Acquisition of English Adjectival Resultatives: Support for the Compounding Parameter

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Introduction: English allows a variety of complex-predicate structures, as illustrated in (1a-f). A child typically acquires (1b-f) as a group, sometime before age 3 (Stromswold & Snyder 1995).

1. a. John painted the house red. (Resultative)
   b. Mary picked the book up. (Verb-Particle)
   c. Fred made Jeff leave. (*Make*-causative)
   d. Fred saw Jeff leave. (Perceptual Report)
   e. Bob put the book on the table. (*Put*-locative)
   f. Alice sent the letter to Sue. (*To*-dative) (Snyder 2001)

Moreover, ages of acquisition for (1b-f) are tightly correlated with the age of novel N-N compounding (Snyder 1995). Snyder proposes that (1a-f) all require the *marked* setting of the Compounding Parameter (2).

2. *The Compounding Parameter*: The grammar {disallows*, allows} formation of endocentric compounds during the syntactic derivation. [*unmarked value]

Yet, the evidence is incomplete: To determine ages of acquisition, Stromswold and Snyder (1995) relied on longitudinal corpora of children's spontaneous speech. They did not check resultatives (1a), because these are very low-frequency, making corpus-data unreliable. Here we address this gap. Since (1b-f) are all acquired before the age of 3, children should likewise comprehend (1a) as early as we can test (i.e., by about 3.5 years, using a Truth Value Judgment (TVJ) task).

Method: Laptop-based TVJ task, with PowerPoint animation. The experimenter narrated a story illustrated on screen, and asked an animated parrot, "What's happening here?" The child judged whether the parrot "got it right or said something silly" for 4 practice items, followed by a mix of 4 fillers and 8 test items (expected answers: 4 yes, 4 no) in pseudo-random order. Inclusion criteria: A child had to either answer all 8 of the practice/filler items correctly, or make at most 1 error: p(at least 7 out of 8 correct$|H_0$) = .035 => significantly better than chance on the easier, non-resultative items => capable of performing the TVJ task.

In the event that a child could perform the task, but had a grammar that did not yet allow resultatives, we expected the child to have a grammatically permissible interpretation available, but with the opposite truth value, namely as a depictive: in (3), adults strongly prefer a 'result' reading of *blue*, although it makes the statement false in the context, but a depictive reading is also possible (and cross-linguistically, depictives are far more widely available than resultatives).

3. *Experimenter:* This is a story about a little girl named *Mary*, and a little boy named *Jim*. Mary has a yellow chair, and Jim has a blue chair. Jim and Mary want their chairs to be the same color. Jim says he can put *blue* paint on Mary's *yellow* chair, but Mary doesn't like it. Then he gets a great idea: he'll put *yellow* paint on his *blue* chair! See he's painting! ... Parrot, what's going on here?
   Parrot: Jim is painting the chair blue!

Thus, if the child treated it as depictive ('Jim's painting the chair while it's blue'), it was grammatical but (in all cases) had the opposite truth-value. (Note too that since painting had just begun, the chair was mostly still the original color in the final image; this would have facilitated the depictive reading.) Alternatively, a child who lacked resultatives might have chosen to use a guessing strategy. Yet, any such strategy would have led to incorrect answers. For example, if the child used the strategy of saying 'yes' whenever the parrot's adjective matched the last-mentioned adjective in the story, the resulting score would have been only 50%, due to the balancing illustrated in (4).

4. Balancing for 'last-mentioned' adjective:
   a. ... he'll put *yellow* paint on his *blue* chair!

b. ... he'll paint his *blue* chair with *yellow* paint!

Finally, note that anytime the child indicated the parrot was wrong, we asked, "What's really happening?" Remarkably, as illustrated in (5), every child in our study answered appropriately, and almost all used resultatives.

5. Examples of resultatives produced by children during the experiment:
   a. She's painting her box YELLOW!
   b. No he's coloring it. Richard is coloring his bottle ... PINK!

Results: Out of the children tested, 11 children met the inclusionary criteria (age 3;07-5;07; mean 4;06). In nearly every case, performance was at/near ceiling: First, as a group, children's sensitivity to truth/falsity of resultatives was robustly significant (Wilcoxon Signed-Ranks W=66, $n_{s/r}$=11, directional p=.0036). Second, within individual-subject data, the predicted contrast in Yes-responses (i.e., for True versus False items) reached significance for all 11 children (4 had 4/4 'YES' on True, 0/4 'YES' on False, binomial p=.0039; 6 had 4/4 'YES' on True, 1/4 'YES' on False, binomial p=.0352; 1 had 3/4 'YES' on True, 0/4 'YES' on False, binomial p=.0352). Finally, most children actually produced correct resultatives to explain what really happened (see (5)).

Discussion: All the children who could perform the TVJ task (based on answers to practice/filler items) also performed well on adjectival resultatives (both as a group and individually, in the sense that every child reached significance for accuracy, and most produced adjectival resultatives in response to *why*-questions). Hence, the results strongly supported the prediction that children would succeed at TVJ for adjectival resultatives as soon as they could perform the TVJ task, and thus strongly supported the prediction of the Compounding Parameter.

The findings led us to another question: How do children determine that resultatives are available in English? Do they wait for direct evidence? Or might they be exploiting a parameter-based strategy? Besides acquisitional studies, Son (2007) found a link between novel compounding and adjective resultatives through cross-linguistic field work. Hence, if a child knows that English has the marked setting of TCP, and knows the relevant lexical items (As, Vs), perhaps little or no direct input is necessary. To gain some insight into this question, we conducted a small corpus study: we assessed the frequency of adjectival resultatives in child-directed speech. We selected longitudinal corpora of child-parent interactions for four children (CHILDES; MacWhinney 2001). We hand-searched every example of a transitive V followed by a direct object and a result AP in Maternal utterances. As in (6), for the mothers of Adam, Eve, and Peter, there were zero uses of adjectival resultatives. For Lily's mother, there were 4 uses in 63,423 maternal utterances. As a group, there is an estimated frequency of around 4 uses per 100,000 maternal utterances.

6. Frequency of adjectival resultatives in maternal speech:

Corpus:	**Adam (Brown)**	**Eve (Brown)**	**Lily (Providence)**	**Peter (Bloom)**	***TOTAL***
Maternal utterances:	20,152	10,247	63,423	3,248	*97,070*
# Resultatives:	0	0	4	0	*4*
Frequency:	<1/20,000	<1/10,000	.0000631 (6.31/100,000)	<1/3,000	*.0000412 (4.12/100,000)*

Thus, the results in (6) suggest that the children in our TVJ study have succeeded at acquiring resultatives despite receiving *exceedingly few* examples in their input. While this does not prove that the children exploited a "parametric" strategy, the evidence points in that direction.

Selected References and Related Works: Snyder, W. (2001) On the nature of syntactic variation: Evidence from complex predicates and complex word-formation. *Language*. Son, M. (2007) Directionality and Resultativity: the Cross-linguistic Correlation Revisited. *Nordlyd.* Stromswold, K. & Snyder, W. (1995) The acquisition of datives, particles, and related constructions: Evidence for delayed parametric learning. *BUCLD 19.*