The Effect of Discourse Expectations in the Processing of Complex Noun Phrases by L2 Speakers of English

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One of the hallmarks of academic texts is complex noun phrases such as pharmaceutical market size increase, which are composed of a head noun plus several modifiers [1]. If the component parts of the complex NP have been introduced in the preceding text (i.e., discourse expectation created), this NP can serve as a shorthand to convey complex ideas quickly to the reader. However, if the component parts have not been introduced (i.e., no discourse expectation created), the meaning of the complex NP is less immediately obvious.

In the present study, we investigated whether complex NPs that are not introduced lead to processing difficulty during real-time reading, following recent findings that discourse expectations influence processing in other domains [2,3,4,5]. We predicted that complex NPs would be harder to process than structures that break the modifiers into shorter units (e.g., increase in the size of the pharmaceutical market), and that this effect would be more pronounced for longer structures.

We tested these predictions in an eye tracking study with two groups of advanced L2 speakers of English: (1) twenty native speakers of German, a language that commonly uses complex NPs in written text, and (2) twenty native speakers of other languages that are not uniform in their use of complex NPs. We predicted that the German speakers would have less difficulty processing the complex NPs than other-language speakers due to more experience processing complex NPs though their native language.

Two variables were tested. Structure comprised either a complex noun phrase (NP) or the equivalent structure with modifiers expressed as prepositional phrases (PP). Words refers to the number of words in the complex NP: either four words (Four) or six words (Six). Materials comprised ten sentence pairs (varying NP and PP) in each of the Four and Six conditions, yielding four conditions (examples below). Items were distributed across four lists in a Latin Square design. Sentences were divided into four regions of interest for analysis: Critical (NP or PP), Post-Critical (is/are V-ed), Spillover (by DET N), and Final (P DET ADJ N).

Results were analyzed separately for each group and for each region using ANOVAs. First Pass reading times in the Spillover region were longer in the NP than in the PP condition for both groups, although this difference held only in the Six condition for the Other group. In the Final region, First Pass reading times were longer in the Six than in the Four condition for both groups, and the difference between these conditions was greater for PP trials than for NP trials. Effects were similar but earlier for Total Duration reading time.

Results largely confirm our hypotheses. When no expectation has been established in preceding discourse, complex NP structures are more difficult to process than simpler PP variants, and this effect is more pronounced in longer structures, at least in the Other group. Further, we find a delayed effect of structure length with longer structures (NP/PP-Six) being more difficult to process than shorter ones. Overall, our results provide experimental evidence for processing difficulty in L2 speakers while reading structurally complex sentences in English. However, our data do not support transfer of an L1 parsing strategy (complex NP processing in German) to the L2.
Sample stimuli from four conditions

NP-Four: Pharmaceutical market size increase / is driven / by the competition / in Western countries.

PP-Four: Increase in the size of the pharmaceutical market / is driven / by the competition / in Western countries.

NP-Six: The national income distribution public perception bias / is explored / by the methodology / of the present study.

PP-Six: The national bias in public perception of the distribution of income / is explored / by the methodology / of the present study.

References