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Verbing in English: An Acquisition Perspective on Denominals

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Abstract Unmarked category change is highly productive in English. Research on novel forms is limited but indicates effects of contextual support and the semantic link between nouns and their derived verbs. Additionally, acceptability varies considerably, likely reflecting the need for pragmatic inference. We propose a syntax-pragmatics interface approach arguing that distinct but interacting constraints give rise to hypotheses on how denominal verbs are acquired and processed.

Keywords Unmarked category change. Denominal verbs. Syntax-pragmatics interface. Acceptability. Pragmatic inference.

Summary 1 Introduction. – 2 Do Young English Children Verb Nouns? – 3 Adult Processing Novel Verbs. – 4 Lexical Innovation without Lexical Machinery: A Syntax-pragmatics Account. – 5 Conclusion and a Final Note on Morphology.

1 Introduction

First language acquisition studies have shown that nouns are acquired earlier than verbs (Gillette et al. 1999). Explanations include a cognitive-based approach wherein word learning indexes conceptual development and an experiential-based approach wherein

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emerging syntax and acquired nouns enable the acquisition of verb meaning (cf. Gleitman 1990).

Following Gillette et al (1999) and standard assumptions in the literature, how and when something is acquired depends on the available cues and one's cognitive readiness to exploit them. The Timing Hypothesis (Tsimpli 2014; Schulz, Grimm 2019) attributes later-developing skills to conceptual maturation, including working memory and attention, permitting the integration of syntactic, semantic, and discourse-pragmatic cues (e.g., Hendriks et al. 2013). In this framework, narrow syntactic properties are acquired 'early' or 'very early.' This earliness is due to (i) infants' innate, high-level sensitivity to cues devoid of intrinsic, lexical, or compositional meaning, such as rhythm and prosody (Mehler et al. 1988), as well as (ii) their related ability to focus on linguistic form with infants already sensitive to core syntactic properties (Seidl et al. 2003).

In lexical acquisition, the first form-meaning mappings appear around 12 months in a two-step process during which stored phonological forms are mapped onto meaning units (Jusczyk and Hohne 1997). At this point, the precedence of nouns over verbs *in production* is attested, a fact which input (child-directed speech) cannot account for. Instead, it has been argued this asymmetry derives from the different sets of relevant cues: extralinguistic cues suffice for nouns while the combination of acquired nouns and developing syntactic frames enables acquiring verb meanings (Gillette et al. 1999). Thus, (concrete) noun meaning involves world-to-word pairing, while verb meaning involves structure-to-world pairing (Gleitman 1994). Although this reflects a universal trajectory in lexical acquisition, it assumes that lexical entries are acquired with inextricable category specification. Yet, in adult grammar many lexical items surface with multiple categories, e.g. paint_{v}/paint_{N} which has led syntactic theories to suggest either category-free roots (e.g. Borer 2003) or covert derivational processes in the syntax (e.g., Hale and Keyser 1993). Both of these approaches raise learnability questions: how can children acquire category-free roots when lexical items always appear categorized in the input? But also, how can children acquire complex and covert derivational processes to derive a verb from a noun? Although full responses to these questions are beyond the scope of this chapter, we note that they make different predictions regarding the trajectory and speed of acquisition. If the acquisition task starts with category-free roots, as universals, acquisition of paint_{v}/paint_{N} should be early and uniform. However, if children must acquire specific derivational processes, acquisition should be gradual and piecemeal ($\text{clean}_{\text{Adj}}$/$\text{clean}_{\text{V}}$ vs paint_{v}/paint_{N}).

In this study, we discuss the phenomenon of 'verbing' as a productive process for lexical innovation as it relates to developing L1 and L2 grammars of English and its processing by adult L1 speakers.

We will argue that this is more naturally captured via a root-based approach which we will use to generate novel testable predictions regarding language acquisition and L1 sentence processing.

2 Do Young English Children Verb Nouns?

Target-like use of category changes requires the acquisition of both the syntactic mechanisms available in the target grammar and awareness of the conditions under which different types of category changes are felicitous. Regarding syntactic mechanisms, previous work on L1 acquisition indicates that in languages permitting unmarked category shifts, such shifts appear very early. Observational studies have reported the production of novel cross-categorial forms (e,.g., 1-3) from around age 2 (Clark 1982; Kuczaj 1978).

(1) Don't broom my mess. [not wanting his mother to sweep his room] (2;11, Clark 1982)

(2) Mummy trousers me. [talking about getting dressed] (2;3, Clark 1982)

(3) You're gunning him. [= shooting with a gun] (5;0, Kuczaj 1978)

This demonstrates that children acquiring a language like English acquire the relevant syntactic mechanism very early. However, production data are not well suited to investigating children's awareness of when/whether such category changes are felicitous, as they cannot distinguish genuine expectations of polysemy from stretching known words to fill communicative gaps (Clark 1978). Consistent with this idea, Clark (1982) observed that non-adult-like innovations (e.g., those blocked by existing lexical items) were frequent in children aged 3-5 but noticeably less so in older children. Therefore, studies on the interpretation may be more instructive of the conditions under which children find unmarked category shifts felicitous.

Bushnell and Maratsos (1984) asked 2-, 5-, and 7-year-olds to act out unmarked category shifts like (4). Unlike 2-year-olds, 5- and 7-year-old children acted these sentences out as doing something with X (e.g., kleenex) to Y (e.g., suitcase) reliably more often than the reverse. However, 7-year-old children recognized sentences with novel forms as 'silly,' suggesting that although they could generate interpretations, they recognised these shifts were not conventionalised (the judgement task was too difficult for younger children).

(4) Can you kleenex the suitcase?

More recently, Lippeveld and Oshima-Takane examined young children's interpretation of novel category shifts from newly taught nouns/verbs, thereby avoiding influence from previous experience. In the nominal version of their task, (Québécois) French-speaking children were first taught a noun (e.g., 'This is a vop.') from a video with exemplars of an unknown tool performing an action. After confirming the acquisition of the noun, children were presented two novel objects, one which performed the same action and one which did not, and were asked to find the 'one that vops.' While both 2.5-year-old and 3-year-old children readily learned the novel nouns, only 3-year-old children were able to reliably extend them and identify the target tool when asked to find the 'one that vops' (Lippeveld, Oshima-Takane 2015b). A similar pattern held in the verbal version of the task. Of the children who were able to learn the novel verb, only the 3-year-olds were able to reliably find 'the vop.' Subsequently Lippeveld and Oshima-Takane (2015a) found that 2.5-year-olds exposed to more cross-categorial pairs in their input were more likely to extend them to novel verb uses, suggesting a role of input as well as maturation.

While these studies show that children extend senses across categories when provided the novel form, other work suggests that they also actively infer novel forms without evidence. Srinivasan et al. (2017) taught 3-5 year olds novel verbs (e.g., dax) referring to the use of an instrument, and tested whether children infer a corresponding nominal form via a mutual exclusivity task. When shown the instrument used for *daxing* alongside other objects (patients/unrelated tools) and asked to find the *kiv*, children 4- and 5-year-olds reliably selected the alternative object, indicating an expectation for cross-categorial polysemy. Given task difficulty, it is unclear whether younger children also have such expectations.

Taken together then, these findings suggest children acquire the syntactic mechanism underlying unmarked category change very early and are sensitive to at least some specific semantic links between N-V pairs by around 3. More broadly, this aligns with evidence that polysemy facilitates, rather than hinders, lexical acquisition (Srinivasan and Rabagliati 2021 and citations therein).

The above also ties in with a long-standing question in language acquisition: are child grammars productive or conservative? Put another way, do their grammars generate forms/interpretations beyond prior experience, or do they resist generalisation? Both positions have been argued. Productivity is attested in syntax-semantics (e.g., generics, Brandone, Gelman 2009) and pragmatic phenomena (e.g., metaphor comprehension in familiar contexts, Vosniadou 1987), but not all types of scalar implicature (cf. Barner, Bachrach 2010; Noveck 2001). Verbing provides further evidence

for productivity in early grammars, as even very young children overgeneralize verbs (Clark 1982).

3 Adult Processing Novel Verbs

Previous experimental work with adults has focused on factors influencing interpretation and processing of novel verbs in context. That work has suggested that, like children, adults favour polysemy over accidental homophony. Anecdotal evidence for this comes from Kelly (1998), where participants paraphrased sentences like (5), with 11 out of 12 reported paraphrases incorporating the attested noun (e.g., 'I played my harmonica by the campfire.'). Related evidence can be taken from Vogelzang et al.' (submitted) paraphrase task.

(5) I harmonicaed by the campfire.

However, these interpretations are not unconstrained. In addition to the semantic content of the noun (e.g., Kelly 1998), interpretations are conditioned by their syntactic context. Kaschak and Glenberg (2000) showed that the novel verbs with ditransitive frames were interpreted as implying a transfer event (cf. give, send), unlike their transitive counterparts (see also Goldwater, Markman 2009 on middles).

Beyond the level of the sentence, interpretation and processing are particularly sensitive to the discourse context. Kaschak and Glenberg (2000) showed that while sentences with novel denominal verbs are read more slowly overall (an effect not reducible to their relative unexpectedness, Cairncross et al., submitted), supportive/non-supportive contexts disproportionately affected their processing (e.g., prior mention of a chair with missing wheels would hinder a verbal interpretation of 'chair' in 6). This suggests greater reliance on contextual information, presumably because such verbs lack a stored eventive meaning.

(6) Rachel (brought/chaired) the scientist his mail.

More recent work has shifted its attention from the properties of the stimuli to properties of the participants. Vogelzang et al. (2025; submitted) compared the processing and acceptability of novel denominal verbs to their parent nouns in L1 and L2 English speakers, focusing on individual differences in cognitive skills and language proficiency. Results from L1 speakers showed that, although novel forms were rated as less acceptable, processing was influenced by speakers' contextual linguistic diversity, i.e. the speaker's active and passive exposure to multiple languages (indexed by the CILD-Q, Wigdorowitz et al. 2023); as diversity increased, the processing cost of

novel category shifts decreased. Vogelzang et al. (submitted) suggest this may reflect greater proficiency in pragmatic inferencing across contexts and/or weaker commitments to stored lexical content.

A different pattern emerged for intermediate to advanced L2 speakers. Although they also read sentences with novel denominals more slowly, reading times were not modulated by contextual linguistic diversity. Instead performance was influenced by their L2 proficiency (Vogelzang et al. 2025); more proficient participants were more likely to differentiate acceptability ratings, favouring conventionalised forms. Given increasing proficiency is unlikely to reduce capacity for pragmatic inferencing, Vogelzang et al. (2025) suggest that this reflects greater prescriptivism and/or awareness of the novelty. This partially parallels L1 acquisition where early production of novel category shifts is followed by a decline of non-target forms and increased sensitivity to conventionality (Clark 1982; Bushnell, Maratsos 1984).

4 Lexical Innovation without Lexical Machinery: A Syntax-pragmatics Account

Previous analyses of (attested) denominal verbs can be split depending on how the verb relates to its nominal counterpart. Some assume a direct derivational relationship, whereby a nominal base is incorporated into an abstract verb (e.g., Hale and Keyser 1993), with different semantic categories (e.g., locatum vs locatum) derived from different syntactic structures. Others deny the relationship is always direct, arguing that denominal verbs can arise from a category-free root merging with a verbalising element (e.g., Harley 2005; Suozzi, Cardinaletti 2024). Integrating an acquisitional perspective, recall that these two approaches make different predictions regarding the developmental speed and trajectory. As noted above, this phenomenon is very early acquired with children initially innovating more and gradually converging on adult norms. Similarly, L2 speakers accept more lexical innovation in lower proficiency levels and become more conservative with higher proficiency.

Therefore, we adopt a root-based approach, namely Borer's exoskeletal approach (2003 and subsequent work) to account for the observed patterns in L1 and L2 development. A core assumption of this approach is that non-functional lexical items (listemes) are category-free pairings of abstract phonological content and concepts, which play no role in syntax. Consequently, elements such as the mass-count distinction or argument structure are not lexically specified, but arise from functional elements (functional morphemes and features) that build syntactic structures.

In this framework, at a post-syntactic level, the abstract interpretation provided by the syntax is evaluated against the conceptual content of the roots; where mismatches arise, the conceptual content is stretched to fit the rigid interpretation provided by the grammar. Thus, (7) leads to an interpretation in which the steak has been liquified, despite world knowledge.

(7) Kim drank the steak.

In this approach, roots are categorised by their syntactic context. Focusing on verbing, Borer argues that this can happen in several ways: via a functional morpheme like *-ise* which assigns a category (e.g., RADICE vapor-ise); by movement out of the lexical domain (where category-free listemes are first merged) to a position such as T (e.g., RADICE paint-ed); or contextual assignment as in (8). Although there T is filled by *will*, blocking the movement of elements from the lexical domain, *will* forces its complement (the lexical domain, LD, where roots are first merged) to be recategorised as a VP, in turn, forcing some non-maximal element to become its head, i.e., V.

(8) $[_{T}$ will $[_{LD \rightarrow VP}$ RADICE clean -> clean$_{v}]]$

Event structure is then determined by what else is merged into the structure. For example, take (9 & 10). While the former is telic, the latter is atelic. In Borer's approach, this is because the object in (9) is quantized via the presence of the numeral. By re-merging the object into a functional projection which c-commands the VP (AspQ), its quantity value is copied via spec-head agreement, resulting in a telic event. In the case of (10), however, no quantity value is available, resulting in an atelic event.

(9) I ate two apples (in an hour).

(10) I ate apples (*in an hour).

Turning back to novel verbs, under Borer's exoskeletal approach, no N-to-V derivational process is required: novel verbs are roots verbalized by functional elements, AspQ or T, that determine event structure and argument structure. This holds even when roots such as *steak* in (11) for which its conceptual content must be considerably stretched to become eventive. In this framework, novel category shifts are linguistically no different from conventionalised verbs, and the productivity noted by Clark and Clark (1979) and observed in L1 acquisition is expected. Put differently, on the one hand, the productivity of verbing reflects syntactic properties encoded in the exoskeletal approach, while on the other hand, the plausibility of

stretching a concept, given world knowledge, leads to post-syntactic conservativity.

(11) Kim steaked the drink.

This yields new predictions for the processing and interpretation of novel denominal verbs. Focusing on aspect and quantised objects, consider (12) and (13). In (12), listeners may flexibly interpret *cocktail* (e.g., providing cocktails or entertaining in a cocktail-like manner), but the event must be atelic, as the object, though individuated, is not quantised and provides no quantity value for AspQ (Borer 2003 and subsequent work). In (13), by contrast, the object is quantised, allowing an (optionally) telic interpretation. These interpretative differences should come for free in L1 and L2 acquisition and processing provided the relevant functional heads and features are already in place.

(12) They cocktailed guests (*in/for an hour).

(13) They cocktailed two guests (in/for an hour).

Another relevant point is that, unlike the functional morpheme *-ise* which contributes semantic content, verbing via abstract features (e.g., <past>) or contextual assignment imposes no additional restriction on interpretation beyond the event structure. As such, learners and adult L1 comprehenders should entertain a wider range of interpretations for unmarked category shifts than marked ones. However, finding a contextually appropriate interpretation poses a greater burden on pragmatic inferencing of the comprehender (cf. Carston 2021).

Following a relevance-theoretic approach (Sperber, Wilson 1995), lexical entries encode linguistic and encyclopaedic meaning, and utterance interpretation relies on the comprehender's pragmatic inferencing to derive context-specific meaning that balances relevance and cognitive effort (Carston 2002). Thus, interpreting lexical items, particularly novel ones as well as metonymy and polysemy more generally, involves constructing *ad hoc* concepts to evaluate the speaker's intended meaning (Carston 2021; Falkum 2015).

This ability to infer contextually appropriate meanings is available to young children and adults alike (Falkum et al. 2016). In combination with their grammatical competencies (e.g., early acquisition of event structure and its effects on argument structure and telicity; Schulz 2018), this ability supports the production and interpretation of cross-categorial polysemy. It can thereby facilitate lexical development beyond the input and stored mappings, leading to the rapid development of the lexicon through syntax (cf. Gleitman

1990). In this way the combination of syntax and pragmatics can readily account for children's creativity and overgeneralisation of novel Vs in English (Clark 1982; Kuczaj 1978).

A remaining question is how their creativity in production is later constrained. Existing accounts point to the role of the developing lexicon, enabling learners to select from stored items in context (Borer 2004; Tsimpli 2006). In this vein, Tsimpli's (2006) analysis of Voice and transitivity alternations in Greek learners shows that the relevant syntactic properties are acquired early (age 3), with morphosyntax constraining production in the absence of a fully developed lexicon. Extending this to verbing, stored lexical items progressively compete or block novel verbs (e.g., $broom_v$ vs $sweep_v$), while pragmatic inference continues to support lexical innovation across the lifespan. Variation across L1 and L2 speakers would then reflect experiential factors (e.g., language proficiency or contextual linguistic diversity) affecting inferencing. Along these lines then, the conservativity of more proficient L2ers could be taken to emerge for the same reasons as in older L1 children, namely greater influence of stored lexical knowledge. What remains unclear is whether low-proficiency L2 learners show creativity comparable to young L1 learners before such constraints of a larger lexicon emerge.

5 Conclusion and a Final Note on Morphology

Based on L1 acquisition and processing data, we argued that verbing in English reflects *syntactic* creativity. Syntax, alongside an innate pragmatic capacity for contextual inference, is responsible for children's very early acquisition of verbing and their readiness to interpret novel verbs. As the lexicon develops, stored lexical items increasingly compete with novel forms in most communicative contexts.

A related and rather underexplored question concerns the role of morphology in the acquisition and processing of verbing. Would non-category changing derivational morphology affect acceptability by providing additional information to constrain interpretation (e.g., re-tree, over-cocktail)? What about inflectional morphology as a cue for category change? Although this is a matter of ongoing research (Cairncross et al., in prep.), our approach would predict that derivational but not inflectional morphology could affect acceptability rates as only the former provides additional semantic information to guide interpretation. Relatedly, although syntactic creativity and pragmatic inferencing should be universal, the availability of unmarked category shifts is language-specific. The role of morphological marking in the L1 warrants further investigation to better compare the acquisition of verbing in L1 and L2 English.

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