

## Deriving the *wenn/falls* contrast in German as a scalar implicature: with experimental evidence

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The meaning of conditionals and that of conditional connectives (CCs) such as the English *if* has been long debated in the formal semantic literature. In the restrictor analysis proposed by Kratzer (1986, 1991), *if* does not have a distinctive conditional meaning on its own and *if*-clauses are used to restrict modal operators or generic frequency operators. This analysis of conditionals and CCs has inspired many insightful follow-up studies through which it becomes clear that the interpretation of conditional sentences is subject to a process of semantic and pragmatic modulation. What remains understudied, however, is the role of CCs in the modulation process. Visconti (1996), for example, argues that CCs can contribute secondary – in recent terms, ‘non-at-issue’ – meanings concerning a ‘propositional attitude’ such as the speaker’s epistemic, deontic or emotional evaluation towards the antecedent or the consequent. Here, we will focus on the two German CCs *wenn/falls* and argue that their essential contrast can be modeled on a scale of epistemic commitment towards the antecedent, that is, ‘More committed <‘*wenn*’, ‘*falls*> Less committed’ (Giannakidou 2014, Giannakidou and Mari 2015). We will argue for this analysis based on their distributional properties and additional experimental evidence.

Distributionally speaking, both *wenn* and *falls* are compatible with indicative conditionals and they both license NPIs (1a). Thus, they are nonveridical operators w.r.t. the conditional antecedent and give rise to an ignorance implicature concerning the antecedent. However, they differ, among others (e.g. the presence/lack of temporal meaning), in the following aspects: First, unlike *wenn*, *falls* cannot be used in factual conditionals (1b). Secondly, unlike *wenn*, *falls* is assumed to be degraded in counterfactual conditionals (IDS Grammatik: p.2281), see (1c). Thirdly, unlike *wenn*, *falls* cannot be used for counterfactual exclamatives (1d). Fourthly, unlike *wenn*, *falls* is degraded in occurrence with factive evaluative adverbs such as *leider* (Liu 2012). Last, unlike *wenn*, *falls* is degraded in conditionals modified by the quantifying adverb *immer* ‘always’ as shown in (1e) (Zarffarer 1991, p.216)

- (1) a. *Wenn/Falls Du auch nur irgendeinen Arzt kennst, schreibe mir bitte.*  
wenn/falls you even any doctor know, write to me please.  
‘If you know any doctor, please write to me.’
- b. *Wenn/#Falls Kai krank ist, muss das Seminar ausfallen.*  
wenn/falls Kai sick is, must the seminar be cancelled  
‘Given that Kai is sick, the seminar must be cancelled.’  
(In a context where Peter’s sickness is presupposed.)
- c. *Wenn/#Falls Kai krank gewesen wäre, hätte das Seminar ausfallen müssen.*  
Wenn/falls Kai sick become were, had the seminar be cancelled must  
‘If Kai had become sick, the seminar would have been cancelled.’
- d. *Wenn/#Falls ich reich wäre!*  
wenn I rich were (‘If only I were rich!’)
- e. *Wenn #Falls Benni leider fehlen wird, werde ich enttäuscht sein.*  
wenn/falls Benni unfortunately be absent will, become I disappointed be  
‘If Benni is unfortunately absent, I will be disappointed.’
- f. *Immer wenn/\*falls Steffi gewinnt, wird gefeiert.*  
Always wenn/falls Steffi wins, will celebrated  
‘Always, when Steffi wins, there will be celebrations.’

These distributional differences can all be accounted for by putting *wenn/falls* into a scale of commitment strength so that *falls* carries a scalar implicature (SI) that the antecedent is not likely: 1) *falls* is incompatible in factual conditionals, because there the antecedent is presupposed, which is incompatible with the unlikelihood SI; 2) the degradedness of *falls* in counterfactual conditionals or counterfactual exclamatives might be due to a semantic redundancy, i.e. the antecedent is false and due to *falls* held not to be likely, and 3) the degradedness of (1e) is due to the mismatch between *falls* and *leider* in terms of epistemic

commitment towards the antecedent. 4) While Zarffarer blames the ungrammaticality of (1f) with *falls* on its ‘singularity’ that clashes with the plurality of *immer* ‘always’, we propose alternatively that the clash results from a presupposition failure: the quantifying adverb presupposes there exists at least one case/event of Steffi’s winning, which contradicts the SI by *falls*. Furthermore, with this analysis, we can also predict correctly the interpretations for *wenn - nicht falls* ‘when - not if’ and *falls - nicht wenn* ‘if - not when’ (examples omitted for space reasons). The first involves the cancellation of the SI and the latter its reinforcement.

Supplementary to the SI analysis, we can treat *falls* as an attitudinal expression at a separate (thus non-at-issue) layer of doxastic states, i.e. ‘ $\lambda P$ .not-likely(P,x)’, with x as a free variable. The reason why we incorporate the free variable in the lexical entry is that the attitudinal agent is typically the speaker, but it doesn’t have to be the case. In (2), for example, the attitude can be attributed to the sentence subject, Stefan.

(2) *Stefan hat seine Frau mit einer Scheidung bedroht, falls sie eine Affäre hat.*

Stefan has his wife with one divorce threaten, falls she one affair has

‘Stefan has threatened his wife with a divorce, in case she is having an affair.’

To test the analysis, we conducted a production experiment using the forced lexical choice paradigm. We did the production study because comprehension experiments might not be the right method for testing such subtle pragmatic differences. The experiment used a 2 x 3 factorial design with the factors ‘Context’ and ‘Connective’. The Context factor had two levels, encoded in the sentence preceding the conditional sentence: Either the protagonist believes the content of the antecedent or not; the third-person protagonist was used to avoid egocentric perspective taking by subjects. The Connective factor has three levels: *wenn*, *falls* and a mismatching control item e.g. *oder*. Participants were asked to make a choice, as in the example scenario of (3). The experiment used 24 test scenarios and 48 filler scenarios.

(3) *Kathi hat morgen für einen Tag freigenommen. Sie {glaubt / glaubt nicht} dass es morgen regnet und denkt: \_\_\_\_\_ es morgen regnet, bleibe ich zu Hause.*

(‘Kathi has taken tomorrow off. She {believes / doesn’t believe} that it will rain tomorrow and is thinking: \_\_\_\_\_ it rains tomorrow, I will stay at home’)

a. **wenn**                      b. **falls**                      c. *oder*

Based on our main hypothesis that *falls* is related to a low degree of epistemic commitment towards the antecedent in contrast to *wenn*, we derived two predictions: 1) *Falls* would be less preferred than *wenn* in scenarios where the protagonist has a high degree of belief in the content of the antecedent and 2) *falls* would be preferred over *wenn* in scenarios where the protagonist has a low degree of belief in the antecedent. The results clearly confirm both hypotheses, the details of which we will discuss in the presentation.

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