

**Signaling with one hand:
A cross-linguistic comparison of the facilitative effect of “On the one hand”**

Merel C.J. Scholman¹, Vera Demberg¹ & Hannah Rohde²

¹*Language Science and Technology, Saarland University, Germany*

²*Linguistics and English Language, University of Edinburgh, Scotland*

Recent work has provided evidence that readers make predictions regarding coherence relations between clauses or adjacent sentences (Köhne & Demberg, 2013; Rohde & Horton, 2014; Xiang & Kuperberg, 2015). Scholman, Demberg and Rohde (2017) extended these findings to show that readers make fine-grained predictions of upcoming discourse structure across multiple sentences, based on the marker “On the one hand” (OT1H). In a series of studies, they found that “On the other hand” (OTOH) is dispreferred after an intervening sentence marked by “but” has provided a plausible contrast with the OT1H sentence.

The results from Scholman et al. (2017) indicate that readers do make predictions of upcoming contrast based on OT1H. Surprisingly, however, results from their eyetracking study did not reveal a facilitative effect of OT1H on processing of OTOH. One possible explanation for the absence of an effect is that the experiment contained a large amount of items with OTOH (32 items out of 92 items total), increasing the expectedness of OTOH overall and thereby reducing the expected facilitative effect of OT1H. We here report on a series of experiments that follow up on this hypothesis. We take a cross-linguistic perspective, looking at whether the presence of OT1H (and the Dutch equivalent) has a similar effect on processing of OTOH in Dutch as in English. The distributions of the markers differ slightly: English OTOH occurs without OT1H more often (79% of all occurrences of OTOH; Scholman et al., 2017) than Dutch OTOH (63%, SoNaR corpus). In other words, OTOH can occur without OT1H in both languages, but does so more frequently in English.

Experiment 1. Story continuation study

The goal of the current study was to test whether the English and Dutch items differ in the predictions that the OT1H sentence evokes (in the presence and absence of OT1H). 40 English and 40 Dutch-speaking participants wrote a story continuation to the English or Dutch items, respectively, that were designed for the eye-tracking experiments. Passage 1 presents an example of an English item, and passage 2 of a Dutch item. The items differ slightly to make them more comparable with the other passages that were included in the eye-tracking experiments (Exp. 2 and 3). For the continuation study, the OTOH sentence was removed, and participants were asked to provide a continuation of one or two sentences.

1. **Intro** Bob suggested a business merger with Jennifer’s company, and now she’s considering it.
- OT1H** (On the one hand,) she’d like to join forces with Bob, because he already has many loyal customers.
- OTOH** On the other hand, she wants to make sure she can rise to power as CEO without competition.

2. **Intro** De ondernemer overwoog om zijn zaak te fuseren met een andere zaak.
The entrepreneur was considering merging his business with another business.
- OT1H** (Aan de ene kant) kon hij profiteren van de klantenbasis van de andere ondernemer.
(On the one hand,) he could profit from the client base of the other entrepreneur.
- OTOH** Aan de andere kant wilde hij graag als enige de leiding hebben in zijn zaak.
On the other hand, he wanted to be the only one in charge of his business.

As expected, both English and Dutch items received more contrastive continuations in conditions where OT1H is present than in conditions where OT1H is absent ($\beta = 3.72$, $SE = .42$, $z = 8.75$, $p < .001$). More interestingly for the current study, we found an interaction between language and condition ($\beta = -2.59$, $SE = .77$, $z = -3.34$, $p < .001$): participants provided more contrastive continuations for items where OT1H was present in Dutch than in English, but no such difference was found for items where OT1H was absent. This indicates that when OT1H is present in these contexts in Dutch, readers anticipate an upcoming contrast more strongly than in English.

Experiment 2. Eyetracking-while-reading in English

Native English speakers ($n=80$) read 16 experimental items. Presence of OT1H varied. The items were interspersed with 96 items for an unrelated experiment.

The results showed that the first pass duration at OTOH was shorter when OT1H was present compared to when it was not ($\beta = -17.03$; $SE = 8.09$; $t = -2.1$; $p < .05$). No other effects were found (regression path duration: $\beta = -4.76$; $SE = 14.35$; $t = -0.33$; $p = .74$; total fixation duration: $\beta = -11.71$; $SE = 7.46$; $t = -1.57$; $p = .12$). These results suggest that the absence of an effect in the English study was in fact due to there being too many occurrences of OTOH.

Experiment 3. Eyetracking-while-reading in Dutch

A large number of participants ($n=84$) read 12 experimental items containing the Dutch equivalent of OTOH. The items were interspersed with 60 items from an unrelated study.

The results showed that reading times at Dutch OTOH were shorter when Dutch OT1H was present compared to when it was not (first pass duration: $\beta = -57.4$; $SE = 9.49$; $t = -6.05$; $p < .001$; regression path duration: $\beta = -56.02$; $SE = 17.19$; $t = -3.26$; $p < .01$; total fixation duration: $\beta = -63.6$; $SE = 19.83$; $t = -3.2$; $p < .01$).

Discussion and conclusion

The results show evidence of the possibility of cross-sentence prediction in English and in Dutch, but the difference in strength of the effect (in English only in early processing measures; in Dutch in early and late processing measures) raise further questions about the factors that drive coherence expectations – are the expectations properties of the Dutch items that may have favored a subsequent contrast more strongly than the English items? Or are there more general differences across two (closely related) languages regarding speakers' discourse structure and their explicit marking of discourse relations?

References

- Köhne, J., & Demberg, V. (2013). The time-course of processing discourse connectives. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 35, No. 35).
- Rohde, H., & Horton, W. S. (2014). Anticipatory looks reveal expectations about discourse relations. *Cognition*, *133*(3), 667-691.
- Scholman, M. C., Rohde, H., & Demberg, V. (2017). “On the one hand” as a cue to anticipate upcoming discourse structure. *Journal of Memory and Language*, *97*, 47-60.
- Xiang, M., & Kuperberg, G. (2015). Reversing expectations during discourse comprehension. *Language, Cognition and Neuroscience*, *30*(6), 648-672.