

THE USE OF CLEFT CONSTRUCTIONS IN L2 WORD PROCESSING AND WORD RECALL

Anke Sennema

University of Potsdam, Germany
sennema@uni-potsdam.de

ABSTRACT

This study compared the effects of syntactic focus and context on word processing speed and word recall in L1 and L2, using 80 adult native German L2 learners of English and 30 native speakers of British English as controls. Recorded sentence stimuli were used to compare cleft and non-cleft sentences, native and non-native language speakers, and presence and absence of additional context information. Results indicated a processing advantage of cleft in L1 (English and German) but not in L2 (English). Additional context resulted in faster L1 and L2 processing for German listeners but not for the English controls. Word recall was not facilitated by syntactic focus marking nor by context in any of the language groups.

Keywords: L2 processing, information structure, cleft, context, word recall

1. INTRODUCTION

The ability to decode both the information structure (IS) and discourse organization in a new language influences L2 learners' proficiency, and has been addressed with increasing research interest. [10] argues that the linguistic devices L2 learners use are strongly related to information organization in their native language. It has been suggested [6] that listeners do not simply carry over the cues of native listening to the processing of non-native prosodic patterns, but instead adopt novel approaches. This suggests a certain plasticity of use of linguistic features that might also apply to other levels of IS, such as focus, where some parts of a sentence, single words or even syllables receive more prominence than others [7] and may facilitate information processing [4]. The discussion about the interpretation of clefts has mostly concentrated on L1-processing. This paper addresses the question of whether clefts are as accessible in learners' L2 as they are in their L1, and whether a L1-L2 transfer of cleft usage should be considered desirable.

English has an underlying SVO word order in contrast to German's SOV. Furthermore, German is a V2-language with a clearly demarcated initial position preceding the finite verb that can be exploited for different information-structural purposes. In English, clefting is considered an important focusing option as a result of a more restrictive word order [5]. In contrast, German is more flexible and freely allows reordering of syntactic arguments (e.g. scrambling and topicalization). One could conjecture that the frequency of clefts is lower in V2-languages that have other structural means of indicating information-structural distinctions (e.g. movement to pre-finite position in German), which would reduce the need for using clefts (see [1]).

With regard to the effect of context, it is suggested that integration of the word into a broader lexical network facilitates cognitive processing [8]. Wh-expressions can provide such a lexical network, leading to faster understanding of the focused part of the answer sentence [9]. Such a processing advantage of question-induced focus was confirmed for English and Dutch by [2].

Research [3] showed that cleft as a focus-marking device triggers a richer encoding of the marked expression, and although encoding the expression consumes cognitive effort, subsequent recall of the marked expression is facilitated, and [8] proposed long-term recall benefits for context embedded new words.

The findings above motivate the hypothesis that clefts, in combination with context as secondary factor can direct L2 learners' attention to a focused constituent, making it more readily available for immediate processing and for subsequent retrieval. This study explores whether clefting, and the provision of additional context supports L2 processing, and whether access to IS in the L2 underpins learners' ability to effectively process and recall words in a second language.

2. EXPERIMENT

The experiment tested processing of cleft structures and subsequent word recall by German L2 learners of English and by a control group of speakers of British English. In the experiment, the dependent variable was reaction time (RT) to the target phoneme. Independent variables were (1) focal accent on the target-bearing word as provided by cleft (+/-); (2) the provision of context (+/-).

2.1. Speech material

Test materials comprised 40 sentences (20 target sentences/ 20 fillers) in both German and English, which were balanced for cleft and non-cleft structures. In each target sentence, a two-syllabled target word occurred in sentence medial position, containing the target phoneme /b/ at the beginning of the second syllable. All target and filler items consisted of two lexically unstressed syllables which formed pseudo-words.

Sentences were presented either with preceding question (+ context), or without preceding question (- context). The type of question was a cleft-question in the form of *Is it the...?* (German: *Ist es der/die...?*). The non-clefted sentences had narrow focus with accent realized on the grammatical subject. In the cleft sentences, pitch accent was realized on the subject of the clefted construction. In the context condition, the target words always received accent by contrastive focus.

Example sentence, English language condition:

- “Is it the frail Skua that is now looking for juicy fruit?” (preceding question)
- “The frail TULBUL is now looking for juicy fruit.” (non - cleft)
- “It’s the frail TULBUL that is now looking for juicy fruit.” (cleft)

Example sentence, German language condition:

- “Ist es der faule Närig, der stundenlang auf einem Fuß steht?” (preceding question)
- “Der faule KABU steht stundenlang auf einem Fuß.” (non - cleft)
- “Es ist der faule KABU, der stundenlang auf einem Fuß steht.” (cleft)

2.2. Speaker and recording procedure

A male native speaker of British English recorded the English stimuli, and a male native speaker of Standard German recorded the German stimuli. Digital recordings were made in a soundproof booth, with an audio sampling frequency of 22.05

kHz with 16-bit amplitude resolution. Speech materials were recorded directly onto hard disk and transferred for editing. All tokens were scaled to have an average intensity of 70 dB SPL.

2.3. Participants

80 adult native German L2 learners of English took part in the experiment. Most of them had started learning English at the age of 11, and they had had English classes for 8.8 years on average. Thus, an appropriate level of proficiency with regard to the task could be expected and it was assumed that cleft structures were present in the participants’ grammar. Participants reported normal hearing and normal or corrected vision at the time of testing.

A control group of 30 native speakers of British English participated in the experiment. They were tested in the UK.

2.4. Experimental task

A listening test with a phoneme detection task, followed by a word recall test were conducted. The experiment controlled for presentation with and without context, and for language order for the German participants (English language condition first, followed by German or vice versa). In the listening test, participants were instructed to press a button as soon as they heard the target sound /b/ in a word. They were encouraged to attend to the content of the sentences, as they would be queried on it at the end of the experiment. Feedback on the correctness of the /b/-detection was given only in the trial test. 40 sentences were presented in random order, and participants could listen to the stimuli only once. This part took about 15 minutes.

Participants then entered a self-paced word recall test (4-AFC task) in which the 40 sentences were presented in writing on a computer screen. At the position of the target word, four alternatives were presented: one was the target, one item differed from the target in one phoneme but was otherwise identical, and the other two choices were unrelated but with an identical number of syllables and word stress as the target word. All options fitted equally well in the sentences with regard to grammatical constraints. Participants had to click on the alternative which they thought they had heard in the listening section.

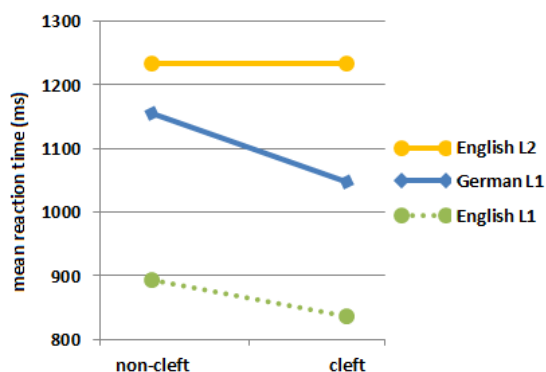
3. RESULTS

Decision latencies indicated the time from the onset of the target word to the listeners' response. Responses shorter than 150 ms or longer than 5000 ms were discarded.

The reaction times (RT) of German L1 and English L2 conditions were compared in a one-way ANOVA. There was a significant effect of language [$F(1,78)=8.398$; $p=.005$], indicating that items in German L1 were processed faster than items in English L2. A t-test revealed that reaction times were significantly slower in English L2 than in English L1 [$t(108)=3.596$; $p<.001$].

ANOVAs analysed the effects of language, cleft and context, yielding a significant effect of cleft in German L1 [$F(1, 319)=5.550$, $p<.05$]. This suggested a faster reaction to items occurring in clefted than in non-clefted sentences. In English L2, the effect of cleft was not significant. In English L1, a main effect of cleft construction [$F(1,28)=14.300$; $p<.005$] indicated that items occurring in clefts were processed faster than items occurring in non-cleft sentences (see Fig. 1).

Figure 1: Mean reaction time for the factors *language condition* and *syntactic structure*.

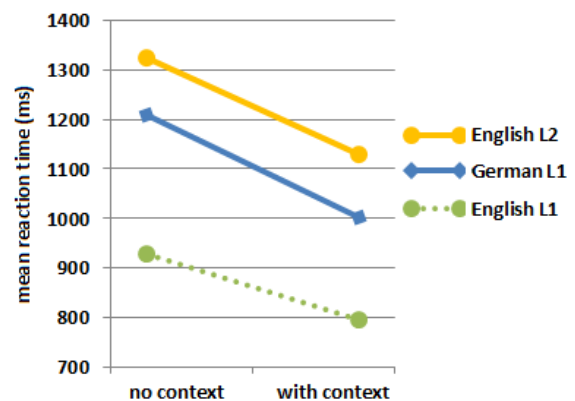


Separate ANOVAs for cleft construction per context condition revealed a significant effect only in the German L1 condition with context: targets occurring in cleft sentences were processed faster than those occurring in non-clefts [$F(1,78)=6.64$, $p<.05$]. No significant effects of syntactic structure were observed in the English L1 condition, in the German no-context condition, nor in the two English L2 context conditions. However, a trend could be observed in the English L2 with-context condition that cleft sentences tended to be processed faster than non-clefts [$F(1,78)=3.890$, $p=.052$].

The effects of context were significant in conditions German L1 [$F(1, 319)=18.832$, $p<.001$]

and English L2 [$F(1,318)=8.479$, $p<.005$], both suggesting a faster reaction to items presented with context question. The difference was not significant in the English native language condition (see Fig. 2). No interactions were observed between the factors.

Figure 2: Mean reaction time for the factors *language condition* and *context*.



Univariate ANOVAs tested whether words occurring in cleft sentences were better recalled than in non-clefts (4-AFC task). There was no effect of syntactic structure on word recall in German L1. In English L2 the effect of syntactic structure on word recall failed to reach significance [$F(1,311)=3.539$, $p=.061$]. In English L1 there was a significant effect of syntactic structure [$F(1,116)=10.536$, $p<.005$], indicating that items occurring in non-cleft sentences were significantly better recalled (67.0%) than items in cleft sentences (53.0%).

Context had an effect only in German L1 [$F(1,303)=5.316$, $p<.05$], suggesting that items presented without context were better recalled (46.3%) than items with context (42.5%).

A language comparison revealed that German participants recalled items significantly better in their L2 English (52.6%) than in their L1 German (44.4%) [$F(1,115)=18.410$, $p<.005$].

4. DISCUSSION

The results suggest a processing advantage of clefts for L1 German, confirming findings of [5]. This result can be explained by the typological parameter of subject-prominence, and the related focus effect: cleft structures seem to produce an increased subject-prominence within sentences that allows faster processing of the focused constituent.

However, the ability to exploit the syntactic structure of speech input, and direct attention to syntactically marked words did not carry over well

from native to nonnative language processing. This cannot be explained by insufficient L2 proficiency of the subjects as no significant difference was found between the number of missing responses for cleft and non-cleft items in the L2 data. In contrast to their L1, the German listeners didn't locate where in the L2 utterance the element with focus assignment was situated. It seems that the L2 learners were unaware of basic pragmatic and semantic aspects of IS such as the status of focus expressions. In this framework, the difference between the use of clefts in L1 and L2 could be seen as a learner problem of applying specific linguistic structures present in the L1 according to the principles of IS in the target language.

Additional context resulted in faster L1 and L2 processing for German listeners. This result shows that question-induced cues to focus can be exploited effectively in both native and nonnative listening, which confirms [2, 4, 9]. The proposition of context as a means to facilitate processing is particularly interesting with regard to L2: context increases the processing load, yet the longer stream of input seems to prepare for upcoming information, leading to more rapid word processing. The lack of a context effect in English L1 could not be attributed to individual differences and needs further research attention, as it is contrary to results of [2, 4].

Word recall was not facilitated by marked cleft constructions for the German listeners. This general difference may be due to clefts being a more common and preferred focusing principle in English [1]. The lack of effect in English L1 challenges findings of [3]. Altogether, results point towards novel findings of a reading study by [11], who found no evidence that clefting results in a sustained increase in availability in memory of the clefted noun across sentences.

The finding that context did not facilitate word recall may be due to the possibly low amount of actual semantic content that the questions offered to the listeners. The questions did not contain enough substance for the generation of meaning and they didn't support establishing the semantic network needed to support accurate word recall as proposed by [8]. The current work promotes the view that contextual information that offers more semantic, prosodic, or lexical connections may compensate for the additional processing load that context constitutes for the listeners in word recall tasks.

5. CONCLUSION

This study delivered evidence that listeners have an understanding of the significance of clefts as focus-marking device in native listening. However, this seems to be more accessible in the native language than it is in the nonnative language. Altogether, findings illustrate the need of a dynamic exchange of information-structural organization between L1 and L2, and the need to exploit different resources in order to advance proficiency in a second language.

6. ACKNOWLEDGEMENTS

This research was carried out at the University of Potsdam as part of a Ph.D. project within the Collaborative Research Centre "Information Structure", funded by the German Research Foundation. I gratefully acknowledge the contribution of S. E. Carroll and R. v.d. Vijver with construction of the stimuli.

7. REFERENCES

- [1] Ahlemeyer, B. Kohlhof, I. 1999. Bridging the cleft. An analysis of the translation of English it-clefts into German. *Languages in Contrast* 2(1), 1-25.
- [2] Akker, E., Cutler, A. 2003. Prosodic cues to semantic structure in native and nonnative listening. *Bilingualism: Language and Cognition* 6(2), 81-96.
- [3] Birch, S.L., Garnsey, S.M. 1995. The effect of focus on memory for words in sentences. *Journal of Memory and Language* 34, 232-267.
- [4] Cutler, A., Fodor, J.A. 1979. Semantic focus and sentence comprehension. *Cognition* 7(1), 49-59.
- [5] Doherty, M. 1999. Clefts in translations between English and German. *Target* 11(2), 289-315.
- [6] Hawkins, R., Chan, C.Y.-H. 1997. The partial availability of Universal Grammar in second language acquisition: the 'failed functional features hypothesis'. *Second Language Research* 13(3), 187-226.
- [7] Krifka, M. 1997. Focus. In Wilson, R.A., Keil, F.C. (eds.), *The MIT Encyclopedia of the Cognitive Sciences*. Cambridge/MA: MIT Press, 315-317.
- [8] Lawson, M.J., Hogben, D. 1996. The vocabulary-learning strategies of foreign-language students. *Language Learning* 46(1), 101-135.
- [9] Selkirk, E. 2005. *Sentence Prosody: Intonation, Stress, and Phrasing*. Unpublished manuscript.
- [10] von Stutterheim, C. 2003. Linguistic structure and information organisation: The case of very advanced learners. In Foster-Cohen, S.H., Pekarek-Doehler, S. (eds.), *EUROSLA Yearbook 3*. Amsterdam: Benjamins, 183-206.
- [11] Vasishth, S., Shaher, R.F., Srinivasan, N. Accepted pending revision. The role of clefting, word order and given/new ordering in sentence comprehension: Evidence from Hindi. *Journal of South Asian Linguistics*.