Preposition Stranding and the Compounding Parameter: 
A Developmental Perspective

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1. Introduction

In this study, we present converging evidence from comparative syntax and the acquisition of English for Stowell’s (1981, 1982) view that natural-language grammars permitting pre/postposition-stranding (P-stranding) are restricted to those that have the verb-particle construction. Our findings, we will argue, indicate that the positive setting of the Compounding Parameter proposed in Snyder (1995, 2001) constitutes a necessary condition for the availability of P-stranding, and thus confirm the global nature of this parameter. More broadly, this study demonstrates the potential of child language acquisition as a rich source of evidence concerning the parameters of variation permitted by human language.

2. Conditions on Reanalysis

It has been observed at least since van Riemsdijk (1978) that the availability of P-stranding, as illustrated in (1), is quite limited cross-linguistically.¹

(1) a. What did they talk about?
   b. Mary has many students to work with.

In light of the existence of cross-linguistic variation, many attempts have been made within the Principles-and-Parameters framework (Chomsky 1981) to determine what parameters are crucially relevant for the availability of this marked property (Herslund 1984, Hornstein and Weinberg 1981, Kayne 1984, Law 1998, Maling 1977, van Riemsdijk 1978, Salles 1997, Stowell 1981, 1982, among many others). In a pre-Minimalist framework, Stowell (1981, 1982) proposed that the availability of P-stranding is tightly connected to the availability

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1. In this study we focus on P-stranding under A’-movement, and will not discuss P-stranding under A-movement as in (i), which is also known as pseudopassive.
   (i) This problem was already accounted for.
of verb + (adpositional) particle construction. In this section, we summarize Stowell’s analysis, which provides the theoretical basis of our cross-linguistic and acquisitional investigations.

According to Stowell (1981, 1982), the possibility of P-stranding in a given language is governed by the parameter given in (2).

(2) There {is, is not} a word-formation rule in the lexicon which creates a complex verb of the following form: [\( \nu \ V – \) Particle].

Stowell assumes, following Emonds (1985), that particles are ‘intransitive prepositions.’ He also adopts the assumption from Hornstein and Weinberg (1981) that there is a UG constraint which dictates that Reanalysis must apply in the syntax in order for P-stranding to be possible. Reanalysis is an operation that creates a complex verb from a verb and a preposition, as in (3).³

(3) \( V \ [pp \ NP] \rightarrow [\nu \ V – P] NP \)

Stowell proposes that this Reanalysis operation must satisfy the UG constraint stated in (4).

(4) *Structure-Preserving Condition on Reanalysis* (Stowell 1982: 255):

A string of words, \( S \), may be reanalyzed so as to form complex word, \( W \), only if:

(i) \( S \) can be properly analyzed as a string of adjacent syntactic constituents of the form \( [\alpha_1 \ldots \alpha_n] \), where \( \alpha_i \) has the specific matrix of the categorial features \( M_i \), and a specified bar-level \( L_i \), and

(ii) there is a string of constituents \( S' \), consisting of a set of adjacent terms \( [\beta_1, \ldots, \beta_n] \), where \( \beta_i \) has the categorial feature matrix \( M_i \), and the bar-level \( L_i \), and

(iii) \( S' \) is defined as a word by the rules of the word-formation component.

The intuition behind (4), Stowell explains, is that “[t]he complex words which they [i.e. Reanalysis rules] ‘create’ [in the syntax] must be weakly equivalent in structure to words that might be produced independently by the word-formation rules of the language in question” (Stowell 1982: 255).

Under Stowell’s system, the verb-particle combination provides a template for the complex verb created by the Reanalysis operation. If a language has a verb-particle construction with the order verb + particle as in (5a), then that combination provides a template to reanalyze the verb and the prepositional head

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3. See Baltin and Postal (1996) for a detailed discussion of problems with the Reanalysis operation.
of the following PP into a single complex verb. If a language contains a verb-particle construction with the order particle + verb, as in (5b), then that combination provides a template to reanalyze the verb and the postpositional head of the preceding PP into a single complex verb.

(5) \( \text{verb-particle} \rightarrow \text{Reanalysis} \)

\[
\begin{align*}
\text{a. } [v \ V + \operatorname{Prt}] & : \quad V [\operatorname{PP} \ P \ NP] \rightarrow [v \ V + P] \ NP \\
\text{b. } [v \ \operatorname{Prt} + V] & : \quad [\operatorname{PP} \ NP \ P] \ V \rightarrow \ NP [v \ P + V]
\end{align*}
\]

The condition in (4) states that Reanalysis (and consequently P-stranding) is possible only in those languages that take the positive value of (2) and thus have the relevant template, namely, the verb-particle construction with the appropriate word order.

Since English permits the verb-particle construction with the order verb + particle, as shown in (6), this language is allowed to reanalyze the verb and the prepositional head of the following PP. Hence, ‘preposition-stranding’ is possible.

(6) John should \([v \ \text{pick up}] \) the book.

(7) What did they \([v \ \text{talk about}] \) ?

In Dutch, the verb-particle construction has the order particle + verb, and thus Dutch allows the reanalysis of the verb and the head of the preceding postpositional phrase. Hence, ‘postposition-stranding’ is possible in Dutch, even though its possibility is very limited, compared to English.

(8) … omdat Jan mijn broer op belde
    because John my brother up called (van Riemsdijk 1978: 91)
(9) a. Zij probeert [\operatorname{PP} \ er \ in] te klimmen.
    she tries there in to climb
    ‘She is trying to climb into it.’
  b. Waar probeert \( t \ \text{i} \ \text{in} \ \text{te klimmen} \)?
    where tries in to climb
    ‘Where is she trying to climb into?’ (Stowell 1982: 249)

We have seen above that under Stowell’s (1981, 1982) system, the existence of a verb-particle construction with the appropriate word order constitutes a necessary condition for the application of Reanalysis, and consequently for the possibility of P-stranding. Yet, it does not constitute a sufficient condition, since “Reanalysis rules are subject to various other conditions”(Stowell 1982: 266). Even though the nature of the other conditions is not fully understood at this point (see Herslund 1984 for discussion), Stowell’s analysis still makes interesting predictions for cross-linguistic variation and the acquisition of P-stranding. In the following sections we will examine the validity of these predictions.
3. Predictions for Cross-linguistic Variation in P-stranding

Assuming that Stowell’s (1981, 1982) analysis, reviewed in the previous section, is on the right track, we obtain the following predictions for cross-linguistic variation in P-stranding: First, ‘preposition-stranding’ is possible only in those languages that have the V-Particle-NP construction, and second, ‘postposition-stranding’ is possible only in those languages that have the NP-Particle-V construction. The results of our cross-linguistic survey, summarized in (10), bear out these predictions.

(10) Results of cross-linguistic survey:  

<table>
<thead>
<tr>
<th></th>
<th>Verb-Particle</th>
<th>P-stranding under A’-movement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Germanic:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>North Germanic:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Icelandic:</td>
<td>√ V-Prt-NP</td>
<td>√ Preposition-stranding</td>
</tr>
<tr>
<td>Norwegian:</td>
<td>√ V-Prt-NP</td>
<td>√ Preposition-stranding</td>
</tr>
<tr>
<td>Swedish:</td>
<td>√ V-Prt-NP</td>
<td>√ Preposition-stranding</td>
</tr>
<tr>
<td>Danish:</td>
<td>√ V-Prt-NP</td>
<td>√ Preposition-stranding</td>
</tr>
<tr>
<td><strong>West Germanic:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English:</td>
<td>√ V-Prt-NP</td>
<td>√ Preposition-stranding</td>
</tr>
<tr>
<td>German:</td>
<td>√ NP-Prt-V</td>
<td>NO</td>
</tr>
<tr>
<td>Dutch:</td>
<td>√ NP-Prt-V</td>
<td>√ Postp-stranding with R-pronouns</td>
</tr>
<tr>
<td>Frisian:</td>
<td>√ NP-Prt-V</td>
<td>√ Postp-stranding with R-pronouns</td>
</tr>
<tr>
<td>Afrikaans:</td>
<td>√ NP-Prt-V</td>
<td>√ Postp-stranding in limited contexts</td>
</tr>
</tbody>
</table>


5. Herslund (1984: 40) and others mention that V-Prt-NP order is not possible in Danish. Yet, Thráinsson (2000:166) presents the following example:

(i) Jeg skrev op nummeret / *det.

“I wrote the number / it down.”

6. van Riemsdijk (1978: 215) reports that a limited range of ‘postposition-stranding’ is possible in northern German dialects.

7. R-pronouns in Dutch are: *er, daar (both =there), hier (=here), ergens (=somewhere), nergens (=nowhere), waar (=where) and overal (=everywhere).


Niger-Congo:
  Bete Gbadi  √ NP-Prt-V  √ Postposition-stranding
  Vata:  √ NP-Prt-V  √ Postposition-stranding
Afro-Asiatic:
  Hebrew:  NO  NO
Altaic:
  Turkish:  NO  NO
  Basque:  NO  NO
  Greek:  NO  NO
Japanese-Korean:
  Japanese:  NO  NO
Romance:
  French:  NO  NO
  Italian:  NO  NO
  Spanish:  NO  NO
Slavic:
  Bulgarian:  NO  NO
  Russian:  NO  NO
  Serbo-Croatian:  NO  NO

4. Predictions for the acquisition of English

Under Stowell’s (1981, 1982) system, the availability of V-Particle-NP constructions, stemming from the positive setting of the parameter in (2), constitutes one of the necessary conditions for the possibility of ‘preposition-stranding.’ In other words, the language-particular knowledge required for V-Particle-NP constructions is a strict subset of the knowledge required for preposition-stranding. This predicts that a child learning English should never have a grammar that permits preposition-stranding, but disallows the V-Particle-NP construction:

(11) Children learning English should never acquire preposition-stranding significantly earlier than the V-Particle-NP construction.

In order to test this prediction, we selected ten longitudinal corpora for English from the CHILDES database (MacWhinney and Snow 1990), to obtain a

10. A variety of French spoken in Prince Edward Island, Canada, reportedly allows preposition-stranding (King and Roberge 1990), but at present we have no information about whether it permits the V-Particle-NP construction.

11. van Riemsdijk (1978: 133) reports that some limited possibilities for P-stranding exist in Macedonian, but we do not have any detailed information at this point.
total sample of more than 124,000 lines of child speech. The corpora we analyzed are listed in Table 1.

Table 1: Corpora analyzed

<table>
<thead>
<tr>
<th>Child</th>
<th>Collected by</th>
<th>Ages</th>
<th># Files</th>
<th># Child Utterances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abe</td>
<td>Kuczaj (1976)</td>
<td>2;4.24 - 2;9.19</td>
<td>40</td>
<td>4,214</td>
</tr>
<tr>
<td>Adam</td>
<td>Brown (1973)</td>
<td>2;3.4 - 2;7.0</td>
<td>10</td>
<td>9,253</td>
</tr>
<tr>
<td>Allison</td>
<td>Bloom (1973)</td>
<td>1;4.21 - 2;10.0</td>
<td>6</td>
<td>2,192</td>
</tr>
<tr>
<td>April</td>
<td>Higginson (1985)</td>
<td>1;10.0 - 2;11.0</td>
<td>6</td>
<td>2,321</td>
</tr>
<tr>
<td>Eve</td>
<td>Brown (1973)</td>
<td>1;6.0 - 2;3.0</td>
<td>20</td>
<td>12,473</td>
</tr>
<tr>
<td>Naomi</td>
<td>Sachs (1983)</td>
<td>1;2.29 - 4;9.3</td>
<td>93</td>
<td>16,634</td>
</tr>
<tr>
<td>Nina</td>
<td>Suppes (1973)</td>
<td>1;11.16 - 2;11.12</td>
<td>36</td>
<td>22,957</td>
</tr>
<tr>
<td>Peter</td>
<td>Bloom (1970)</td>
<td>1;9.8 - 2;8.12</td>
<td>17</td>
<td>24,422</td>
</tr>
<tr>
<td>Sarah</td>
<td>Brown (1973)</td>
<td>2;3.5 - 3;8.27</td>
<td>75</td>
<td>20,787</td>
</tr>
<tr>
<td>Shem</td>
<td>Clark (1978)</td>
<td>2;2.16 - 2;8.3</td>
<td>20</td>
<td>9,178</td>
</tr>
</tbody>
</table>

For each child we began by locating the first clear uses of (a) a V-Particle-NP construction, (b) a direct-object wh-question, (c) a wh-question or a null-operator construction with preposition-stranding. The CLAN program Combo, together with a complete file of English prepositions and of English particles, was used to identify potentially relevant child utterances, which were then searched by hand and checked against the original transcripts to exclude imitations, repetitions, and formulaic routines.

The results are summarized in Table 2. Among the ten children, eight of them acquired V-Particle-NP constructions, direct-object wh-questions, and preposition-stranding by the end of their corpora. Following Snyder and Stromswold (1997), the age at which a child produced his or her first clear example of a construction was considered to be the age of acquisition for this construction. Mean age of acquisition for V-Particle-NP construction was 2;3. Mean age of acquisition for preposition-stranding was 2;7. Thus, the mean age of acquisition for the V-Particle-NP construction was earlier than preposition-stranding by about 4 months.
Table 2: Ages of acquisition

<table>
<thead>
<tr>
<th>Child</th>
<th>File #</th>
<th>Age</th>
<th>File #</th>
<th>Age</th>
<th>File #</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abe</td>
<td>013</td>
<td>2;6.6</td>
<td>002</td>
<td>2;5.0</td>
<td>021</td>
<td>2;7.7</td>
</tr>
<tr>
<td>Adam</td>
<td>02</td>
<td>2;3.18</td>
<td>05</td>
<td>2;5.0</td>
<td>5</td>
<td>2;5.0</td>
</tr>
<tr>
<td>Allison</td>
<td>6</td>
<td>2;10.0</td>
<td>6</td>
<td>2;10.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>April</td>
<td>---</td>
<td>---</td>
<td>02</td>
<td>2;1.0</td>
<td>04</td>
<td>2;9.0</td>
</tr>
<tr>
<td>Eve</td>
<td>10</td>
<td>1;10.0</td>
<td>05</td>
<td>1;8.0</td>
<td>18</td>
<td>2;2.0</td>
</tr>
<tr>
<td>Naomi</td>
<td>37</td>
<td>2;0.5</td>
<td>34</td>
<td>1;11.30</td>
<td>70</td>
<td>2;8.30</td>
</tr>
<tr>
<td>Nina</td>
<td>01</td>
<td>1;11.16</td>
<td>14</td>
<td>2;2.12</td>
<td>32</td>
<td>2;9.13</td>
</tr>
<tr>
<td>Peter</td>
<td>05</td>
<td>1;11.17</td>
<td>07</td>
<td>2;1.0</td>
<td>13</td>
<td>2;5.3</td>
</tr>
<tr>
<td>Sarah</td>
<td>046</td>
<td>3;1.24</td>
<td>033</td>
<td>2;10.11</td>
<td>052</td>
<td>3;3.7</td>
</tr>
<tr>
<td>Shem</td>
<td>01</td>
<td>2;2.16</td>
<td>01</td>
<td>2;2.16</td>
<td>15</td>
<td>2;6.6</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>2;3</td>
<td></td>
<td>2;3</td>
<td></td>
<td>2;7</td>
</tr>
</tbody>
</table>

To evaluate the statistical significance of an observed age-difference between the acquisition of the V-Particle-NP construction and the acquisition of preposition-stranding, we began at the child’s first direct-object wh-question. (We reasoned that it was appropriate to look for a wh-question with proposition-stranding only when the child was already using wh-movement in simple, direct-object questions.) We then counted the number of clear uses of the earlier construction (either V-Particle-NP or preposition-stranding) before the first clear use of the later construction. Next we calculated the relative frequency of the two constructions in the child’s own speech, starting with the transcript after the first use of the later construction, and continuing for a total of four transcripts or through the end of the corpus (whichever came first). Finally we used a modified sign test to obtain the probability of sampling the observed number of tokens of the earlier construction simply by chance, before the first use of the later construction, under the null hypothesis that both became available concurrently and had the same relative probability of use as in later transcripts (cf. Stromswold 1996, Snyder and Stromswold 1997).

Results of the statistical analysis are summarized in Table 3. Two of the eight children acquired the V-Particle-NP construction and preposition-stranding at approximately the same age. One of them (Adam) acquired the V-Particle-NP construction and preposition-stranding at the same time: His first clear use of the V-Particle-NP construction was earlier than that of direct-object wh-question and of preposition-stranding, but the transcript containing his first clear use of a direct-object wh-question also contained his first clear use of
preposition-stranding. As for the other child (Abe), there was no significant difference, \( p > .10 \) by modified sign test. The remaining six children acquired the V-Particle-NP construction significantly earlier than preposition-stranding, by modified sign test (Eve, Naomi, Nina, Peter, Sarah, Shem). Crucially, no child in our study acquired preposition-stranding significantly earlier than the V-Particle-NP construction. Thus, the results have borne out the prediction in (11) from Stowell’s (1981, 1982) analysis. Therefore, the time course of the acquisition of English provides support for Stowell’s view that natural-language grammars permitting preposition-stranding are restricted to those permitting the V-Particle-NP construction.

Table 3: Results of the statistical analysis

<table>
<thead>
<tr>
<th>child</th>
<th># of earlier construction</th>
<th>Relative Frequency</th>
<th>p =</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V-Prt-NP</td>
<td>P-stranding</td>
<td></td>
</tr>
<tr>
<td>Abe</td>
<td>1</td>
<td>.143</td>
<td>.857</td>
</tr>
<tr>
<td>Adam</td>
<td>0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Allison</td>
<td>4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>April</td>
<td>7 (P-str)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eve</td>
<td>9 (V-Prt)</td>
<td>.333</td>
<td>.667</td>
</tr>
<tr>
<td>Naomi</td>
<td>7 (V-Prt)</td>
<td>.467</td>
<td>.533</td>
</tr>
<tr>
<td>Nina</td>
<td>9 (V-Prt)</td>
<td>.375</td>
<td>.625</td>
</tr>
<tr>
<td>Peter</td>
<td>16 (V-Prt)</td>
<td>.778</td>
<td>.222</td>
</tr>
<tr>
<td>Sarah</td>
<td>4 (V-Prt)</td>
<td>.364</td>
<td>.636</td>
</tr>
<tr>
<td>Shem</td>
<td>26 (V-Prt)</td>
<td>.429</td>
<td>.571</td>
</tr>
</tbody>
</table>

5. P-stranding and the Compounding Parameter

As we saw in Section 2, Stowell (1981, 1982) proposed that parametric variation in the availability of the V-Particle-NP / NP-Particle-V construction (and consequently of P-stranding) lies in the word-formation rule given in (2). Yet, recent studies by Snyder (1995, 2001) provide converging evidence from child language acquisition and comparative syntax for the view that the verb-particle constructions, including the the V-Particle-NP construction, stem from a global parameter called the Compounding Parameter. On this view, natural-language grammars that have any of the ‘complex predicate’ constructions listed in (12) are restricted to those that permit fully productive, endocentric root compounding (e.g. banana box, hand chair).
a. Resultative: John painted the house red.
b. Verb-Particle: Mary picked the book up / picked up the book.
c. Make-causative: Fred made Jeff leave.
d. Perceptual report: Fred saw Jeff leave.
f. To-Dative: Alice sent the letter to Sue.
g. Double Object Dative: Alice sent Sue the letter.

Then, our results reported here suggest that P-stranding is also tightly connected to the Compounding Parameter, in the sense that the availability of P-stranding requires the positive setting of this parameter. This indicates that the Compounding Parameter is more ‘global’ than Snyder (1995, 2001) originally envisioned, which we believe is a preferable consequence from the viewpoint of grammar acquisition.

6. Conclusions

In this study we have shown that both cross-linguistic variation and the time course of the acquisition of English provide support for Stowell’s (1981, 1982) view that natural-language grammars permitting preposition-stranding are restricted to those permitting the V-Particle-NP construction. In light of the recent proposal made in Snyder (1995, 2001), we interpreted these findings as an indication that P-stranding stems from the Compounding Parameter, which in turn suggests that the Compounding Parameter is more ‘global’ than Snyder imagined. Most importantly, this study has demonstrated that the time course of child language acquisition is a rich source of evidence concerning the innate constraints (parameters) on language variation.

Appendix: Children’s first clear uses of direct-object wh-questions, V-Particle-NP constructions, and preposition-stranding

(1) Abe:
   b. *ABE: uhhuh fireman put out fire ! (Abe013:85)
   c. *ABE: Mom # I blowed you in the fingers Mom # what's that for ? (Abe 21:274)

(2) Adam:
   b. *ADA: take off Adam paper . (Adam02:274)
   c. *ADA: where dat come from ? (Adam05:9)
(3) Allison:
   b. *ALI: Mommy can we take out the pig (Allison 6:367)

(4) April:
   a. *APR: what goat say ? (April02:854)
   b. *APR: owl to play with . (April04:419)

(5) Eve:
   a. *EVE: what doing # Mommy ? (Eve05:69)
   c. *EVE: it's a bathtub for a boy get in . (Eve18:1980)

(6) Naomi:
   a. *NAO: what-'is Mommy doing ? (Naomi34:78)
   b. *NAO: xxx put on this . (Naomi37:99)
   c. *NAO: what-'is this go in ? (Naomi70:105)

(7) Nina:
   b. *NIN: dress up dolly . (Nina01:1000)
   c. *NIN: who's that you talking to # Momma . (Nina32:1429)

(8) Peter:
   a. *PET: <huh # what she doing> [<] . (Peter07:231)
   b. *PET: take off this . (Peter05:2053)
   c. *PET: what this come from ? (Peter13:2043)

(9) Sarah:
   a. *SAR: what my doing ? (Sarah 033:522)
   b. *SAR: xx brin(g) ba(ck) m(y) toys . (Sarah046:229)
   c. *SAR: whe(r)e you at . (Sarah052:332)

(10) Shem:
   a. *SHE: what is mommy doing ? (Shem01:539)
   b. *SHE: Paper # i wantuh bring out the whole roll . (Shem01:1113)
   c. *SHE: i(t)'s step for sitting on . (Shem15:801)

References


