

Influence of modality markers on the conditional interpretation of the German preposition *ohne*

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Abstract

This paper investigates the impact of modality markers on the conditional interpretation of the German preposition *ohne* ('without'). It tackles the question whether it is the preposition itself that possesses a conditional sense or whether it may be due to a modal context that the interpretation arises. The paper presents an annotation study for modality factors (e.g. mood, modal auxiliary verbs, modal adjectives, modal adverbs, modal infinitives, negation) in the context of these sentences. The statistical analysis of the data has been carried out by means of a correspondence analysis in order to identify the relevant factors for the conditional interpretation. The results suggest that primarily the verb mood has an influence.

1 Conditional interpretation of *ohne*

Conditionality can be expressed by a variety of linguistic means. The most typical form is the conditional sentence that is signaled by the subordinators *if... then...* and establishes a relation between a condition in the antecedent and a depending state of affairs in the consequent. The conditional relation belongs to a subgroup of CCC relations, as they are sometimes referred to (Kortmann, 1997), standing for conditionals, causals, and concessives. But although

conditionality is an attested interclausal relation, there are examples in which the same relation is expressed by prepositional phrases, e.g. (1).

- (1) *Ohne größere Wanderung ist es kaum möglich die Insel kennenzulernen.*
Without bigger hike is it hardly possible the island to.get.to.know
'Without a long hike it is almost impossible to get to know the island.'

The paraphrase of (1) as a conditional sentence stresses the conditional relation: "*If there is no long hike, it is almost impossible to get to know the island.*" In the paraphrase the subordinated *if*-clause expresses the condition in the antecedent, while the matrix clause expresses the depending state of affairs in the consequent. As the preposition *ohne* carries an inherent negation, the negation become explicit in the paraphrase with the *if*-clause. In the former example (1) solely the *ohne*-PP constitutes the antecedent and expresses the condition, which is precisely a negative condition. Negative condition is defined by Kortmann (1997:86) as "*If not p, q: The coming of about q depends on the nonfulfillment of p.*"

But should the preposition *ohne* ('without') hence be attributed a negative conditional interpretation? The preposition *ohne* expresses that something is lacking or absent in general. The set of all senses and subsenses (which are indicated by the underscore) for German *ohne* can be found in Table 1 (cf. Müller and Roch, 2012). Examples are provided in English.

meaning	example
absence	He likes the house without a garden.
modal	
_instrument	He opened the door without a key.
_manner	He walked all the way without shoes.
participation	
_comitative	He went home without his brother.
restrictive	He paid 200 \$ without the taxes.
statement	He must be at home without doubt.
governed	He can do without water a few days.

Table 1: Prepositional meanings of *ohne*/‘without’

From the lexical resources of German it is reasonable to assume a conditional interpretation. The dictionary of Kempcke (2000) and the dictionary of prepositions by Schröder (1986) list conditional interpretations for *ohne*. But I will argue that there are actually four different interpretations in the class of CCC relations possible for *ohne*. The interpretations are exemplified in Table 2 with examples from English. The examples are relatively similar, because only minor changes in mood and tense of the verb or the addition of an adverb is required in order to arrive at one of the other interpretations within this subclass.

CCC meaning	example
conditional	Without a hike it is impossible to get to know the island.
causal	Without the hike (which was cancelled) we did not get to know the island.
concessive	Even without the hike (which was cancelled) we got to know the island.
conditional-concessive	Even without a hike it is possible to get to know the island.

Table 2: CCC relations of *ohne*/‘without’

Nevertheless, one has to ask what the semantic contribution of the preposition is. There are three hypotheses available. First, one could suppose that *ohne* possesses a conditional aspect of meaning which goes in accordance with the dictionaries. Secondly, it would also be possible that the preposition has one of its typical other interpretations like ‘privation’ or ‘negation’. Third option is that *ohne* does not carry any meaning at all in these sentences and is semantically vacuous.

For the German preposition *bei*, Grabski and Stede (2006) assume that instead of showing a conditional interpretation, the preposition is left lexically underspecified. According to them the conditional relation is only interpreted by the speaker. It is a slightly different case with *ohne*, as it adds at least the negation.

Clearly, if the second or third option pertains, we have to ask how the conditional interpretation arises in the first place. A possible solution would be to assume that conditionality arises from other factors in the clause, either lexical or constructional. If this solution is viable, the conditional interpretation of *ohne* could be regarded as a pseudo interpretation instead of listing it as one of the senses of the preposition.

2 Modality markers in context

In connection with these considerations we can crucially observe that the conditional interpretation is mostly accompanied by a modal sentence context. One can observe a wide range of modality markers as e.g. subjunctive mood, modal auxiliary verbs, modal adjectives, modal adverbs, the modal infinitive etc. All these modality markers have of course an influence on the factual status of a sentence as they leave it open whether some statement is or becomes a fact in the world. The negation also occurs quite frequently in the context of these sentences. It is an important factor as well as it changes the validity of a statement. Apart from that generic readings are also frequent and must be taken into account. The following examples for the conditional interpretation of *ohne* shall exemplify the prominence of modality contexts.

- (2) *Ohne technische Kenntnisse*
 Without technical knowledge
kann man das nicht reparieren.
 can.MODAUX one this not.NEG repair
 ‘Without technical knowledge one cannot repair it.’
- (3) *Er hätte vielleicht*
 He have.SBJV maybe.MODADV
ohne Fehlurteil eines Kampfrichters
 without misjudgment of.a referee
seinen ersten Sieg erreichen können.
 his first victory achieve can.MODAUX
 ‘Without the misjudgment of a referee he maybe could have achieved his first victory.’

In example (2) modality markers are the modal auxiliary verb *können* ('can'), and a negation. The sentence also exhibits a generic interpretation which is indicated by the German pronoun *man* ('one'). Modality is signaled in example (3) by the subjunctive mood in the verb (German *Konjunktiv II*), by the modal adverb *vielleicht* ('maybe') and the modal auxiliary verb *können* again. The occurrences of modality markers and negation etc. are noticeable in the examples. It stands to question what their influence is and whether they may establish the conditional interpretation. The aim of the paper for the moment is to identify the influencing modal factors of the interpretation. The explanation of the data is left for future work.

3 Annotation of modality factors

In order to shed some light on these questions we present a corpus study, which investigates the influence of modality markers on the conditional interpretation. Annotation has been carried out manually for 1332 sentences with an *ohne*-PP. The data set is a part of the NZZ (Neue Zürcher Zeitung) newspaper corpus and already contained annotations for preposition meanings of *ohne* provided in the Bochum preposition project¹. Table 3 gives the exact numbers of the preposition meaning distribution in the data sample².

preposition meaning	number of sentences
1_participation	51
2_causal	28
3_conditional	514
4_conditional_concessive	67
5_concessive	66
6_modal	308
7_governed	8
8_restrictive	9
9_absence	280
10_statement	1

Table 3: Distribution of preposition meanings

¹ http://www.linguistics.rub.de/~kiss/dfg_projekt.html

² The meaning '10_statement' does not appear in the analysis, as it has too few instances and was excluded during aggregation. The subsenses exemplified in Table 1 are not distinguished as they are not relevant for the task at hand. The sample is not balanced, but results have proven to be stable with 2000 sentences. As the annotation of the whole dataset of 4216 sentences is not complete the findings must be considered preliminary.

The following list contains the relevant factors for the annotation and the respective values that can be chosen inside a category. The category 'mood_tense' is a combination of the German mood (indicative, imperative, conjunctive I, conjunctive II (subjunctive)) and tense form of the verb (present, preterite, perfect, pluperfect, future I and future II, including infinitives that have no tense). The values for 'mood_tense' can become 'no' if there is no verb available in the sentence. The category 'modal_marker' is also in need of explanation. It subsumes the different markers modal auxiliary verb, modal adjective, modal adverb, and modal infinitive. It becomes 'mod' as soon as one of the modality markers is present, else it must be 'no_mod'.

- mood_tense: {Ind, Imp, KonI/II, no_Pres, Pret, Perf, Plu, FutI/II, Inf, no}
- negation: {neg, no_neg}
- modal_marker: {mod, no_mod}
(‘mod’ if modal auxiliary verb, or modal adjective, or modal adverb, or modal infinitive = yes, else ‘no_mod’)
- generic_specific_reading: {gen, spec}

An annotation example for the modality factors is presented in (5). The annotations belong to the sentence in (1) which is repeated once again in (4):

(4) *Ohne größere Wanderung ist es kaum möglich die Insel kennenzulernen.*
Without bigger hike is it hardly.NEG possible.MODADJ the island to.get.to.know
'Without a long hike it is almost impossible to get to know the island.'

- (5) Annotations for example (4)
- mood_tense (*ist*): Ind_Pres
 - negation (*kaum*): neg
 - modal_marker (*möglich*): mod (modal adjective = yes)
 - generic_specific_reading: gen

4 Correspondence Analysis (CA)

Correspondence analysis (CA, Benzécri, 1973; Clausen, 1998) has been chosen for the statistical analysis. It is a method of multivariate statistics and is suitable to handle categorical variables, like those introduced in (5). Correspondence analysis produces a low-dimensional map in which associations between variables become visible. There are several implementations of correspondence analysis in the R environment available, e.g. in the *ca* package by Nenadić and Greenacre (2007) or in the *languageR* package by Baayen (2008) via the function *corres.fnc*.

As the standard input format correspondence analysis takes a cross tabulation. In the present case it is a cross tabulation of the variable ‘preposition meaning’ and an interactive variable³ of all annotated factors. The interactive variable combines the annotations in one large variable of the general form ‘mood_tense.negation.modal_marker.generic_specific_reading’. The aim of the analysis is to reveal the hidden associations between the variables. The focus is of course on the conditional interpretation, and whether there are associations with the annotated modality markers.

Table 4 contains the principal inertias and a scree plot (obtained from the *ca* package) for the data. Inertia must be understood as variance. The values indicate how well a dimension explains the variation in the distances between categories in the map. The scree plot is a test that can be used to obtain the appropriate number of dimensions. It means that all dimensions before a clear break in the plot are considered relevant.

Principal inertias (eigenvalues):				
dim	value	%	cum%	scree plot
1	0.450588	47.9	47.9	*****
2	0.152640	16.2	64.1	*****
3	0.117962	12.5	76.7	*****
4	0.077014	8.2	84.9	***
5	0.060756	6.5	91.3	***
6	0.043893	4.7	96.0	**
7	0.020953	2.2	98.2	
8	0.016715	1.8	100.0	
Total	0.940503	100.0		

Table 4: Principal inertias (eigenvalues) of CA

³ Cf. Clausen, 1998 for the term ‘interactive variable’.

So due to this plot we should definitely include the first three dimensions in the analysis.

In the resulting map of correspondence analysis in Figure 1 the black labels represent the prepositional meanings (cf. Table 3) while the grey labels display the annotated combined modality factors. What immediately catches the eye is that Figure 1 shows a clear separation between the conditional interpretation and the other interpretations of *ohne* on the first axis. The interpretation of the map yields two important observations. The mood feature ‘subjunctive’ (German *Konjunktiv II*) is grouped in the map together with the conditional interpretation. It appears only in the positive space of the first axis. One can also say that these categories “correspond in space”, so we can assume that these variables are associated. Second observation is that the feature ‘no_negation’ is found in the map in a group with all the other interpretations of *ohne*. The opposite feature ‘negation’ occurs with the other interpretations only in a few exceptions. In the same area with the conditional interpretation, however, we find both values for negation, so negation is not required for a conditional interpretation, but it occurs quite seldom with the other interpretations of *ohne*. The features ‘modality_marker’ and ‘generic_specific_reading’ cannot clearly be set aside in the map, so it must be left open, whether these factors have any influence on the conditional interpretation. The correspondence analysis in the present case cannot explain the influence of these variables.

5 Conclusion

Correspondence analysis has proven a useful method to make associations between categorical variables visible. For the conditional interpretation of the preposition *ohne* it could be shown that there is a considerable influence of the subjunctive mood of the verb. Future studies with more data and reassessment of the factors will maybe reveal more insights into how the conditional interpretation arises.

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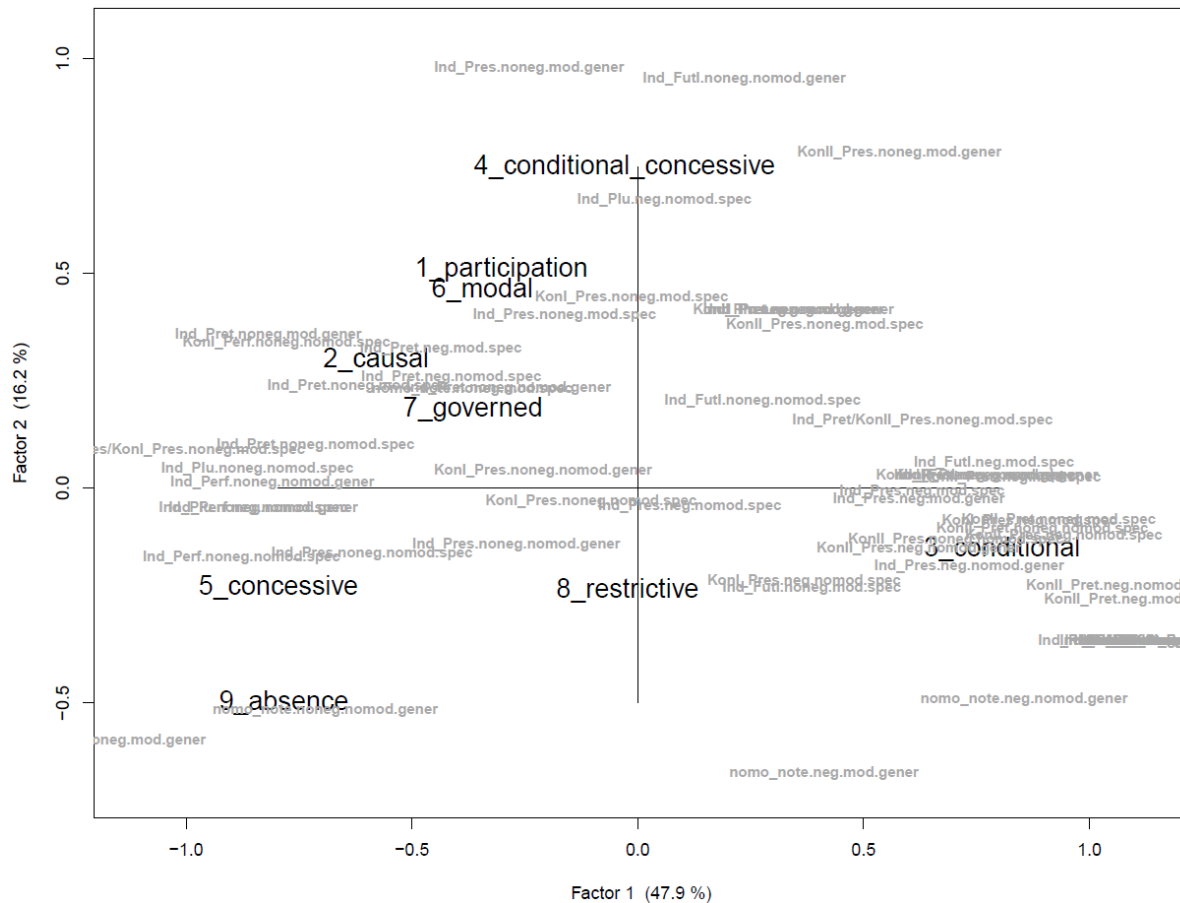


Figure 1: First two dimensions of CA

References

- Harald Baayen. 2008. *Analyzing Linguistic Data. A Practical Introduction to Statistics Using R*. Cambridge University Press, Cambridge.
- Jean-Paul Benzécri. 1973. *L'analyse des données. Volume II. L'analyse des correspondances*. Dunod, Paris.
- Sten-Erik Clausen. 1998. *Applied Correspondence Analysis. An Introduction*. Quantitative Applications in the Social Sciences, 121. Sage Publications, Thousand Oaks, CA.
- Michael Grabski and Manfred Stede. 2006. "Bei": Intraclausal Coherence Relations Illustrated With a German Preposition. *Discourse Processes* 41(2).
- Günter Kempcke. 2000. *Wörterbuch Deutsch als Fremdsprache*. De Gruyter, Berlin.
- Bernd Kortmann. 1997. *Adverbial Subordination: A Typology and History of Adverbial Subordinators Based on European Languages*. De Gruyter, Berlin/New York.
- Antje Müller and Claudia Roch. 2012. *Präpositionsannotation – Manual*. Bochum, Ms.
- Oleg Nenadić and Michael Greenacre. 2007. Correspondence Analysis in R, with Two- and Three-dimensional Graphics: The ca Package. *Journal of Statistical Software* 20(3).
- Jochen Schröder. 1986. *Lexikon deutscher Präpositionen*. VEB Verlag Enzyklopädie, Leipzig.