

'Nonetheless' can reverse predictions immediately: evidence from ERPs

Yana Arkhipova (y.arkhipova.17@ucl.ac.uk), Ryan Law (UCL), Ming Xiang (University of Chicago) & Wing Yee Chow (UCL)

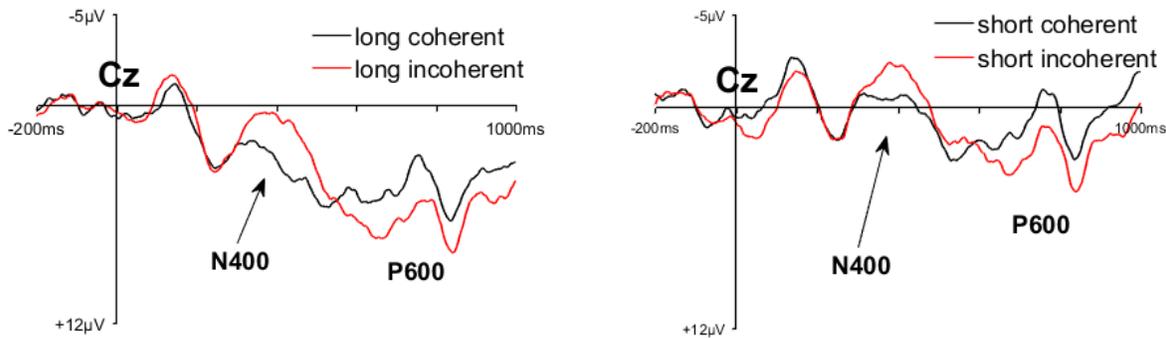
Concessive connectives such as 'however' and 'nonetheless' serve a key role in guiding language comprehension. They are critical in establishing coherence across sentences as they signal that the current proposition is to contradict or contrast with the prior discourse context [1]. A recent event-related potential (ERP) study examined how comprehenders process short stories with (or without) the concessive connective 'even so' in the target sentence [2]. They found a reduced N400 response to coherent critical words relative to incoherent critical words in both cases and suggested that comprehenders can use 'even so' to reverse their expectations about upcoming input on the fly. Meanwhile, however, some have suggested that related linguistic devices such as negation and quantifiers like 'few' and 'rarely' may not be processed fully incrementally [3-4, c.f. 5]. Further, as recent work suggested that some predictive computations may take longer than others (e.g., using argument roles in verb prediction [6]), questions remain as to how quickly concessive connectives can reverse comprehenders' predictions in real time.

The present study set out to ask how quickly comprehenders can use the concessive connective 'nonetheless' to reverse their predictions using ERPs. Following [2], we manipulated the coherence (and cloze probability) of the critical word by changing the prior context. Further, we manipulated the distance between 'nonetheless' and the critical word by placing 'nonetheless' either at the beginning of the target sentence or immediately prior to the critical word, resulting in a 2 (coherent vs. incoherent) x 2 (long vs. short distance) design. A total of 120 sets of stimuli were intermixed with 60 filler items which did not contain any connectives.

Condition	Context	Target sentence	Cloze (sd)
Long Coherent	The tourist wanted to get back to his hotel. He had a map of the city for directions.	<i>Nonetheless</i> , he was <u>lost</u> in the city's winding streets.	0.41(0.21)
Long Incoherent	The tourist wanted to get back to his hotel. He couldn't find his map and there was no one he could ask for directions.	<i>Nonetheless</i> , he was <u>lost</u> in the city's winding streets.	0.02(0.04)
Short Coherent	The tourist wanted to get back to his hotel. He had a map of the city for directions	He was, <i>nonetheless</i> , <u>lost</u> in the city's winding streets.	0.37(0.21)
Short Incoherent	The tourist wanted to get back to his hotel. He couldn't find his map and there was no one he could ask for directions.	He was, <i>nonetheless</i> , <u>lost</u> in the city's winding streets.	0.03(0.05)

If comprehenders can reverse their predictions immediately upon encountering 'nonetheless', then we should see a clear N400 effect (coherent < incoherent) in both the long- and short-distance conditions. Alternatively, if the contextual effect triggered by 'nonetheless' is dependent on the amount of time participants have to process 'nonetheless', then the N400 effect might be reduced (or even reversed) in the short-distance conditions compared to the long-distance conditions. Results (n=27) revealed qualitatively similar ERPs across the short- and long-distance conditions, with coherence eliciting a clear N400 effect followed by a P600 effect in both cases. We tentatively take these findings to suggest that comprehenders were able to reverse their predictions immediately upon encountering a concessive connective, and attribute the P600 effect to incongruity detection. We are currently conducting two follow-up experiments to investigate whether the lack of an effect of distance may have been due to the frequent occurrence of 'nonetheless' and the absence of non-concessive connectives in the experimental stimuli.

Figure 1. Grand averages ERPs at the critical word in the long-distance (left) and short-distance (right) conditions at the central electrode CZ. Negativity is plotted upwards.



	<i>df</i>	350-450 ms	600-800 ms
Coherence	1,26	20.925**	9.664*
Distance	1,26	32.412**	59.912**
Coherence × Distance	1,26	2.477	<1

Table 1. Two-way repeated measures ANOVA *F*-values at the critical word. The analysis was conducted on average ERPs taken from 15 central and posterior electrodes (CZ, PZ, OZ, C3/4, CP1/2, CP5/6, P7/8, P3/5, and O1/2). **p* < .01, ***p* < .001

References:

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