

Experientiality markers in memory reports: A semantics-pragmatics puzzle

In a nutshell. We give experimental support that German free relative *wie*- [‘how’] complements embedded under the memory predicate *noch wissen* [‘still know’] mark the remembering of a personally experienced event. Our main experiment, based on scale judgements, raises questions about the pragmatics-semantics interface of this phenomenon, and about the robustness of experiential memory markers in general. Two complementary studies address these questions.

Background. The complex German memory predicate *noch wissen* (lit. ‘still know’), can combine with a declarative *dass* [‘that’] clause (1b) and with an eventive-*wie* [‘how’] free relative (1a):

- (1) a. *Ich weiß noch, wie Oma im Meer geschwommen ist.*
 I know still how Grandma in-the sea swim is
 ‘I remember Grandma swimming in the sea.’
 b. *Ich weiß noch, dass Oma im Meer geschwommen ist.*
 I know still that Grandma in-the sea swim is
 ‘I remember that Grandma was swimming in the sea.’



Dass-clauses and *wie*-free-relatives can be coordinated under *noch wissen*. Therefore, we assume a uniform semantics for *noch wissen* in (1a) and (1b) (cf. Sadock and Zwicky, 1975), such that these sentences form a minimal pair.

Most theories of memory distinguish experiential remembering (i.e. recall of a personally experienced event) from ‘fact-only’ remembering, i.e. recall of general facts based on indirect evidence (Tulving, 1972). In our experiments, we introduce the siblings Red and Blue (wearing name-matching clothes; alongside their control cousin Pinkie) to personify these kinds of experience:

- (2) a. Red spent the summer two years ago with Grandma and saw her swimming in the sea.
 b. Blue spent that summer abroad and was told about Grandma’s swimming much later.

Based on our intuitions and in line with literature on non-manner ‘how’ (Umbach et al., 2022), we expect (1a) to unambiguously report experiential memory (Red, (2a), 1st picture) while (1b) is expected to report both fact-only (Blue, (2b), 2nd picture) and experiential memory. By confirming this, we provide the first empirical evidence for experientiality markers in memory reports.

Our **Main Experiment** is a Qualtrics online study asking for judgements on a scale from 1 (*gar nicht richtig*, ‘not correctly at all’) to 7 (*völlig richtig*, ‘absolutely correctly’) for sentences describing a given scenario. We recruited 40 German native speakers via Prolific, excluded three based on low control performance, and tested within-subjects. Independent variables were the complementizer (values: WIE, DASS; see (1)) and the character uttering the sentence (values: RED, BLUE; see (2)), resulting in four items per scenario and 16 target items – 4 per condition – in sum, augmented with 16 controls. Based on our background assumptions and literature-informed expectations sketched above, we formulated two hypotheses. **Hypothesis A:** Higher ratings for the RED+WIE than for the BLUE+WIE condition; and **Hypothesis B:** Higher ratings for BLUE+DASS than for BLUE+WIE. Both together would show that *wie* in *noch wissen* reports is an experientiality marker in the sense that it disambiguates for experiential memory in contrast to *noch wissen, dass*.

Descriptive Statistics: Hypothesis A was clearly confirmed with an extremely strong contrast (see table for means of all datapoints and standard deviation; see Figure 1

	RED	BLUE
WIE	$\mu = 6.80$ ($\sigma = 0.54$)	$\mu = 3.78$ ($\sigma = 1.98$)
DASS	$\mu = 6,69$ ($\sigma = 0.61$)	$\mu = 4.80$ ($\sigma = 1.91$)

for quartiles and outliers). Hypothesis B was also confirmed, but with a weaker contrast due to the lower-than-expected rating of BLUE+DASS. We are confident that these contrasts will be shown to be highly significant in our inferential statistics performed in January, applying an ordinal cumulative link mixed effect model (for motivation of the choice, see Liddell and Kruschke, 2018).

Speaker-ID Experiment: The set-up and the phrasing of the scale labels of the Main Experiment were aimed at truth-conditional semantics (see Zhu and Ahn, 2023, for the influence of instructive formulations on results). To control for pragmatic competition, we ran a smaller experiment (n=30, 4 target + 4 control items) in a speaker-identification format (inspired by Davis and Landau, 2021) with the same background story and sentences as the Main Experiment. In the speaker-ID format, participants had to select exactly one character who uttered the sentence. The independent variable here was the complementizer. The nature of the evidence (RED vs. BLUE) was turned into the dependent variable, leading to a 2x2 set-up. We confirmed **Hypothesis I** – RED was selected more often (84%) in the WIE condition – and **Hypothesis II** – BLUE (64%) in the DASS condition.

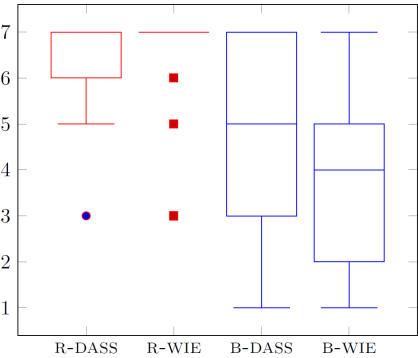


Figure 1: Ratings Main Exp.

Discussion: Experiment 1 on its own suggests that *wie* is an episodicity marker in the sense of decreased acceptability of *noch wissen*, *wie* in a fact-only scenario. It leaves room, in principle, to reason that this could be due to pragmatic competition with *noch wissen*, *dass* which is preferred for independent reasons in the fact-only case. The fact that the preference for BLUE in the DASS condition was much weaker than the preference for RED in the WIE condition suggests the opposite: *wie* is limited to experiential remembering semantically, *dass* can be used in both cases. Maximizing precision in the fact-only case leads to a pragmatic preference of *noch wissen*, *dass*.

A Puzzle: That BLUE+DASS scored much lower than RED+WIE in our Main Experiment is a surprise: Since BLUE+WIE has even lower ratings, there are participants who do not grant Blue *any* kind of remembering even though they have reliable indirect evidence. The high σ for BLUE+DASS and a look at the individual participants’ answers suggest a divide: One group of participants is in line with our semantic-pragmatic explanation above while others have stricter conditions on memory – in the scale format of our Main Experiment, that is! If experiential remembering was just always ‘the real’ memory, we wouldn’t expect a preference for BLUE in the DASS condition in the Speaker-ID Experiment. The solution we suggest is that the forced choice design gives rise to the pragmatic competition we intended while our judgement scale design is sensitive to the accommodation of different Questions Under Discussion (QUD): That the grandchildren are said to exchange stories of the old time might lead some people to accommodate a QUD like ‘Who was there when that happened?’. We plan to test this explanation by contrasting the Main Experiment with a version of it introducing a QUD like ‘Who knows the most facts about Grandma?’

The question remains how broad the phenomenon of experientiality markers is. Our **English Scale Experiment** (n=29, 8 target items) is a first hint that it might be quite robust. It is mostly equivalent to the Main Experiment, but with the memory predicate *remember* and the hypothesized marker gerundive *-ing* small clauses in contrast to *that*-clauses (i.e. the translations in (1); inspired by Bernecker, 2010). The results, including the puzzle on BLUE+DASS, closely resemble the German results. This suggests a phenomenon that ranges over languages, memory predicates, and structures marking experientiality. A preregistered study (n=100) with our scale design contrasting German present and past tense in the complement of *noch wissen* follows in February 2024.

Bernecker, S. (2010). *Memory*. Oxford University Press. · Davis, E. E. and B. Landau (2021). *Seeing vs. seeing that*. In Proceedings of ELM 1, pp. 125-135. · Liddell, T. and J. Kruschke (2018). *Analyzing ordinal data with metric models: What could possibly go wrong?* Journal of Experimental Social Psychology, 328-348. · Sadock, J. M. and A. M. Zwicky (1975). *Ambiguity tests and how to fail them*. In J. Kimball (Ed.), Syntax and Semantics, Vol. 4, pp. 1-36. New York. · Tulving, E. (1972). *Episodic and semantic memory*. In E. Tulving and W. Donaldson (Eds.), Organization of Memory, pp. 381-402. New York: Academic Press. · Umbach, C., S. Hinterwimmer, and H. Gust (2022). *German wie-complements: Manners, methods and events in progress*. Natural Language and Linguistic Theory 40, 307-343. · Zhu, Z. and D. Ahn (2023). *Effects of instruction on semantic and pragmatic judgment tasks*. In Proceedings of ELM 2, pp. 322-33.