(54) Serbian
ispitivanje
is-piti-va-nje
PREF-ask.IMPF-SI-NMLZ
'questioning'

Whereas event nominals are formed by adding a derivational suffix to their imperfective stem, result nominals receive a derivational suffix to their perfective stem (55) (Gatarić et al., 2021, p.383):

(55) Serbian
rešenje
reše-nje
solve.PF-NMLZ
'solving'

Likewise, the eventive counterpart of (55) is given in (56) (Gatarić et al., 2021, p.383):

(56) Serbian
rešavanje
reša-va-nje
solve.IMPF-SI-NMLZ
'solving'

It is thus common in Serbian for deverbal nouns to come in pairs, i.e., in an imperfective and a perfective form. What Simonović and Arsenijević (2014) found is that imperfective-derived nominalizations include complete internal verbal structure, in contrast to perfective-based nominalizations (Kovačević, 2021). From the analyses conducted by Bašić (2010) and Simonović and Arsenijević (2014), it can be concluded that perfective-derived nominalizations tend to form result nouns. In contrast, imperfective-derived nominals tend to create event nouns.

Several studies disagree with the findings by Bašić (2010) and Simonović and Arsenijević (2014). For instance, Ignjatović (2016) stated that deverbal nouns derived from imperfective verbs can denote both telic and atelic events. In the following example, Ignjatović (2016, p.10) illustrates this point (57):

(57) Serbian

Jovanovo	*zatvaranje/*zatvorenje*	*prozora.*
Jovan-ovo	zatvara-nje/zatvore-nje	prozor-a
Jovan-POSS	close.IMPF-NMLZ/close.PF-NMLZ	window.M.SG-GEN

'Jovan's closing of the window.'

What happens in example (57) is that "a telic event, rendered by a perfective verbal form, is nominalizable by a morphologically imperfective verbal noun" (Ignjatović, 2016, pp.10-11). The deverbal noun *zatvaranje* 'closing' is derived from the perfective verb *zatvoriti* 'to close' and has undergone imperfectivization. The study by Kovačević (2021) analyzed *-nje* nominalizations and found that perfective-derived nouns can carry an eventive denotation, as with *napisivanje* 'writing.' Regarding the deverbal noun's functional structures, Kovačević (2021) dismisses the predictions of Simonović and Arsenijević (2014) by stating that perfective-derived nominalizations can also exhort verbal structure, thus not only imperfective-derived nominalizations. Therefore, similar to English *-ation* and Hungarian *ás/-és* nouns, Serbian deverbal nouns with *-nje* can also be ambiguous between an event or result reading (Mrazović & Vukadinović, 1990).[10]

The study by Zlatić (1997) evaluates some of Grimshaw's (1990) diagnostics in the Serbian language and highlights the specific areas where the language supports Grimshaw's (1990) dichotomy. First, in line with Grimshaw (1990), Serbian event nominals require complements (58) (Zlatić, 1997, p.185):

(58) Serbian

Rešavanje		**(postavljenog*	*zadatka)*	*trajalo*
reša-va-nje		postvaljen-og	zadatka	traja-lo
solve.IMPF-SI-NMLZ		proposed-ADJ	assignment.GEN.SG	take-PST.PL.N
je	*čitav*	*sat.*		
je	čitav	sat		
aux.3SG	whole	hour.M.SG		

'The solving *(of the assigned problem) took a whole hour.'

[10] It is possible to disambiguate some Serbian deverbal nouns via different stress patterns: event nouns often have a short rising accent, and result nouns have a long rising stem vowel (*péčenje* 'roasting' vs. *pečénje* 'roast') (Zlatić, 1997).

In Serbian, event nominals can express their agents in several ways, such as by the prenominal possessive adjective, illustrated in example (59), or with an agentive *od strane*-phrase (*by*-phrase), exemplified in (60) (Zlatić, 1997, pp.193-194):

(59) Serbian

(Jovanovo)	*rešavanje*	**(problema)*	*je*	*uvek*	*brzo.*
Jovan-ovo	reša-va-nje	problem-a	je	uvek	brzo
Jovan-POSS	solve.IMPF-SI-NMLZ	problem-M.GEN.PL	aux.3SG	always	fast

'John's solving *(of problems) is always fast.'

(60) Serbian

Jovanovo	*hapšenje*	*od*	*strane*	*policije*
Jovan-ovo	hapše-nje	od	stran-e	policij-e
Jovan-POSS	arrest.IMPF-NMLZ	from	side-GEN	police-F.GEN

'John's arrest by the police'

In example (59), only the possessive agent argument, *John*, is optional, whereas the complement *of problems* is obligatory. If *John* is interpreted as the agent of *solving,* then the nominalization is eventive, and thus, the internal argument is necessary. Similarly to (59), the agentive *by*-phrase in (60) is an argument that must be expressed.

However, Bašić (2010, p.60) shows that event nominals do not have obligatory arguments in Serbian (61):

(61) Serbian

Ispitivanje	*je*	*trajalo*	*satima.*
is-piti-va-nje	je	traja-lo	sat-ima
PREF-ask.IMPF-SI-NOM	aux.3SG	last-3SG.PST.N	hour.M.SG-INS

'The examination lasted for hours.'

The event nominal *ispitivanje* 'examination' does not appear with an overt argument. Bašić (2010) explains that the corresponding (imperfective) verb *ispitivati* 'to examine' must have been able to drop the internal argument. Further, Bašić (2010) adopts a proposal for Czech by Procházková (2006) that the [+/- perfective] value determines the obligatoriness of internal arguments for Serbian event nouns. Thus, in Serbian, verbal morphology or eventivity does not

directly determine the obligatory realization of arguments, as Grimshaw (1990) argued, but the perfective nature of verbs does. For Serbian result nouns, Bašić (2010) claims that they cannot combine with aspectual modifiers and that they cannot have obligatory arguments because they lack an AspP in their functional projection. As shown by Svenonius (2004), only Slavic event nouns contain an AspP layer to host the external prefix and imperfective suffix, which allows their arguments to be dropped. This also means that only Serbian event nouns can be aspectually modified as these elements semantically select for events, as shown in the previous example (61) with *trajalo satima* 'lasted for hours' (Zlatić, 1997).

Lastly, the diagnostic of adverbial modification in Serbian with *često* 'frequent' has also been attested (Zlatić, 1997). As expected, only event nominals can combine with such modifiers (62) (Zlatić, 1997, p.191):

(62) Serbian

Često	*rešavanje*	*/*rešenje*	*problema*	*je*
često	reša-va-nje	reše-nje	problem-a	je
frequent	solve.IMPF-SI-NMLZ	solve.PF-NMLZ	problem-M.GEN.PL	aux.3SG

poželjno.
poželjno
desireable.N.ADJ
'The frequent solving/solution of problems is desirable.'

Interestingly, Zlatić (1997) does not confirm whether result nominals in the plural form can combine with these modifiers, like in English (Grimshaw, 1990). It is unknown whether deverbal nominalizations in Serbian, specifically event nominals, can pluralize and if so, why. To sum up, whether Hungarian and Serbian contain many exceptions to Grimshaw's (1990) theory is to be investigated.

2.4.4 Interim summary

So far, this thesis has introduced the linguistic concept of deverbal nominalizations. In the literature dealing with deverbal nouns, Grimshaw's (1990) theory has often been followed. Some studies have confirmed her theory in other languages, while other studies have shown that her theory is rather controversial and cannot be applied cross-linguistically. The objective of this thesis is to bring clarity to this matter by investigating the acceptability of plural marking in deverbal event nouns across English, Hungarian, and Serbian. Moreover, it aims to identify

the specific conditions that facilitate pluralized forms. Based on the studies discussed in the theoretical background, Table 3 below summarizes each study's findings about the possibilities for plural event nominals in their respective languages:

Table 3

The pattern of event nominals in the plural across different studies

Language	**Plural Event Nouns**	**Example**	**Study**	**Explanation**
English	No	**Two examinations.*	Grimshaw (1990)	Event nouns behave like mass nouns. The plural morpheme only selects the non-thematic argument *R,* which only result nominals have.
	Yes	*Each of the three destructions of Cartage (began with a siege).*	Alexiadou et al. (2007), Melloni (2011)	Deverbal event nouns with [+telic], [+perf], and [+b] features can pluralize.
		**There was a pushing of the cart by John.*	Borer (2005)	Only atelic event nouns prohibit pluralization.
Hungarian	No	**Destructions of the city.*	Szabolcsi (1992)	Event nouns behave like mass nouns. They also lack a dedicated plural form.
		*A film *megnézteivel* 'after watching the film(/several times)	Szabó et al. (2016)	Event nouns inherit the information and argument structure of their verbs.
Serbian	No	*Rešenja/*rešavanja ovih zadataka.* 'the solutions/*solvings of these problems.'	Zlatić (1997)	Event nouns behave like mass nouns.

3. Research questions

It has been widely believed that Grimshaw's (1990) rules for identifying deverbal nominals are accurate. Schoorlemmer's (1998), Villalba's (2013), and Gondra's (2014) findings support Grimshaw's (1990) theory that event nominals cannot pluralize. However, the current thesis has reviewed studies showing that this generalization does not hold in all languages. The findings by Bisetto and Melloni (2007) show that Italian event nouns in the plural are permitted. Iordăchioaia and Soare (2008) further confirm this for Romanian. These findings have also been replicated for Germanic languages such as German (Alexiadou, 2001) and Dutch (Sleeman & Brito, 2010). As a result, there are doubts about whether Grimshaw's (1990) theory can be

extended to Hungarian and Serbian. Therefore, the following overarching research question has been posited:

1. How and when is plural marking used in deverbal nominalizations?

Previous research has shown that plural event nominals are possible in various languages, including English. If plural event nominals are also possible in Hungarian and Serbian, it would challenge Grimshaw's (1990) widely accepted theory. This would expand the current understanding of these languages and contribute to the broader field of syntax and semantics.

1.1 What is the grammatical status of plural event nouns?

The grammatical status of plural event nouns is crucial to the present study's investigation. By analyzing native speakers' judgments from surveys, the aim is to reveal the degree of acceptability given to deverbal event nouns in the plural. This empirical approach will pinpoint the current grammatical status of plural event nouns, a key step in understanding their usage and implications for syntactic theory.

Many cross-linguistic examples demonstrate significant variation within Grimshaw's (1990) diagnostics. For instance, event nouns do not always need an argument structure, and result nouns may select arguments (Hull & Gomez, 2000; Alexiadou, 2001; Bašić, 2010). Also, in the contexts of adverbial and aspectual modification, studies show that the deverbal event and result nouns allow for variation and thus are not in line with Grimshaw's (1990) predictions in a strict sense (Meinschaefer, 2005; Bašić, 2010). As such, this study investigates the contexts in which deverbal nouns can appear and to what degree deverbal nouns' plural marking depends on contextual or semantic factors. This leads to the formulation of the following sub-question:

1.2 What is the relative impact of semantic factors, including the type of reading, adverbial modification, argument structure, and aspectual modification, on the grammaticality of plural event nouns?

Previous studies have shown that the context in which a deverbal nominal construction is used can significantly affect its acceptability (Bisetto & Melloni, 2007; Heinold, 2010; Sleeman & Brito, 2010; Van Hout, 2016). For this reason, a link between the context and the acceptability of plurality in deverbal event nouns is expected. It is, therefore, necessary to consider various

contexts to determine whether there is a difference between them and where the acceptability of plural event nouns occurs most frequently. If the participant judges all plural forms of event nouns as grammatical, then it will be possible to conclude which context allows them to pluralize the most. Conducting such empirical research is necessary because empirical data provides insights into how deverbal nominals are used and perceived by native speakers in everyday language. Research that counters Grimshaw (1990) also backs up their claims with empirical evidence (Roy & Soare, 2011). Moreover, Roy and Soare (2011) explicitly state that an empirical basis is necessary to distinguish between event and result nouns, having reviewed studies that have also made this distinction (e.g., Alexiadou, 2001; Cornilescu, 2001; Iordăchioaia & Soare, 2008). To address the question of which semantic factors allow for plurality in deverbal nouns, each nominal will appear in such context in the singular and plural.

Lastly, this thesis examines what happens to the syntactic representation of deverbal nominals in all three languages by asking the following research question:

2. What are the syntactic structures underlying English, Hungarian, and Serbian plural deverbal nominalizations?

To answer the final research question on which syntactic structures the event nouns will have, a robust review of syntactic proposals is necessary to link this to the collected results. It will then be possible to see whether any of the discussed literature or syntactic proposals hold or whether it is necessary to construe a completely novel syntactic representation for each or some of the languages in this study. Judgments from native speakers will reveal to what extent preexisting syntactic proposals, such as those by Alexiadou (2001) and Harley (2009), can be upheld. If plural event nominals are acceptable constructions, then the syntactic representations will require vast alternation to host the number morphology without conflicting with other elements in the syntax.

4. Methodology and data collection

To answer the research questions, this study designed acceptability judgment tasks in the form of a survey in all three languages. Acceptability judgments, accompanied by a numerical Likert scale, were chosen since they serve as a controlled experiment to provide empirical, quantitative data and reveal more about the relative acceptability of, in this case, deverbal nominals by native speakers (Schütze & Sprouse, 2014). The choice of the Likert scale was based on various studies

that showed its effectiveness in retrieving judgments on naturalness or acceptability within (e.g., Gulgowski et al., 2021) and beyond the domain of deverbal nouns (e.g., Smirnova, 2015). The current study custom-designed items for the survey in each language. All the languages contained similar sentences and deverbal nominals, but some adjustments were made to reflect the language's grammatical rules correctly (such as alterations to the word order). An example of the English questionnaire items is provided in (63):

(63) English questionnaire item
The constant construction lasted several weeks.
1 2 3 4 5
(1: fully unacceptable – 5: fully acceptable)

The deverbal nominal *construction* in (63) is a singular event noun with an event-oriented modifier, one of Grimshaw's (1990) four contexts. In example (63), it is expected, following Grimshaw (1990), that the participant will judge the deverbal singular event noun *construction* as acceptable. However, if Grimshaw's (1990) theory holds, then the participant will judge its plural form, *constructions,* in the same context as unacceptable (for an overview of examples in the four contexts, see section 4.2 'Materials').

4.1 Participants

Recruiting participants for this study involved a combination of methods to ensure a diverse and large sample and a demographically rich representation. Participants were mainly recruited via mutual acquaintances and through various social media websites like Facebook, Reddit, and LinkedIn. Multiple recruitment methods were essential to reach individuals from different backgrounds, ages, and genders. By advertising the study on social media websites, it was possible to connect with potential participants who may not have been reached through mutual acquaintances. In order to account for at least 80 percent statistical power, each survey required a minimum of thirty participants (Schütze & Sprouse, 2014). All the samples satisfied this requirement. The following pie and clustered column charts visually represent the current sample's origin. The pie chart in Figure 1 displays the distribution of the participants' birthplaces, while the clustered column chart in Figure 2 depicts the languages they can speak.

Figure 1

Distribution of the participants' birthplaces in percentages

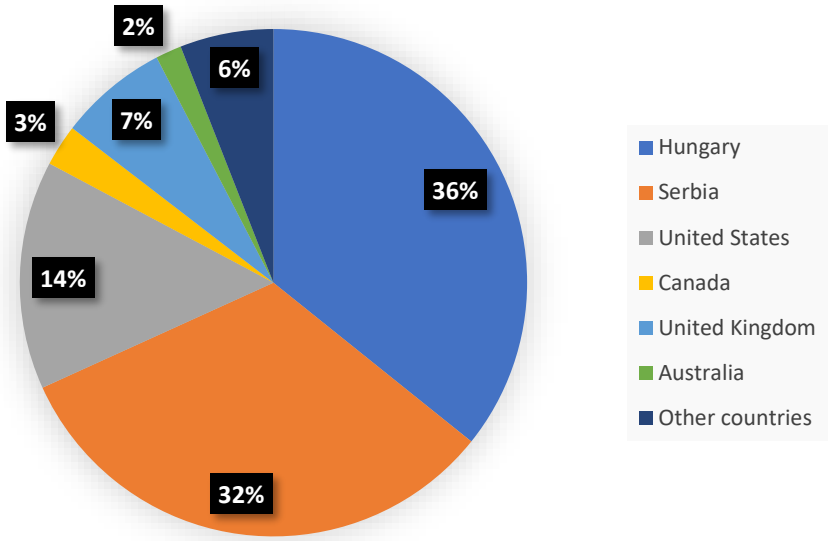
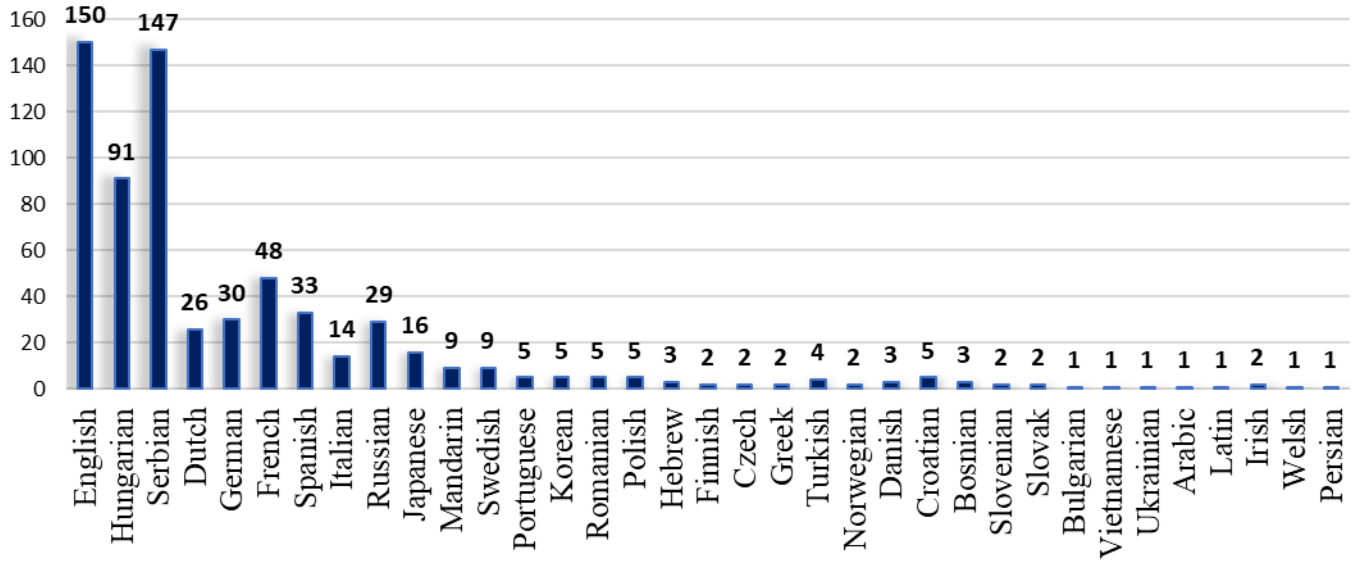


Figure 2

Distribution of the languages that the participants speak



In total, 340 individuals participated in the study, of which 59 (17.3%) were English, 159 (46.6%) were Hungarian, and 123 (36.1%) were Serbian native speakers. Although the distribution of participants is not even, the validity of the results can still be ensured by running statistical analyses that consider the differences in group sizes, such as mixed-effects models.

Of the participants, 53.6% (*n* = 180) were female, 45.5% (*n* = 153) were male, and 0.9% (*n* = 3) were reported to be non-binary. The age of the participants varied from 13 to 66, with an average age of 31.53 (*SD* = 11.4). Table 4 contains the participants' characteristics per language.

Table 4

Participant characteristics per language

	English (n = 59)		Hungarian (n = 157)		Serbian (n = 123)			
Variable	N	%	N	%	N	%	χ^2	p
Gender								
Female	20	33.9	88	57.1	72	58.5	12.84[a]	.005
Male	38	64.4	64	41.6	51	41.5		
Non-binary	1	1.7	2	1.3	0	0		
Variable	M	SD	M	SD	M	SD	F (2, 336)	p
Age	31.9	13.6	29.0[b]	9.5	34.6[b]	11.8	8.90	< .001

Note. [a] Fisher-Freeman-Halton exact test; [b] significant difference in average age.

The English group contained relatively more male participants (64.4%) than the Hungarian (41.6%) and Serbian (41.5%) groups, which appeared to be a significant difference, Fisher's exact $p = .005$. The average age was significantly lower in the Hungarian group ($M = 29.0$, $SD = 9.5$) than in the Serbian group ($M = 34.6$, $SD = 11.8$).

4.2 Materials

For this study, three questionnaires were created, one for each language, using the online survey software Qualtrics. The list of English sentences for the lexical item *translation* with the four contexts can be found in Table 5:

Table 5

English test items used in the present study

Type of reading	
Event - singular	The translation lasted a year
Event - plural	The translations lasted a year

Result - singular	The translation won a prize
Result - plural	The translations won a prize
Adverbial modification	
Event - singular	The frequent translation lasted a year.
Event - plural	The frequent translations lasted a year.
Result - singular	The frequent translation received a lovely review.
Result - plural	The frequent translations received a lovely review.
Argument structure	
Event - singular	The New Testament's translation by Miranda lasted a year.
Event - plural	The New Testament's translations by Miranda lasted a year.
Result - singular	The New Testament's translation by Miranda sold for 20 euros.
Result - plural	The New Testament's translations by Miranda sold for 20 euros.
Aspectual modification	
Event - singular	The translation in a year exhausted the translator.
Event - plural	The translations in a year exhausted the translator.
Result - singular	The translation in a year sold for 20 euros.
Result - plural	The translations in a year sold for 20 euros.

The Hungarian and Serbian questionnaires contained equivalent sentences (adapted to the languages; see Appendix A). Each language contained two lexical items: English *translation* and *construction,* Hungarian *fordítás* 'translation' and *beszélgetés* 'conversation,' and Serbian *prevođenje* 'translation' and *nagrađivanje* 'rewarding.' The questionnaires contained instructions in the respective languages to avoid any cross-linguistic influences. The English and Serbian questionnaires comprised 47 sentences, while the Hungarian questionnaire

contained 48 sentences due to an extra filler[11] item (see Appendix A). Schütze and Sprouse (2014) suggested including filler items in order to forestall any potential for the participants' awareness regarding the nature of the study, preventing scale bias, and ensuring that all Likert-scale points were used equally often.

All the questionnaires included an informed consent form at the beginning of the tasks, which indicated the study's aim and outlined the nature of the tasks that participants were expected to complete. The introductory page for the participants stated that their personal information would be handled with utmost confidentiality and anonymity. In addition, the researcher's contact information (i.e., e-mail address) was made available to the participants to address any queries or concerns. To enroll in the study, the participants had to confirm their comprehension of the objectives by marking a checkbox. The first questions were on the participant's demographics, i.e., their age, their gender, the languages that they speak, and where they were born.

The questionnaire contained sentences with a Likert scale ranging from 1 (fully unacceptable) to 5 (fully acceptable). The participant got to see one sentence or one question per page, and it was not possible to return to the previous sentence. This was done because the sentences are very similar, with sometimes only a minor change to the deverbal nominal occurring in the singular or plural. Although the deverbal noun was surrounded by other material, the participants were instructed to create their own context that best fits the sentence. It was also mentioned that the questionnaire would require approximately 10-15 minutes to complete – this was kept stable for all the languages. The dependent variable was the plurality of deverbal event nouns, while the independent variables were the three languages and the four diagnostics.

4.3 Procedure

As soon as the participant consented, their answers were recorded and saved in Qualtrics. The participants were encouraged to distribute the survey's link amongst their family and friends to maximize the sample size as much as possible. The participant could quit partaking in the study by simply closing the questionnaire's web page. Their answers would still be recorded but discarded for further data analyses. Each questionnaire was available for a maximum of two weeks, and after that period, they were closed, meaning that response collection was no longer possible. The participant had the option to leave the questionnaire and return to it at a later time.

[11] The filler items consisted of sentences with wh-questions (English/Serbian) and gapping (Hungarian), and they contained both fully ungrammatical and fully grammatical sentences.

The results indicate that all participants completed the questionnaire in a single sitting or abandoned it altogether.

4.4 Data analysis

After exporting the data to Excel, the incomplete responses were removed. Likewise, the missing values were identified and removed from further data analyses. The Excel files were then transformed into suitable files for the statistical software IBM SPSS Statistics (Version 27.0). The data were analyzed utilizing a three-way mixed ANOVA using SPSS and JASP (JASP Team, 2024). A three-way factorial mixed ANOVA is a statistical analysis investigating the effects of within-subject factor(s) and between-subject factor(s) on a single dependent variable. In this study, one between-subject factor was used, namely the type of language (English vs. Hungarian vs. Serbian), and two within-subject factors, the type of deverbal noun (result vs. event noun) and condition (singular vs. plural condition). The dependent variable was the degree of acceptability. This analysis was done for each of the four diagnostics (type of reading, adverbial modification, argument structure, aspectual modification) in order to reveal which contexts allow for plural deverbal forms. No violations of the assumptions were found, and an alpha level of 0.05 was used for all analyses. In cases where the analyses yielded significant results, a Bonferroni corrected post hoc test was employed to ensure that type I errors (or false positives) were ruled out and to pinpoint the specific groups between which the differences were observed.

5. Results

Each participant was asked to indicate how acceptable they considered the different sentences. These sentences were either singular or plural (form of noun), either denoting an event or a result (type of noun). These four nouns were given in four different contexts: type of reading, adverbial modification, argument structure, and aspectual modification. For each of the 16 combinations, two sentences were presented to the participants in their respective languages. An average score was calculated between the two sentences. Table 6 gives descriptive statistics for the 16 different combinations for each language.

Table 6

Descriptive statistics of the different sentence categories

	English				Hungarian				Serbian			
			95% CI				*95% CI*				*95% CI*	
	M	*Mdn*	*median*		*M*	*Mdn*	*median*		*M*	*Mdn*	*median*	
Type of reading												
Event - singular	4.26	4.5	4.5	5.0	4.88	5.0	5.0	5.0	4.10	4.0	4.0	4.5
Event - plural	3.63	4.0	4.0	5.0	4.29	4.5	4.5	5.0	4.26	4.5	4.5	5.0
Result - singular	4.38	5.0	5.0	5.0	4.88	5.0	5.0	5.0	3.88	4.0	4.0	4.5
Result - plural	4.22	4.5	4.5	5.0	4.66	5.0	5.0	5.0	3.33	3.5	3.5	4.0
Adverbial modification												
Event - singular	3.47	3.5	3.5	4.0	3.67	4.0	4.0	4.5	3.05	3.0	3.0	4.0
Event - plural	3.38	3.0	3.0	4.0	3.41	3.5	3.5	4.0	3.32	3.5	3.5	4.0
Result - singular	2.68	2.3	2.0	3.0	3.06	3.0	3.0	3.5	2.88	3.0	3.0	3.5
Result - plural	2.82	3.0	3.0	3.5	3.29	3.0	3.0	3.5	3.14	3.0	3.0	3.5
Argument structure												
Event - singular	3.53	3.5	3.0	4.0	4.35	4.5	4.5	5.0	4.38	4.5	4.5	5.0
Event - plural	2.91	3.0	3.0	4.0	3.68	4.0	4.0	4.5	3.84	4.0	4.0	4.5
Result - singular	3.70	3.8	3.0	4.0	4.65	5.0	5.0	5.0	4.02	4.0	4.0	4.5
Result - plural	3.29	3.0	3.0	4.0	4.13	4.0	4.0	4.5	3.92	4.0	4.0	4.5
Aspectual modification												
Event - singular	2.43	2.5	2.5	3.0	4.57	5.0	5.0	5.0	4.12	4.5	4.5	5.0
Event - plural	2.44	2.3	2.0	2.5	4.03	4.0	4.0	4.5	4.05	4.5	4.5	5.0
Result - singular	2.09	2.0	2.0	3.0	3.95	4.0	4.0	4.5	2.73	2.5	2.0	3.0
Result - plural	1.99	2.0	2.0	3.0	3.65	4.0	4.0	4.5	3.31	3.0	3.0	3.5

To determine whether there is a difference in acceptability between singular and plural nouns and between event or result nouns in each of the four categories, four three-way mixed ANOVAs were performed, with acceptability as the dependent variable. There were two within-subject factors, namely form (singular vs. plural) and type (event vs. result), and the between-subject factor was language (English vs. Hungarian vs. Serbian). Table 7 contains the results of the four three-way mixed ANOVAs. As several missing answers were recorded, the sample size of each of the ANOVAs varies.

Table 7

Results of the four three-way mixed ANOVAs

	Type of reading			Adverbial modification		
Factor	*F*	*p*	η_p^2	*F*	*p*	η_p^2
Type of noun (event vs. result)	0.32	.572	.001	58.46	< .001	.177
Form of noun (singular vs. plural)	85.68	< .001	.215	1.33	.250	.005
Language (Eng vs. Hun vs. Ser)	66.64	< .001	.299	3.40	.035	.024
Type*Language	41.36	< .001	.209	1.94	.146	.014
Form*Language	4.65	.010	.029	6.29	.002	.044
Type*Form	0.13	.720	.000	2.84	.093	.010
Type*Form*Language	35.73	< .001	.186	5.85	.003	.041
	Argument structure			**Aspectual modification**		
Factor	*F*	*p*	η_p^2	*F*	*p*	η_p^2
Type of noun (event vs. result)	10.45	.001	.033	92.20	< .001	.249
Form of noun (singular vs. plural)	108.00	< .001	.260	0.35	.556	.001
Language (Eng vs. Hun vs. Ser)	26.35	< .001	.146	85.94	< .001	.382
Type*Language	18.94	< .001	.110	17.12	< .001	.110
Form*Language	5.45	.005	.034	27.11	< .001	.163
Type*Form	13.05	< .001	.041	9.90	.002	.034
Type*Form*Language	2.20	.113	.014	5.57	.004	.039

Combining all contexts and readings, Serbian speakers accepted plural event nouns the most (M = 3.87, SD = 0.349), followed by Hungarian (M = 3.85, SD = 0.335) and English (M = 3.09, SD = 0.456). Although Hungarian and Serbian do not significantly differ from one another in their total acceptability (p = .607), Serbian and English, as well as Hungarian and English, do (respectively p = .044 and p = .037).

5.1 Type of reading

As shown in Table 6, the mean acceptability scores for event and result nouns in the diagnostic type of reading are relatively high in both singular and plural conditions. Across all languages, all averages exceed the neutral value of 3. The main effect of the type of reading was not significant, $F(1, 313) = 0.32$, $p = .572$, $\eta_p^2 = .001$, as shown in Table 7. This means that there is no significant difference in the acceptability of event and result nominals across the type of reading. However, there was a significant main effect of form, $F(1, 313) = 85.68$, $p < .001$, $\eta_p^2 = .215$, indicating that singular nouns, on average, have a significantly higher level of

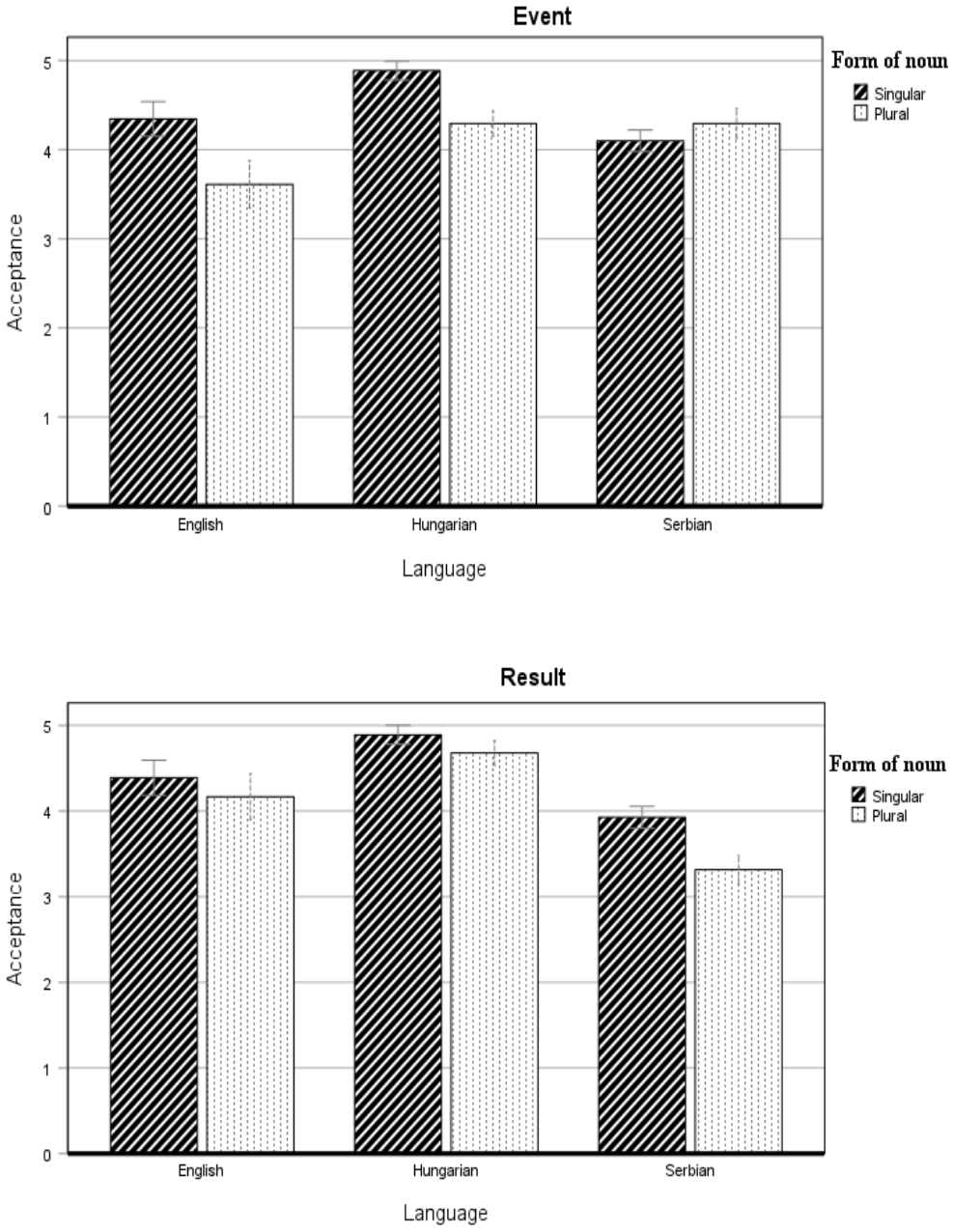
acceptability ($M = 4.42$, $SE = 0.03$) than plural nouns ($M = 4.06$, $SE = 0.05$). The main effect of language was also significant, $F(2, 313) = 66.64$, $p < .001$, $\eta_p^2 = .299$. Subsequently, post-hoc tests with Bonferroni correction show that the acceptance of nouns is significantly higher in Hungarian ($M = 4.69$, $SE = 0.05$) than in English ($M = 4.13$, $SE = 0.08$; $p < .001$) and Serbian ($M = 3.91$, $SE = 0.05$; $p < .001$), but there is no significant difference in acceptance of the nouns in the type of reading category between English and Serbian individuals ($p = .081$).

A significant interaction effect is found between type of noun and language, $F(2, 313) = 41.36$, $p < .001$, $\eta_p^2 = .209$. This implies that in the context of the type of reading, the difference in acceptability between event and result nouns differs across languages. Pairwise comparisons with Bonferroni $\eta_p^2 = .209$ correction show that both English ($M_{event\text{-}result} = -0.30$, $SE = 0.11$, $p = .008$) and Hungarian ($M_{event\text{-}result} = -0.19$, $SE = 0.03$, $p < .001$) native speakers report a higher acceptance of result nouns. In comparison, the Serbian native speakers show higher acceptance of event nouns ($M_{event\text{-}result} = -0.30$, $SE = 0.11$, $p < .001$). There was also a significant interaction effect between the form of noun and language, $F(2, 313) = 4.65$, $p = .010$. Although all three language groups reported a higher level of acceptance for the singular than for the plural noun, the difference in acceptance between the two forms was most prominent among the English group ($M_{singular\text{-}plural} = 0.48$, $SE = 0.09$, $p < .001$), followed by the Hungarian group ($M_{singular\text{-}plural} = 0.40$, $SE = 0.05$, $p < .001$) and smallest in the Serbian group ($M_{singular\text{-}plural} = 0.21$, $SE = 0.06$, $p < .001$). No interaction effect between the type of noun, i.e., event or result, and the singular and plural condition was found, $F(1, 313) = 0.13$, $p = .720$.

Lastly, the three-way interaction effect of the type of noun, the singular or plural form, and the type of language was significant, $F(2, 313) = 35.73$, $p < .001$, $\eta_p^2 = .186$. The bar charts in Figure 3 illustrate this three-way interaction effect.

Figure 3

Average score within the category type of reading per language, type of noun, and form of the noun



Regarding event nouns, the English and Hungarian groups reported significantly higher acceptance of singular than plural nouns (respectively, $p < .001$ and $p < .001$). In comparison, the Serbian group accepted plural nouns more than singular nouns ($p = .019$). For result nouns, all three languages reported higher acceptance of singular nouns than plural nouns, although this difference was only significant among the Hungarian ($p = .002$) and the Serbian groups ($p < .001$). The difference was not significant among the English-speaking participants ($p = .081$).

5.2 Adverbial modification

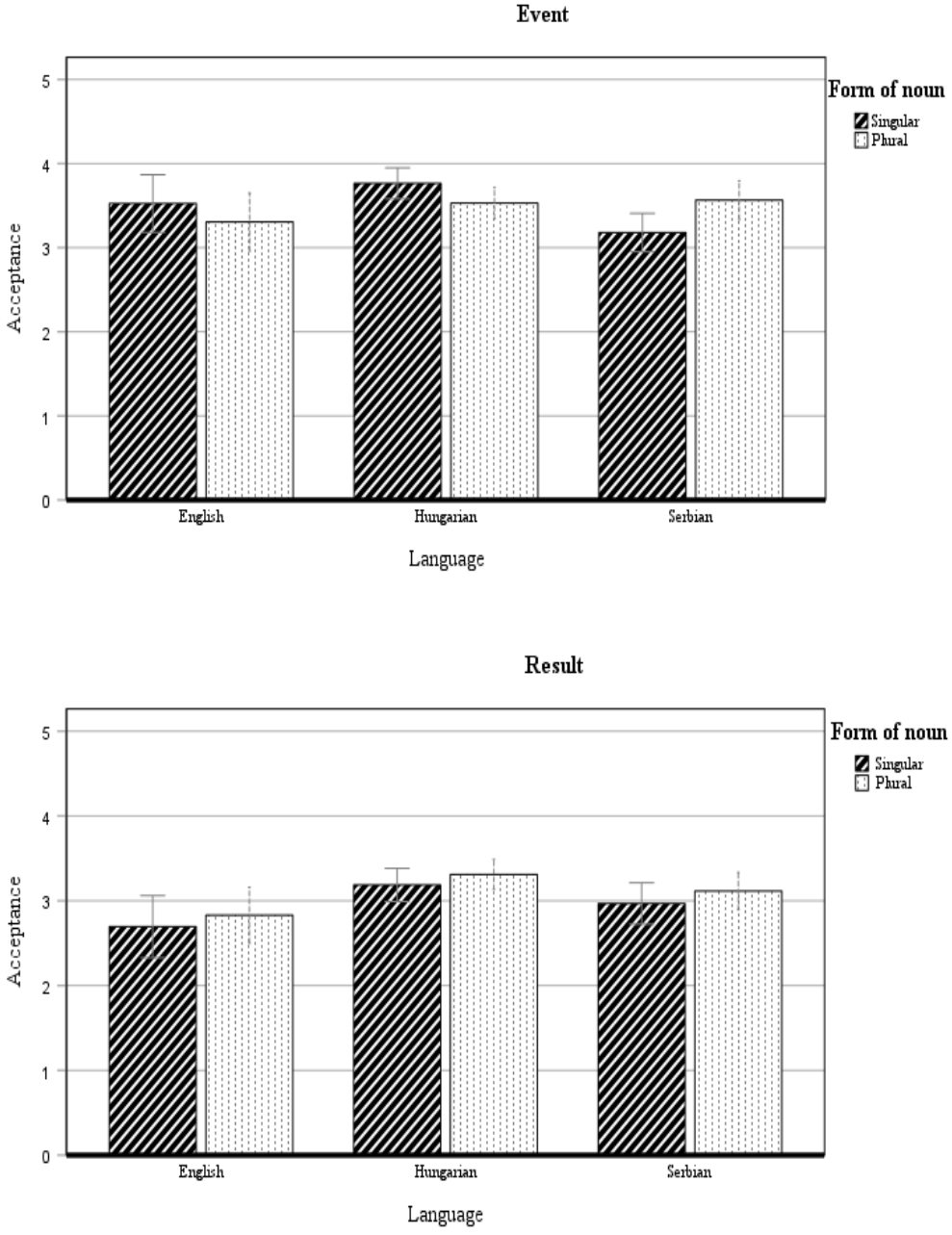
Regarding the diagnostic of adverbial modification, a significant main effect was found for the type of noun, i.e., event or result, $F(1, 272) = 58.64$, $p < .001$, $\eta_p^2 = .177$. On average, the acceptance of events ($M = 3.48$, $SE = 0.07$) is higher than the acceptance of results ($M = 3.02$, $SE = 0.07$). The main effect of the form of the noun was not significant, $F(1, 272) = 1.33$, $p = .250$, $\eta_p^2 = .005$, indicating that the acceptance of plural nouns is comparable to the acceptance of singular nouns. The main effect of language was significant, $F(1, 272) = 3.40$, $p = .035$, $\eta_p^2 = .024$. However, the Bonferroni corrected post-hoc tests show no difference in acceptance between the English and the Hungarian group ($p = .082$), the English and the Serbian group ($p = 1.00$), nor between the Hungarian and the Serbian group ($p = .149$).

No significant interaction effect is found between the type of noun and language, $F(2, 272) = 1.94$, $p = .146$, $\eta_p^2 = .014$, or between the type of noun and form of the noun, $F(1, 272) = 2.84$, $p = .093$, $\eta_p^2 = .010$. However, there was a significant interaction between form of noun and language, $F(2, 272) = 6.29$, $p = .002$, $\eta_p^2 = .044$, showing that Hungarian speakers ($M = 3.48$, $SE = 0.08$) reported a significantly higher acceptance than English speakers ($M = 3.11$, $SE = 0.16$, $p = .009$) on singular nouns, but no significant differences were found between the languages when it comes to plural nouns.

Finally, there was a significant three-way interaction effect between the type of noun, form of noun, and language, $F(2, 272) = 5.85$, $p = .003$, $\eta_p^2 = .041$, which is visualized in Figure 4.

Figure 4

Average score within the category of adverbial modification per language, type of noun, and form of noun



Only when the type of noun is event, significant differences between the singular and plural forms are found; as the acceptance within the Hungarian group is significantly higher for the singular form (p = .004), the acceptance in the Serbian group is significantly higher for the plural form (p < .001). There are no significant differences between the forms when the type of noun is the result.

5.3 Argument structure

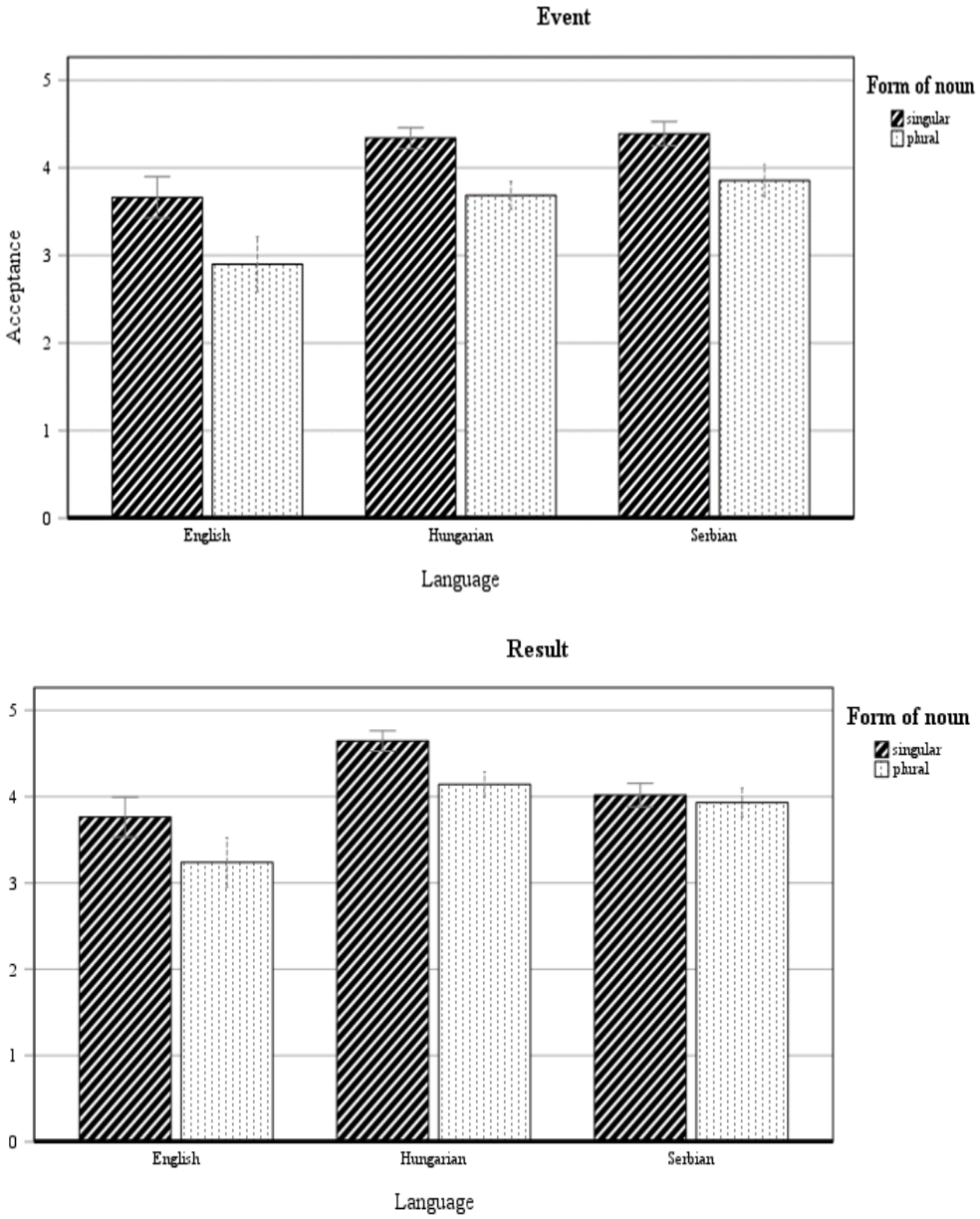
The three-way mixed ANOVA concerning the category of argument structure resulted in a significant main effect of the type of noun, $F(1, 308) = 10.45$, $p = .001$, $\eta_p^2 = .003$. The acceptability rates for the result nominals ($M = 3.96$, $SE = 0.05$) were significantly higher than for the event nominals ($M = 3.80$, $SE = 0.05$). There was also a significant main effect of the form of the noun, $F(1, 308) = 108.00$, $p < .001$, $\eta_p^2 = .260$; singular nouns, on average, lead to higher acceptance rates ($M = 4.14$, $SE = 0.04$) than plural nouns ($M = 3.63$, $SE = 0.05$). The third main effect, the effect of language, was also significant, $F(2, 308) = 26.35$, $p < .001$, $\eta_p^2 = .146$. Post-hoc tests with Bonferroni correction show that the acceptance level is significantly lower in the English group ($M = 3.39$, $SE = 0.10$) than in both the Hungarian ($M = 4.20$, $SE = 0.05$; $p < .001$) and Serbian ($M = 4.05$, $SE = 0.06$, $p < .001$) groups. However, the Hungarian and Serbian groups do not significantly differ in acceptance of the argument structure sentences ($p = .139$).

Significant two-way interactions were found between the type of noun and language, $F(2, 308) = 18.94$, $p < .001$, $\eta_p^2 = .110$, the form of noun and language, $F(2, 308) = 5.45$, $p = .005$, $\eta_p^2 = .034$, and between type of noun and form of noun, $F(1, 308) = 13.05$, $p < .001$, $\eta_p^2 = .041$. In the case of event nouns, the Serbian ($M = 4.12$, $SE = 0.07$) and Hungarian groups ($M = 4.01$, $SE = 0.06$) report significantly higher levels of acceptance than the English group ($M = 3.28$, $SE = 0.12$; respectively, $p < .001$ and $p < .001$). However, there was no difference between the Serbian and Hungarian acceptance levels of event nouns ($p = .678$). In the result type of noun, there were significant differences between all three languages ($p < .001$), where the Hungarian group reported the highest acceptance ($M = 4.39$, $SE = 0.06$), followed by the Serbian group ($M = 3.97$, $SE = 0.07$) and the English group ($M = 3.50$, $SE = 0.11$). When comparing languages for singular and plural nouns separately (the interaction between the form of noun and language), both show that Hungarian-speaking individuals have the highest acceptance, followed by Serbian-speaking individuals and, lastly, English-speaking individuals. The differences between the languages were all significant, except for the difference in acceptance among plural nouns for Hungarian ($M = 3.91$, $SE = 0.06$) and Serbian ($M = 3.89$, $SE = 0.07$), which did not differ significantly ($p = 1.00$). The interpretation of the final two-way interaction effect of the type of noun and the form of the noun is as follows: singular event nominals had a significantly higher acceptance ($M = 4.13$, $SE = 0.05$) than plural event nominals ($M = 3.48$, $SE = 0.07$). Likewise, singular result nouns ($M = 4.14$, $SE = 0.05$) had a higher acceptance than plural result nouns ($M = 3.77$, $SE = 0.06$). Across the noun types. plural event nouns ($M = 3.48$, $SE = 0.07$) differed significantly from plural result nouns ($M = 3.77$, $SE = 0.06$) in acceptability.

The three-way interaction between the form of the noun, the type of noun, and language was not significant, $F(2, 308) = 2.20$, $p = .113$, $\eta_p^2 = .014$. Figure 5 presents the average acceptance scores per language group, form, and type of the noun.

Figure 5

Average score within the category argument structure per language, type of noun, and form of noun



5.4 Aspectual modification

For the final analysis, the three-way mixed ANOVA revealed a significant main effect of type of noun, $F(1, 278) = 92.20$, $p < .001$, $\eta_p^2 = .249$; event nouns on average resulted in higher

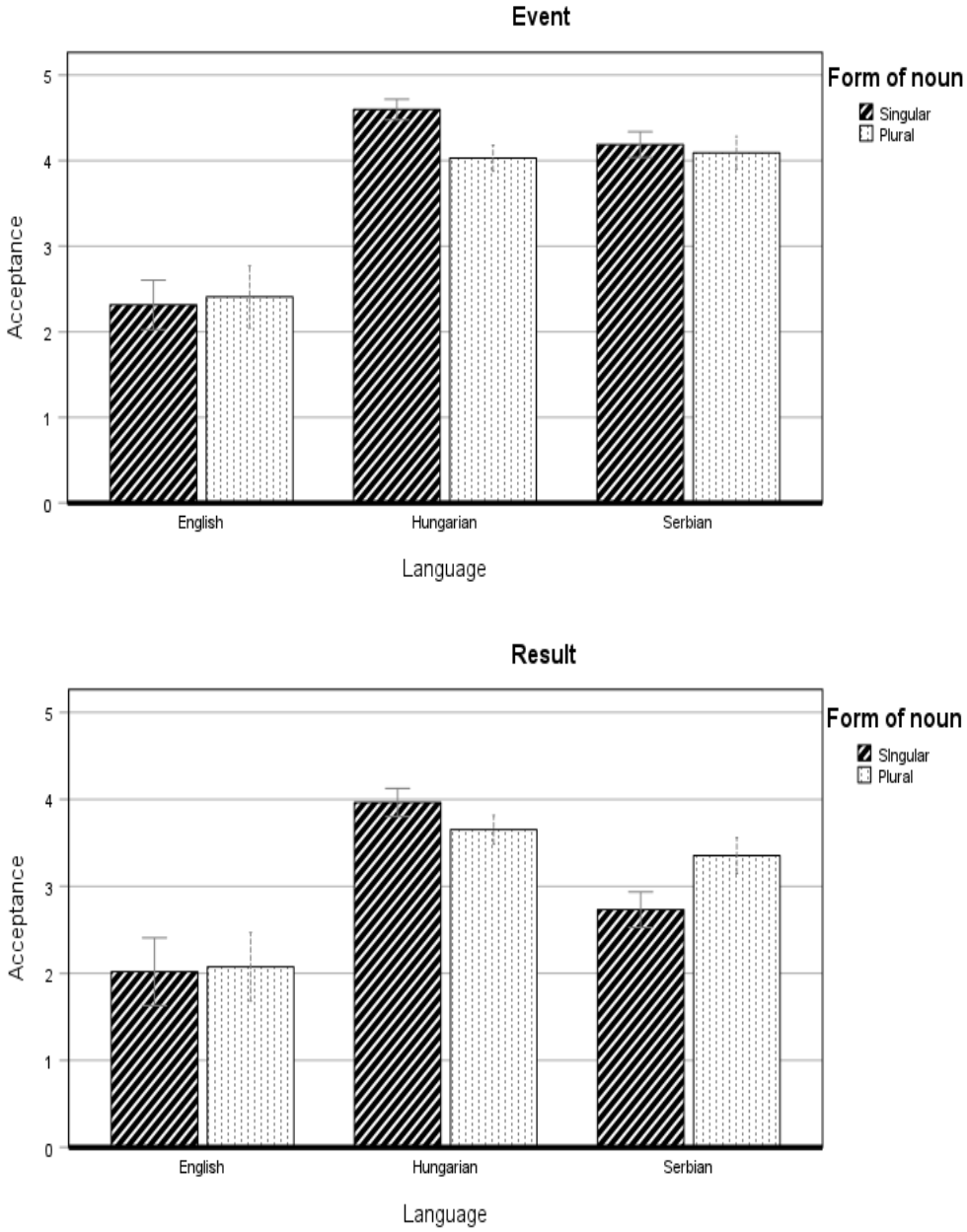
levels of acceptance (M = 3.60, SE = 0.06) than result nouns (M = 2.97, SE = 0.07). There was no main effect of the form of the noun, $F(1, 278) = 0.35$, $p = .556$, $\eta_p^2 = .001$, indicating that when it comes to the category aspectual modification, there is no difference in acceptance between singular nouns (M = 3.30, SE = 0.06) and plural nouns (M = 3.27, SE = 0.07). Finally, there was a significant main effect of language, $F(2, 278) = 85.94$, $p < .001$, $\eta_p^2 = .382$. To determine between which languages significant differences in acceptance exist, post-hoc tests indicate the lowest average level of acceptance is reported by the English group (M = 2.20, SE = 0.13), which is significantly lower than the average acceptance of the Serbian group (M = 3.59, SE = 0.07, $p < .001$) and the Hungarian group (M = 4.06, SE = 0.06, $p < .001$). The difference between the Serbian and Hungarian groups is also significant ($p < .001$).

The two-way interaction between the type of noun and language is significant, $F(2, 278) = 17.12$, $p < .001$, $\eta_p^2 = .110$. Pairwise comparisons show that event nouns yield higher acceptance levels than result nouns in all three language groups. Nevertheless, this difference is not significant in the English group ($M_{event\text{-}result} = 0.32$, $SE = 0.17$, $p = .059$). However, it is significant in both the Hungarian ($M_{event\text{-}result} = 0.51$, $SE = 0.07$, $p < .001$) and the Serbian ($M_{event\text{-}result} = 1.10$, $SE = 0.87$, $p < .001$) groups. The two-way interaction between the form of noun and language is also significant, $F(2, 278) = 27.11$, $p < .001$, $\eta_p^2 = .163$. In the Hungarian group, the singular nouns, on average, show higher acceptance than the plural nouns ($M_{singular\text{-}plural} = 0.44$, SE = 0.06, $p < .001$), while in the Serbian group, a higher acceptance is reported for the plural nouns ($M_{singular\text{-}plural} = -0.26$, $SE = 0.08$, $p < .001$). In the English group, the singular and plural nouns result in comparable acceptance levels ($M_{singular\text{-}plural} = -0.07$, $SE = 0.15$, $p = .613$). The third two-way interaction, between the type of noun and the form of the noun, is also significant, $F(1, 278) = 9.90$, $p = .002$, $\eta_p^2 = .034$. On average, event nouns result in significantly higher levels of acceptance if they are singular (M = 3.70, SE = 0.06) than if they are plural (M = 3.51, SE = 0.07; $p = .008$), while no differences in acceptance are found between singular (M = 2.91, SE = 0.08) and plural nouns (M = 3.03, SE = 0.08; $p = .141$) when the type of noun is result.

Moreover, the three-way interaction effect is significant, $F(2, 278) = 5.57$, $p = .004$, $\eta_p^2 = .039$, which is shown in Figure 6.

Figure 6

Average score within the aspectual modification per language, the type of noun, and the form of the noun



Pairwise comparisons with Bonferroni correction show that in the English group, there is no significant difference between the singular and plural nouns for both event (p = .601) and result nominals (p = .786). In the Hungarian group, both when the type of noun is event and result, the acceptance is higher with singular nouns than with plural nouns (respectively p < .001 and p < .001). In the Serbian group, no difference in acceptance between singular and plural nouns is found in the case of event nouns (p = .300), but the acceptance of singular nouns is

significantly lower than the acceptance of plural nouns when the type of noun is result ($p < .001$).

6. Discussion

The primary objective of this study was to investigate the pluralization of deverbal nominalizations in English, Hungarian, and Serbian to either validate or challenge Grimshaw's (1990) argument structure theory in more intricate linguistic settings.

6.1 Plurality in deverbal nominalizations

The first research question concerned the potential of deverbal nominalizations to pluralize in three distinct languages. The current study's results show that plural event nouns were acceptable constructions in English, Hungarian, and Serbian. The results thus align with previous research that has found event nominals to pluralize in some languages (Alexiadou, 2001; Roodenburg, 2006; Alexiadou et al., 2007; Bisetto & Melloni, 2007; Iordăchioaia & Soare, 2008; Sleeman & Brito, 2010; Melloni, 2011). These findings, in turn, challenge Grimshaw's (1990) theory. As Grimshaw (1990) claimed that deverbal nominals cannot be pluralized, the results of this study suggest that her criteria are not universally applicable and that language-specific factors are influential. The arguments of certain studies that link the possibility of plural event nominals to aspect also do not hold (e.g., Roodenburg, 2006; Knittel, 2011). For instance, perfectivity was argued to play a role since only perfective event nominals could pluralize, as illustrated by French (Knittel, 2011). However, Serbian has shown that event nominals with an imperfective aspect were also accepted in their plural forms (64):

(64) Serbian

Nagrađivanja	*su*	*trajala*	*nekoliko*	*nedelja.*
nagrad-iva-nj-a	su	traja-la	nekoliko	nedelj-a
reward.PF-SI-NMLZ-PL	have.AUX.PL	take-3SG.F.PL	several	week-PL

'The rewardings took several weeks.'

This stark contrast suggests that the pluralization of Serbian event nominals is not as closely tied to perfectivity as in French.

On the topic of telicity, English plural event nouns, despite being telic, were not accepted in three out of the four diagnostics. This supports Grimshaw (1990) in suggesting that plural

event nouns are mostly unacceptable sentences, as shown in a variety of contexts. In contrast, Serbian allowed telic event nominals to be pluralized and accepted across all conditions, aligning with Meinschaefer (2005) and Roy and Soare (2011), who have postulated this for English. The role of telicity in the pluralization of event nominals in English and Serbian can be further elaborated to provide a more detailed comparison. In English, the telic nature of the event nominals hindered their pluralization, while in Serbian, it was a facilitator. These results for Serbian are unexpected and significant, as they do not align with what Schoorlemmer (1998) has found for Russian, despite both languages being Slavic and typologically similar. Hungarian event nouns, although being atelic, were also judged acceptable in the plural, contradicting the earlier findings by Szabolcsi (1992), Laczkó (1997), and Szabó et al. (2016).

The final aspectual factor investigated in this research was boundedness. All the event nominals investigated in the current study depicted bounded events rather than referring to ongoing actions or unbounded activities. Despite this fact, only Hungarian and Serbian accepted plural event nouns in all four diagnostics. Accordingly, the notions of telicity, perfectivity, and boundedness were overruled by other factors in the sentence for English. One explanation behind the current findings is that this study conducted empirical research using quantitative research methods, as opposed to Grimshaw (1990), who relied only on English theoretical data for her conclusions. Further, this thesis did not look at one language but a combination of languages for which native speakers were consulted. This approach aimed to understand better the complex interplay between the theoretical use of languages and their structures and the real-world use of deverbal nominals. The empirical data collected has the following implications for the reviewed theory: while Grimshaw (1990) has long been considered the standard, this research has empirically proven that her theory is too limited and that a single theoretical observation of deverbal nominals in language is insufficient. In other words, Grimshaw's (1990) theory falls short of explaining the pattern of plural event nominals as fully accepted constructions in different contexts and across different languages.

Research question 1.2 concerned the impact of semantic factors on the acceptability of deverbal nouns. This included the contexts of the type of reading, adverbial modification, argument structure, and aspectual modification. The results indicate that all the semantic factors were important in allowing plural event nouns, but their impact differed depending on the language. Across all three languages examined, it was observed that the context in which plural event nouns were deemed most acceptable was within the domain of the type of reading. English plural event nouns were most rejected in the aspectual modification diagnostic. For Hungarian and Serbian, the acceptability was the lowest when the event nominals occurred with

adverbial modifiers. Still, only for English were the plural event nominals judged unacceptable in the diagnostic of aspectual modification, whereas for Hungarian and Serbian, the judgments in the context of adverbial modification were still on the higher end of the acceptability scale. Additionally, English event nominals were also judged as unacceptable in the remaining contexts, thus in the presence of arguments and adverbial modifiers. In English, plural event nouns were deemed acceptable only in the absence of any modifiers. This pattern implies that, when it comes to pluralization, English deverbal nominalizations are much more sensitive to factors cueing an eventive reading than Hungarian and Serbian. The results for English are thus mainly in line with Grimshaw's (1990) proposal, except for the unmodified (type of reading) context where plural event nominals were accepted. To reiterate, the presence of other material decreased the acceptability of plural event nouns in English but not in Hungarian and Serbian. The addition of modifiers or other material could have triggered constraints that disallow the plural marking of event nominals in English. In contrast, Hungarian and Serbian could have been more flexible in this regard, thereby not restraining the mechanisms for marking plurality. Another possible explanation is that the count-mass distinction works differently across these three languages. If the count-mass distinction operates differently in the languages being compared, it could affect how speakers use and conceptualize nouns, leading to differences in acceptability judgments. To confirm or deny these hypotheses, further research needs to be done into the differences between languages with plural event noun constructions (see Chapter 8, 'Future research').

6.2 The syntactic representations of deverbal nominals

Grimshaw (1990) does not attribute the distinction between deverbal event and result nouns to their syntactic structures and claims instead that this distinction is inherent to the lexical entry of the noun itself. Grimshaw's (1990) dichotomy between deverbal event and result nominals is mainly based on the lexical properties of the nouns themselves, thus neglecting their syntactic structures. In other words, Grimshaw (1990) considers both types of nominals to be derived from the lexicon. However, it is crucial to consider the syntactic structures of deverbal nouns because there are various syntactic proposals arguing for different approaches. As a result, it is not clear which syntactic structure should be used as the basis for the syntactic analysis of deverbal nouns. As Grimshaw (1990) does not illustrate how her semantic and lexical theory translates into a syntactic account, her diagnostics suggest that all derived nominals have the same syntactic structure. The only difference between derived nouns is the presence or absence of argument structure (Alexiadou & Grimshaw, 2008). Grimshaw (1990) states that event

nominals, as opposed to result nominals, cannot pluralize, meaning that their projection must lack the means to host number morphology. This leads to the conclusion that event nominals, although they have a rich verbal internal structure, do not have sufficient nominal structure to host plural marking (Alexiadou et al., 2010). Grimshaw's (1990) other diagnostics, such as argument structure and adverbial and aspectual modification, are also not always overt in both structures: only event nominals and plural result nominals allow such modifiers.

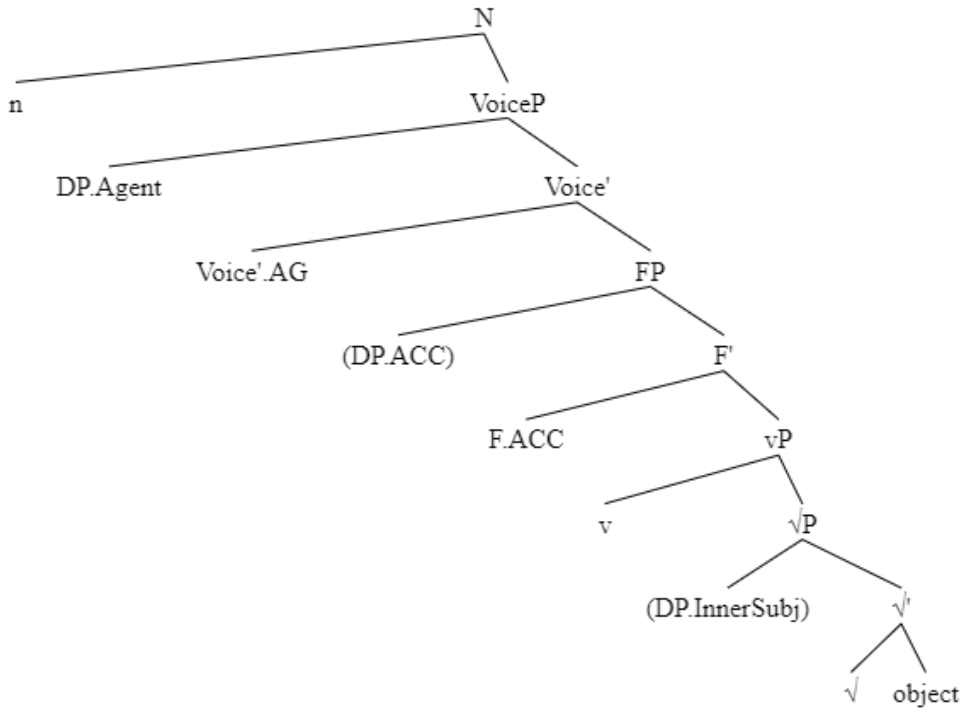
The development of syntactic representation in linguistic research has seen substantial progress since Grimshaw (1990). The subsequent years have witnessed a gradual evolution of the field, with each new study building upon the groundwork laid by its predecessors. The current section first reviews early syntactic accounts that fall under the Distributed Morphology (DM) framework proposed by Halle and Marantz (1993, 1994). This syntax-based approach also applies to deverbal nominalizations as, according to Gondra (2014), all deverbal nominals project a nominalizer phrase (nP). Moreover, as Harley (2009) puts it, all morphemes require a corresponding terminal node. Roots are entered into the syntax as neutral – they only receive their categorical feature by their functional head. This means that if a functional n° governs the root, then the lexical category of the root is a noun. This section also reviews syntactic proposals that assume multiple generative cycles, such as the ones by Alexiadou (1999, 2001), Borer (2003), and Kornfilt and Whitman (2011). The study by Alexiadou (2001) significantly advanced the field as it directly builds on Grimshaw (1990), claiming that some of her diagnostics are syntactically conditioned. Then, Alexiadou's (2001) claims were further developed by Borer (2003, 2005). Similarly, Borer's (2003) study became the basis for Ramchand's (2008) study. This cumulative effect assures a gradual refinement of the existing syntactic models and leads to a more nuanced understanding of the underlying structures of deverbal nominals. The final section will discuss the syntactic representations of nominals by Kornfilt and Whitman (2011), who have proposed and argued for a syntactically hierarchical and more generative account of deverbal nouns. This section concludes by proposing the appropriate syntactic representation based on the acceptability of plural event nouns by native speakers per language.

6.2.1 Harley (2009)

Within the framework of DM, Harley (2009) proposed the following structure (65):[12]

[12] All syntactic trees have been adapted from the researcher in question but modified to fit the current research aim. Thus, there might be some layers or information missing that are not relevant for the present discussion, such as the specification of [SC] (small clause).

(65)



The interpretation of a deverbal nominal such as *examination* is as follows: The root (√) element carries the base form, *examine*. The 'little *v*' accounts for the root's eventive reading since it selects for an eventive argument, thus assuring its argument structure. Event nouns must include a verbal functional projection that guarantees the obligatory presence of arguments, which is done via the little *v*. The Functional Phrase (FP) in Harley's (2009) structure is responsible for licensing the accusative case on the root's object, which moves to spec-FP. VoiceP is responsible for the agentivity of the root's subject, which moves to spec-VoiceP. On top of this structure, a nominalizing phrase, N, ensures the nominal features and morphology and contains the final nominal in *n.* [13] At first glance, it seems that plural event nouns are accounted for by Harley's (2009) structure since nothing prohibits them from being pluralized in the nominal domain (Wiegant, 2019). Harley (2009), with reference to semantics, explains that event nominals can undergo *coercion*. This is a process where the semantics of a word are altered to fit a different syntactic category, meaning that mass nouns can receive a count interpretation (e.g., *two (CUPS OF) coffees*). However, the presence of the syntactic object is ruled out due to a semantic side-effect. As Harley (2009) puts it, "the presence of a syntactic object is incompatible with the coercion of a process [event] nominal to a count noun because the delimitation imposed by the packager is incompatible with the delimitation imposed by the object" (p.339). In essence, what

[13] Harley (2009) makes no distinction between N and nP, thus views N = nP.

seems to be the problem is that there are two elements, the null *n* head (for count noun status) and the syntactic object, that impose boundaries on the interpretation of an event, but these boundaries clash, as there can only be one boundary to define the event (Harley, 2009; Wiegant, 2019).

Harley's (2017) later influential work is on the typology of languages based on the differing functions of the VP. Following Pylkkänen (2002), Harley (2017) groups languages into Voice-splitting or Voice-bundling. Voice-splitting languages position the functions of Voice and *v* in separate projections. Voice-bundling languages combine these functions into a single projection. This study adopts her three-way division of the verbal domain: *v*P (with little *v*), the verbalizer ᴠ (or middle ᴠ), and VP.[14] Harley (2017) uses the v◦ as the verbalizer, but this study employs the use of middle ᴠ for two reasons. First, Harley (2017) treats the v◦ similar to Ramchand's (2008) ProcP, which is responsible for an eventive interpretation. In the same vein, the ProcP is absent in result nominals.[15] Still, the lexical element of event and result nouns must first be turned into a verb by a verbalizer. If Harley's (2017) proposal is retained, then this would mean that the lexical root cannot be verbalized since ProcP's absence equals a verbalizer's absence. In the current analysis, the eventive little *v* and verbalizer ᴠ are two different categories in the same structure. The second reason is that employing v◦ requires a specification of the feature [+/- CAUSE], which is unnecessary for the current analysis. An opposing view is by Alexiadou (2001), discussed below.

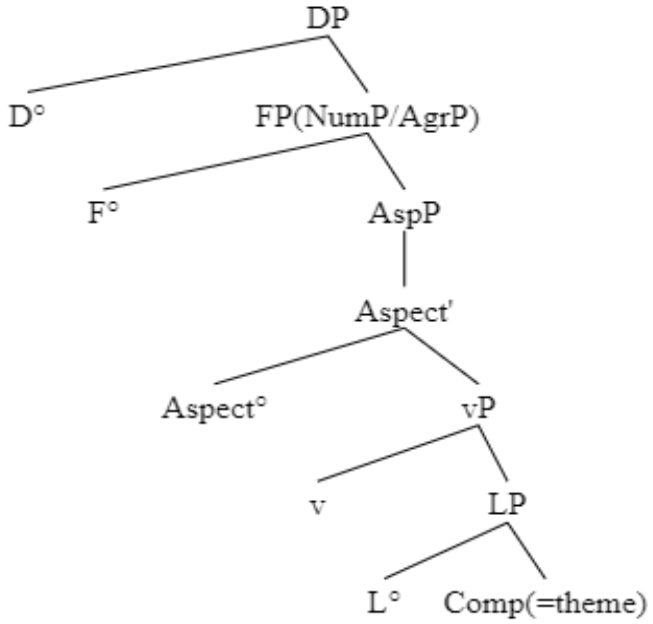
6.2.2 Alexiadou (2001)

Alexiadou (2001) primarily focuses on the distinction between event and result nominals regarding their syntactic and functional layers. The syntactic representation of event nouns is found in (66) and that of result nouns in (67) (Alexiadou, 2001):

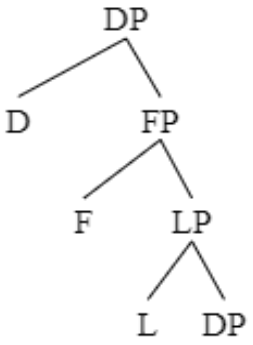
[14] Harley (2017) makes no distinction between VP and √P, thus views VP = √P.

[15] Ramchand's (2008) trees are not discussed in detail since they can be viewed as underlying a larger syntactic structure, focusing only on the (lexical or semantic) event structure itself (Wood & Marantz, 2017). Since Ramchand (2008) maintains the same semantic structure cross-linguistically, this study does not further consider her account: this study is focused on the syntactic representations, rather than the semantic decomposition, of deverbal nominals.

(66) Event nouns



(67) Result nouns



Both structures contain a category-neutral lexical projection (LP), in which L° carries the stem, similar to Harley's (2009) √P.[16] The structures diverge significantly in that only event nouns possess the functional layers AspP and *v*P[17], which dominate the lexical root of deverbal event nouns. According to Alexiadou (2001), there is no dominant layer over the lexical root of result nouns since these roots inherently carry the semantics of the resultant state. Event nominals necessitate an AspP layer in their structure to combine with aspectual modifiers, and the

[16] Alexiadou (2001) relies on Carme Picallo (1991) in her choice of using LP. The main argument is that the L° stem undergoes head raising and becomes a noun in the case of event nominals. However, result nominals inherently carry the categorial status of NP already at the D-structure. Picallo (1991) refers to this process as "syntactic nominalization" (p. 300).

[17] Alexiadou (2001) bundles VoiceP and *v*P together, using both phrases interchangeably. However, in her later work on causatives, Alexiadou et al. (2006) advocate for a distinction between VoiceP and *v*P.

presence of a *v*P layer ensures the eventivity of these nominals (Alexiadou, 1999). The *v* head is eventive and ensures an eventive reading and the presence of an eventive argument (Gondra, 2014). Result nouns are not eventive and thus lack Aspect and *v.* Alexiadou (2001) posits that the projection of arguments of the lexical roots (or constants) becomes obligatory due to these functional projections. In contrast to event nominals, result nouns do not require an eventive functional head that obligates them to realize their complements. For this generalization, Alexiadou (2001) depends on Levin's (1999) theory of verbs as constants, determining the number of arguments a lexical root takes. By not separating event nouns from result nouns, Levin (1999) created a paradigm for the presence of arguments, claiming that only eventive roots require their arguments obligatorily. Since the argument structure is already there, result nouns can choose to realize their complements since they are not eventive, in contrast with event nouns. Thus, Alexiadou (2001) differs from Grimshaw (1990) by not attributing the difference to the nominal's argument structure and instead claims that both event and result nominals can take complements. This is why her syntactic structure of result nominals in (65) contains a category neutral-lexical projection (LP) and not a VP.

As remarked by Sleeman and Brito (2010, p.201), Alexiadou's (2001) structure of event nominals in (66) does not explain why event nominals can sometimes leave the arguments unexpressed, as in (68):

(68) The discussion lasted two hours.

Moreover, the structure of result nominals in (67) does not resolve why they can combine with a *by*-phrase, as data from Portuguese shows (69) (Sleeman & Brito, 2010, p.203):

(69) Portuguese

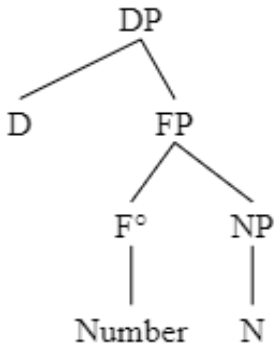
A	*análise*	*do*	*texto*	*pelo*	*aluno*	*enriqueceu*
a	análise	do	texto	pelo	aluno	enriqueceu
the.DET.SG.F	analysis.SG.F	of the	text.SG.M	by the	student.SG.M	enlarge.3SG.PST

o	*conhecimento*	*dos*	*colega.*
o	conhecimento	dos	colega
the	knowledge	of the	colleague.PL

'The analysis of the text by the student enlarged the knowledge of the colleagues.'

Nevertheless, Alexiadou's (2001) structures account for the pluralization possibilities of event nouns by embedding Number within the FP. She bases this proposal on Ritter's (1991) and Carme Picallo's (1991) findings.[18] According to Iordăchioaia and Soare (2008), the nominal structure of Romanian infinitives comprises a NumP. In contrast, as with Romanian supines, the verbal structure rules out any projection of NumP as soon as imperfective (or unbounded) AspP is projected. This claim does not hold for Greek, as Alexiadou (2001) explains: "plural nominals in Greek qualify as event nominals . . . if their aspectual interpretation changes from perfective to imperfective" (p.41). Therefore, together with her evidence from Greek event nouns, Alexiadou (2001) proposes that plural marking is independent of other material in the structure and occurs within the FP, as illustrated in (70) (Alexiadou, 2001):

(70)



In a more recent framework, Alexiadou and Grimshaw (2008) established two more models of nominalization: a structural model and an event model. As the name implies, the structural model attributes the verbal properties of the deverbal noun to the functional layers, as in Alexiadou (2001). The event model theorizes that the verbal properties of deverbal nouns are due to the argument structure instead, as in Grimshaw (1990). Moreover, like Kornfilt and Whitman (2011), Alexiadou and Grimshaw (2008) remarked that high affixation of the nominalizing morpheme accounts for more verbal properties in the derived noun, as with event nouns. Result nouns, then, lack such functional, verbal projections.

[18] Ritter (1991) focuses on three genitive constructions in Hebrew and demonstrates that all Hebrew noun phrases require the presence of a NumbP layer. The evidence demonstrates syntactic raising from the spec-NP to spec-NumP to get case-marked. As a result, Ritter (1991) argues that a functional projection between D and N must host plural affixation in all Hebrew nouns. Next, Carme Picallo (1991) shows that a distinction must be made between gender and number features in all types of nouns in Romance languages. For this, she focuses on Catalan and concludes that "[a]ll nominals in Catalan, without exception, are inflected for Number and belong to a particular Gender" (Carme Picallo, 1991, p. 281). She extends this to other Romance languages because they collectively and consistently express number and gender distinctions. This implies that successive cyclic movements occur with the noun adjoining to gender and eventually to number in all nominal structures.

Lastly, Alexiadou et al. (2010) argue for the following partial structure of event nouns, which contains layers that come on top of the AspP in the structure as shown in (66), with optional projections in parentheses (71):

(71) DP > (NumP) > ClassP > nP

The ClassP layer, a crucial component in the structure of event nouns, can either contain a semantic [+count] or [-count] feature. When ClassP has a semantic [+count] feature, it triggers the presence of NumP. The positive [+count] value in ClassP agrees with the telic inner aspect of the VP, while event nominals with the atelic inner aspect have [-count]. This reasoning is primarily supported by evidence from Romanian and Polish. For instance, Polish has demonstrated that perfective event nouns can pluralize, indicating that the presence of aspect does not prohibit plurality, contrary to Alexiadou's (2001) claim. Alexiadou et al. (2010) further argue that imperfective event nouns are atelic, leading to the blocking of plural morphology. In summary, Alexiadou et al. (2010) have refined their analysis, suggesting that the [-count] feature located in ClassP with imperfective event nouns is responsible for blocking NumP.

6.2.3 Borer (2003, 2005)

Research by Borer (2003) has reviewed the diagnostics by Grimshaw (1990) via two approaches: endo-skeletal and exo-skeletal. In the endo-skeletal approach, the formal features of the lexical items determine their properties and structure, while in the exo-skeletal approach, the morphosyntactic configurations and functional elements are of the essence (Acedo-Matellán, 2018). Whereas endo-skeletal centers around the internal composition of nominals, exo-skeletal is a view that is primarily focused on how the structure itself determines the grammatical structure and lexical meanings of the nominals (Borer, 2003). This study by Borer (2003) is thus in contrast with the DM framework since it encompasses both pre-syntactic and syntactic generation (Wiegant, 2019).

In Borer's (2003) work, event nominals are referred to as AS-nominals (argument structure) and result nominals as R-nominals. Borer (2003, 2005) agrees with Grimshaw (1990) that *-ation* nominals are ambiguous between an event and result reading and that Grimshaw's (1990) diagnostics cannot be cross-combined. For *-ation* nouns with an event reading, Borer (2005) proposes that they include "a full VP and a fully functional structure … with arguments" (p. 51). In line with Alexiadou (2001), Borer (2003) claims that result nominals lack a complete structure that includes verbal and aspectual layers; they are only simple and root-derived

nominals. Borer (2003, p.58) illustrates Alexiadou's (1999) structures for AS-nominals in (72a) and R-nominals in (72b):

(72) a. [$_{DP}$ [$_{ASP}$ [$_{v}$ [$_{LP}$ √destroy the city(theme)]]]] $_{L \rightarrow N}$

b. [$_{DP}$……. [$_{LP}$ √destroy]]] $_{L \rightarrow N}$

The $_{L \rightarrow N}$ is the lexical item being realized as a noun in situ (if dominated by a DP, the LP becomes the NP) since Alexiadou (1999) does not consider *v* or Asp as verbalizers. The dots in (70b) illustrate the absence of the event node *v* and Asp layer for result nominals. However, in her later work, Borer (2005) abandons Alexiadou's (1999) structures for two crucial reasons. First, Borer (2003) explains that the structure of AS-nominals in (70a) dismisses that AS-nominals occur with deverbal or deadjectival nouns only. In Alexiadou's (1999) structure, any lexical item can be plugged into the root of the lexical projection, which, according to Borer (2003), is not constrained by any morpho-phonological considerations. Borer (2003) continues by stating that because of this, nouns such as *table* can give rise to an eventive reading, which is erroneous. This also means that zero-alternations can wrongly have an eventive reading because they are not ruled out by Alexiadou's (1999) structures (Borer, 2003). It is correct that Borer (2003, 2005) attributes the difference between event and result nominals to their syntactic processes, of which result nominals endure a more nominal or lexical process and event nominals a more verbal one. Like Grimshaw (1990), Borer (2003) distinguishes between event and result nominals with the presence or absence of argument structure. She departs from Grimshaw (1990) by not viewing the derivational suffix as the source of eventivity (Melloni, 2007). Instead, Borer (2003, p.51) proposes the following morpho-syntactic structure for deverbal event nominals (73) and result nominals (74):

(73) a. Kim's breaking/destruction of the vase

b. [$_{NP}$ -tion$_{NOM}$/-ing$_{NOM}$ [$_{EP}$ Kim [$_{ASPQ}$ the vase [$_{L\text{-}D}$ break/destroy]]]] ($_{L\text{-}D \rightarrow VP}$)

(74) a. formation

b. [$_{N}$ [$_{L\text{-}D}$ form] -ation]

c. ([$_{DP}$) ([$_{NumP}$) [$_{NP}$ formation]

The structure of event nominals contains argument licensing heads, EP (Event Phrase), and ASPQ (subject-of-quantity argument), which are responsible for coercing the denotation of the

lexical meaning in a VP (Melloni, 2007). The L-D (lexical phrasal domain) contains the encyclopedic item (EI) and becomes an NP if embedded under a nominal functional structure such as DP. Borer's (2003) structures immediately show that the representation of result nominals lacks an argument structure. As further detailed by Melloni (2007), "the suffix is too *low* to allow the projection of elements incompatible with a head noun" (p.42). Thus, only AS-nominals contain a fully-fledged VP. In contrast, result nominals contain a nominalizing morphological structure with functional layers such as DP and NumP if necessary, but never verbalizing functional structure like ASPQ.

To highlight, Borer's (2003, 2005) theory is supported by evidence indicating that lexical items receive their information as soon as they are inserted into a syntactic context (Ramchand, 2008).[19] Subsequent structures, such as the one by Ramchand (2008), build on and agree with Borer (2003, 2005) on the existence of an aspectual head responsible for the verbalizing structure. Nevertheless, the study by Melloni (2007) identified some gaps and criticized Borer's (2003, 2005) account for several reasons. One of Melloni's (2007) main points is regarding the status of the external argument. Borer's (2003) representation of AS-nominals does not point out that the external argument is optional. More radically, Borer's (2003) theory leads to the interpretation that all nominals without an argument structure are R-nominals. This is incorrect since much evidence shows that argument-less nominals can still have an eventive reading. Relevant to the current study, Borer's (2003, 2005) structures for AS-nominals do not include the possibility of pluralization.

6.2.4 Kornfilt and Whitman (2011)

The final syntactic approach to review is by Kornfilt and Whitman (2011). In their work, Kornfilt and Whitman (2011) focused on creating a typology of nominalizations based on the functional categories that dominate them. For this, they created a hypothesis called the Functional Nominalization Thesis (FNT).

> **1. Functional Nominalization Thesis**
> Nominal properties of a nominalization are contributed by a nominal functional projection. The nominalization has verbal properties below the nominal functional projection and nominal properties above it.
>
> (Kornfilt & Whitman, 2011, p.1298)

[19] Ramchand (2008) divides her representation of event structure into three subcomponents: the initial state of the process (initP), the event itself (procP), and the result state (resP). In her analysis, the initP contains the initiator, the procP holds the undergoer, and the resP licenses the resultee of the subevent. For a recent review of Ramchand's (2008) split-vP, consider the study by Ausensi (2018).

One of the FNT's aims is to determine the level of nominalization. For instance, low nominalizations do not assign case nor combine with adverbs (Kornfilt & Whitman, 2011). On the other hand, high nominalizations introduce the nominalizer higher; thus, it builds in higher in the structure. The FNT is a significant theoretical approach that insists that deverbal nouns contain both nominal and verbal projections, of which the nominal projection dominates the verbal one. Four language types were created based on their levels of nominalization: CP, TP, *v*P, and VP-nominalizations (Kornfilt & Whitman, 2011). Table 8 lists all four types with the precise properties and examples from the upcoming text:

Table 8

Four types of nominalizations, their properties, and examples

Type	**Properties**	**Example**
CP	o The verbal projection terminates at the CP o Nominalization at the highest point of the embedded clause o The top projection is DP	(75)
TP	o The top projection is DP o Assigns genitive case	(76)
*v*P	o Introduces argument o Assigns accusative case	(77)
VP	o Lexical in nature o Does not license accusative case o Does not contain a verbal *v*P	(78)

Languages may contain a high level of nominalization in which a nominal function projection is introduced at the DP, known as CP-nominalizations. This means that the entire embedded clause is verbal and that the nominal projection is at the highest position of the embedded clause. Kornfilt & Whitman (2011, p.1299) illustrate this for Polish (75):

(75) Polish

Jan	*oznajmil*	*[to*	*ze*	*Maria*
Jan.NOM	announce.3SG.PST.M	this.DET	that.COMP	Maria.NOM
zmienia	*prace].*			
change.3SG.PST.F	job.ACC			

'Jan announced that Mary is changing her job.'

The overt complementizer *ze* 'that' in (75) is added to Polish nominals and selected by the determiner *to* 'this,' which functions as the nominalizer. Example (75) also shows that the CP must be higher than the TP since *Mary* introduces a TP, confirming the hierarchy of CP>TP>*v*P (Kornfilt & Whitman, 2011). Greek nominals have also been found to follow the same pattern (Kornfilt & Whitman, 2011).

The next type, TP-nominalizations, are resembled by the English poss/*-ing* gerunds, as exemplified in (76) (Kornfilt & Whitman, 2011, p.1302):

(76) Kim's *continual/continually playing the sonata

The poss/*-ing* gerund in the English example (76) appears in the standard noun position, excluding *that*-clauses and having a top projection that is also a DP. As with CP-nominalizations, the nominal projection with the functional head D selects the verbal projection TP. The presence of nominal or adjectival modifiers is disallowed, and complementizers cannot precede them. A large amount of data for this type stems from Turkish nominalizations. In Turkish, verbal *that*-clauses cannot combine with nominalizations and require the subject to appear in the genitive case.[20] The nominal functional head D licenses the genitive case on the subject in languages such as Turkish but also Japanese (Kornfilt &Whitman, 2008).

A language whose nominalizations fall under the *v*P type is Dutch, exemplified by its determinerless nominal infinitives (77) (Kornfilt & Whitman, 2011, p.1299):

(77) Dutch

Bomen	*kappen*	*(door*	*de*	*industrie)*	*is*	*schadelijk.*
tree.PL	felling.INF	by	the	industry.SG	is	harmful

'The felling of the trees (by the industry) is harmful.'

Though not overt, Dutch *bomen kappen* 'the felling of the trees' receives accusative case, requiring a complete, verbal *v*P. Moreover, adding *frequent* 'frequent' in (77) is acceptable, so there must be a nominal category to host the modifier between the D and the *v*P (Reuland, 2011;

[20] It has yet to be investigated what features are defective and critical in TP nominalizations since no nominative case is assigned.

Kornfilt & Whitman, 2011).[21] This means that *v*P-nominalizations are not directly selected by the nominal functional head D and that a nominal counterpart of *v* below D is required instead.

Recognizing that a language can exhibit different types of nominalizations is imperative. The fact that English poss/-*ing* nominals conform to the TP-type warrants careful consideration, as it does not necessarily follow that other categories of nouns adhere to the same pattern or type. This also goes for Dutch: Dutch determinerless nominal infinitives are categorized as *v*P gerunds, but Dutch *het/dat* nominalizations exhibit the final type, namely, VP-nominalizations (78) (Reuland, 2011, p.1284):

(78) Dutch

Het	*oproepen*	*van*	*getuigen*	*door*	*de*	*officier*
the	summon.INF	of	witness.PL	by	the	coroner.SG

'The summon of witnesses by the coroner'

VP-nominalizations are the most lexical type, as no case licensing nor theta-role assignment occurs, meaning that such nominalizations lack a verbal *v*P. The Dutch *het/dat* nominalizations, such as in example (78), are introduced by a determiner, can be modified by adverbs, and can include a *by*-phrase with a subject – all of these properties are also shared with VPs. The absence of case assignment and the optional realization of arguments shows that such nominalizations lack a verbal *v*P. However, the generalization of VP-nominalizations by Kornfilt and Whitman (2011) fails to account for the crucial element of eventivity within event nominals without a *v*P. They do not propose how event nominals realize their eventive argument or bear their eventive reading if they lack a *v*P.

In short, what CP- and TP-nominalizations have in common is that they both have a nominal functional category (D) immediately above them. Hence, they are selected by it. On the other hand, *v*P-nominalizations require a nominal head above them since they need to host modifiers like adjectives. Lastly, VP-nominalizations are the most lexical, thus lacking the *v*P, and selected directly by the head of the NP, or as Kornfilt and Whitman (2011) call, "nominal counterparts of 'light' verbs" (p.1309). The categorization of English, Hungarian, and Serbian deverbal nouns within the frameworks of Alexiadou (1999, 2001), Alexiadou and Grimshaw (2008), Borer (2003, 2005), and Kornfilt and Whitman (2011) remain elusive. This section has also shown some flaws or shortcomings within these syntactic proposals and that they differ

[21] Data from Italian confirms this further: *Il suo continuo la canzone impeccabilimente* 'the continual impeccable performance of the song' (Zucchi, 1993).

more than they overlap. This thesis will fill this gap with its novel data and extend beyond the semantic interpretation of Grimshaw's (1990) diagnostics to the direct syntactic representation of deverbal nominalizations.

6.3 Syntactic proposals on the basis of the results

This section answers the second and final research question on what kind of syntactic representation plural deverbal nominalizations have.

6.3.1 Hungarian and Serbian

Since Hungarian and Serbian were similar in their acceptability judgments on plural event nouns, this thesis groups them. This means that one syntactic structure holds for both languages' deverbal event nouns. From the current data, it can be inferred that the syntactic representations of Hungarian and Serbian event nominals should allow plural marking across all diagnostics, i.e., in the presence of adverbial and aspectual modifiers and argument structure.

Regarding the behavior of plural event nominals in these languages, it can be stated that Harley's (2009) structure does not suffice. One reason is that plurality in event nouns has been attested for these two languages. Consequently, this also means that the presence of both a syntactic object and a head encoding count noun status are semantically compatible, contrary to Harley (2009) (Wiegant, 2019). Harley's (2017) tripartite division of the VP has thus been modified to fit with the distinction of event and results nominals, and it also neatly illustrates the different functions of the *v,* v, and VP.

Next, Borer's (2003) claim that Grimshaw's (1990) diagnostics cannot be combined also does not hold: plural event nouns can appear with aspectual and adverbial modifiers and an argument structure, as illustrated by Hungarian and Serbian.

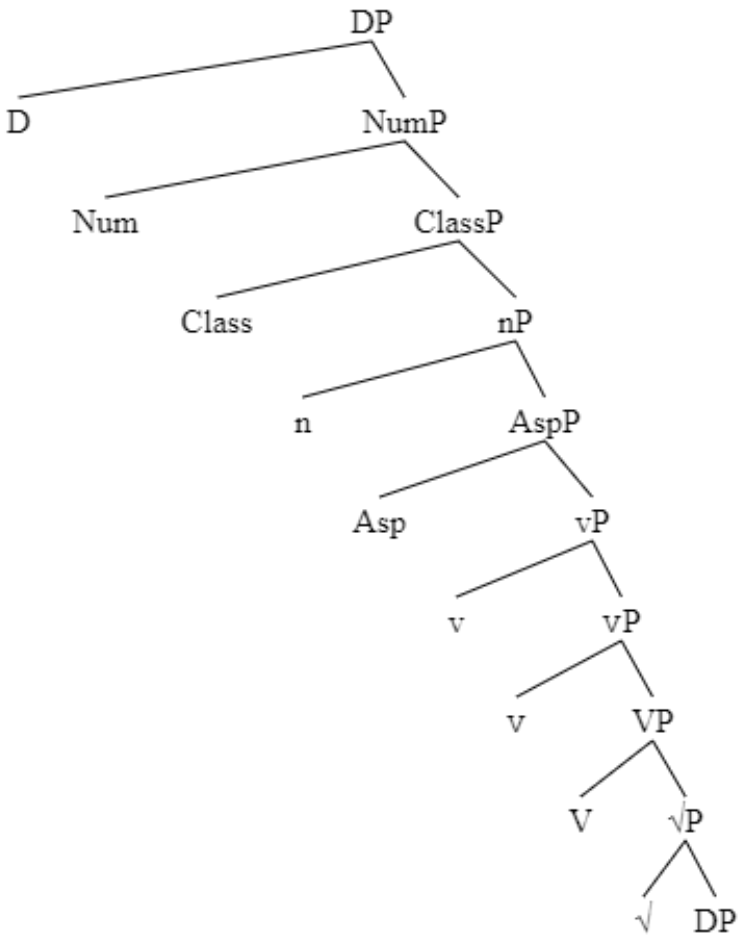
Alexiadou's (2001) structure of event nouns links adverbial and aspectual modification to the AspP, while the *v*P assures eventivity. It is erroneous to assume that the presence of AspP leads to the absence of NumP because imperfective event nouns in Hungarian and Serbian have shown to be accepted in the plural. As Bašić (2010) argues, event nouns in Serbian require an aspectual head. Aspectual modifiers are dependent on the values and presence of AspP. The structure that is valid for Serbian and Hungarian event nouns by Alexiadou (2001) was modified to include a VP[22] and an overt verbalizer v, which must operate outside of the *v*P. Moreover, adverbial modifiers like *frequent/constant* are also accepted with plural event nouns. The *in-*

[22] Evidence for a morphologically overt VP is exemplified by Catalan (see Alexiadou, 2001).

PPs and *for*-PPs are located within the VP, and dependent on the value of its inner aspect (telic or atelic), one of the two PPs gets chosen: telic verb phrases are modified by *in*-adverbials, while *for*-adverbials modify atelic verb phrases. Thus, the internal syntax of Hungarian and Serbian must host NumP, AspP[23], *v*P, vP, and VP.

The proposed structure should thus contain nodes that host plural morphology and ensure the possibility of inserting modifiers and selecting arguments. As emphasized in the current study, deverbal nominals share verbal and nominal features – therefore, they require both verbal (*v*P and VP) and nominal (nP and NumP) nodes (Gondra, 2014). The final structure of Hungarian and Serbian event nominals is provided below in (79):[24]

(79)



[23] This thesis adheres to the idea that AspP contains both semantic or aspectual information, i.e., perfective/imperfective, and aspectual modifiers.

[24] This structure is not exhaustive, meaning that it can contain other projections. For example, Bašić (2010) shows that a PartP is present in Serbian deverbal nouns as well. Such additional projections are beyond the scope of the current study, however, as its aim was to provide a general, 'basic' structure of deverbal event nouns to which other projections can be added.

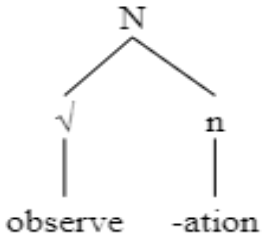
This is the maximum internal structure of deverbal event nominals in Hungarian and Serbian. Following Kornfilt and Whitman (2011), the nominal projection dominates the verbal one: in this case, the structure is nominal in the higher part, and verbal in the lower part. The v head is the verbalizer that turns the root into a verb. The FP that contained Num is now overtly translated into NumP, which hosts plural morphology. The n° hosts the nominalizer, Hungarian *-ás*/*-és* and Serbian *-nje.* The VP and √P are two separate phrases (cf. Harley, 2017): the VP hosts modifiers and phrases such as *in*-PPs, while the √P carries the lexical (root) element. The most considerable alteration is that the [+count] feature on ClassP is not obliged to agree with the aspectual value of AspP – it is simply always available. The results show that imperfective plural event nouns, such as *prevođenja* 'translations' in Serbian and *fordítások* 'translations' in Hungarian, were accepted in their plural forms. Thus, Hungarian and Serbian event nominals with telic or atelic inner aspect always have ClassP [+count], projecting NumP. The main point is that a [+count] feature in ClassP can co-exist with a different value (i.e., imperfective) in AspP, allowing the number distinction in both Hungarian and Serbian event nouns, contra Alexiadou et al. (2010). This is not the case for English.

6.3.2 English

Lastly, this section discusses the syntactic representation of plural event nouns in English. As shown before, the presence of material with deverbal event nominals blocks plural morphology for English. This also means that English event nouns must have a different syntactic representation than Hungarian and Serbian event nouns. Plural event nouns in English were only accepted in an unmodified, i.e., type of reading context.

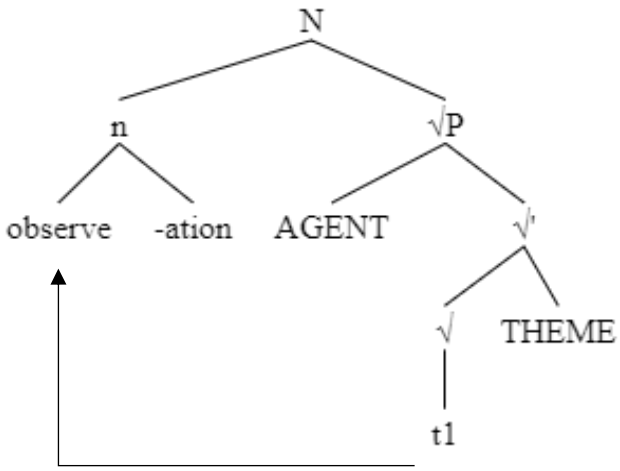
The theories or syntactic structures by Alexiadou (2001) and Harley (2009) do not hold for English: It is not the case that English cannot pluralize (Harley, 2009), nor is it the case that English can pluralize across the board (Alexiadou, 2001). Agreeing with the fact that *-ation* nominals are ambiguous between an event and result reading, Alexiadou and Grimshaw (2008) propose the following structures (80) and (81) (Wiegant, 2019):

(80)



What happens in the structure of (80) is that *-ation* nominals are affixed in the Root cycle, which abandons argument structure and where the attachment is to the root, thus leading to a result reading. This structure resembles low attachment or low affixation.

(81)

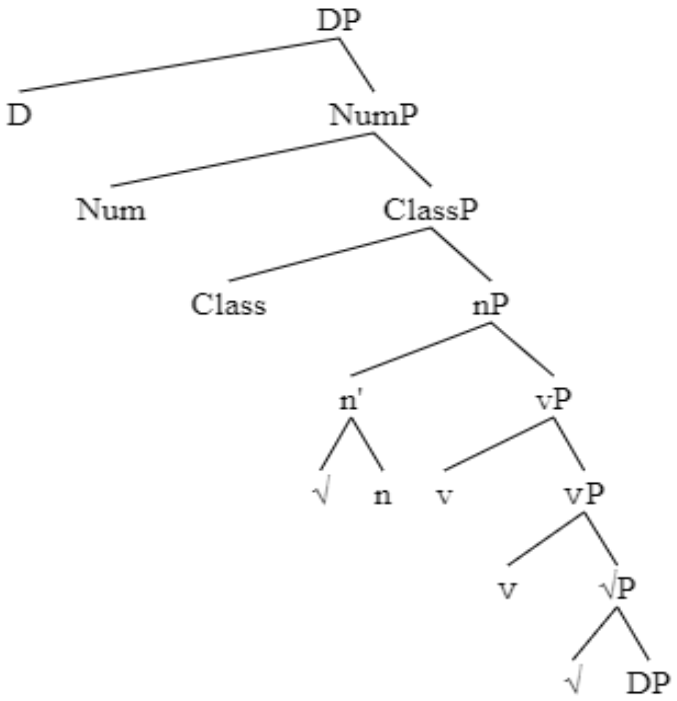


In (81), *-ation* nominals are inserted in the Outer cycle, where argument structure is preserved since the nominalizing element is attached to a higher projection. This structure then resembles high attachment or high affixation.

Concerning *-ation* nominals, Alexiadou and Grimshaw (2008) argue that they do not have a VoiceP because they cannot select an external argument (Kratzer, 1994). Unlike Alexiadou (2001), Alexiadou and Grimshaw (2008) do not further explore the possibility of plural *-ation* nouns.

After analyzing the English plural event nouns, a new structure has been created, shown in (82):

(82)

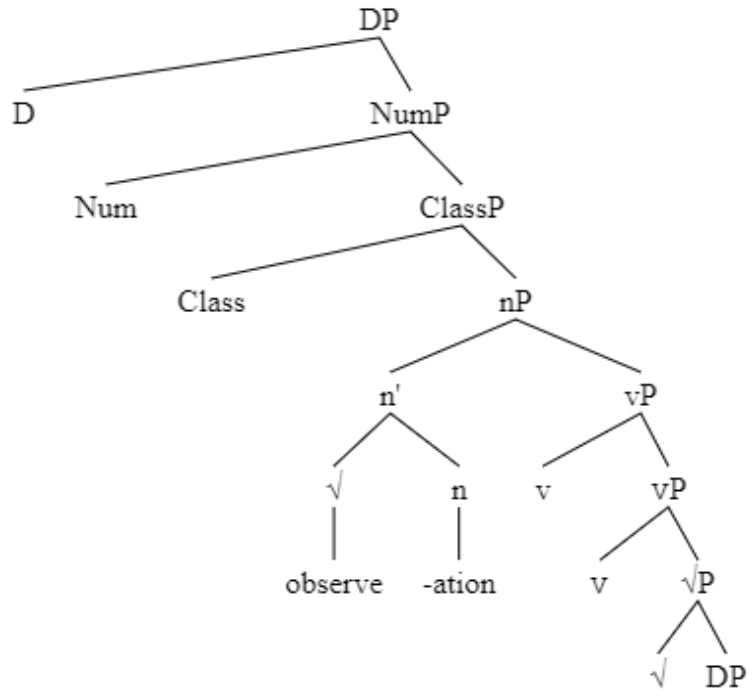


In structure (82), affixation occurs in the Root cycle to ensure it does not project an argument structure. In the Root cycle, the nominalizer *-ation* is merged with the root, resulting in a loss of argument structure. However, the reading obtained is not a result reading because the *v*P is present to ensure eventivity. Before doing so, the v turns the root element into a verb. The VP is absent: nominalizations not syntactically derived from a VP cannot combine with adjuncts such as *in*-PPs and *for*-PPs.[25] Like *-ing* suffixes (Alexiadou et al., 2010), the *-ation* suffix does not realize AspP because of its ungrammaticality to combine with modifiers, securing the possibility to pluralize in the type of reading context. The v represents the verbalizer, similar to *n* for being the nominalizer. The [+count] feature is still present in ClassP, as with the syntactic structure for Hungarian and Serbian, and English deverbal nouns also receive their plural marking via NumP.

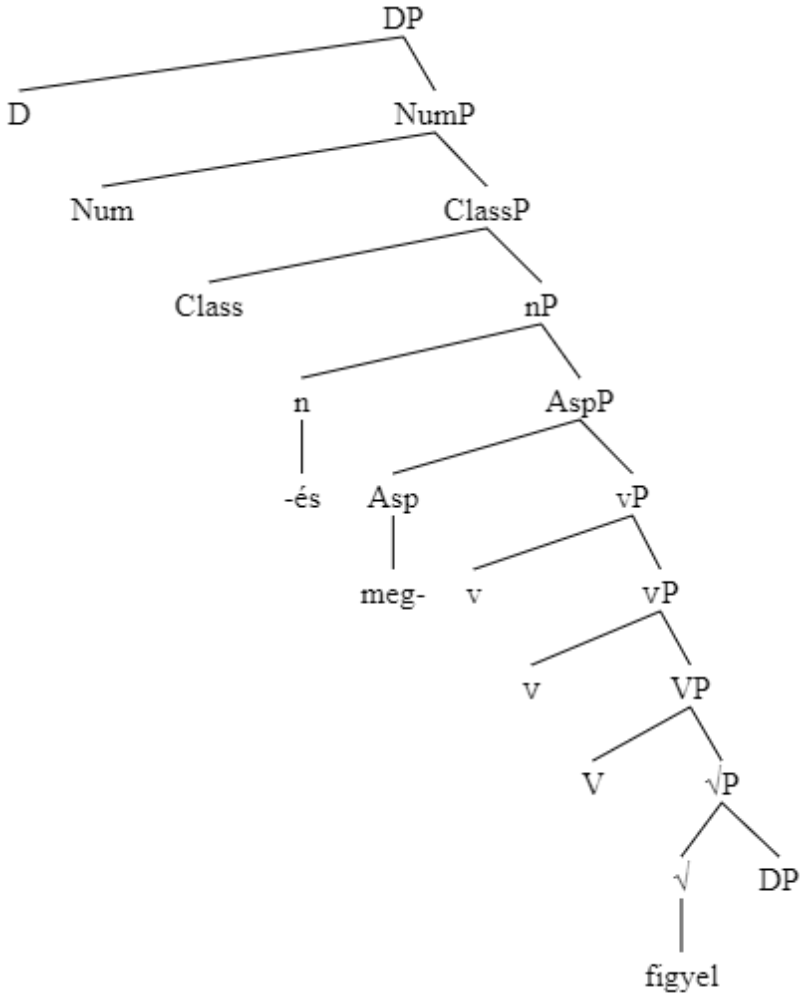
The deverbal noun *observation* is found in (83) for English, and the Hungarian *megfigyelés* 'observation' is found in (84), similar to the structure of the Serbian *posmatranje* 'observation' in (85):

[25] A study by Hayriyan (2020) claims that deverbal event nominals do not possess an internal VP structure because of the following: adverbial modifiers and sentential adverbs are external to the NPs, and simple deverbal nominals can be replaced with *'do so.'*

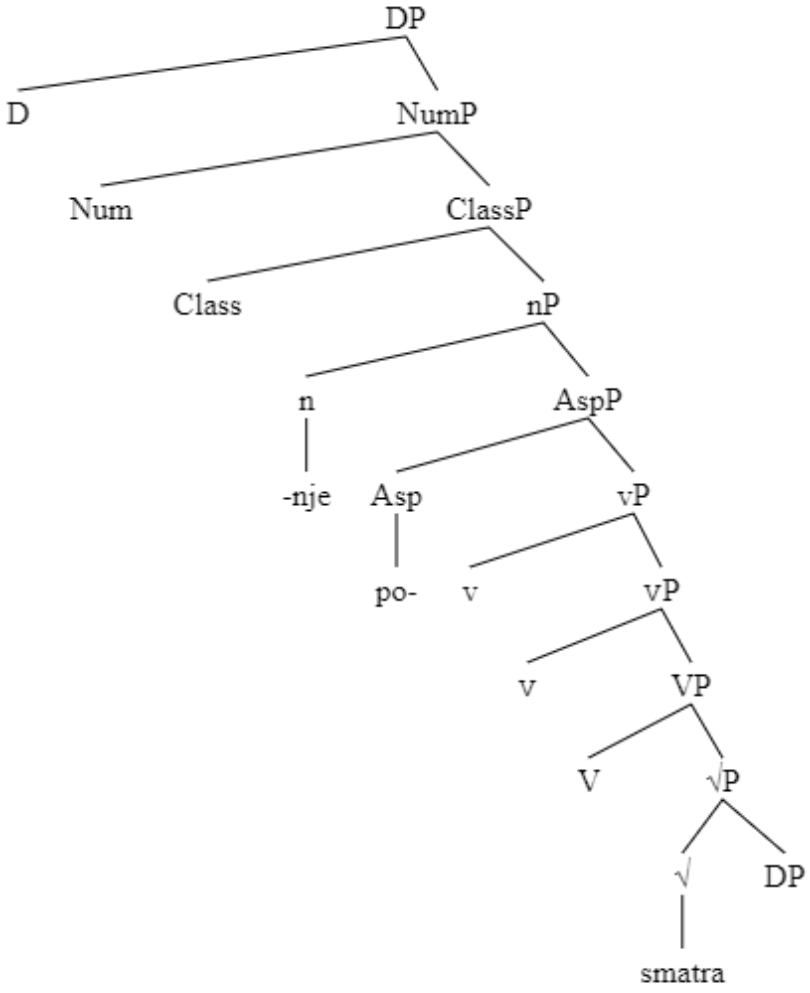
(83)



(84)


DP
D
NumP
Num
ClassP
Class
nP
n
AspP
-és
Asp
vP
meg-
v
vP
v
VP
V
√P
√
DP
figyel

(85)



6.4 Limitations

This research, distinguished by its cross-linguistic approach, explored the acceptability of deverbal nominalizations in diverse contexts, unveiling new insights into their plural marking and syntactic structures. By collecting native speaker judgments, this study focused on deverbal nouns in English, Hungarian, and Serbian, with the aim of challenging Grimshaw's (1990) well-known distinction between event and result nominals. The findings, which demonstrated that Hungarian and Serbian allow plural event nominals in all contexts, while English only permits them without modifiers, not only confirmed but also extended previous literature that has identified numerous exceptions to Grimshaw's (1990) theory. In essence, by presenting novel and significant empirical evidence and critically evaluating the applicability of Grimshaw (1990) to a broader linguistic landscape, this research significantly enriched the current understanding of deverbal nominalizations.

Although this study has offered significant new insights into the nature and theory of deverbal nominalizations from a cross-linguistic perspective, it is essential to address some limitations. One of the main limitations is the significant difference in sample size between the languages. Despite this, the conclusions drawn from the results can still be considered valid as there was no significant effect of the sample size. Two demographic variables, age and gender, showed significant differences between the three language groups (see Table 4). As a result, these differences could impact the study's homogeneity and bring confounding effects into the analysis. Therefore, consistent sample sizes of different languages are recommended to obtain streamlined results. Additionally, it is advised to maintain demographic variables by excluding participants who do not fall within a particular age range.

Another limitation of the study is the short length of the sentences in the questionnaires. The participants were instructed to imagine a context that would best fit the sentence of the deverbal noun. However, this could not be checked or kept stable; thus, the interpretation of the deverbal noun may fluctuate between participants and languages. In future research, this limitation can be avoided by including a more extensive context surrounding the sentences to ensure that all participants have the same understanding of them. Although this may have played a role in the judgment tasks, the results are still valid because all the participants received the same sentences and instructions. Moreover, the participant could not go to the previous sentence to compare the two constructions, which secured the spontaneity and naturalness of judgments.

Lastly, due to the short nature of the survey and the ability of participants to contact the researcher directly, the survey has not been piloted before distribution. While the survey still received a great deal of methodological consideration to make sure that all methodological choices ensured the validity of the results, it would have been beneficial to pilot the survey prior to its distribution. This would have helped to identify any issues with the survey design, such as the wording of the questions and instructions, and enable the researchers to make the necessary adjustments. Nonetheless, the accuracy and precision of the survey were ensured through a review process carried out by native researchers of linguistics in English, Hungarian, and Serbian. Each sentence was carefully scrutinized to ensure that it was comprehensible and effectively facilitated the retrieval of the necessary responses. No further issues were identified due to not having piloted the survey besides the general remarks of some participants not understanding the context of the deverbal nominal, which ties back to the second limitation.

7. Conclusion

This study posed the question of how and when plural marking is used in deverbal nominalizations, thereby testing the applicability of Grimshaw's (1990) theory to English, Hungarian, and Serbian. The reason behind this research was the amount of cross-linguistic evidence that suggests that event nominals can pluralize, contra Grimshaw (1990). In addition, this thesis aimed to propose new syntactic representations based on the empirical data from the questionnaires it would find. The results of this study showed that plural event nominals were acceptable constructions in all languages. Crucially, the languages differed significantly regarding the factors governing this acceptability. Whereas English only allowed plural event nouns in one context (without modifiers), Hungarian and Serbian did not show any restrictions. These findings are thus not in line with Grimshaw (1990) and show instead that plurality is not a valid criterion for distinguishing deverbal nouns cross-linguistically.

Moreover, the syntactic structures of Hungarian and Serbian are alike, while the syntactic representation of English event nouns needed the most adaptation. This thesis put forth that count semantics is always present in event nominals and that the addition of other material constraints number marking only for English.

Taken together, these findings indicate that a refined theory on deverbal nominalizations is warranted and that native speaker judgments provide valuable insights into the development of such linguistic constructions. In conclusion, the ability of deverbal event nominals to undergo pluralization has been observed cross-linguistically.

8. Future research

This study has provided several new insights into the nature of deverbal nominalizations across languages, which had yet not been addressed or satisfactorily studied in previous research. Furthermore, the results suggest that more research needs to be done. For instance, little empirical research has been done on the grammaticality of deverbal nominals in different contexts and constructions. Specifically, it has yet to be studied which (extra)linguistic factors or underlying mechanisms govern the acceptability of event nominals in the plural. As previously suggested, the languages in the current study may differ from each other due to how they encode the count-mass distinction. Further research exploring these linguistic factors could provide deeper insights into the observed differences between languages.

The results of this study suggest that the current categorization of deverbal nominals, as proposed by Grimshaw (1990), needs to be reevaluated. This study has shown, by collecting

empirical data, that Grimshaw (1990) can no longer account for deverbal nominals in English in its entirety. The studies that support Grimshaw (1990) have also not done empirical research or gathered empirical evidence for their claims and thus solely rely on or provide theoretical claims. Other languages, such as Russian, might also display that plural event nouns have become acceptable constructions by Russian native speakers, contrasting Schoorlemmer's (1998) findings. Thus, investigating languages by means of combining theoretical and empirical approaches could be valuable in uncovering potential universal patterns and language-specific phenomena. Since the current study delivered a substantial amount of data, future research can explore other phenomena within the same dataset, for instance, by focusing on result nominals and their acceptability judgments or by exploring the realization of argument structure.

It could also be helpful to review the remaining diagnostics of Grimshaw (1990), such as the use of determiners, demonstratives, and possessives. Investigating which determiners can be used in this new light of deverbal nouns will reveal more about the NP structure, such as determiner-noun concord, as well as any possible syntactic constraints.

More research is necessary to conclude the range of languages and factors that allow event nominals to pluralize. Furthermore, it would be interesting to explore the acquisition of deverbal nominals to see at what age and stage children acquire and use these linguistic forms. This could reveal whether and when number marking is possible for deverbal nouns. By pursuing these suggestions, researchers can draw further conclusions on and contribute to the concept of deverbal nominalizations regarding pluralization and other related linguistic processes.

References

Acedo-Matellán, V. (2018). Exoskeletal Versus Endoskeletal Approaches in Morphology. In M. Aronoff (Ed.), *Oxford Research Encyclopedia of Linguistics*. Oxford University Press. https://oxfordre.com/linguistics/view/10.1093/acrefore/9780199384655.001.0001/acrefore-9780199384655-e-585.

Alexiadou, A. (1999). Remarks on the syntax of process nominals: an ergative pattern in nominative-accusative languages. *Proceedings of the North East Linguistic Society, 29*(2), 1-17. https://scholarworks.umass.edu/nels/vol29/iss1/2?utm_source=scholarworks.umass.edu%2Fnels%2Fvol29%2Fiss1%2F2&utm_medium=PDF&utm_campaign=PDFCoverPages

Alexiadou, A. (2001). *Functional Structure in Nominals: Nominalization and ergativity.* John Benjamins Publishing Company.

Alexiadou, A., Anagnostopoulou, E., & Schafer, F. (2006). The fine structure of (anti-) causatives. *PROCEEDINGS-NELS*, *36*(1), 115-128. https://amor.cms.hu-berlin.de/~schaeffl/papers/alex-anag-scha.pdf

Alexiadou, A., & Grimshaw, J. (2008). Verbs, nouns and affixation. *SinSpeC - Working Papers of the SFB 732 "Incremental Specification in Context,"* 1-16. http://dx.doi.org/10.18419/opus-5695

Alexiadou, A., Iordăchioaia, G., & Soare, E. (2007). *Plural Marking in Argument Supporting Nominalizations* [Paper presentation]. International Workshop on Nominal and Verbal Plurality, Paris, France. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=021e4720729c3438879f8dff3492e51f09e5ced2

Alexiadou, A., Iordăchioaia, G., & Soare, E. (2010). Number/aspect interactions in the syntax of nominalizations: A Distributed Morphology approach on JSTOR. *Journal of Linguistics*, *46*(3), 537-574. http://www.jstor.org/stable/40925607

Ausensi, J. (2018). Review of Semantics and Morphosyntactic Variation: Qualities and the Grammar of Property Concepts by Itamar Francez and Andrew Koontz-Garboden. *Isogloss, 4*(1), 141-146. https://doi.org/10.5565/rev/isogloss.77

Bašić, M. (2010). On the morphological make-up of nominalizations in Serbian. In A. Alexiadou & M. Rathert (Eds.), *The Syntax of Nominalizations across Languages and Frameworks* (pp.39-66). De Gruyter Mouton.

Bekaert, E., & Enghels, R. (2019). On the edge between nouns and verbs. The heterogeneous behavior of Spanish deverbal nominalizations empirically verified. *Language Sciences*, *73*, 119-136. https://doi.org/10.1016/j.langsci.2018.08.012

Bisetto, A., & Melloni, C. (2007). Result nominals: A lexical semantic investigation. In G. Booij, L. Ducceschi, B. Fradin, E. Guevara, A. Ralli & S. Scalise (Eds.), *Proceedings of the Fifth Mediterranean Morphology Meeting (MMM5)* (pp.393-412). University of Bologna. http://www.lilec.it/mmm/wp/wp-content/uploads/2012/09/393-412-Bisetto-Melloni.pdf

Bloch-Trojnar, M. (2018). Semantic (ir)regularities in action nouns in Irish. *Studia Celto-Slavica: Journal of the Learned Association Societas Celto-Slavica, 9*, 31-61. https://pure.ulster.ac.uk/files/71276318/Studia_Celto_Slavica_9.pdf

Bloch-Trojnar, M. (2020). Simple Event nominals with Argument Structure? – Evidence from Irish deverbal nominalizations. *Zeitschrift für Wortbildung/Journal of Word Formation*, *4*(2), 143-163. https://doi.org/10.3726/zwjw.2020.02.08

Bogaards, M., Boogaart, R., & Barbiers, S. (2022). The syntax of progressive and ingressive aanhet-constructions in Dutch. *Linguistics in the Netherlands, 39*(1), 2-20. https://doi.org/10.1075/avt.00058.bog

Borer, H. (1994). The projection of arguments. *University of Massachusetts occasional papers in linguistics*, *17*(20), 19-48. https://www.researchgate.net/profile/Hagit-Borer/publication/239061642_The_projection_of_arguments/links/5a5be680458515450278a4a4/The-projection-of-arguments.pdf

Borer, H. (2003). Exo-skeletal vs. endo-skeletal explanations: Syntactic projections and the lexicon. In J. Moore & M. Polinsky (Eds.), *The nature of explanation in linguistic theory* (pp.31-67). CSLI Publications.

Borer, H. (2005). *Structuring Sense Volume 2: The Normal Course of Events*. Oxford University Press.

Borer, H. (2013). *Structuring sense: volume III: taking form*. OUP Oxford.

Borer, H. (2014). The category of roots. In A. Alexiadou, H. Borer, & F. Schäfer (Eds.), *The Syntax of Roots and the Roots of Syntax* (pp.112-148). Oxford University Press.

Carme Picallo, M. (1991). Nominals and Nominalizations in Catalan. *Probus, 3*(3), 279-316. https://doi.org/10.1515/prbs.1991.3.3.279

Cornilescu, A. (2001). Romanian nominalizations: Case and aspectual structure. *Journal of linguistics*, *37*(3), 467-501. https://doi.org/10.1017/S0022226701001074

D'Alessandro, R. A. G. (2019). *Syntax made easy: how to read (and draw) syntactic trees.* https://dspace.library.uu.nl/bitstream/handle/1874/397206/Syntax_made_easy_proofed_ackn.pdf?sequence=1

Depraetere, I. (1995). On the necessity of distinguishing between (un)boundedness and (a)telicity. *Linguist Philos*, *18*, 1-19 https://doi.org/10.1007/BF00984959

Dowty, D. (1979). *Word Meaning and Montague Grammar.* D. Reidel Publishing Company.

Ehrich, V. (2002). On the verbal nature of certain nominal entities. In I. Kaufmann & B. Stiebels (Eds.), *More than words. A Festschrift for Dieter Wunderlich* (pp.69-89). Akademie Verlag.

Engelhardt, M. (2000). The Projection of Argument-Taking Nominals. *Natural Language & Linguistic Theory, 18*(1), 41-88. https://www.jstor.org/stable/4047927

Filip, H. (1997). Integrating telicity, aspect and NP semantics: the role of thematic structure. *Formal approaches to Slavic linguistics*, *3*, 61-96. https://hanafilip.com/wp-content/uploads/2021/11/Filip-1997-Integrating-Telicity-Aspect-and-NP-Sem.pdf

Gatarić, I., Srdanović, S., & Kovač, A. (2021). The processing of process and result deverbal nominals in Serbian and English. *Psihologija*, *54*(4), 381-396. https://www.ceeol.com/search/article-detail?id=984154

Grimshaw, J. (1990). *Argument Structure.* The MIT Press.

Gondra, A. (2014). Different types of nouns, different types of projections. *Iberia: An International Journal of Theoretical Linguistics, 6,* 1-26. https://hdl.handle.net/11441/72660

Gulgowski, P., Błaszczak, J., & Puhacheuskaya, V. (2021). The influence of aspect on the countability of Polish deverbal nominalizations: Evidence from an acceptability rating study. *Zeitschrift für Sprachwissenschaft*, *40*(1), 1-30. https://doi.org/10.1515/zfs-2020-2014

Haas, P., Huyghe, R., & Marín, R. (2007). *Aspectual properties of deverbal nouns* [Conference session]. Workshop Plurality, Unity and Structure in Semantics, Paris, France. https://www.academia.edu/download/43959143/handout_20marin.pdf

Halle, M., & Marantz, A. (1993). Distributed Morphology and the Pieces of Inflection. In K. Hale & S. J. Keyser (Eds.), *The View from Building 20* (pp.111-176). MIT Press.

Halle, M., & Marantz, A. (1994). Some key features of Distributed Morphology. *MIT working papers in linguistics*, *21*, 275-288. https://home.uni-leipzig.de/muellerg/dm1.pdf

Harley, H. (2009). The morphology of nominalizations and the syntax of vP. In M. Rathert, & A. Giannankidou (Eds.), *Quantification, Definiteness and Nominalization* (pp.320-342). Oxford University Press.

Harley, H. (2017). The "bundling" hypothesis and the disparate functions of little v. In R. D'Alessandro, I. Franco, and Á. J. Gallego (Eds.), *The verbal domain* (pp. 3-28). Oxford University Press.

Hayriyan, A. (2020). Deverbal nominals possess no internal VP structure. *Lingua, 248,* 1-23. https://doi.org/10.1016/j.lingua.2020.102927

Heinold, S. B. (2010). *Verbal properties of deverbal nominals: an aspectual analysis of French, German and English* [Doctoral dissertation, Universität Stuttgart].

Hull, R. D., & Gomez, F. (2000). Semantic interpretation of deverbal nominalizations. *Natural Language Engineering, 6*(2), 139-161. https://doi.org/10.1017/S1351324900002436

IBM Corp. (2020). IBM SPSS Statistics for Windows (Version 27.0) [Computer software]. IBM Corp.

Ignjatović, M. (2016). *Nominalization and aspect* [Doctoral dissertation, Universitat Pompeu Fabra].

Iordăchioaia, G., & Soare, E. (2008). Two Kinds of Event Plurals: Evidence from Romanian Nominalizations. In O. Bonami & P. C. Hofherr (Eds.), *Empirical Issues in Syntax and Semantics 7* (pp.193-216). CSSP.

Iordăchioaia, G., van der Plas, L., & Jagfeld, G. (2016). *The grammar of English deverbal compounds and their meaning* [Conference session]. Proceedings of the Workshop on Grammar and Lexicon: interactions and interfaces (GramLex), Osaka, Japan. https://aclanthology.org/W16-3811

Jackendoff, R. (1991). Parts and boundaries. *Cognition*, *41*(1-3), 9-45. https://doi.org/10.1016/0010-0277(91)90031-X

JASP Team. (2024). JASP (Version 0.18.3) [Computer software].

Kamiya, M. (2001). Dimensional Approach to Derived Nominals. *University of Maryland Working Papers in Linguistics [UMWPiL], 11,* 134-162.

Knittel, M. L. (2011). French event nominals and number-inflection. *Recherches linguistiques de Vincennes, 40,* 127-148. http://journals.openedition.org/rlv/1970

Knittel, M. L. (2015). Preverbs, aspect and nominalization in Hungarian. *Recherches linguistiques de Vincennes, 43,* 47-76. http://journals.openedition.org/rlv/2245

Kornfilt, J., & Whitman, J. (2008). Genitive subjects in TP nominalizations. *Proceedings of JeNom*, *4*, 39-72. https://www2.ninjal.ac.jp/past-projects/jparchipelago/pdf/Kornfilt_and_Whitman.JeNom.2013.pdf

Kornfilt, J., & Whitman, J. (2011). Afterword: Nominalizations in syntactic theory. *Lingua, 121*(7), 1297-1313. https://doi.org/10.1016/j.lingua.2011.01.008

Kovačević, P. (2021). On the internal structure of Serbian *-(n)je* nominalizations. *Acta Linguistica Academica*, *68*(4), 426-453. http://dx.doi.org/10.1556/2062.2021.00434

Kratzer, A. (1994). On external arguments. *University of Massachusetts occasional papers in linguistics*, *20*(7), 1-28. https://scholarworks.umass.edu/umop/vol20/iss1/7

Laczkó, T. (1997). Action Nominalization and the Possessor Function within Hungarian and English Noun Phrases. *Acta Linguistica Hungarica, 44*(3/4), 413-475. https://www.jstor.org/stable/44308307

Laczkó, T., & Alberti, G. (2017). *Syntax of Hungarian: Nouns and Noun Phrases, Volume 1.* Amsterdam University Press.

Lapesa, G., Kawaletz, L., Plag, I., Andreou, M., Kisselew, M., & Padó, S. (2018). Disambiguation of newly derived nominalizations in context: A Distributional Semantics approach. *Word Structure*, *11*(3), 277-312. https://doi.org/10.3366/word.2018.0131

Lemmens, M. (2005). Aspectual Posture Verb Constructions in Dutch. *Journal of Germanic Linguistics, 173*(3), 183-217. http://dx.doi.org/10.1017/S1470542705000073.

Levin, B. (1999). Objecthood: An event structure perspective. *Proceedings of CLS*, *35*(1), 223-247. http://www.web.stanford.edu/~bclevin/cls99.pdf

Lieber, R. (2016). *English nouns: The ecology of nominalization.* Cambridge University Press.

Meinschaefer, J. (2005). Event-oriented adjectives and the semantics of deverbal nouns in Germanic and Romance: The role of boundedness and the mass/count distinction. In A. M. Thornton & M. Grossman (Eds.), *La Formazione delle parole* (pp.355-368). Bulzoni Editore.

Melloni, C. (2007). *Polysemy in word formation: the case of deverbal nominals* [Doctoral dissertation, Universita Degli Studi di Verona].

Melloni, C. (2011). *Event and Result Nominals: A Morpho-semantic Approach.* Peter Lang.

Melloni, C. (2015). Result nouns. In P. O. Müller, I. Ohnheiser, S. Olsen, & F. Rainer (Eds.), *Word-formation: An international handbook of the languages of Europe* (pp.1253-1267). De Gruyter.

Mrazović P., & Vukadinović, Z. (1990). *Gramatika srpskohrvatskog jezika za strance.* Dobra Vest.

Procházková, V. (2006). *Argument structure of Czech event nominals* [Master thesis, Universitetet i Tromsø].

Pylkkänen, L. (2002). *Introducing Arguments* [Doctoral dissertation, University of Pittsburgh].

Ramchand, G. (2008). *Verb Meaning and the Lexicon: A First Phase Syntax.* Cambridge University Press.

Reuland, E. (2011). What's nominal in nominalizations? *Lingua, 121*(7)*,* 1283-1296. https://doi.org/10.1016/j.lingua.2011.01.015

Ritter, E. (1991). Two functional categories in noun phrases: Evidence from Modern Hebrew. In S. Rothstein (Ed.), *Perspectives on phrase structure: Heads and licensing* (pp.37-62). Brill.

Roodenburg, J. (2006). *The role of Number within nominal arguments: the case of French pluralized Event Nominalizations* [Conference session]. The 36th Linguistic Symposium on Romance Languages, Rutgers University, New Jersey, United States.

Rosen, S. T. (1999). The Syntactic Representation of Linguistic Events. *Glot international, 4*(2), 3-11. https://www.researchgate.net/profile/Sara-Rosen-3/publication/248029378_The_Syntactic_Representation_of_Linguistic_Events/links/5447a7230cf2d62c30508eb6/The-Syntactic-Representation-of-Linguistic-Events.pdf

Roy, I., & Soare, E. (2011). Nominalizations: new insights and theoretical implications. *Recherches linguistiques de Vincennes*, (40), 7-23. https://doi.org/10.4000/rlv.2006

Roy, I., & Soare, E. (2013). Event-related Nominals. In G. Iordăchioaia, I. Roy, & K. Takamine (Eds.), *Categorization and category change* (pp.123-152). Cambridge Scholars Publishing.

Roy, I., & Soare, E. (2014). On the internal eventive properties of *-er* nominals. *Lingua, 141,* 139-156. https://doi.org/10.1016/j.lingua.2013.11.006

Russo, I., Caselli, T., & Rubino, F. (2012). Recognizing Deverbal Events in Context. *Int. J. Comput. Linguistics Appl.*, *2*(1-2), 91-103. https://www.gelbukh.com/ijcla/2011-1-2/IJCLA-2011-1-2.pdf#page=91

San Martin, I. (2009). Derived nominals from the nominal perspective. *Anuario del Seminario de Filología Vasca "Julio de Urquijo"*, *43*(1-2), 831-845. http://hdl.handle.net/10810/49469

Schütze, C. T., & Sprouse, J. (2014). Chapter 3: Judgment Data. In R. J. Podesva and D. Sharma (Eds.), *Research methods in linguistics* (pp. 27-50). Cambridge University Press.

Schoorlemmer, M. (1998). Complex Event Nominals in Russian: Properties and Readings. *Journal of Slavic Linguistics, 6*(2), 205-254. https://www.jstor.org/stable/24599696

Simonović, M., & Arsenijević, B. (2014). Regular and honorary membership: On two kinds of deverbal nouns in Serbo-Croatian. *Lingue e linguaggio*, *13*(2), 185-210. https://doi.org/10.1418/78407

Sleeman, P., & Brito, A. M. (2010). Aspect and argument structure of deverbal nominalizations: A split vP analysis. In A. Alexiadou & M. Rathert (Eds.), *The Syntax of Nominalizations across Languages and Frameworks* (pp.199-218). De Gruyter Mouton. https://doi.org/10.1515/9783110245875.199

Sleeman, A. (2021). Deverbal nominalizations without overt suffixation in French. *Linguística: revista de estudos linguísticos da Universidade do Porto, N.º Especial,* 473-498. https://doi.org/10.21747/16466195/lingespa21

Smirnova, A. (2015*). Understanding deverbal nominals: World knowledge or lexical semantics?* [Conference session]. Proceedings of the 37th Annual Conference of the Cognitive Science Society, California, United States. https://www.academia.edu/download/38353817/Smirnova2015.pdf

Svenonius, P. (2004). Slavic prefixes inside and outside VP. *Nordlyd, 32*(2), 205-253. https://pdfs.semanticscholar.org/2cab/c2cf5b96c9919d4cd56fadd05a87e0b5e431.pdf

Szabolcsi, A. (1992). Subject suppression or lexical PRO? The case of derived nominals in Hungarian. *Lingua, 86*(2-3)*,* 149-176. https://doi.org/10.1016/0024-3841(92)90033-F

Szabó, V., Tóth, B., Alberti, G., & Farkas, J. (2016). Verbal and nominal properties of the productive Hungarian deverbal nominalizations. *Jezikoslovlje, 17*(1-2), 267-293. https://hrcak.srce.hr/167808

Van Hout, A. (1991). Deverbal nominalization, object versus event denoting nominals, implications for argument & event structure. *Linguistics in the Netherlands, 8*(1), 71-80. https://www.jbe-platform.com/docserver/fulltext/avt.8.10hou.pdf?accname=guest&checksum=CF6E89FDD 5346F980AD68E9AC84452B5&expires=1544857031&id=id

Van Hout, A. (2016). Lexical and Grammatical Aspect. In J. Lidz, W. Snyder, & J. Pater (Eds.), *The Oxford Handbook of Developmental Linguistics* (pp.587-610). https://doi.org/10.1093/oxfordhb/9780199601264.013.25

Vendler, Z. (1967). *Linguistics in Philosophy.* Cornell University Press.

Verkuyl, H. J. (1972). *On the Compositional Nature of the Aspects*. D. Reidel Publishing Company.

Verkuyl, H. J. (1989). Aspectual classes and aspectual composition. *Linguistics and Philosophy, 12,* 39-94. https://doi.org/10.1007/BF00627398

Villalba, X. (2013). Eventualities under deadjectival nominalizations. *Borealis – An International Journal of Hispanic Linguistics, 2*(2), 241-259. http://dx.doi.org/10.7557/1.2.2.2617

Wasak, S. (2020). How complex are deverbal nouns? Argument and event structure in synthetic-ing compounds in English. *Linguistica Silesiana*, *41*, 19-38. https://doi.org/10.24425/linsi.2020.133262

Wiegant, R. (2019). *Dutch Nominalization and the Architecture of Grammar* [Master thesis, Utrecht University].

Wood, J., & Marantz, A. (2017). The interpretation of external arguments. In R. D'Alessandro, I. Franco & Á. J. Gallego (Eds.), *The verbal domain* (pp.255-278). Oxford University Press. https://lingbuzz.net/lingbuzz/002487/current.pdf?_s=H2X5nR4ZqIpIjg-u

Zlatić, L. (1997). *The Structure of the Serbian Noun Phrase* [Doctoral dissertation, University of Texas at Austin].

Zucchi, A. (1993). *The Language of Propositions and Events.* Kluwer Academic Publishers.

Appendices

Appendix A: SURFdrive materials

The following link redirects the reader to SURFdrive, an online storage service that contains all the questionnaires and items used for the current thesis: https://surfdrive.surf.nl/files/index.php/s/FQqh4fwuTPZZQhZ.

The following introductory passage was sent to all participants:
"Dear participant,

Thank you for your willingness to participate in this questionnaire for my research master thesis.

This questionnaire aims to gather grammaticality judgments on various English deverbal nouns. These are nouns that are derived from verbs, such as imagination (which comes from the verb imagine). The judgment scale ranges from 1 to 5, with 1 indicating 'fully unacceptable' and 5 indicating 'fully acceptable.' The sentences describe either a particular event or a particular thing/object, so please try to imagine a suitable context for them. Even though some sentences look similar at first sight, they are all different.

There are no wrong answers, so please complete this questionnaire as instinctively and intuitively as possible.

There are 47 sentences total. This questionnaire should take approximately 10-15 minutes to complete. All responses will be kept anonymous, confidential, and intended for research. If you have any questions or concerns, please contact me at a.radic@hum.leidenuniv.nl.

Kind regards,

Angela Radić
2nd-year Research Master student of Linguistics at Leiden University."