

Argument Omission between Valency and Construction

Evidence for Sentence Type Effects from Acceptability Rating Studies

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Abstract—Our paper deals with the omission of direct arguments in non-elliptical contexts. We argue that valency requirements do not suffice to explain argument omission and that sentence type also plays a crucial role. Our argumentation is based on a set of acceptability rating studies. We conclude with a proposal how our results could be modeled in the grammar.

Keywords—argument omission, valency, obligatory arguments; constructions, sentence type; acceptability rating studies

I. ARGUMENT OMISSION AND SENTENCE TYPE

It is a well-established fact that verbs play a crucial role for the obligatoriness of their complements (cf. e.g. [1]). In the sentence of German in (1), for instance, the direct argument of *abnehmen* 'pick up / to answer the phone' can be omitted, while the direct argument of *nehmen* 'take' in (2) must be realized, otherwise causing unacceptability.

- (1) [Context: A woman's phone is ringing.]
Sie nimmt (den Hörer) ab.
she.NOM picks.up.PRS.3SG the.ACC receiver.ACC VRB.PRT
'She picks up the receiver.'
- (2) [Context: A man hands his wife the shopping basket.]
*Sie nimmt *(den Korb).*
she.NOM takes.PRS.3SG the.ACC basket.ACC
'She takes the basket.'

As noted by [2] and [3], subcategorization frames are often determined with reference to declarative sentences like (1-2). The sentences in (2-3), however, illustrate that the obligatoriness of arguments is not stable across sentence types. Both sentences contain the same verb in the same reading and the contexts are nearly identical. Nevertheless, the direct argument of *nehmen*, which seems to be obligatory on the basis of (2), can be omitted in the corresponding imperative sentence in (3) with completely acceptable results.

- (3) [Context: A man hands his wife the shopping basket. He says:]
Nimm mal (den Korb)!
take.IMP.SG PRT the.ACC basket.ACC
'Take (the basket)!'

Obviously, the verb cannot be responsible for this change of obligatoriness. The sentences in (4) show that speech-act differences do neither suffice to explain differences in argument omission (AO): While AO is perfectly acceptable in the directive infinitive (4a), the direct argument in the directive imperative (4b) is just as obligatory as in the assertive declarative (4c).

- (4) a. [Context: Art exhibition]
Bitte (das Bild) nicht berühren!
please the.ACC picture.ACC not touch.INF
'Please don't touch the picture!'
- b. [Context: Art exhibition]
*Bitte berühr *(das Bild) nicht!*
please touch.IMP the.ACC picture.ACC not
'Please don't touch the picture!'
- c. [Context: Art exhibition]
*Er berührte *(das Bild) nicht.*
he.NOM touch.PST.3SG the.ACC picture.ACC not.
'He didn't touch the picture.'

A reduction of the AO problem to different verb moods is not a solution either, as demonstrated in (5). The sentence in (5a) is a plain directive imperative; (5b) a complex construction consisting of an imperative, the conjunction *oder*, and a declarative (cf. e.g. [4] and [5]), which we will henceforth call IoD. AO in the plain imperative might not be perfectly acceptable, but it is better than in the IoD.

- (5) a. [Context: At the office. A woman is recommending her mechanical pencil, gives it to a colleague and says:]
Benutz mal [?](den Bleistift)!
use.IMP PRT the.ACC pencil.ACC
'Try (the pencil)!'
- b. [Context: At the stationary shop. A student wants to buy a drawing pencil. Her friend is afraid she might buy the wrong one and says:]
*Benutz mal ^{??}(den Bleistift),
oder wir müssen morgen wieder los.*
use.IMP PRT the.ACC pencil.ACC
or we.NOM must.PRS.1PL tomorrow again ADV
'Try (the pencil), or we'll have to set off again tomorrow!'

Recently, sentence type constructions, which combine formal features of sentences like the verb mode with

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functional features like the illocution, have been proposed to account for certain differences in AO (cf. [6]). In that model, the possibility to omit direct arguments would be explained as a formal property of a sentence type. Our paper relates this proposal to findings from acceptability rating studies. In the following chapter, we will present our study and give first results for the influence of sentence types on AO. We will then introduce two kinds of sentence type effects and make proposals how to model them in the grammar.

II. ACCEPTABILITY RATINGS ON ARGUMENT OMISSION

A. Conditions of the Study

Our argumentation is based on a set of empirical studies which we conducted in a project on AO. The goal of that study was to show that valency as well as sentence type have an influence on the obligatoriness of arguments. At present, our study includes acceptability ratings of nearly 1,100 participants (all of them undergraduate students of linguistics at the University of Wuppertal), evaluating context-embedded sentences from a corpus of 500 test items with 43 different verb lexemes in different sentence types. Four of the verbs were tested with two different readings. The participants were asked to give judgments on test sentences in a given context, the only available options being “yes” (acceptable) and “no” (unacceptable). The tests were carried out under supervision. Each participant evaluated about 60 items per test, including distractors.

In the literature, other factors than valency and sentence type have been discussed as having an influence on AO. To these factors belong generic interpretations, contrast (for both cf. [7] and [8]), or genre (cf. [9], [10], and [11]), among others. Due to the focus of our study, we either excluded those additional factors in our test items (e.g. generic interpretations and contrast) or kept them constant (e.g. genre).

B. First Results

In this paper, we will concentrate on AO in assertive declaratives, directive imperatives, directive infinitives, and IoDs. Additional asymmetrical sentence types are discussed in [12].

We could indeed show that the four sentence types differ in their tolerance of AO. Table I and Fig. 1 illustrate that mean values vary widely and that the standard deviation for the directive infinitive is much lower than for the other three sentence types.

A typical example for sentence-type dependent tolerance of AO would be the verb *einschalten* 'to switch on'. Examples

TABLE I. AO AND SENTENCE TYPE

	infinitive	imperative	IoD	declarative
mean	82.7%	63.7%	48.3%	36.6%
range	49	94.7	89.3	97.8
standard deviation	10.7	31	30.8	32

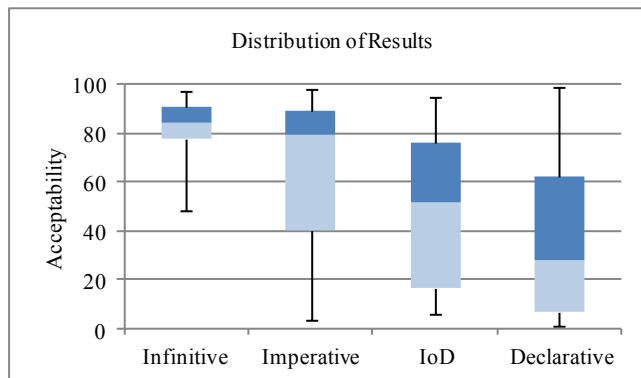


Fig. 1. Boxplot AO and sentence type

for test sentences with this verb are given in (6). Percentages indicate the results from our study; in the original tests, the sentences were given in context. Strikethrough text means that the respective words did not appear in the original test items.

- (6) a. [directive infinitive, 88.5%]
 [Context: A couple in their car. She says:]
Schnell ~~das~~ ~~Radio~~ einschalten!
 quickly the.ACC radio.ACC switch.on.INF
 'Quickly, switch on ~~the radio!~~'
- b. [directive imperative, 78.7%]
 [Context: A couple in their car. She says:]
Schnell, schalt ~~das~~ ~~Navigationssystem~~ ein!
 quickly switch.on.IMP.SG the.ACC navigation.system.ACC PRT
 'Quickly, switch on ~~the navigation system!~~'
- c. [IoD, 52.9%]
 [Context: A man returns to his office during a hot summer and sees that his colleague has switched off the ventilator. He says:]
Schalt ~~den~~ ~~Ventilator~~ wieder ein,
 switch.on.IMP.SG the.ACC ventilator.ACC again PRT
oder ich bekomme einen Hitzschlag!
 or I get a heat.stroke
 'Switch ~~the ventilator~~ back on, or I will suffer a heat stroke!'
- d. [assertive declarative, 28%]
 [Context: A couple after dinner. He says:]
Ich schalte ~~den~~ ~~Geschirrspüler~~ ein.
 I.NOM switch.on.PRS.ISG the.ACC dishwasher.ACC PRT
 'I switch on ~~the dishwasher.~~'

Having argued for an influence of sentence types on the obligatoriness of arguments, we want to systematize this influence as different kinds of sentence type effects.

III. SENTENCE TYPE EFFECTS ON ARGUMENT OMISSION

We follow the standard view of sentence type as a conventional pairing of a sentence form with a certain type of illocution [13]. Sentence types in German differ in the position of the finite verb, the verb mood and the presence of a *wh*-element. Typical examples for sentence types of German would be V2 assertive declarative sentences, V1 interrogative sentences or V1 imperative sentences.

Sentence types do not only impose restrictions on the linear order of words, but also on the realization of arguments.

With respect to subjects, this is not new. For example, it has often been mentioned that subjects of imperative sentences either do not have to be realized overtly (cf. [14]) or cannot be realized overtly (cf. [15] and [16]). We will call such a phenomenon a sentence type effect and apply it to other kinds of arguments as well.

A. Definition of Sentence Type Effects

We define a sentence type effect as the systematic influence of a sentence type on the (non-)realization of arguments in the respective sentence. Such an effect can be diagnosed if given verbs show clear differences in the acceptability of AO in the examined sentence types. We differentiate between a primary and a secondary sentence type effect.

We are dealing with a *primary sentence type effect* (PSTE) if a sentence type determines directly whether and which arguments can be omitted, regardless of the verb and its possibilities for AO in other sentence types. We are dealing with a *secondary sentence type effect* (SSTE) if the verb has a large influence on AO in the respective sentence type and there is a systematic relationship between the AO behavior in the respective sentence type and AO behavior in at least one other sentence type.

B. Manifestations of Sentence Type Effects in our Data

To argue for a PSTE in our data, we had to show (a1) that the results in the respective sentence type were not influenced by the verb and (a2) that the results for this sentence type were independent from the results for other sentence types.

For (a1), we correlated the mean acceptability values of all verbs across all four sentence types (MV) with the results of all verbs in the respective sentence type (RES), e.g. the MV with the RES of the directive infinitive (RES_{INF}). For a PSTE, there should be no significant correlation. For (a2), we correlated the RES of each sentence type with the RES of the other sentence types. For a PSTE, there should be no significant correlation between the sentence type in question and any of the other sentence types.

For an SSTE, on the other hand, we would have to show (b1) that the verb has an influence on AO in a sentence type, which should manifest itself in a significant correlation between the RES of the respective sentence type and the MV, and (b2) that there is a significant correlation between the RES of this sentence type with the RES of at least one of the other sentence types.

C. Results

For correlating the RES of the individual sentence types with the MV, we used Spearman's rank correlation, because the RES were not normally distributed. Table II shows that there is no significant correlation between the RES of the infinitive and the MV, fulfilling the first of two criteria (a1) for a PSTE. For declaratives, imperatives, and IoDs, on the other hand, there is a highly significant correlation between the respective RES and the MV, which means that for each of them, the first of two criteria (b1) for a SSTE is fulfilled.

TABLE II. CORRELATION OF THE RES OF ALL SENTENCE TYPES WITH THE MV (SPEARMAN'S *RHO*)

	r_s	df	p	Results influenced by lexeme?
RES _{INF} - MV	.239	44	.109	no
RES _{IMP} - MV	.90	44	.000	yes
RES _{IoD} - MV	.864	44	.000	yes
RES _{DECL} - MV	.851	44	.000	yes

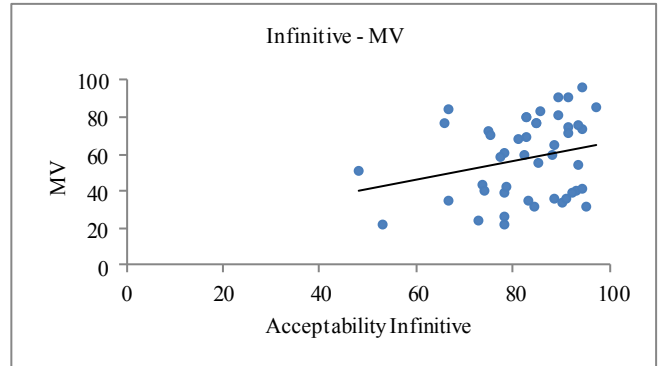


Fig. 2. Scatterplot of the MV and the RES_{INF}

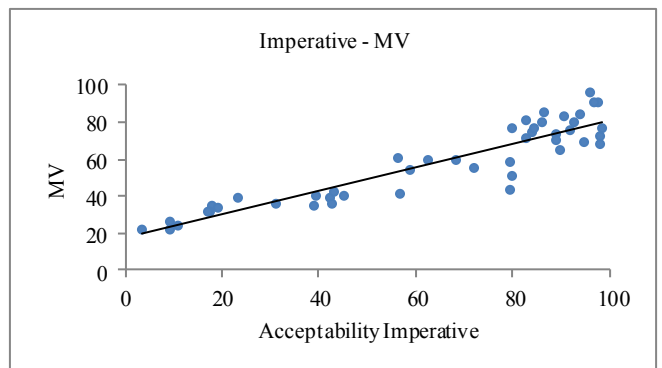


Fig. 3. Scatterplot of the MV and the RES_{IMP}

Fig. 2. illustrates the independence of the RES_{INF} from the MV. Most of the acceptability values for verbs in the infinitive are high. Low scores for individual verbs could be explained by preemption, caused by collocations in other sentence types: for example the low score for *nehmen* 'take' in the directive infinitive could be attributed to the established directive imperative *nimm (mal)*. For most of the lexemes there is an upward deviation in the infinitive.

Fig. 3 shows that the RES_{IMP} vary widely and can be related to the MV. The patterns of the declarative and the IoD, which are not shown here, are quite similar.

In a second step, we had to correlate the RES of the four sentence types with each other. The individual correlations for all six pairings are given in Table III.

TABLE III. CORRELATION OF THE RES OF ALL SENTENCE TYPES (SPEARMAN'S *RHO*)

	r_s	df	p	Results influenced by lexeme?
INF – IMP	.089	44	.558	no
INF – IoD	.028	44	.855	no
INF – DECL	.224	44	.135	no
IMP – IoD	.891	44	.000	yes
IMP – DECL	.630	44	.000	yes
IoD – DECL	.602	44	.000	yes

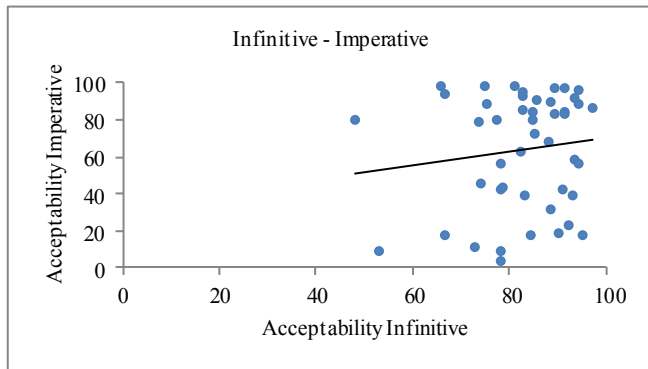


Fig. 4. Scatterplot of the RES_{INF} and the RES_{IMP}

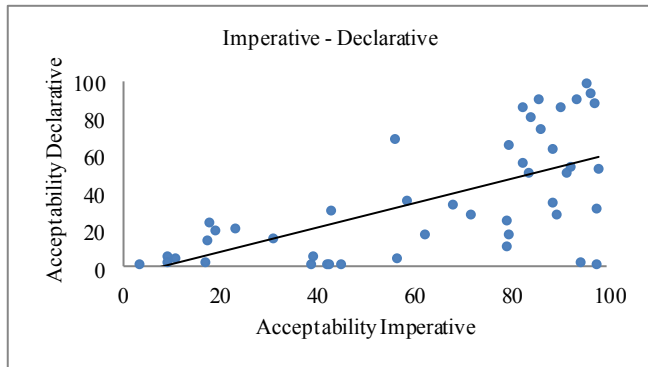


Fig. 5. Scatterplot of the RES_{IMP} and the RES_{DECL}

There is no significant correlation between the RES_{INF} and any of the other sentence types. This means that the infinitive also fulfills the second criterion for a PSTE. There are significant correlations, on the other hand, for all sentence type pairings in which the infinitive is not involved. This means that the second criterion for a SSTE is fulfilled for declarative, imperative, as well as for IoD. Fig. 4 illustrates exemplarily the non-significant correlation between infinitive and imperative, Fig. 5 the moderate correlation between imperative and declarative.

To sum up, there is a PSTE for the infinitive and a SSTE for imperative, declarative, and IoD: The results of the directive imperative, the assertive declarative, and the IoD are

affected by the verb, while the results of the directive infinitive are not. In the following, we will make a proposal for a grammatical description.

IV. HOW TO MODEL SENTENCE TYPE EFFECTS ON ARGUMENT OMISSION

Our findings on AO can be related to a larger debate about argument structure, which has been going on for about two decades: the attempt to replace bottom-up explanations, based on the properties of verbs, by top-down explanations, based on the properties of constructions (cf. e.g. [17]). While some models like [18] are purely constructional, others like [19] and [20] emphasize that both approaches are needed for an adequate grammatical description of a language. To account for the different manifestations of sentence types, we propose an analysis based on a division of labor between valency and constructions.

A. AO in the Infinitive: Sentence Type Constructions

In this framework, the directive infinitive is analyzed as a sentence type construction, in which the possibility to omit arguments is directly determined. Apart from the PSTE which we identified, there are several other arguments in favor of this analysis in the literature (cf. [6] and [21]): For instance, it can be shown that the omitted direct argument is syntactically active, that in spite of the infinite verb form we are dealing with independent main clauses with illocutionary potential, and that NPs in the nominative, which can appear optionally in directive infinitives, aren't subjects (cf. [22]). All these properties are idiosyncratic in nature and make the directive infinitive a good candidate for a constructional analysis.

B. AO in the Declarative: Valency

The RES_{DECL} , on the other hand, for which we can exclude a PSTE on the basis of our data, should be analyzed as verb-dependent. The strong influence of the verb becomes apparent by the heterogeneity of the RES_{DECL} . The low mean acceptability of the declarative suggests that it is also the most conservative sentence type with respect to AO (cf. Table I and Fig. 1). Indeed, for the verbs in our study, the RES_{DECL} are lower than the RES of the other sentence types, with only two cases which could be interpreted as counterexamples. As mentioned in section I., these results are in accordance with the standard assumptions of valency approaches, which usually refer to the declarative when determining subcategorization frames, because this sentence type is considered least susceptible to interfering factors.

C. AO in the Imperative: Mini-Constructions

The results for the directive imperative are more speculative at this point. Although the imperative directly determines a certain syntactic configuration (V1), which favors a constructional analysis on sentence type level, our exclusion of a PSTE rules out such an analysis. The RES_{IMP} is correlated with the RES_{DECL} , but mean values for the imperative are usually higher. While the results for some verbs

are close to each other, there are also many verbs with low results in the declarative and high results in the imperative.

One strategy to capture this behavior could be to analyze the imperative forms of individual verbs as constructions in their own right, so-called *mini-constructions* (cf. [23]). There are several arguments in favor of such form-meaning pairs on the level of inflection form. One of them, independent of AO, is that imperative forms do not belong to the regular inflectional paradigm of a verb, as they may exhibit certain idiosyncrasies (cf. [24]): While some irregularities, like vowel gradation in the strong verbs, are quite predictable, others, like realization of word-final schwa, are not.

In our study on AO, we found some additional idiosyncratic aspects of individual imperatives. For example, we had the impression that particularly high AO results in the imperative (in comparison with the overall performance of the respective verb) were often accompanied by a tendency of this verb to occur only with certain discourse particles (e. g. *nimm mal, gib mal, zeig mal*). If these discourse particles are omitted or exchanged, AO becomes worse, as illustrated in (7) for *nehmen* ‘take’. Such collocations of imperative forms and certain particles might also be analyzed as mini-constructions.

- (7) a. [directive imperative with *mal*, 98.4%]
 [Context: Father and son are unloading the car. The father gives a box to his son and says:]
Nimm mal den—Karton.
 take.IMP.SG PRT the.ACC box.ACC
 'Take ~~the box~~.'
- b. [directive imperative with *bitte*, 57.1%]
 [Context: A family on a holiday trip is unloading the car. The daughter doesn't want to help. The father gives her a suitcase and says:]
Jetzt nimm bitte den—Koffer
 now take.IMP.SG please the.ACC suitcase.ACC
 'Now take ~~the piece of luggage~~, please!'

For the verbs with very high AO results, the results for the corresponding directive infinitives (*nehmen! geben! zeigen!*) tend to be particularly low. The sentences in (8) illustrate this for *nehmen*. While the infinitive has a mean acceptability of 82.7%, the results for *nehmen* in the infinitive are much lower. In a situation in which the test sentence in (7a) might be used, the test sentence in (8a) should also be acceptable, but it is not. The sentence becomes better if information about the manner in which something should be done is added, as in (8b). This might be due to preemption: *Nimm mal!* as a holistic phrase is blocking the corresponding infinitive; in the presence of additional material as in (8b), this effect is canceled.

- (8) a. [directive infinitive, 30.4%]
 [Context: On a construction site. The mason gives a stone cutter to his apprentice, who has accidentally injured him before. He says:]
Hier, die—Steinsäge nehmen!
 Here the.ACC stone-cutter.ACC take.INF
 'Here, take ~~the stone-cutter!~~'
- b. directive infinitive, 65.8%
 [Context: On a construction site. The mason gives a stone cutter to his apprentice, who has accidentally injured him before. He says:]
Die—Steinsäge ganz vorsichtig nehmen!
 the.ACC stone-cutter.ACC really carefully take.INF
 'Take ~~the stone-cutter~~ really carefully!'

All these examples favor an analysis of at least some individual imperative forms as mini-constructions. We will leave open at this point whether all imperative forms or only those with a deviant AO behavior should be interpreted as such. For a discussion of AO in IoDs and similar structures, we refer to [12].

V. SUMMARY

Based on our acceptability rating studies, we proposed that the omission of the direct argument is governed by different principles in different sentence types. AO in the directive infinitive is directly determined by the sentence type, suggesting a constructional analysis with AO as a feature of a directive infinitive sentence type construction. In our terminology, this is an instance of a PSTE, similar to the non-realizations of subjects in directive imperatives. AO in the declarative, on the other hand, does not display such sentence type effects at all and therefore should be analyzed in a traditional valency approach.

The RES_{IMP} can be related to the RES_{DECL}, which means that the influence of the verb in the imperative is very high. Nevertheless, the RES_{DECL} and the RES_{IMP} are not identical, which indicates that sentence type also plays a role. In our terminology, we are dealing with a SSTE. This kind of sentence type effect, however, cannot be systematized as clearly as the PSTE for the infinitive. At least for the explanation of upward outliers, an analysis as mini-constructions seems promising for the imperative.

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