POSTPOSITIVE ADJECTIVES IN LANGUAGE ACQUISITION: NO BIAS FOR CANONICAL WORD ORDER

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1. INTRODUCTION

The psycholinguistic study of adjectives is an interesting domain of investigation for several reasons. From the semantic point of view, adjectives appear as "salient elements", and adjectives with different connotations (for example *positive* vs *negative*) are shown to elicit different brain components (Bernat et al., 2001). From the morphological point of view, adjectives are interesting because the time needed to process them appears to be dependent on the inflectional richness of their category in a specific language, making them a prototypical ground for morphological research (Traficante & Burani, 2003). From the syntactic point of view, adjectives are interesting because they display a number of varying configurations as noun modifiers across languages (and also within one language). For example, reaction time studies show that the time needed to process an adjective is dependent on the canonical position it has in a given language. In Spanish, where adjectives are more often postnominal, their processing is slower than in English, where adjectives appear more often in prenominal position (Brown-Schmidt & Konopka, 2008). This article examines the acquisition of English adjectives that appear in non-canonical order (i.e. after the noun). In other words, it aims at reviewing studies that describe how children learn to use adjectives that do not appear in the canonical position in English (before the noun) in order to identify directions for further study.

In English, adjectives can appear in three different positions or configurations:

1. Prenominally, in the so-called attributive position (i.e. *the available money*);
2. Postnominally, in the so-called predicative position (i.e. *the money is available* or *they painted the room green*);
3. Postnominally, in the so-called postpositive position (i.e. *the money available* [*to provide good services*]).[1]

As already mentioned, not all these configurations are equally likely: the most common position is the attributive one (ca. 80%, dominating especially in written registers (Biber et al., 1999)), followed by the predicative one, and the postpositive position amounts to less than 3% (Schönthal, 2013). English postpositive adjectives are particularly intriguing precisely because their position is non-canonical. While in English

1 A postpositive adjective with an additional modifier is a "heavy postpositive adjective", while a postpositive adjective without an additional modifier is a "light postpositive adjective". While most language acquisition studies do not differentiate between the two, they are likely to be rather different in terms of processing, since the heavy ones are significantly more frequent.

the default position of adjectives is before the noun (as in *yellow bricks*), in a number of contexts, and with a number of adjectives, the opposite order is observed. Examples of contexts where we do observe postpositive adjectives are the following: some fixed expressions require a postpositive adjective (*attorney general* or *president elect*), and these examples are likely to be lexicalized from the psycholinguistic point of view; postposition is obligatory after indefinite pronouns (*something new*); several adjectives can be found in both prenominal and postpositive position, and their meaning changes according to the position (e.g. *concerned*, *present* and *proper*); some adjectives ending in *-ible* or *-able* become free to move in prenominal or postpositive position when accompanied by another adjective in the superlative (*the best possible use* and *the best use possible*); some adjectives, finally, can appear in both prenominal and postpositive position, but their occurrence cannot be explained within the patterns just described (e.g. *applicable*, *available*, *undetected*, *necessary*, or *extant*). A number of explanations have been provided to account for the placement of these adjectives, though none of them is unequivocal (see Bolinger, 1952; James, 1979; Cinque, 2010; Matthews, 2014 for a discussion).

This article reviews several child language acquisition studies that focused on the acquisition of adjectives, and it tries to capture the development and processing in the use of postpositive adjectives (and more generally postnominal adjectives) starting from this previous research. The current article does not differentiate between light and heavy postpositive adjectives, as these have been treated together in previous language acquisition research.

2. EXPERIMENTAL EVIDENCE

One first aspect to consider when analyzing the acquisition of a certain structure is the input children receive in relation to that structure. Since adjectives are among the first elements acquired by children, it is legitimate to analyze parents' child-directed speech in relation to these structures. A study by Davies et al. (2020) presents the analysis of occurrences of a large number of adjective types in the child-directed speech of British parents. By analyzing three different corpora, their data clearly indicate that postpositive adjectives (both light and heavy) are extremely rare in child-directed speech in comparison to prenominal adjectives. The three corpora consisted of child-parent interactions, a collection of popular children's books, and the transcription of a collection of shared book-reading videos. In all three measures, prenominal adjectives amounted to approximately half of the total, and postpositive adjectives amounted to less than 5% of the total. The second large share of adjectives was that of postnominal copular or predicative forms, such as *the bricks were yellow*, or *the car is big*, which amount to approximately 40% of the total (thus corresponding to the general distribution previously mentioned). These data clearly show that postpositive adjectives are a rare phenomenon in child-directed speech, and this is likely to have specific consequences in their acquisition. A study by Hull (2018) better clarifies the distribution of postpositive adjectives in child-directed speech, showing that attributive adjectives are the most common configuration produced by parents, followed by the predicative configuration and finally followed by the postpositive configuration.

However, in spontaneous speech the gap between predicative and postpositive orders is smaller in comparison to the gap we observe in children's books and children's book reading; note that in this study, the term "postpositive" was used to refer to any adjective following directly a noun, thus including instances such as *painting the room green*, which are described as predicative in other research.

Contrary to the natural prediction these distributions lead to, it appears that children in a first stage have a preference for postnominal (either predicative or postpositive) configurations. In a study by Arunachalam (2016), children were shown to better understand short sentences when these contained postnominal adjectives in comparison to prenominal adjectives. In this experiment, preverbal toddlers were presented with a screen with competing objects while their gaze was monitored. The study shows that children are more accurate in looking at the right target when parents describe it using postnominal adjectives than when they use attributive adjectives. The study did not however differentiate between postpositive and predicative adjectives, and thus this result might rather be an index of a preference for predicative structure than nothing else. A preference for predicative over attributive configuration would be consistent with previous analyses that compare the two structures. Predicative adjectives are in fact considered restrictive, while attributive adjectives are not (Cinque, 2010). An adjective following a noun (for example, *the money available*) selects a reference within a larger set, it restricts the meaning of the noun that would otherwise be "larger" (for example, *money available* suggests that not "all money" should be considered as a reference, just the subset of money that is available). An attributive adjective does not operate with the same restrictive principle, and thus may not be preferred in initial stages by children.

A study by Nicoladis and Rhemtulla (2012) on Canadian toddlers corroborates the claim that the ordering of adjectives is not easily divided into canonical and non-canonical by young children, and there is no particular preference for (canonical) attributive order. In this study, children of 2, 3 and 4 years of age were taught a number of novel adjectives, and they were exposed to these adjectives in both prenominal and postnominal position. Their use of adjectives was then elicited and recorded. The results show that while 2-year-olds have a preference for prenominal adjectives, 3-year-olds and 4-year-olds have a preference for postnominal adjectives. Since the productions at these stages of development lack many functional elements, it is difficult to establish whether their postnominal productions are predicative or postpositive, but nonetheless these results clearly indicate that children at age 3 and 4 do not have a strong bias for canonical adjective position. In other words, even if children are indeed exposed more often to adjectives in attributive position than in postnominal position, they do not make an abstraction of this ordering for some time, and thus they do not have a preference for canonical order. In line with a usage-based explanation of these findings, it may be the case that the initial stage of acquisition is lexically driven, in the sense that many collocations may be stored in memory by the child, and only at a later stage, children may be developing generalizations from this stored information (Fenson et al., 1994). As such, the processing of adjectives in non-canonical position would not lead to any particular reaction, since there is no notion of canonical position in the children's minds (yet).

Some corpus analyses seem to point in this direction as well. A study by Bar-Sever et al. (2018) addressed the development of adjective ordering preferences analyzing large corpora of child productions (from age 2 to age 4) belonging to the North American dataset of the Childes database. This study focused uniquely on prenominal (attributive) adjectives, but it offers an interesting insight into the development of canonical adjective ordering in children. The rationale for this research comes from work on adults: A number of studies demonstrate that speakers have specific preferences for the ordering of attributive adjectives, when more than one adjective is modifying the same noun. For example, *small grey kitten* is preferred to *grey small kitten* by almost all native speakers of English, but speakers are not explicitly aware of nor able to explain the reasons for this preference. Some studies have argued that these preferences reflect an underlying organization of adjectives into classes, which are then additionally organized into hierarchies. A number of scholars (e.g. Cinque, 1994; Veselovská, 2013) have suggested that these hierarchies are prevalent cross-linguistically and predict preferences in most speakers. For example, the four classes of "comment", "size", "length", "colour" are organized in this order, and speakers thus prefer the phrase *cute small <> grey kitten* to any other phrase containing these adjectives in a different order.

The study by Bar-Sever et al. (2018) shows that these preferences are rather slow to develop in children. The study demonstrates that up until age 4, children's productions of adjectives are not predicted by the ordering of the hierarchy as suggested by Cinque (1994) for adults. Instead, children seem to pick up mainly on input frequencies. The best predictor of adjective position in early productions is the mere positional frequency of the adjective the child is producing. An adjective that tends to appear right next to the noun (independently of its semantic class) will be produced next to the noun by children. An adjective that tends to appear "one word away" from the noun will be produced "one word away" from the noun by the child. At age four, however, children do start making abstraction of the input, and the ordering of adjectives becomes predictable based on their class, and more precisely based (mainly) on the semantic category. At that stage children thus start behaving like adults, and a "length" adjective will then be uttered before a "colour" adjective, and not vice-versa. This study, the widest analysis of children's production of English adjectives (in terms of the size of the dataset), is unfortunately only available for pre-nominal adjectives, so it is difficult to understand to what extent these claims are valid also for postnominal adjectives. An investigation of the distribution of postnominal adjectives using the methods of Bar-Sever et al. (2018) could offer important insights into the development of preferences (or lack of preferences) for the use of postpositive adjectives as well, and possibly shed some light on the use of adjectives that appear in both attributive and postpositive position.

3. DISCUSSION AND CONCLUSION

The analysis of adjectives processing and positioning in English speaking children offers interesting information about the grammatical nature of these items. The cru-

cial aspect emerging from this review is the non-canonical treatment of adjectives that children display for approximately four years during development. A number of studies demonstrate that during that time, children have a preference for postnominal adjectives. This preference surfaces in perception studies, where English speaking children are shown to better comprehend adjectives when these are used postnominally, and it surfaces in production studies, where English speaking children are shown to produce more adjectives in postnominal position than in prenominal position. These findings are observed despite the fact that child-directed speech clearly goes in the other direction, with attributive adjectives being the most common type of structure in all studies available. While this finding is definitely important for the study of postposition, it should also be stressed that these studies do not differentiate between predicative and postpositive use of adjectives, even if these two cases are likely to be extremely different from the grammatical point of view, and further research differentiating these two structures is thus needed.

Finally, some corpus analyses suggest that the initial stages of adjective learning are very much item-based, and as such a lack of preference for canonical word order may be an index of a lack of abstraction. From approximately the age of four, children seem to mirror adult behaviour more faithfully. However, it should also be stressed that these analyses were conducted investigating the ordering of (multiple) adjectives in attributive position, and as such these claims may not automatically be extended to the acquisition of postnominal adjectives.

As has been shown, further research that includes postpositive and predicative adjectives is necessary. As a result, we aim at investigating the use of postpositive adjectives in English pre-schoolers, who, based on the current analysis of previous literature, may show a transition from non-canonical to canonical preferences. Investigations will be conducted on the Childes corpus (MacWhinney, 2000) as part of the GAČR project *Adjectival postposition in English* (GAČR 19-05631S).

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