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Experimental insights into denominals and creativity in adult Romanian

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Abstract: The current paper investigates denominal verbs through an experiment testing how native Romanian adult speakers prefer to use and understand semi-artificial denominal (non-existent) verbs (SAD verbs) created from existing nouns, such as *a cireşi* 'to cherry' or *a vulpi* 'to fox'. Regarding sentence production, speakers generally prefer to use SAD verbs in intransitive frames and with animate subjects. Regarding interpretation, speakers prefer to associate the nouns/nominal roots SAD verbs derive from with typical activities/states/behavior, in line with Kiparsky's (1997) Canonical Use Constraint. Moreover, speakers mostly paraphrase animal and human role SAD verb classes through 'behave/become like N' paraphrases, while paraphrasing fruits/vegetables and object SAD verb classes by directly combining typical activities/changes-of-state with N. We provide a mixed cognitive-structural account, arguing that the literal interpretation obtains when the light verb merges with the noun, and the figurative interpretation obtains when the light verb merges with the noun-like root, and that the frequency of the interactions between humans and (in)animate entities and the naturalness of a comparison between them determine the type of interpretation.

Key words: denominal verbs, animacy, sentence production, paraphrases, lexical syntax, cognition.

1. Introduction

Creativity in language has been approached from many different perspectives. On the one hand, creativity can be understood as an inherent property of the language, which is at the very root of language generation. This is the perspective proposed by Chomsky (1965, 1972, 1980), who considers the normal use of language a creative activity, distinguishing human language from any other system of animal communication. Whenever people put words together to express a thought, they are engaging in a creative enterprise, which

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is in many ways enabled by recursion. On the other hand, creativity can also be understood in a more restricted sense, as referring to the ability to create unusual words or sentences, which are not present in daily communication. In the current paper, we dwell on the latter approach, and, in particular, on *word-formation creativity*, i.e., the ability to coin new words (on the spot) in order to convey meanings that are not covered by already existent words in the lexicon, or to extend the meaning of already existing words into the figurative realm. Word-formation creativity has received attention in the literature from as early as the 1960s, when Marchand introduced the term *word-manufacture* to refer to welding "[m]ore or less arbitrary parts of words into an artificial new word" (1960: 368). Bauer (1983) then stressed the role of the speaker's motivation in extending the system in an unpredictable manner, which departs from regular conventions. Arndt-Lappe et al. (2018) and Munat (2007) discussed creativity in relation to lexical innovations such as blends, clippings, acronyms, initialisms, truncations, as well as to metaphorical and metonymical shifts of existing words. Importantly, while, initially, word-formation creativity was argued to escape morphological rules (Bauer 1983), more recent approaches (e.g. Munat 2007) argue that even coinages observe productive rules up to a certain extent. However, recent studies (Štekauer 2005a, b, 2006, 2016; Körtvélyessy, Štekauer, & Kačmár 2022) have considered word-formation creativity less from the perspective of the productive system of rules in the language and more from the perspective of the speaker, acknowledging his/her importance in the act of naming things. Thus, while word-formation creativity manifests linguistically, it may be tied to various cognitive abilities, such as creative thinking, for instance.

From an empirical perspective, word-creativity seems to cover a variety of coinages (interjections, compounds, novel nouns and verbs, a.o. – see, for instance, Clark (1982), Clark & Clark (1979) –, and age periods. Interestingly, innovative words such as *angel cake* or *to broom* appear spontaneously not only in child language (Clark 1982, Clark & Clark 1979), but also in adult language, where one can talk about *beering* someone (giving someone a beer), *cigaretting* someone (giving someone a cigarette), *salading* (eating salad), *coffeeing* (drinking coffee), and even about *Kanye Westing* someone (acting like Kanye West towards someone) (Luu 2016). Moreover, the creative power of innovations can be seen in literature too, for instance, in Shakespeare's works, where we find novel uses of denominals such as *grace me no grace, nor uncle me no uncle* (York, in *Richard II*, 2.3.86) (Crystal 2016).

Interestingly, word creativity raises challenges for the interlocutor as well, who has to infer what the speaker meant in a certain situation. Novel words give rise to creative interpretations on the part of the interlocutor, who may not always pin down the exact

meaning intended by the speaker. Thus, within the larger domain of lexical creativity, we can distinguish between **creativity in producing novel words** and **creative interpretation of new/potential words**.

In the current paper, we focus on the latter phenomenon, looking at how native Romanian adult speakers prefer to use and interpret coined, semi-artificial denominal (SAD) verbs, i.e., non-existent verbs derived from existing nouns, such as *a cireşi* 'to cherry' or *a vulpi* 'to fox'. We aim to shed light on the internal structure of denominals and the world-knowledge which guides word formation and interpretation. Already existent denominal verbs are usually associated with a certain use and interpretation. For instance, the verb *a ciomăgi* 'to club' is used transitively, and it conveys the meaning 'to hit with a club' rather than 'to use a club to support a door from falling' or 'to throw a club in the air' or 'to look at a club'. On the other hand, a verb such as *a se pisici* 'to CL. kitty' (roughly corresponding to 'to kitty oneself') is used intransitively, and it conveys the meaning 'to act in a spoiled manner, like a kitty'. Thus, *a ciomăgi* 'to club' is associated with a literal interpretation, involving the actual object club, whereas *a se pisici* 'to CL. kitty' is associated with a figurative 'behave like' interpretation. Given these pre-established associations, it is impossible to have a clear picture of the speakers' natural preferences in creating denominal meanings. Employing the SAD paradigm allows us to probe into the formation of denominal verb meaning in the absence of the lexical bias associated with already existing verbs.

2. Previous research on denominal verbs in adult language

Denominal verbs have been investigated in adult language from both a theoretical and experimental perspective. Various theoretical attempts have been made to try and capture their meaning: *cognitive-semantic accounts*, which explain meaning shifts by resorting to metaphor, *structural accounts*, which rely on the assumption that the meaning of denominal verbs can be captured through their internal structure below the word-level, as well as *mixed structural-pragmatic accounts*, which argue that structure is not enough, and one needs to consider world-knowledge about typical actions.

Cognitive-semantic accounts (e.g., Kövecses & Radden 1998; Dirven 1999; Valera 2017; Bauer 2018; Baeskow 2020, 2021; Ruiz de Mendoza Ibáñez 2017; Štekauer 2005a, 2006) explain conversion and other similar phenomena through cognitive-semantic shifts such as metonymy and metaphor. When the conceptual domain of the new verb is the same as the starting noun/nominal root (e.g., *to fish pearls*), we are dealing with metonymy. Conversion can thus be understood as conceptual metonymy of basic event schemata, whereby one participant in the event schema (the Patient, as in *to fish*, or the

Manner as in *to fish pearls*) is converted into a new verb, evoking the whole action schema. When the conceptual domain of the new verb is different from the starting noun/nominal root (e.g., *to fish for information*), we are dealing with metaphor. Another important notion for the cognitive-semantic perspective is predictability: Štekauer (2005a), for instance, discusses noun-verb conversion in terms of predictability, arguing that the meaning of a converted form is chosen based on the competition between the predictability rates of various possible meanings. For instance, a verb such as *to milk* results through the conversion from a SUBSTANCE to an ACTION, and its meaning ('to obtain milk from a female animal') builds upon the prototypical features underlying the process of recategorization. Interestingly, on the basis of an experimental investigation of potential denominal verbs, Štekauer (2005a) and Štekauer, Díaz-Negrillo, & Valera (2011) identify associations between conceptual fields and various types of semantic relations expressed by denominals: for instance, the conceptual field Vehicles tends to express the semantic relation INSTRUMENT, while the conceptual field ANIMAL tends to express the semantic relation OBJECT followed by MANNER/ PATTERN. Such associations underlie the possible interpretations of potential denominal verbs, although not always in a fully predictable manner.

From a structural point of view, the meaning of denominal verbs has been captured by theories such as Lexical syntax (Hale & Keyser 2002), Distributed Morphology (Borer 2014, Halle & Marantz 1993, Marantz 1997, a.o.) or Spanning (Bleotu 2016, 2019) –see Table 1. In Lexical syntax (Hale & Keyser 2002), denominal verbs result from incorporating a noun/nominal root into a light verb (*dance* = DO *dance*, shelve = PUT ON SHELF). In Distributed Morphology (Borer 2014, Halle & Marantz 1993, Marantz 1997, a.o), denominals result from merging a small v with an underspecified root. In Spanning (Brody 2000, Ramchand 2008, 2014, Svenonius 2012, 2016, Bleotu 2016, 2019, Blix 2021), a denominal verb is a span, i.e., a word which spells out multiple heads (e.g., initiation Phrase, process Phrase, nominal Root).

Lexical syntax (Hale & Keyser 2002)	Distributed Morphology (Halle & Marantz 1993)	Spanning (Ramchand 2014)
V' V NP N_i V N dance t_i	v v Root dance	init@* 'x' Proc* 'x' N dance *Linearized as x [N Proc Init]*

Table 1: Structural accounts of the meaning of denominals

According to Kiparsky (1997), however, the meaning of denominal verbs cannot be captured exclusively in structural terms. While denominal verbs could potentially have a wide variety of meanings, the preference for one meaning over another seems to have a lot to do with which action is considered more typical. Thus, Kiparsky (1997) proposes the Canonical Use Constraint (1):

(1) If an action is named after a thing, it involves a canonical use of that thing.

While Kiparsky (1997)'s principle considers verbs which refer to actions, in a more extensive formulation, the principle should also capture verbs which refer to typical states, changes of state or behaviour.

Most of the theoretical investigations of denominal verbs have focused on denominal verbs which name actions involving the actual entity denoted by the nominal root. However, as argued by Kiparsky (1997), some denominal verbs do not fit into this category. While a verb such as *tape* involves the use of tape, a verb such as *hammer* does not necessarily involve the use of a hammer but rather a hammer-like movement. In other words, one cannot tape with pushpins, but one can hammer with a shoe. Starting from this intuition, Kiparsky (1997) proposes a structural explanation for this difference. He argues that verbs such as *tape* are true denominal verbs, and they are derived by merging light verbs with nouns, while verbs such as *hammer* are pseudo denominal verbs, and they are derived by merging light verbs with N-like roots.

True denominal verbs	Pseudo denominal verbs
	

Table 2: Structure for true and pseudo denominals according to Kiparsky (1997)

However, this view has been criticized by Harley & Haugen (2007), who argued instead that all denominal verbs are derived from roots, and the distinction proposed by Kiparsky (1997) is pragmatic rather than structural, being influenced by how similar the object the denominal verb combines with is to its root: while taping with pushpins is impossible, taping with band aids is plausible, given that band aids are more similar to tape in terms of adhesive properties. Harley & Haugen's (2007) view is further supported by experimental results from English by Bleotu & Bloem (2020, 2021).

Experimental investigations by Kelly (1998) show, however, that some differences may nevertheless exist between 'true' and 'pseudo' denominals. Idiosyncratic verbs which require more creative interpreta-

tions, such as *to monkey, to chair* or *to eye*, are more challenging than verbs derived from rules such as *to dance the X, to play the X,* or *to travel by X.* Kelly (1998) suggests that true denominal verbs may be accounted for through structural rules, while the creative interpretations of idiosyncratic verbs may be captured by extra cognitive, pragmatic processes.

In a similar fashion, Štekauer (2005a, 2006) and Štekauer, Díaz-Negrillo & Valera (2011) also investigate experimentally the issue of predictability of converted nouns. In their experiments, English, Slovak and Polish participants were asked to propose a variety of meanings for some potential denominal verbs in English and then rate the probability of their occurring in an actual language on a Likert scale from 10 (maximum acceptability by a speech community) to 1 (minimum acceptability by a speech community). Štekauer (2005a, 2006) and Štekauer, Díaz-Negrillo, & Valera (2011) look at potential denominals derived from nouns belonging to several conceptual fields: Body Parts (*to knuckle*), Animals (*to ape*), Fruits, Furniture (*to bin*), Vehicles (*to rocket*), Clothes (*to boot).* They reach the conclusion that, for both native and non-native participants, each conceptual field has a preferred tendency towards a certain semantic relation among the relations OBJECT, INSTRUMENT, LOCATION, PATTERN (model of an action), MANNER, RESULT. The field Body Parts, for instance, tends towards the relation PATTERN, followed by MANNER, the field Animal tends towards the relation OBJECT, followed by MANNER, the field Fruits tends towards the relation OBJECT, the field Furniture tends towards INSTRUMENT and LOCATION, followed by MANNER/ PATTERN, while the field Vehicles tends towards INSTRUMENT. They thus associate literal and figurative interpretations with the conceptual fields of the nouns/nominal roots denominals are derived from.

A recent study by Martin & Piñón (2020) investigates behavior-like denominals in French from a semantic perspective, in terms of the notion of *stereotype S*. For instance, the verb *diplomatiser* is interpreted as 'behave like a diplomat', in terms of the stereotypical properties associated with a diplomat (politeness, charm, communicative skills, a.o.). Importantly, a person need not be a diplomat to behave like one, therefore, the stereotype does not entail the noun. According to Martin & Piñón (2020), in French, the verbal suffix *-izer* introduces the stereotype, and the resulting item further combines with a Voice head which introduces the external argument (the Agent) (Kratzer 1996). While the idea that a suffix introduces a stereotype seems to work for French, one has to also consider languages like English, where there seems to be no suffix, at least not a phonologically visible one. Moreover, in Romanian, for instance, all verbs have a verbal ending, but not all have a verbal suffix. Nevertheless, a stereotype reading is available even for verbs without a verbal suffix. In such cases, one could either postulate a zero suffix, responsible for introducing a stereotype, or simply argue that the

light verb itself introduces such a stereotype. For reasons of simplicity, we shall assume the latter approach. Thus, we end up with two possible derivations for 'behave like' readings (Table 3): a root account, where the light verb combines with a root with an N-like meaning, and a stereotype account, where the verb combines with a stereotype which expresses the properties most typical of N. The latter account is similar to the OBJECT LIKE N account of denominals discussed by Bleotu (2019) and Bleotu & Bloem (2020, 2021). Importantly, on either account, 'behave like' readings are more challenging structurally than literal readings of denominals, given the complexity of computing N-like meaning (involving the stereotypical properties of N).

Throughout the paper, for reasons of consistency and interpretive transparency, we shall use the label *literal* to refer to interpretations which involve the actual entity (Kiparsky's true denominals) and the label *figurative* to refer to interpretations which refer to actions/states/behaviors that involve some similarity to the entity denoted by N (Kiparsky's pseudo denominals).

Root Account	Stereotype Account
V V Root	V V Stereotype LIKE N

Table 3: Derivation of 'behave like' readings of denominal verbs

3. Current experiment: Denominal Paraphrase and Sentence Elicitation Task

The current experiment examines how Romanian native adult speakers use and understand SAD verbs. On the one hand, we investigate whether participants prefer to use novel denominal verbs in transitive/intransitive frames and with animate/inanimate subjects. On the other hand, we look at what paraphrases/interpretations participants prefer to associate SAD verbs with.

3.1. Predictions

In terms of sentence production, given that there is a general Animacy Bias for subjects (Dahl & Fraurud 1996, Givón 1983), we predict that participants should produce more sentences with denominal verbs with animate subjects than inanimate subjects.

As far as transitivity is concerned, different theories make

conflicting predictions about the participants' possible behaviour. According to *a Frequency-Based Approach* (Robinson & Ellis 2008), the frequency of a syntactic frame in the language may affect the rates at which participants produce potential denominals in such frames. Consequently, given that transitive verbs are more frequent in Romanian than intransitive ones (5500 transitive verbs versus 1500 intransitive ones; Ungureanu 2005), participants should produce more sentences with SAD verbs in transitive frames than intransitive frames.

A Transitivity Bias Approach which considers transitive frames mapping <*Agent, Theme/Patient*> relations primary in Universal Grammar (Bowerman 1982, Brooks, Tomasello, Dodson & Lewis 1999) and intransitives as derived from transitives would similarly predict more transitive uses of denominals than intransitive ones.

According to *a Structural-Based Approach*, however, participants should be sensitive to the internal structure of denominals. Consequently, since denominal verbs consist of a light verb and a nominal, being in a sense, covert transitives (see Hale & Keyser 2002, *to dance* means 'to do a dance'), *a Structural-Based Approach* predicts that participants should produce more denominal verbs in intransitive frames than in transitive frames.

According to *a World-Knowledge Approach* (Clark & Clark 1979), various factors related to how the world is construed could influence participants towards choosing a transitive or an intransitive frame. For instance, if the action they associate with the verb typically involves another entity, they will choose a transitive frame; if it does not, then they will choose an intransitive frame. Consequently, for SAD verbs derived from animal names, given that human behavior is in many ways similar to and often compared to animal behavior, we expect participants to use SAD verbs in intransitive frames quite often. However, for SAD verbs derived from objects or fruits/vegetables names, we expect participants to use SAD verbs in transitive frames more often in case of frequent interactions between humans and the objects/fruits/vegetables, but not otherwise (people are more similar to animals than to objects/fruits/vegetables).

In terms of interpretation, participants are expected to give paraphrases with actions/states/behaviour typically associated with the entity denoted by the noun/nominal root, in line with Kiparsky's Canonical Use Constraint. Moreover, we know that literal interpretations are more accessible than figurative ones, and that figurative interpretations place heavier demands on processing. Interpreting a word figuratively requires additional cognitive efforts than literal language, such as identifying the similarities between two entities and the relations between these similarities (Chiappe & Chiappe 2007, Coulson & Van Petten 2002, Inhoff, Lima, & Carroll 1984, Ortony et al. 1978, Paivio 1979, Reynolds, & Antos 1978, Recanati 2004, Rubio-

Fernández 2007, Shinjo & Myer 1987). We thus expect participants to have a general preference for literal interpretations, involving the actual entity denoted by the nominal root/noun. However, various cognitive facts may affect the choice between literal and figurative interpretations. In the case of SAD verbs derived from animal names, given the similarity and the natural comparison between human and animal behaviour, we expect participants to provide more 'behave like' (figurative) interpretations than literal ones. Moreover, we expect both literal and figurative interpretations to exemplify actions/states/behavior typically associated with the entity denoted by the noun/nominal root, in line with Kiparsky's (1997) Canonical Use Constraint.

3.2. Participants

40 Romanian native adult speakers (Age range: 18-22, Mean age: 21;4) took part in the experiment. They were recruited from undergraduate students who pursue American Studies at the Faculty of Foreign Languages, University of Bucharest. Importantly, they were homogeneous with respect to their age (18-22) and English level (B2/C1 according to the Common European Framework of Reference for Languages. We opted for testing students from the American Studies instead of Philology students, since, unlike Philology students, who have many linguistics courses, American Studies students have few such courses. They are, therefore, less likely to be influenced in their answers by prior linguistic knowledge.

3.3. Procedure and materials

We employed an elicitation task, asking participants to provide sentences and paraphrases for 16 SAD verbs belonging to four classes: objects/places, fruits/vegetables/vegetables, animals, human roles (see Table 4). The four classes were established using animacy as a criterion: thus, we tested two animate classes (human > animals) and two inanimate classes (fruits/vegetables > objects/places). Within the animate class, humans are more salient than animals, while, within the inanimate class, fruits/vegetables may be argued to have a higher degree of animacy than objects/places. The classes of denominals we opted for are slightly different from the cognitive fields in Štekauer, Díaz-Negrillo, & Valera (2011) (Body Parts, Animals, Fruits, Furniture, Vehicles, Clothes). Štekauer, Díaz-Negrillo, & Valera (2011) tested various subclasses of our object class separately (furniture, vehicle, clothes), in order to investigate the relations between cognitive fields and semantic relations. Importantly, these (sub)classes could be argued to express different semantic relations (Location, Instrument, Object), which was particularly relevant for their purposes. In contrast, our experiment tries to establish whether the interpretations participants

provide for our classes are literal or figurative, looking for associations with the animacy of the nominal root and with the animacy of the subject. Consequently, our classification of denominal classes is less fine-grained in this respect. Nevertheless, in our investigation, we tested one class which is not present in Štekauer, Díaz-Negrillo & Valera (2011): while they tested denominals derived from body parts, we tested denominals derived from human roles.

In responding to the task, participants were asked to limit themselves to the first sentence and paraphrase that comes to their mind, unlike in Štekauer, Díaz-Negrillo & Valera (2011), where participants were asked to provide all the possible meanings that come to their mind. While they were interested in the whole array of possible interpretations a speaker could provide for a potential denominal, we focus on the most salient interpretations.

Denominal class	Thematic role	Verbs
object class (non-animate objects & places)	Instrument, Location	*a chitări* 'to guitar', *a maşini* 'to car', *a râui* 'to river', *a strada* 'to street'
fruit/vegetable class (fruits, vegetables)	Theme/Locatum	*a cireşi* 'to cherry', *a lămâi* 'to lemon', *a dovleci* 'to pumpkin', *a cepui* 'to onion'
animal class	Theme/ Manner/Result	*a vulpi* 'to fox', *a pinguini* 'to penguin', *a elefănți* 'to elephant', *a iepuri* 'to bunny'
human class	Theme/ Manner/Result	*a dentisti* 'to dentist', *a mecanici* 'to mechanic', *a bunici* 'to grandma', *a mătuşi* 'to aunt'

Table 4: Non-existent verbs derived from existent nouns used in the experiment

Before the actual elicitation task, the interviewer provided an example answer for the word *a mătura* 'to broom': first a sentence containing the word, followed by a paraphrase *a da cu mătura* 'to use the broom'. The interviewer then encouraged participants to do the same with the novel words they would be given.

As one can notice, in the pre-testing, participants were exposed to only one denominal verb with a literal meaning instead of several denominals with both literal and figurative meanings. Moreover, they were not familiar to the distinction between literal and figurative meanings of denominals from previous studies. As a reviewer points out, the presence of a literal denominal in the pre-testing may have contributed to a literal bias. While this may certainly be true, we chose not to use an example with a denominal with a figurative meaning and a sentence and a paraphrase of it in order to avoid the opposite (figurative)

bias. Future research may further explore to what extent exposing participants to literal/figurative meanings of existing denominals creates a bias regarding the interpretation of potential denominal verbs.

3.4. Results

In Table 5, we present some examples of sentences and paraphrases provided by participants.

Denominal class	Verb	Lit./ Fig.	Sentence answers	Paraphrases
object/ place class	*a chitări* 'to guitar'	Lit.	*El chităreşte frumos.* 'He guitars beautifully.'	*a cânta la chitară* 'to play the guitar'
		Fig.	*El a chitărit tot timpul.* 'He guitared all the time.'	*a se preface că cântă la chitară* 'to pretend to play the guitar'
Denominal class	Verb	Lit./ Fig.	Sentence answers	Paraphrase
object/ place class	*a maşini* 'to car'	Lit.	*Ioana maşineşte în fiecare weekend* 'Ioana cars every weekend.'	*a conduce maşina* 'to drive a car'
		Fig.	*Acel instrument maşineşte de când l-ai pornit.* 'That instrument has been carring ever since you started it.'	*a face zgomote ca o maşină* 'to make noises like a car'
	a râui 'to river'	Lit.	*Dan a ieşit cu barca la râuit.* 'Dan went rivering with the boat.'	*a merge cu barca pe râu* 'to travel along the river by boat'
		Fig.	*Sucul de portocale a râuit de-a lungul mesei, distrugând fața de masă.* 'The orange juice rivered across the table, destroying the table cloth.'	*a curge precum un râu* 'to flow like a river'
	a strada 'to street'	Lit.	*El a stradat în fața blocului.* 'He streeted in front of his flat.'	*a curăța o stradă* 'to clean a street'
		Fig.	*Când stradează deasupra oponenților, e clar ca va câştiga dezbaterea.* 'When he streets against his opponents, it is clear that he will win the debate.'	*a adopta un limbaj zgomotos, a vorbi ca pe stradă* 'to talk noisily, as on the street'

fruits/ vegetables class	*a cireşi* 'to cherry'	Lit.	*Eu cireşesc in gradină.* 'I am cherrying in the garden'.	*a culege cireşe* 'to pick cherries'
		Fig.	*A cireşit la auzul spuselor lui.* 'She cherried at hearing his words.'	*a se îmbujora, a se face roşu ca cireaşa* 'to become red in the cheeks, to become red like a cherry'
	a lămâi 'to lemon'	Lit.	*Mama lămâieşte pentru maioneză.* 'Mother is lemoning for mayonnese.'	*a stoarce lămâi* 'to squeeze lemons'
		Fig.	*Mi-a lămâit viaţa.* 'He lemoned my life.'	*a face viaţa acră ca o lămâie* 'to make life sour like a lemon'
	a dovleci 'to pumpkin'	Lit.	*Copiii abia aşteaptă să dovlecească în octombrie.* 'The children can hardly wait to pumpkin in October.'	*a decora dovleci* 'to decorate pumpkins'
		Fig.	*Dovleceşte de fiecare Halloween.* 'He pumpkins every Halloween.'	*a se îmbrăca ca un dovleac* 'to dress up like a pumpkin'
	a cepui 'to onion'	Lit.	*Mama cepuieşte.* 'Mom is onioning.'	*a tăia ceapa* 'to cut onion'
		Fig.	*Cepuieşte după fiecare despărţire.* 'He/she onions after every break-up.'	*a adăuga încă un strat la învelişul exterior ca o ceapă pentru a se proteja* 'to add one more extra layer to the external shell like an onion in order to protect oneself'
animal class	*a vulpi* 'to fox'	Lit.	*Vânătorul şi soţia sa au vulpit creatura care le măcelărise păsările din coteţ.* 'The hunter and his wife foxed the creature that had butchered the birds from the coop.'	*a jupui o vulpe* 'to flay a fox'
		Fig.	*A vulpit-o cu nişte vorbe frumoase.* 'He foxed her with some beautiful words.'	*a păcăli ca o vulpe* 'to trick like a fox'
Denominal class	Verb	Lit./ Fig.	Sentence answers	Paraphrase

animal class	*a pinguini* 'to penguin'	Lit.	Missing	Missing
		Fig.	*Copilul pinguineşte.* 'The child is pinguining.'	*a merge ca un pinguin* 'to walk like a penguin'
	a elefănți 'to elephant'	Lit.	*El a elefănțit când a fost în Africa.* 'He elephant when he was in Africa.'	*a călări un elefant* 'to ride an elephant'
		Fig.	*El elefănțește prin casă.* 'He elephanted in the house.'	*a merge tărăgănat ca un elefant* 'to walk like an elephant'
	a iepuri 'to bunny'	Lit.	*După ce am prins iepurele cel mare, l-am iepurit toată ziua.* 'After I caught the big bunny, I bunnied it all day.'	*a smotoci un iepure* 'to cuddle a bunny'
		Fig.	*Irina iepurește pe câmp.* 'Irina is bunnying in the field.'	*a țopăi ca un iepure* 'to hop like a bunny'
human class	*a dentist* 'to dentist'	Lit.	*Dentistul m-a dentistit până am amorțit.* 'The dentist dentisted me until I became numb.'	*a lucra la dinți* 'to fix someone's teeth'
		Fig.	*Filmul m-a dentistit.* 'The film dentisted me.'	*a speria ca dentistul* 'to scare somebody just as a dentist does'
	a mecanici 'to mechanic'	Lit.	*El mecaniceste şi câştigă mult.* 'He mechanics and earns a lot of money.'	*a lucra ca mecanic* 'to work as a mechanic'
		Fig.	*Îşi mecanicește singur maşina când se strică.* 'He mechanics his own car when it breaks.'	*a repara ca un mecanic* 'to fix like a mechanic'
	a bunici 'to grandma'	Lit.	*Ea îşi bunicește nepoții.* 'She grandmas her grandsons.'	*a fi bunica lor* 'to be their grandmother'
		Fig.	*Sora mea mă buniceşte de când am început facultatea.* 'My sister keeps grandmaing me ever since I started the faculty.'	*a ocroti ca o bunică* 'to protect like a grandmother'
	a mătuși 'to aunt'	Lit.	*Ea mătuşeşte doi gemeni.* 'She aunts two twins.'	*a deveni mătuşă* 'to become an aunt'
		Fig.	*Noi mătuşim.* 'We are aunting.'	*a face curat ca o mătuşă* 'to tidy up like an aunt'

Table 5: Sentence answers and paraphrases offered by adult participants per denominal classes and interpretation

Legend: Lit. = Literal interpretation, Fig. = Figurative interpretation

In terms of sentence production, the results mostly confirm our predictions. As far as subject animacy is concerned, participants produced more sentences with animate subjects than inanimate subjects for all denominal classes (see Table 5, Table 6):

Denominals	Animate subject	Inanimate subject
object class	91.92%	8.08%
fruits/vegetables class	96.39%	3.61%
animal class	98.18%	1.82%
human class	100%	0%

Table 6: Proportion of animate subjects per denominal class

We found no significant effect of Nominal Root Animacy (ß = −0.6560, Standard Error (SE) = 0.6868, Z = −0. Interestingly, only 4 sentences had animal names as subject, the majority of sentence subjects were human subjects (*I, you, mom, dad,* a.o.).

We used R-4.0.5 (2021) to perform a mixed effects logistic regression with Subject Animacy as a dependent variable (DV), Nominal Root Animacy (the animacy of the nominal root the denominal is derived from) as a fixed effect and random slopes per Item and Participant, in order to see whether there was any effect of Nominal Root Animacy upon the rate of animate subjects in the sentences produced by participants. 955, p = 0.339 > .05).

In terms of transitivity, there seems to be an overall preference for using verbs intransitively rather than transitively. However, when we look at classes of SAD verbs separately (see Table 5, Table 7), we notice that participants preferred intransitive frames for only three verb classes (the Object class, the Fruit/Vegetable class, the Animal class). For SAD verbs derived from human role names, participants preferred transitive frames.

Denominals	Transitive	Intransitive
object class	23.6%	76.4%
fruits/vegetables class	41.56%	58.43%
animal class	23.6%	76.36%
human class	71.87%	27.95%

Table 7: Proportion of transitive verbs per denominal class

Using R-4.0.5 (2021), we fitted a mixed effects model with Transitivity as a dependent variable (DV), Nominal Root Animacy (the animacy of the nominal root the denominal is derived from) as a fixed effect and random slopes per Item and Participant, in order to see whether there was any effect of Nominal Root Animacy upon the rate of transitive verbs in the sentences produced by participants. We found

a significant effect of Nominal Root Animacy (ß = −12.274, SE = 0.034, Z = −354.9, p < .001).

In terms of paraphrases, participants gave answers in accordance with Kiparsky's (1997) Canonical Use Principle (see Table 5, 8), associating the (animate/inanimate) entities SAD verbs derive from with typical actions/states/behaviors. For instance, participants associated a verb such as *a cireşi* 'to cherry' with multiple canonical interpretations such as *eating cherries, picking cherries,* but also *turning red like a cherry* (see Table 8 for other examples too).

Denominals	Interpretations
object class	*a maşini* 'to car'- to drive a car, to repair a car, to travel by car, to make car-like sounds
fruits/ vegetables class	*a cireşi* 'to cherry'- to pick cherries, to eat cherries, to give someone cherries, to fill the kitchen with cherries, to look for cherries, to bloom (about cherry trees), to turn red like a cherry/ blush, to pinch someone until their skin turns red
animal class	*a vulpi* 'to fix'- to catch a fox, to flay a fox, to steal like a fox, to be sly like a fox, to deceive like a fox
human class	*a dentisti* 'to dentist'- to wash one's teeth, to go to the dentist, to fix teeth, to become a dentist, to behave like a dentist, to pretend to be a dentist, to scare someone like a dentist would

Table 8: Examples with multiple paraphrases/interpretations of SAD verbs

Overall, there seems to be variation between two types of paraphrases:

(i) **literal paraphrases**, which combine an event verb and the noun the SAD verbs are derived from

(ii) **figurative paraphrases**, which generally combine *be, become*, *behave* (or other state or change-of-state verbs) and the explicit similarity *like* followed by the noun the SAD verbs are derived from

While *literal paraphrases* indicate direct involvement of the sentence subject with the entity denoted by the nominal root, *figurative paraphrases* indicate some similarity in appearance or behaviour between the sentence subject and the entity denoted by the nominal root. Interestingly, there seems to be a correlation between the animacy of the nominal root of SAD verbs and the type of interpretation: participants prefer literal paraphrases for SAD verbs derived from object or fruits/vegetables names, but figurative paraphrases for SAD verbs derived from animal names or human roles (see Table 9). Looking at the results from the perspective of Štekauer (2005a, 2006) and Štekauer, Díaz-Negrillo, & Valera (2011), we remark that the SAD verbs derived from nouns/nominal roots belonging to the Object class

(covering objects, vehicles and places) tend to express OBJECT, INSTRUMENT or LOCATION relations, the class consisting of Fruits/ Vegetables tends to express the semantic relation OBJECT ('do an action with the object/fruit/vegetable'). The SAD verbs derived from nouns/nominal roots belonging to the Animal class tend to express the semantic relation OBJECT, followed by MANNER/PATTERN. The SAD verbs derived from nouns/nominal roots belonging to the Human role class tend to express the semantic relation MANNER/ PATTERN.

Denominals	Literal	Figurative
object class	72.67%	27.33%
fruits/vegetables class	65.67%	34.33%
animal class	3.03%	96.97%
human class	40%	60%

Table 9: Type of interpretation per denominal class

Using R-4.0.5 (2021), we fitted a mixed effects model with Interpretation (literal/figurative) as a dependent variable (DV) and Nominal Root Animacy (the animacy of the nominal root the denominal is derived from), with random slopes per Item and Participant, in order to see whether there was any effect of Nominal Root Animacy upon the type of paraphrases (literal/figurative) provided by participants. The results indicate a highly significant effect of Nominal Root Animacy (ß = 3.6269, SE = 0.8722, Z = 4.158, $p < .001$).

4. Discussion

4.1. Sentence Elicitation

4.1.1. Animacy Bias

The fact that participants produced more sentences containing SAD verbs with animate subjects than inanimate subjects can be explained through an Animacy Bias for sentence subjects, which has been argued to have either a conceptual source (Arnold 2010, Bock & Warren 1985) or a lexical source. Generally, animate entities are more often the subject or a topic of a sentence than inanimate ones (Dahl & Fraurud 1996, Givón 1983). Moreover, they are also easier to retrieve, and, consequently, they occur earlier in the sentence (Branigan & Feleki 1999, Branigan & Tanaka 2008). Our experimental results support these findings. In particular, we could even talk about a Human Subject Bias based on our data, given that the sentences produced by participants had human subjects, and only 4 sentences had animal names as subject. The choice of the subject is

extremely important, as it leads to an interpretation of the denominal verb as an action/state/behavior characterizing a human being.

4.1.2. Intransitivity Preference

Interestingly, participants also tended to produce more verbs in intransitive frames than in transitive ones. This behavior goes against *a Frequency-Based Approach*, which would have predicted more transitive verbs, given the high frequency of transitives versus the low frequency of intransitives in Romanian[2]. It also goes against a possible *Transitivity Bias*, arguing that transitive frames mapping <*Agent, Theme/Patient*> relations are basic, primary in Universal Grammar, whereas intransitive ones are derived. Instead, the findings can better be explained within *a Structural-Based Approach* which treats denominal verbs as covert transitives, i.e., as verbs which have incorporated their object, an idea supported by the existence of (explicit) cognate objects (Hale & Keyser 2002) such as *dance a dance* or *smile a smile.* If participants assume that denominal verbs already have an object, then this explains why they prefer not to combine them with another object and instead go for an intransitive frame. While the overall general preference seems to be for intransitive frames over transitive ones, if we look at denominal classes in comparison, we notice that this preference seems to hold for denominals derived from animal names, fruits/vegetables names and object names, but not for denominals derived from human role names. A possible explanation for this could be laid out in terms of a *World-Knowledge Approach*, arguing that participants prefer to associate denominals derived from human roles with activities which involve other people. This could be due to the relational nature of human role names: a grandmother is a grandmother to someone, an aunt is an aunt to someone, a doctor is a doctor to someone. Consequently, activities typical for human roles involve references to other people the subjects are in relation with. In contrast, nouns denoting fruits/vegetables names, animal names or objects are not relational. If a denominal incorporates a fruit/vegetable/animal/object name, the resulting verb will occur in an intransitive frame. Interestingly, the proportion of transitive frames produced by participants seems to be higher for denominals derived from object/place names. This can be captured by appeal to world knowledge, arguing that people generally interact directly with objects/places.

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[2] The tendency to prefer transitives over intransitives seems to characterize not only adult language, but child language too. In English, for instance, children often use intransitive verbs in transitive frames (e.g., *I disappeared it, You cried her!*), as documented by a variety of experimental and corpus studies (Ambridge and Ambridge 2020, Bowerman 1982, a.o.).

4.2. Paraphrase elicitation: Literal versus Figurative Interpretative Preferences

For all classes of denominals, participants gave answers with typical actions/states/behavior, in line with Kiparsky's Canonical Use Constraint (1997). Moreover, they provided both literal and figurative paraphrases. This shows the inherent polysemy of denominal verbs: the same novel denominal verb can give rise to multiple interpretations. For instance, some speakers prefer to associate the verb *a cireşi* 'to cherry' with typical actions involving cherries such as picking or eating cherries. However, for other speakers, *a cireşi* 'to cherry' meant that a person's face would *become like a cherry*, i.e., turn red because of blushing. Also, many speakers associated a verb such as *a vulpi* 'to fox' with humans displaying the typical behaviour of foxes (stealing, tricking, a.o.), but, for some speakers, *a vulpi* 'to fox' meant 'to catch foxes'. The Fruit/Vegetable class and the Object/Place class are mostly interpreted in a literal manner, since people often interact with fruits/vegetables and objects. In contrast, the Animal class is almost exclusively figurative since people rarely interact with (the) animals (mentioned) but often behave like them (*to fox* = 'to behave like a fox'). The Human role class is both literal and figurative, since people can either act in accordance with certain function or as if they had it. Interestingly, following Štekauer (2005a, 2006)'s and Štekauer, Díaz-Negrillo, & Valera (2011)'s discussion of conceptual fields and semantic relations, we find certain semantic tendencies in the interpretation of denominal verbs. The Object class (covering objects, vehicles and places) was mostly interpreted in a literal manner as INSTRUMENT (for objects and vehicles) and LOCATION (for places). The Fruit/vegetable class was mostly interpreted as OBJECT ('eat/pick'). In contrast, the Animal class and the Human role class were mostly interpreted figuratively as MANNER/PATTERN. We note that the figurative interpretation was dominant for these classes, in spite of a possible literal bias which has been induced to participants in the pre-testing.

Our findings are in line with the experimental results from Štekauer (2005a, 2006) and Štekauer, Díaz-Negrillo & Valera (2011), who found that the Fruit class tended towards OBJECT interpretations, the Vehicles class towards INSTRUMENT interpretations, and the Animal class towards MANNER interpretations. The associations between cognitive fields and semantic relations in the case of denominal verbs are difficult to represent structurally but are quite nicely captured by cognitive-semantic accounts. Nevertheless, as discussed by Štekauer (2005a, 2006) and Štekauer, Díaz-Negrillo & Valera (2011), they are not always as regular as one would predict (e.g., *to pigeon* 'to send a message via a pigeon' is associated with the semantic relation INSTRUMENT to a lower degree than expected).

While subtle differences between denominals derived from nouns/nominal roots associated with various cognitive fields evade a

lexico-syntactic explanation, the general semantic difference between literal and figurative interpretations of denominal verbs may be argued to have a structural reflex, along the lines of Kiparsky (1997). In addition, further world knowledge and pragmatic considerations may help settle the meaning of denominal verbs.

We will assume that paraphrases may be taken as a key indicator of a possible l-syntax for denominal verbs, while, at the same time, assuming that, although a paraphrase is indicative of the meaning of a denominal, a lexico-syntactic representation is not identical to a paraphrase. Importantly, speaking about a different verb and its corresponding paraphrase, Hale & Keyser (1993) argue that "they do not intend to imply that a conflation like *shelve* "means" the same thing as its analytic paraphrase *put on a shelf* (cf. *put the sand on a shelf, shelve the sand*). We maintain simply that they share the same LRS representation" (Hale & Keyser 1993: 105, fn.7). Consequently, we shall assume that all literal readings of SAD verbs share the same l-syntactic structure, merging a light verb with a noun (Table 9). The light verb is generally a DO-ing verb, though a BECOME verb is also possible (e.g., *to fox* as 'to become a big fox'). Interestingly, world knowledge further enriches the meaning of the light verb (eat, pick, catch, a.o.). We also assume all figurative readings of SAD verbs share the same l-syntactic structure, merging a light verb with an N-like nominal root (Table 9), expressing the stereotypical properties of N. The light verb is ACT in this case ('to act/behave like N'), though it can also be BECOME ('to become like N'). World-knowledge further supplies the most salient similarity criterion between the sentence subject and the root, i.e., in what sense the sentence subject and the root are similar (red color for *cherry*, sour taste for *lemon*, orange color, round shape or big size for *pumpkin*, slyness for *fox*, hopping or shyness or fearful behavior for *bunny*, a.o.). An alternative analysis to this would be the Stereotype analysis of Martin & Piñón (2020), where a light verb merges with a Stereotype which expresses the most prototypical properties of N.

In order to capture the Romanian data, we further assume that the structure of denominals includes a thematic vowel functioning as a verbalizer. This thematic vowel appears at the end of the denominal verb, but, in the hierarchical structure, it occurs above V (Bleotu 2019). After incorporating N/root (e.g., *vulpe/ vulp-* 'fox'), the verb moves to the thematic vowel (*-i*), giving rise to the denominal verb (e.g., *vulpi* 'fox.V'). This ordering of incorporation and movement captures the intuition that l-syntactic meaning is established before adding verbal declension (see Table 10)[3].

[3] While, in the current paper, we adopted an l-syntactic account, see Bleotu (2019) for a parallel more economical analysis using spanning, where a denominal verbs spells out multiple projections at the same time (for instance, the verb *dance* spells out an initiation Phrase, a Process Phrase and a noun N).

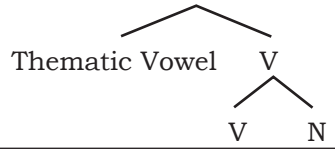
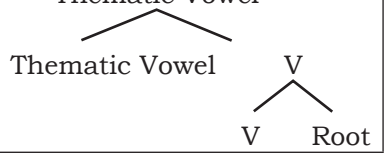
Literal readings	Figurative readings
	

Table 10: Literal and figurative readings of denominals in Romanian (inspired by Kiparsky 1997, Bleotu 2019)

Thus, our account maps the likelihood of interactions between humans and animate/inanimate entities and the similarity between them onto different structures, while also taking into consideration cognitive and world knowledge biases about canonical actions/states/behavior.

5. Conclusion

In conclusion, the paper has investigated experimentally how native Romanian adult speakers use and interpret novel denominal verbs derived from existing nouns. We find that, when producing sentences with denominal verbs, speakers have a general preference for using denominal verbs in intransitive frames rather than transitive frames, except for the human roles class, where most of the uses are transitive. This can be explained through the relational nature of human role names, which require actions which involve multiple participants. Moreover, speakers prefer animate sentence subjects over inanimate ones, a finding which can be explained through a general Animacy Bias which guides sentence production. In terms of interpretive preferences, speakers observe Kiparsky's (1997) Canonical Use Constraint, associating denominals with typical activities/states. An interesting finding is that they seem to provide figurative 'become like/ behave like N' interpretations for denominals derived from animal names and human roles, while preferring literal interpretations involving an activity and N for denominals derived from fruits/vegetables and object names. This contrast can be explained through world knowledge, given that the similarity between human and animal behaviour is natural and often part of our background, while the most natural association between humans and fruits/vegetables and objects is direct use. Following Kiparsky (1997), we tried to capture this contrast at the structural level also, by arguing that literal interpretations of denominals arise by merging light verbs with nouns, while figurative interpretations of denominals arise by merging verbs with N-like roots.

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