**Evidence for the parametric approach to L1A in English and Dutch**

**[A study of complex predicates and novel compound acquisition in English and Dutch]**

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**1 Introduction**

Despite the enormous effort that goes into research, no conclusive theory of how language works is currently being agreed upon, or even close to that. The acquisition of language is even a greater mystery. How can small children acquire complex grammatical rules without the training that adults need. Every human tribe or race uses language to communicate. And while there are only about a small hundred or so different sounds that are used in all languages, the variety of different languages is vast. Searching for universal laws that govern this variety of human languages is searching for the linguistic Holy Grail. Only small steps are made in understanding how language works. One moment in which the language facility opens its doors for a peek inside is in children’s language acquisition. The order in which grammatical constructions are acquired and the mistakes that children make can provide clues to the workings of languages in general and the language facility of the human brain.

A major development in the 1980s was the introduction of Chomsky’s Principles and Parameters framework (1981), a version of which is still in use today as a framework of linguistic investigation. The P&P framework takes off from the notion of Universal Grammar (UG) defining the most fundamental Principles of grammar assumed to be innate in every human. The Principles in the P&P framework are the universal principles that govern all languages. This restricts all language to a finite set of possibilities. The innateness of these Principles contributes to the language acquisition process for children who now have a more advanced starting point from where to begin this process. The Parameters in the P&P framework govern the differences between languages within the Principles. The Parameters provide languages with several options for grammatical constructions. These options are the Parameter settings; for example, a language could use a subject-verb-object word order, or verb-subject-object but never object-verb-subject; these are some of the different settings which a language must choose from. The child learning a language has innate knowledge of the parameters and learns which setting applies to her language. Once the parameter is set, the child has acquired the grammatical construction. Or, to put it in the words of Fromkin et.al.: “A useful metaphor for parameter-setting is to think of the child flipping a series of switches to either ‘on’ or ‘off’ based on linguistic input” (340).

This paper seeks to investigate claims in Snyder’s article *On the Nature of Syntactic Variation* (2001) concerning so-called Macro and Micro parameters. As revolutionary as the Principles-and-Parameters Framework is, so hard it is to find conclusive and undisputed principles and parameters. The difficulty of UG is that it needs to deliver parameters addressing variation (by settings) that still hold some form of universality. The parameters have to pass the test of being consequently applicable in a wide variety of languages. Time and time again parameter settings are discovered, only to be widened and abstracted to unusable broadness. Snyder takes off from Baker’s view that Macroparameters can account for the major differences between language families and Microparameters explain the differences between the languages of a single language family or between dialects of a language. Where microparameters often have most of the attention from linguists worldwide, Baker argues that macroparameters deserve more attention because “there is some reason to think that there are macroparameters out there hiding in a forest of microparameters, and the generative linguistic community should be trying harder to seek them out” (2). The point of Snyder’s specific contribution to this debate is to propose both a Macro- and a Microparameter for Universal Grammar, as part of a parametric theory of the phenomena of ‘co-dependence of compounding’ and ‘complex predicate constructions’. As a good UG contribution, his proposal has both a typological (variation) and a language acquisition angle.

Snyder proposes as a microparameter:

(1) A language permits the English-style verb-particle construction only if it allows speakers to freely create novel, endocentric root compounds (82).

Briefly (more explication will obviously follow below), if (2a) below are examples of English-style verb-particle constructions, and (2b) of novel, endocentric root compounds, then universally for a language having the latter (2b) is a prerequisite to hanging the former (2a).

(2a) The minister *followed* him *up* as PM.

 She *put* the jar *down* on the table.

 He *called* her *up* today.

(2b) coffee mug table

 dishwasher cupboard

 wash cycle indicator light

So languages need not have (2a), but they only have (2a) if they have (2b).

The evidence for the existence of Snyder’s microparameter is found in children’s language acquisition using the CHILDES database. Snyder proves a correlation in acquisition between verb-particle constructions and novel N-N compounds in English-speaking children. Dutch is a language that uses the English-style verb-particle constructions, which means that if Snyder’s proposal is correct, test results in Dutch should match the test results in English. Snyder’s (2001) goal is to establish “the idea that the formation of complex predicates depends on syntactic compounding” (10). The goal of this paper is to see whether Snyder’s microparameter can be confirmed or falsified using Dutch. Snyder’s investigation of English-speaking children using the CHILDES database will be repeated with Dutch-speaking children also using the CHILDES database. Statistical evidence should confirm correlation between the moments of acquisition of verb-particle constructions and novel N-N compounds. A significant correlation in the Dutch-speaking population will contribute to evidence provided by Snyder with the English-speaking population. Confirming the predictions of a parameter on the basis of more languages validates the parameter and therefore it could shed more light on the P&P framework in general. It will transpire, however, that in the results the predicted correlation is absent; this leads to a discussion of possible explanations, hoping to contribute to an interesting current linguistic debate.

**2 Theory**

In the field of linguistics, there are several major theoretical frameworks. This paper investigates Chomsky’s Principles-and-Parameters approach (1981). The basis for this approach is Universal Grammar. While acquiring a language, the child accesses innate grammatical knowledge. For the major parameters in grammar, the child has to discern which of different settings apply to her language. This innate knowledge explains how it is possible for young children to learn complex grammatical rules in a short time with limited cognitive abilities and without the many mistakes of adult learners of the same language.

 As indicated in the Introduction, A problem of Macro-parameter settings is that it is almost impossible to find useful parameters that explain the vast differences amongst language families. The differences between Bantu and Roman, Native American and Mandarin languages are simply too large to be caught in simple rules. The condition for a found rule to be considered a parameter should be that the rule contributes to the acquisition of the language. It is not always automatically the case that when a universal rule provides discrimination between languages, it means that the rule has any use as a part of UG.

Difficulties in discovering macroparameters are not themselves an argument that macroparameters do not exist. Snyder (2007) argues that the problem in finding universal parameters lies in the methodology of research:

Linguists in the 1980s were often looking for lists of superficial properties that clustered together across languages. An immediate problem is that the points of parametric variation they were trying to discover are (by hypothesis) considerably more abstract than the surface characteristics one can determine through casual inspection of a language (6).

Since it is practically impossible for a single researcher to do an in-depth analysis of all languages, the finding of Macro-parameters is greatly compromised. One attempt at a large scale investigation for a unifying parameter is Snyder’s (2007) proposal that: “A language permits the English-style verb-particle construction only if it allows speakers to freely create novel, endocentric root compounds” (82). The production of these novel endocentric root compounds is assumed to be a syntactic combination of heads: in the examples of (2b), coffee, table, cycle and light are such heads. “As in the present discussion, operations of word formation that occur in the syntax are associated with productivity, while operations of word formation that take place ‘in the lexicon’ (i.e. outside the syntactic derivation) are less productive” (9). These novel, productively formed compounds differ from the well-established lexical ones, such as ‘handbook’ and ‘extension cable’: these do not play a role in Snyder’s parametric account. Snyder’s (2007) explanation of the (English) verb-particle construction runs as follows:

The verb-particle construction, as in “Mary lifted the box up” or “Jan *threw away* the newspaper”, involves a particle that is typically (although not always) prepositional, and that can be separated from the verb by a direct object, if the verb has one. The construction is an idiosyncratic feature of English, unavailable in the major Romance and Slavic languages, for example. (56)

Snyder bases the proposal on the observation of Neeleman en Weerman (1993) that verb-particle constructions function as morphological compounds. If a language does not permit novel N-N compounds, the parameter setting should prevent verb-particles to occur. Snyder overcomes the problem of methodology noted above by means of a large-scale cross-linguistic survey using native informants from as many different languages and language families as possible. These informants gave evidence of the presence or absence of both complex predicates and novel N-N compound. Lexical compounds are not considered since the theory entails productive syntactic compounding, which can only be productive if a syntactic process takes place. The results of the cross-linguistic survey show that languages can have compounding but not complex predicates, compounding and complex predicates, or neither.

|  |  |  |
| --- | --- | --- |
| Language | Resultatives | Productive N-N compounding |
| American Sign Language | YES | YES |
| Austroasiactic (Khmer) | YES | YES |
| Finno-Ugric (Hungarian) | YES | YES |
| Germanic (English, German) | YES | YES |
| Japanese-Korean (Japanese, Korean) | YES | YES |
| Sino-Tibetan (Mandarin) | YES | YES |
| Tai (Thai) | YES | YES |
| Basque | NO | YES |
| Afroasiatic (Egyptian Arabic, Hebrew) | NO | NO (?) |
| Austronesian (Javanese) | NO | NO |
| Bantu (Lingala) | NO | NO |
| Romance (French, Spanish) | NO | NO |
| Slavic (Russian, Serbo-Croatian) | NO | NO |

Thus, the evidence suggests that there is a link between the compounds and the verb-particle constructions and since the verb-particle construction seems to rely on endocentric compounds, the Macroparameter needs to cover a wider field first. This notion of “wider field” implies the following common ‘parametric’ learning strategy.

Figure 1, cross-linguistic survey (Snyder, 36)

A macroparameter should provide a choice that enables or disables one major grammatical construction before any subsets need consideration. That justifies the use of a macroparameter in language acquisition. The child needs first to find the right setting for the macroparameters so that no processing ability is wasted in figuring out subsets of grammatical constructions that do not apply to the language that the child is learning. In order to capture the correlation between the major grammatical construction of Compounding and the subset of complex predicates, Snyder first presents the Compounding parameter:

(3) “The grammar {disallows\*, allows} formation of endocentric compounds during syntactic derivation [\*unmarked value]” (8)

 Note that the unmarked value does allow lexicalized compounds. As Zonneveld remarks, “Acquisition by parameter setting proceeds from default to non-default, from subset to superset, and, in terminology often associated with this developmental picture, from ‘unmarked’ to ‘marked’” (376). Thus, the unmarked value means that to the child, the grammar of her language does not allow the formation of endocentric compounds during syntactic derivation until she is presented with enough positive examples that it is allowed. When the parameter follows the marked setting, the language is moved from a subset to a superset, from where a Micro-parameter could further decide whether the endocentric compounding also allows verb-particle constructions. Snyder argues that the evidence and the hypotheses predict that children should acquire the compounds earlier, or at least not later than verb-particle constructions. This model allows an economic use of the processing ability of the child, so that no valuable time is wasted in the acquisition process.

**3 Method and results: Snyder**

The child’s acquisition of a language and specifically the order and time in which certain properties are acquired could provide an insight into the intricacies of language itself. Snyder assumes that if complex predicate constructions are acquired as a group, the complex predicates must depend on a single, parametric property of grammar (6). This assumption follows from the hypothesis that “English complex predicates necessarily involve a morphological compound at some abstract level of grammatical representation, even though they do not exhibit the morphological characteristics of a compound in the surface form of a sentence” (8). In other words, complex predicates could be seen as ‘a kind of compounds’. When novel N-N compounds and complex predicates are allowed in a language, the acquisition of novel N-N compounds should correlate closely to the acquisition of complex predicates. For evidence to support this prediction, Snyder uses data from the well-known CHILDES acquisition database. This database contains transcripts of spontaneous children’s speech from different corpuses in different languages that can be analyzed using the CLAN or the CHAT program. In investigation the acquisition of a certain linguistic phenomenon, methodological points abound, and when one of them is to find a good, manageable criterion for the point in time at which that phenomenon can be considered ‘acquired’. For Snyder, as for the other researchers, the age of acquisition of a certain category is proven by the so-called First Repeated Use (FRU), which means that the first use of a certain category, in this case verb-particle constructions and novel N-N compounds, has to be followed by a second use within a month. This prevents accidental uses from undermining the evidence.

Snyder used the spontaneous speech of 12 English-speaking children in the CHILDES database. The first step was to establish the FRU of the verb-particle construction. A file was made with a list of potential particles like:

 “around, away, back, down, in, off, on, open, over, out, under, up”. (91)

With this file, a search command was given to find sentences where one of these words was used. The combo command excludes single word utterances and links any word to any one of the potential particles in the list.

combo +t”\*SAR” +s@particles.txt –w2\*.cha > sarah.particles

The output file sarah.particles was manually searched for uses of verb-particle constructions. The –w2 modifier in the command allowed the researcher to distinguish children’s repeats of adult sentences from children’s spontaneous speech. A first spontaneous verb-particle construction had to be followed by a second use within a month to rule out an accidental use without acquisition of the grammatical rule. When a verb-particle FRU was found, the age and the MLU were recorded.

 For Snyder to find the FRU of novel N-N compounds, another use of the combo command was needed. The combo excluded single word utterances:

 combo +t”\*SAR” +s\_\*^!.^!. \*.cha > sarah.two

The resulting file, sarah.two , was manually searched for novel N-N compounds.

 An overview of Snyder’s (2007) results on the search is given in Figure 2.

|  |  |  |
| --- | --- | --- |
| Child | Bare-root compounding | V-NP-Particle |
|  | Age (years) | FRU | Age (years) | FRU |
| Adam | 2.26 | tatoo man | 2.26 | put dirt up |
| Anne | 2.05 | animals steps | 1.93 | put the monkey on |
| Aran | 1.99 | car noise | 2.08 | put sand up |
| Becky | 2.08 | Noddy car | 2.08 | ride his back |
| Carl | 1.96 | car bridge | 1.95 | take it off |
| Dominic | 2.02 | elephant trains | 2.15 | I take fence off |
| Eve | 1.83 | pig (=peg) toy | 1.83 | write it down # my pencil |
| Gail | 2.01 | Gromit tissues | 1.99 | turn it on |
| Joel | 1.95 | tiger shirt | 2.07 | put it back |
| John | 2.00 | seesaw lion | 1.96 | put colors away |
| Liz | 2.04 | spider book | 1.96 | Liz put clothes on |
| Naomi | 1.92 | bunny girl | 1.90 | take it out |
| Nicole | 2.30 | happy holiday day | 2.30 | put this one on |
| Nina | 1.96 | rabbit book | 1.96 | take it off |
| Peter | 1.87 | tape+recorder button | 1.94 | I put them back |
| Ruth | 2.41 | choo+choo brick | 2.27 | me throw baba out |
| Sarah | 2.59 | ribbon hat | 2.56 | you can get it out |
| Shem | 2.25 | bunny+rabbit record | 2.21 | you can get it out |
| Warren | 1.85 | my baby drink | 1.85 | Warren put slippers on |
| Mean | 2.07 |  | 2.07 |  |

Figure 2, FRU of a novel, endocentric root compound, and FRU of a V-NP-Particle construction (Snyder, 92)

Snyder proves a correlation between the age of FRU for novel N-N Compounds and for verb-particle construction with the Pearson Correlation test.

The results … are as follows: *r* = 0.937, *t* (17) = 11.1, *p* < .001. In other words, the ages of FRU for the two constructions are very closely associated. The coefficient of determination is *r*2 = 0.880, indicating that fully 88.0 percent of the variation in the ages for either construction can be explained by the variation in the ages for the other construction. (92, 93)

 These results are represented graphically by means of a scatterplot, which is reproduced in Figure 3.

Figure 3, Scatterplot of FRUs, with best-fitting trend line (Snyder, 93)

Snyder concludes that:”[l]anguage acquisition and comparative syntax provide converging evidence for a parameter that determines both the availability of productive, endocentric compounding, and the availability of a range of syntactic ‘complex predicate’ constructions” (20). The evidence that is presented in both Snyder’s book (2007) and article (2001) comes forth from the cross-linguistic survey described above in the ‘theory’ chapter and analysis of spontaneous speech using the CHILDES database. Snyder (2007) adds that “[t]he acquisitional support for the [compounding] hypothesis comes mainly from a correlational analysis” (95), referring to the correlation between the FRU of verb-particles and novel N-N compounds. Snyder’s Compounding Parameter in (2) seems to be a true and valuable contribution to the current linguistic debate mentioned above.

**4 Method and results Dutch research**

For the study comparing Dutch, the Groningen and the Van Kampen corpuses were selected. The Groningen corpus contains longitudinal data of spontaneous speech of seven Dutch children, male and female, ranging from age 1;05 to 3;07 in an unstructured home setting. The recordings were taken in one and two week intervals. The Van Kampen corpus contains a longitudinal data in the form of mother-child interactions of two female children in the age range of 1;09 to 6;00.

 Applying Snyder’s method, first a file was created with possible particles and named particles.txt:

Op, neer, door, af, over, terug, uit, open, in, onder, boven, aan, daar, hier, toe, dicht, open, weg, mee, bij

For each child, the combo command was run, connecting any word with one of the possible particles in the file. Since every recording was transcribed in a different file, the command was given for every file of every child separately.

 combo +t"CHI" +s@particles.txt -w2 abe20101.cha > Xabe20101part.txt

The resulting files, as Xabe20101part.txt, were manually searched for the use of verb-particle construction. Every first use was then checked to be followed by a second use within a month and imitations of adult speech were ignored. The results were combined in a table.

 To find the age of the FRU of novel N-N compounds, a method different from Snyder’s was in order. In Dutch, compounds are written as single words, and this spelling convention was (unfortunately but reasonably) also used in transcribing this corpus. Using the combo command to search for strings of nouns would therefore be ineffective. A simple freq command for each file resulted in a list of every word that was uttered by the child.

 freq +t"CHI" tom20417.cha > tom20417.txt

In the list, every novel compound was identified and tested with a kwal command to identify and eliminate imitations of adult speech.

kwal +t"CHI" +s"ambulance+auto" pet20321.cha -w4

To qualify as an FRU, the first use of a novel N-N compound was followed by a second use within a month. The results were combined with the results of the verb-particle study in a table.

 For further analysis, the Mean Length of Utterance (MLU), “the average length of a child’s utterances, usually computed in morphemes over a set of at least 100 utterances” (O’Grady, 375), of every child was calculated for every file using the mlu command:

mlu +t"CHI" abe\*.cha -t%mor > mluabe.txt

The MLU of a child functions as an indicator of the child’s speech production abilities and as a control for the comparability of the children for statistical analysis. The MLU of the transcript in which a FRU occurred was included in the table and a graph was made to show the progress of MLU of the children.

 For statistical analysis, a number of calculations were needed. In the CHILDES files the ages were represented in Y;MM;DD format, which had to be converted to decimals for mathematical purposes. The method used was to calculate the total number of days by multiplying the Y by 365,25 (the average number of days in a year), adding the MM , multiplied by 30,41 (the average number of days in a month, divided by 365,25 adding the DD, and dividing the result by 365,25. Potential small differences caused by using averages of years and months are considered acceptable for the purpose of this research. $\frac{Y∙365,25+MM∙30,41+DD}{365,25}$

 The correlation between the FRU of compounds and the FRU of verb-particle constructions, the FRU and MLU of compounds and the FRU and MLU of particles were calculated using a standard correlation test in *Microsoft Excel* $ρ\_{x,y}=\frac{Cov (X,Y)}{σ\_{x}∙σ\_{y}}$ as well as the Pearson correlation test. The results of the correlation tests were plotted in graphs using *Microsoft Excel.*

The MLU of every file of every child was recorded to provide insight in the development of the speech production during the age range in which the acquisition takes place. These results are graphed and the correlation coefficient was calculated using the Pearson correlation test. A regression line was added to the graph. All statistical calculations were overseen by Bas Effing M Sc.

A major difficulty in finding novel N-N compounds in child’s speech is to make sure that the compound is novel and that the utterance is not simply a syntactic or semantic mistake. Marking a compound as novel is a somewhat subjective process. A compound may be novel to the analyst when to the family of the child it may be a common, often-used and possibly lexicalized, phrase. Ruling out child errors is another difficulty. The word *taartschoen* (pie shoe), for example, has a clear meaning to the child, because the child answers: “g’woon g’woon taartschoen!” (pie shoe of course!) when asked what he means. The meaning is and remains unclear to the adults so that it remains to be seen whether the child actually meant a shoe that has some relation to pie, or a pie that resembles a shoe. The word *taartschoen* is included in the results because, despite the unclear meaning, the child has chosen to combine two nouns to convey a meaning that his lexicon did not contain a representative word or expression for.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CHI | FRU C(years) | MLU | Word | FRU P | MLU(years) | phrase |
| Abel | 2.62 | 2.231 | Taartschoen[pie shoe] | 2.26 | 2.302 | He, daar komt ie aan[hey, there comes he on (there he comes)] |
| Daan | 3.08 | 2.838 | Papamoeder[daddy mother] | 2.57 | 2.823 | ik krijg deze op[I get this up (I can finish this)] |
| Iris | 2.89 | 1.753 | Poederkaas[powder cheese] | -- |  | none |
| Josse | 2.19 | 1.689 | Suikerdropje[sugar liquorice] | 2.64 | 2.489 | Moet even weg[must for a bit go] |
| Matthijs | 2.40 | 1.932 | Kiepauto[tilt car] | 2.53 | 2.096 | Hier past ‘ie beneden in[here fits it down in (it fits down here)] |
| Peter | 2.31 | 2.822 | Ambulanceauto[ambulance car] | 2.18 | 2.361 | Peter zet klok aan[Peter swithces clock on] |
| Tomas | 2.50 | 1.951 | Botsauto\*[crash car] | 2.67 | 2.407 | Heeft een muts op[Has a hat on] |
| Laura | 2.81 | 2.909 | SpeelbankPlay bench  | 2.76 | 2.500 | Ik ga zo weg hoor.[I go shortly away hear (me)] |
| Sarah | 2.34 | 2.526 | JurkvlinderDress butterfly | 2.36 | 2.337 | Ik heb niet staartjes in[I have not pigtails in]  |
| mean | 2.53 \*\* | 2.362 |  | 2.50 | 2.414 |  |

\* Botsauto may also mean a bumper car, which is a lexicalized compound, but from the context it is clear that the child means something else.

\*\* Iris’ FRU C is left out of the mean FRU C calculation because of her exclusion from statistical analysis. With Iris included, the mean FRU C would be 2.57

Figure 4, results Dutch corpus investigation

The results table provides the age of First Repeated Use of novel N-N compounds (FRU C), the MLU of the transcript in which the FRU C was found and the actual compound that was produced. In the right three columns, the table provides for each child the FRU for the verb-particle constructions (FRU P), the MLU of the transcript in which the FRU P was found and the actual case produced by the child. The bottom-most row displays the average ages and MLUs for each column.

In one instance, the child makes a head direction error when she says *jurkvlinder* (dress butterfly) to mean *vlinderjurk* (butterfly dress). The mistake is corrected by the mother and the child repeats the correct word. After this, the child frequently produces novel N-N compounds without further head direction mistakes.

The verb-particle constructions analysis seems quite straightforward. Phrases like “He, daar komt ie aan”, and “Moet even weg”, are most likely phrases that the child has heard uttered by parents or other caretakers many times before. Phrases like this are very common in day-to-day utterances in a home setting. One objection against inclusion of these cases might be that the phrases might be seen as lexicalized phrases. However, these phrases consist of basic words that the child knows. Snyder’s (2007) notion of children’s “grammatical conservatism” seems to be relevant here. Snyder observes that children only start using certain grammatical constructions after they fully understand the grammatical principle at work: “the child did not begin with an extra-grammatical strategy, or even a non-English grammar, as an early way to produce verb-particle constructions, before she ever attempted to produce it herself “ (73). This notion of so-called Grammatical Conservatism suggests that even if a child repeats an often heard phrase, she has fully acquired the grammatical phenomenon at work. The phrase “hier past ‘ie beneden in” seems a clearer example of a complex construction that has little chance of being a repetition of an often-heard and used phrase.

One child (Iris) did not produce a verb-particle construction in any of her transcripts. The results of this case are therefore not used in statistical analysis, except for the initial MLU progression table.

The following table contains the progress of the MLU of all children between 2.00 and 3.33 years as calculated using the CLAN program. Slight irregularities are found in the ages that can be ascribed to the recalculation from the Y;MM;DD format to decimal ages. These irregularities have no significant effect on the outcome of the statistical calculation and are therefore disregarded. A consistent or correlating progression of the population’s MLU during the period of research will help in determining the suitability of the population for further statistical analysis. If the MLU patterns show a wide variation, looking for correlation in acquisition has little use. In other words: a strong correlation between the MLU progression of the population can help prove that the absence of correlation in other variables, such as the FRUs, is no coincidence.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  Abel | Iris | Daan | Josse | Matthijs | Peter | Tomas | Laura | Sarah |
| 2,00 | 1,394 |  | 1,416 | 1,208 | 1,416 | 2,007 | 1,352 | 1,396 | 1,677 |
| 2,01 | 1,672 | 1,185 | 1,496 | 1,561 | 1,45 | 2,018 | 1,416 | 1,764 | 1,878 |
| 2,02 | 1,943 | 1,185 | 1,723 | 1,689 | 1,597 | 2,361 | 1,547 | 1,95 | 2,147 |
| 2,03 | 2,302 |  | 1,751 | 1,989 | 1,582 | 3,191 | 1,795 | 2,022 | 2,065 |
| 2,04 | 2,219 | 1,185 | 2,131 | 2,13 | 1,932 | 3,344 | 1,856 | 2,093 | 2,526 |
| 2,05 | 2,285 | 1,624 | 2,343 | 1,651 | 2,061 | 3,536 | 2,141 | 2,197 | 2,46 |
| 2,06 | 1,975 |  | 2,435 | 2,218 | 2,456 | 3,473 | 1,951 | 2,148 | 2,595 |
| 2,07 | 2,231 |  | 2,402 | 2,178 | 2,627 | 3,73 | 2,247 | 2,164 | 2,744 |
| 2,08 | 2,341 | 1,151 | 2,389 | 2,272 | 2,316 | 3,302 | 2,407 | 2,26 | 2,673 |
| 2,09 | 2,341 | 1,607 | 3,406 | 2,469 | 2,272 |  | 2,654 | 2,5 | 3,413 |
| 2,10 | 2,81 | 1,646 | 2,782 | 3,558 | 2,429 |  | 2,343 | 2,909 | 2,884 |
| 2,11 | 3,387 | 1,824 | 2,309 | 2,998 | 2,587 |  | 2,831 | 2,844 | 2,856 |
| 3,00 | 3,102 | 1,881 | 2,838 | 3,113 | 3,241 |  | 2,897 | 2,712 | 3,643 |
| 3,01 | 3,65 | 2,145 | 2,902 | 3,953 | 3,22 |  |  | 2,857 | 3,068 |
| 3,02 | 3,523 | 2,085 | 2,63 | 3,965 | 2,558 |  |  | 2,784 | 3,812 |
| 3,03 | 3,264 | 2,679 | 2,692 | 3,381 | 2,683 |  |  | 2,927 | 3,048 |
| 3,04 | 3,488 | 2,327 |  | 3,228 | 3,213 |  |  | 3,028 | 3,104 |
| age |  |  |  |  |  |  |  |  |  |

Figure 5, MLU progression Dutch child research population

The results for the novel N-N compound and verb-particle FRUs and the novel N-N compound and verb-particle MLUs showed the same pattern for the standard correlation and the Pearson correlation as show in the table below, which is not unexpected in a small population. The results of the statistical analysis as represented in Figure 6 are discussed below.

|  |  |  |
| --- | --- | --- |
| FRU compounds – FRU verb-particles |  | MLU compounds – MLU verb-particles |
| correlation  | 0,304289 | correlation  | 0,44494 |
| Pearson Correlation | 0,304289 | pearson correlation | 0,44494 |
|  |
| correlation FRU C - MLU C | 0,578407 |  |
| correlation FRU P - MLU P | 0,348896 |
|  |  |  |
| confidence interval test FRU compounds | 2.20 < μ < 2.78 |  |
| confidence interval test FRU verb-part. | 2.32 < μ < 2.67 |  |

Figure 6, Statistical analysis Dutch research population

**5 Discussion**

The results for the Dutch-speaking children are notably different from the English-speaking children in Snyder's study. A relatively wide scope of possibilities may underlie these differences.

Snyder's population of child subjects consists of 12 children. The CHILDES database, unfortunately only provides nine suitable Dutch-speaking children from two different corpuses. From these nine children, one could not be used for statistical analysis because, as indicated above, the verb-particle variable was completely missing from her transcript. The small number of test subjects can be argued to seriously compromise the results and the conclusions that might be drawn from them. On the other hand, however, for Snyder’s microparameter in (1) to apply, even a small population should confirm the strong correlation between the acquisition of novel N-N compounds and verb-particle constructions found by Snyder. Or, no correlation at all in the Dutch-speaking population could raise questions to the universality of Snyder’s parametric system. Snyder’s prediction is that the microparameter should work universally for all languages that allow both the English-style verb-particle constructions and novel N-N compounding.

The average age of Dutch children acquiring the verb-particle constructions and the novel N-N compounds is about six months older than the English-speaking children of Snyder's study. No novel N-N compounds or verb-particle constructions were found before the age of two years. A possible explanation for the compound results could be that novel compounds seem to be slightly less common in Dutch. If, according to Snyder’s hypothesized parametric correlation, the acquisition of the verb-particle construction depends on the acquisition of compounds, it follows logically that a delayed acquisition of compounds also delays the acquisition of verb-particle constructions. However, the average FRU of verb-particles is slightly younger than the average FRU of novel N-N compounds. Although it could be argued that a one-hour fortnightly transcript shows so little of the child's output that the first recorded use might easily be months apart from the actual, non-recorded first use, Snyder observes that young children, upon having acquired a certain feat, often show a period of over-usage right after. This is precisely why the First Repeated Use is considered a proper indicator of the age of the actual first use.

A confidence interval test of the ages of FRU C and FRU P predicts that chance is likely that 95% of all Dutch-speaking children will acquire novel N-N compounds between the age of 2.29 and 2.78 and verb-particle constructions between the ages of 2.32 and 2.67. These figures provide a clear overlap that can be seen as an indication that both novel N-N compounds and verb-particle constructions are acquired within a period of approximately a half year (2,88 months). This makes it safe to say that Dutch-speaking children acquire verb-particle constructions and novel N-N compounds at the same time. It does not prove, however, a relation between the acquisition of verb-particle constructions and novel N-N compounds. Only a correlation test could provide statistical evidence that the two phenomena are closely related and not a simultaneous effect of an ‘outside source’, such as cognitive or processing abilities.

Figure 7, Scatterplot verb-particle – compounding FRU

Snyder's proves a statistic correlation between the FRU of novel N-N compounds and verb-particle constructions in English-speaking children. A correlation test between these variables in the Dutch children, however, shows little or no correlation at all: a correlation of .304 is usually considered insignificant. This lack of correlation does also show in the scatterplot in Figure 7. The small population of Dutch-speaking children cannot sufficiently explain the extremely low R2 of .093.

The confidence interval seems to confirm Snyder’s prediction that verb-particle constructions and novel N-N compounds are acquired simultaneously. However, the correlation test presents strong evidence that there is no clear correlation between the two constructions, thus undermining Snyder’s claim of a hierarchical relation. The result of the Dutch corpus study is therefore inconclusive.

More research must be done to confirm or undermine the current strong suspicion that no correlation exists between the interdependent acquisition paths of novel N-N compounds and verb-particle constructions in Dutch-speaking children. The lack of correlation seriously undermines Snyder’s claim that the acquisition of complex predicates depend on the acquisition of novel root compounds. If the correlation in Snyder’s research does not follow from a parameter setting, as this evidence suggests, then there should be a different reason that causes the correlation when it occurs, as in English. Also, if the lack of a correlation in Dutch is language-specific, there should be a reason why Dutch differs in this respect.

Slightly more correlation is found between the FRU of compounds and the MLU of the FRU transcripts at .578. This, however, cannot be said of the correlation between the verb-particle FRU and its MLU at .349. This suggests that the acquisition of novel N-N compounds in Dutch children depends on their processing abilities more than on a parameter setting. However, if cognitive abilities are the factor and they are measured in the child’s MLU, then the MLU of acquisition should closely resemble the English-speaking children, which it doesnot. The MLU at the time of acquisition of verb-particle constructions for English-speaking children is 1.919 and for the Dutch-speaking children, it is 2.414. This difference is too large to ignore and rules out that the acquisition of novel N-N compounds and verb-particle constructions solely depend on the child’s processing ability. If the argument remains that Dutch might make fewer uses of novel N-N compounds a critical amount of positive evidence might explain some of the differences between the English- and Dutch-speaking children and, partially, the lack of correlation in the Dutch results. To account for the difference between the MLU of Dutch- and English-speaking children, the difference in frequency of usage of novel compounds and verb-particle constructions in both languages should be considerably more than observed. Furthermore, the slightly higher correlation is still much too small to be considered a correlation at all. The conclusion clearly invited by these figures is that more research into the frequency of compounds in a language as predictor of the moment of acquisition of novel N-N compounds is highly justified.

Figure 8, Scatterplot MLU – age

Figure 9, MLU – age development with regression line

As mentioned above, the MLU development of the children can function as a control for statistical analysis. In a population as small as eight, chances are that these happen to be eight very different children, which could account for the complete lack of correlation between the age of FRU and the MLU at time of acquisition of novel N-N compounds and verb-particle constructions. However, the development of speech production of this population shows that the children’s MLU progressions are clearly correlated. During the period of this research, from 2.0 years to 3.33 years, the progression of MLU of the nine initial Dutch-speaking children shows a correlation coefficient of .701. This figure increases to .871 when the child that did not produce a verb-particle construction and a child of which half (47%) of the MLU data is missing are disregarded. The regression line of the latter calculation is displayed in Figure 9. Because the children have a correlating development in MLU, the moment at which certain grammatical properties as compounding and complex predicates are acquired should correlate closely as well if these properties are closely related. The shown correlation between the children’s MLU development, therefore, is a strong indication that the lack of correlation between the FRU of novel N-N compounds and verb-particle constructions is non-accidental.

**6 Conclusions**

A population of eight children is too small a number to draw definite conclusions toward confirming or falsifying Snyder’s proposed microparameter. However, the results of the comparative study of Dutch children provide at least an indication that the predicted correlation may well be absent from the linguistic output of Dutch-speaking children in the relevant age range.

 Snyder’s (2007) hypothesis that “A language permits the English-style verb-particle construction only if it allows speakers to freely create novel, endocentric root compounds” (82), still stands. Dutch allows its speakers to create novel, endocentric root compounds at will and it permits the English-style verb-particle. By using the term ‘English-style verb-particle construction’, however, Snyder seems to imply that other observations about the English-style verb-particle construction should also apply to the languages that allow this type of construction. Snyder’s (2001) microparameter that “in children acquiring English, the age at which complex predicates are first used productively should correspond very closely to the age at which novel root compounds are first produced” (10), does not seem to apply to children acquiring Dutch although the underlying theory suggests that it should. This inconsistency may be the result of language-specific factors. The frequency at which complex predicates and novel root compounds occur in a language might alter the moment of acquisition, which would explain the strong difference in age at the moment of acquisition between the Dutch- and English-speaking children. The difficulty in this explanation, however, is the lack of correlation between the FRU of novel N-N compounds and the FRU of verb-particle constructions in the Dutch-speaking children, whereas the English-speaking children did show a definite correlation. The frequency of novel compounds and complex predicates in Dutch is not so different to English that it could account for such a difference between solid correlation and none whatsoever.

 The difference in MLU at the moment of acquisition between the English- and Dutch-speaking children seems to rule out factors concerning cognitive abilities. If the acquisition of complex predicates and novel compounds depends solely on the processing abilities of the child, both Dutch- and English-speaking children should show similar MLU levels at the time of acquisition.

 The goal of this thesis was to address Snyder’s compounding microparameter, aiming to confirm or falsify it by reproducing Snyder’s investigation of 12 English-speaking children with 9 Dutch-speaking children. The results, however, are inconclusive: clearly, the difference between verb-particle constructions and novel N-N compounds in English and Dutch has to be better understood in order to progress. Also, entering more relevant Dutch-speaking children in the CHILDES (or any other similar) database would obviously help, enabling a more significant population for statistical analysis.

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