A Corpus-based Study of the German Recipient Passive

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Abstract
In this paper, we investigate the usage of a non-canonical German passive alternation for ditransitive verbs, the *recipient passive*, in naturally occurring corpus data. We propose a classifier that predicts the voice of a ditransitive verb based on the contextually determined properties of its arguments. As the recipient passive is a low frequent phenomenon, we first create a special data set focussing on German ditransitive verbs which are frequently used in the recipient passive. We use a broad-coverage grammar-based parser, the German LFG parser, to automatically annotate our data set for the morpho-syntactic properties of the involved predicate arguments. We train a Maximum Entropy classifier on the automatically annotated sentences and achieve an accuracy of 98.05%, clearly outperforming the baseline that always predicts active voice (94.6%).

Keywords: Voice Alternations, Argument Structure, Corpus-based Syntax

1. Introduction

Besides the regular passive voice, many languages exhibit so-called non-canonical passive constructions as for instance the *get* passive in English, the *se faire* passive in French or the recipient passive (also called *bekommen passive*) in German which will be the focus of this work. The genesis of these non-canonical passives and their grammatical restrictions have been subject to extensive debates in theoretical linguistics. In this work, we are interested in the usage of this alternation which we consider as a meaning-equivalent paraphrase of the regular passive and the active. This is illustrated in Example (1) which presents the realisation of a German ditransitive verb in active, passive and recipient passive voice.

(1) a. Der Kellner serviert den Gästen eine Flasche Wein.
   "The waiter serves the guests a bottle of wine."

b. Eine Flasche Wein wird den Gästen vom Kellner serviert.
   "A bottle of wine is served to the guests by the waiter."

c. Die Gäste bekommen vom Kellner Flasche Wein serviert.
   "The guests get served a bottle of wine by the waiter."

The aim of our study is to be able to predict the voice of a German ditransitive verb from its given context in a corpus sentence. More precisely, we pursue the hypothesis that the German recipient passive can be predicted from the contextually determined properties of its arguments (i.e. the definiteness of the agent, the person of the patient etc.). This hypothesis follows the work by Bresnan et al. (2005) who show that the usage of the English dative alternation is guided by statistical tendencies which can be modeled on the basis of multiple contextual factors.

Since the corpus-based modelling of linguistic alternations typically requires relatively “deep” linguistic information (e.g. morphological information about definiteness etc.), previous approaches usually rely on manually annotated treebank data. However, in the case of the German recipient passive, the construction is too low frequent in order to be appropriately represented in standard German resources. Therefore, in a first step, we built a specialised data set of occurrences of German ditransitive verbs, extracted from a set of German corpora. This data set was automatically annotated with the German LFG parser (Rohrer and Forst, 2006). In a second step, we exploit the automatically annotated sentences to train and test a maximum entropy classifier that is given the context of a ditransitive verb and predicts its voice. The classifier achieves an accuracy of 98.05% over a baseline of 94.6% which always predicts the active voice.

While previous work on the German recipient passive has mostly dealt with syntactic, semantic and stylistic restrictions on the phenomenon (Diedrichsen, 2004), the results presented in this paper suggest that the usage of the German recipient passive alternation is subject to soft syntactic and stylistic constraints that can be modelled by means of multiple contextual factors. The constraints we observed are very similar to factors found in previous work on different alternations and languages.

The remainder of the paper is structured as follows. We provide some background on related work in Section 2, and on the linguistic phenomenon in Section 3. In Section 4, we describe the construction of our data set. Our classification experiments and their results are presented in Section 5. In Section 6, we look at some of the features in more detail in order to see whether the model conforms to linguistic tendencies observed in previous works.
2. Related Work

There are a number of (mostly English) argument alternations or syntactic paraphrases that have been investigated in corpus-based linguistic studies, such as the English passive (Thompson, 1987; Bresnan et al., 2001), the English dative alternation (Bresnan et al., 2005; Arnold et al., 2000) or that-clause reduction (Levy and Jaeger, 2007). In these works, the use of an argument alternation in language is typically related to a number of properties of their arguments, e.g., definiteness, animacy or complexity of the involved noun phrases. In Aissen (1999) and Aissen (2003), this idea is described in terms of markedness hierarchies (which can be formalised as Optimality-theoretic constraints). These hierarchies associate argument functions with certain prototypical properties for person, animacy, or definiteness; e.g., subjects tend to be higher on the person scale than objects (1st person > 3rd person).

Depending on the language, these markedness hierarchies can be encoded as hard constraints in the grammar, or figure as soft, usage-related preferences. For the passive alternation, this contrast is nicely established in Bresnan et al. (2001) who investigate the relationship between voice and person in English and Lummi. In Lummi, the person hierarchy is encoded as a hard constraint into the grammar of the language such that the subject must be higher in the person hierarchy than the object. This hierarchy is illustrated in (1), meaning that in the case of a third-person agent and a first person patient, the verb is obligatorily passivised in order to be able to realise the first person entity as the subject.

\[ 1.\text{pers} \cup 2.\text{pers} > 3.\text{pers} \]  

(1)

Obviously, in English, there is no such hard constraint, both sentences in Example (2) are grammatical. Nevertheless, Bresnan et al. (2001) found a clear statistical tendency for English passivation in cases where the Lummi hard constraint would be violated, indicating that this hard constraint is present as soft constraint in English. In our work, we hope to find similar factors accounting for preferences of the recipient passive over the regular passive and the active.

(2) a. The man_{3ps} sees us_{1ps}  
   b. We_{1ps} are seen by the man_{3ps}

In a similar setting, Bresnan et al. (2005) investigate the English dative alternation. Verbs like give can have two variants of complements: two objects (the *double object construction*) or an object and a prepositional phrase, see Example (3).

(3) a. Susan gives the children toys  
   b. Susan gives toys to the children

A possible explanation for this syntactic variation could be the meaning of the event: is it a kind of movement (use of a prepositional phrase) or a change of state (use of a double object construction)? Actually, similar, purely meaning-based explanations have been proposed for the German recipient passive, as we discuss in the following Section. However, Bresnan et al. (2005) show that the alternation can be modeled taking into account a number of contextually determined argument properties, such as the complexity of the noun phrases, definiteness, pronominality, salience, number, and person. Based on these features, Bresnan et al. (2005) fit a logistic regression model that yields 94% prediction accuracy.

The methodology that is typically pursued in these theoretically motivated works on argument alternations is to hand-code a set of selected sentences where a specific alternation is displayed. By this means, the authors isolate the phenomenon under investigation relying on high-quality, manually annotated data. As a result, the obtained models allow for a detailed analysis of the individual contextual factors at play.

A somewhat different approach is taken in recent works from the domain of Natural Language Generation showing the relevance of syntactic alternations for computational applications. Rajkumar and White (2011) model the realisation of that-clauses in a grammar-base generation component taking into account the features proposed in Levy and Jaeger (2007). Zarrifie et al. (2011) generate passives interacting with free word order in German based on a linguistically-informed feature model that incorporates the relative hierarchy of the involved arguments.

In contrast to the previously mentioned theoretical works on argument alternations, these application-oriented works typically deal with more data where several syntactic variation phenomena interact. Also, Zarrifie et al. (2011) conduct their experiments on automatically parsed data, meaning that the statistical component has to deal with noise introduced from parsing errors. A further difference to investigations based on hand-coded data is the design of the feature model, and the type of argument properties taken into account. While Bresnan et al. (2005) encode the information status (or givenness) of the predicate arguments, the feature models in Rajkumar and White (2011) and Zarrifie et al. (2011) are based on morpho-syntactic information that can be extracted from automatically produced syntactic analyses. However, the information status of a noun phrase is often reflected in its morphosyntactic realisation, such that these automatically obtainable features typically provide relatively accurate models (Zarrifie et al., To appear).

The study of the German Recipient Passive that we present in this paper is clearly inspired from the theoretical approach pursued in Bresnan et al., 2001) or (Aissen, 1999). However, our ultimate goal is to inform generation-based approaches such as Zarrifie et al. (2011), where deep linguistic features such as informations status cannot be assumed to be available.

3. The Recipient Passive

In German, certain ditransitive verbs can be passivised in two different ways: (i) the patient or direct object can be promoted to a subject, (ii) the recipient or dative object can be promoted to a subject while the agent is demoted to an optional prepositional object. Both passives, the regular passive (i) and the recipient passive (ii) are formed by means of an auxiliary and the past participle of the main
verb. The auxiliary of the regular passive is werden (in English: be), while in the recipient passive bekommen (get) has to be used. Note that the verb bekommen (get) can also be used as a full verb in German.

The two main questions debated in the linguistic literature are (i) which class of ditransitive verbs or dative objects licenses the recipient passive?, (ii) what is the linguistic origin of the construction and to what extent is the construction with the verb bekommen fully grammaticalised?

According to the theory of grammaticalisation (Diewald, 1997), the recipient passive originates from a construction where bekommen is used as a main verb (i.e. get) and its object is modified by a predicative participle (cf. (4-a)). In these constructions, the main verb started to lose its original meaning such that usages as in Example (4-b) became possible, where bekommen has two possible readings: the main verb and the auxiliary (cf. (4-b)). In the final, fully grammaticalised stage, the main verb reading is not available and the only possible reading of bekommen is the auxiliary, i.e. the recipient passive (cf. (4-c)).

(4) a. Sie bekommt die Bretter vom Schreiner.
   She gets the planks from the carpenter.
   schon passend zugeschnitten.
   already appropriately cut.
   "The carpenter gives her the planks which are already cut to the appropriate size."

   b. Sie bekommt den Katalog zugeschickt.
   She gets the catalogue sent.
   "She gets the catalogue sent by post" or "The catalogue is sent to her by post".

   c. Peter bekam den Führerschein wegenommen.
   Peter gets the licences taken away. "Peter’s driver licence was suspended."

The German recipient passive occurs most frequently with the auxiliary bekommen, which is stylistically relatively unrestricted. Pimanyonok (2004) mentions two further auxiliaries, that can only be used in specific contexts and textual genres: erhalten (obtain) and kriegen (cop). The auxiliary erhalten is used only in instructions and non-fictional texts, whereas kriegen is very infrequent in written language and is only used colloquially. The examples in (5) show the three possible versions of the recipient passive.

(5) a. *Er bekam
   He got
   universal ein Buch geschenkt.
   a book given.
   "He was given a book."

   b. Sie erhält
   She got
   literary den Nobelpreis verliehen.
   the Nobel Prize awarded.
   "She was awarded the Nobel Prize."

   c. Die Frau kriegt
   The woman gets
   colloquial die Bretter
   the planks
   zugeschnitten.
   cut.
   "The woman is given the planks cut to the appropriate size."

Grammatically, not stylistically, bekommen and kriegen are equivalent. They can both be used to passivise ditransitive verb having the meaning of “removing”. This is not possible with the auxiliary erhalten, see Example (6).

(6) a. * Peter erhält den Führerschein entzogen.
   * Peter gets the driver’s license revoked.
   "Peter’s driver’s license is revoked."

   b. Peter bekommt den Führerschein entzogen.
   Peter gets the driver’s license revoked.
   "Peter’s driver’s license is revoked."

In opposition to the regular passive (cf. (7-a)), an impersonal passive (i.e. a construction without subject) is not possible in the recipient passive (cf. (7-b)) (Pittner and Berman, 2004):

(7) a. Heute wird getanzt.
   Today is danced.
   "Today, people dance."

   b. * Heute bekam verziehen
   * Today, was forgiven.
   "Today, people forgave."

There are several restrictions on the main verb that can undergo the recipient passive alternation. As described in (Diedrichsen, 2004), ditransitives that do not subcategorise a recipient cannot undergo the alternation, see Example (8).

(8) a. Du schuldest mir 100 Euro.
   You owe me 100 Euro.

   b. * Ich bekomme von dir 100 Euro geschuldet.
   I get from you 100 Euro owed.

In some cases, the main verb may only have a two place valence as in (9).

(9) Er bekommt verziehen.
   He gets forgiven.
   "He is forgiven."

The dative object in the active voice of a main verb must not be a reflexive pronoun (cf. (10)).

(10) a. Er stellt sich die Frage . . .
   He puts himself the question . . .
   He is wondering whether . . .

   b. [*] Er bekommt von sich die Frage
   He gets by himself the question
   gestellt . . .

   put . . .

In the literature, the syntactic status of the recipient passive is highly controversial. One reason for this controversy is the remaining semantics of the auxiliary. Thereby, constructions with verbs of removing (the opposite of the auxiliary’s meaning) seem ungrammatical, see Example (11). Consider, however, the counter-example .

(11) * Er bekam das Fahrrad gestohlen.
    He got the bike stolen.
    "His bike was stolen from him."

Moreover, the morpho-syntactic ambiguity of bekommen may lead to ambiguous interpretations of the passivised events. The sentence in (12) has three readings.

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(12) Peter bekommt einen Apfel gewaschen.
   Peter gets an apple washed.
   “Someone washes an apple for Peter.” or:
   “Peter succeeds in washing an apple.” or:
   “Peter is given a washed apple.”

Another difference between the regular passive and the recipient passive is the importance of the prepositional agent for the information structure and the accent of the sentence. In (13-a) the prepositional agent is the most important (focused) element following the verb, whereas in (13-b) it is focused together with main verb, that constitutes the most important element. This difference gets apparent in the sentence accent (Eisenberg, 1999)

(13) a. Der Karl bekommt von der Karla das Formular
   The Karl gets by the Karla the form
   ausgefüllt.
   filled in.
   “The form is filled in for Karl by Karla.”

   b. Das Formular wird dem Karl von der Karla
   The form is to the Karl by the Karla
   ausgefüllt.
   filled in.
   “The form is filled in for Karl by Karla.”

The recipient passive is often used in a coordination reduction (i.e., a coordination of sentences with coreferent subjects where only the first one is mentioned) as in Example (14-a). If a speaker wanted to realise Example (14-a) without a recipient passive, he would have to coordinate two sentences with different subjects which is information-structurally suboptimal (cf. Example (14-b)) (Diedrichsen, 2004).

(14) a. Er fuhr zu schnell, wurde von der Polizei
   He drove too fast, was by the police
   angehalten und bekam den Führerschein
   stopped and get the drivers license
   entzogen
   withdrawn.
   “He drove too fast, was stopped by the police
   and lost his driver’s license.”

   b. Er fuhr zu schnell und die Polizei entzog
   He drove too fast and the police took away
   ihm den Führerschein.
   him the drivers license.
   “He drove too fast and the police confiscated his
   driver’s license.”

In this work, we will leave aside more details on this discussion of lexical and grammatical constraints of the recipient passive. Instead, we are interested in contexts where a ditransitive verb potentially licenses all three voices (active, regular passive and recipient passive), but the speaker chose to realise the latter one. We will only consider the most frequent auxiliary bekommen for our study in order to exclude the factor of stylistic preference as much as possible.

4. Building the Data Set

Since the German recipient passive is constructed with a special auxiliary (bekommen), it can be reliably extracted from corpora by means of flat PoS patterns. We extracted all sentences with an occurrence of the recipient passive from several German text collections. We considered the following corpora: (i) the Huge German Corpus (HGC), a collection of newspaper texts, (ii) DEWAC, the German web corpus, (iv) the GUTENBERG corpus, that contains classic German literature of more than 550 authors, and (v) the TIGER corpus, a syntactically annotated treebank. For the extraction, we used the Corpus Query Processor (CQP), a component of the IMS Corpus Workbench (CWB) (Christ, 1994), that provides several German PoS-tagged corpora. The main advantage of this tool is the efficient specification and execution of queries as regular expressions within a given context.

| corpus (size in sentences) | recipient passes total freq. | rel. freq |
|----------------------------|-----------------------------|-----------|
| HGC (~ 12 Mio.)            | 4,664                       | 0.04%     |
| DEWAC (~ 33 Mio.)          | 23,235                      | 0.08%     |
| GUTENBERG (~ 6.5 Mio.)     | 966                         | 0.02%     |
| TIGER (36,475 )            | 9                           | 0.025%    |

Table 1: Occurrences of recipient passives in German corpora

Table 1 displays the number of instances we found, showing that the recipient passive is used rarely with respect to the entire set of sentences in a corpus. However, the total number of recipient passive instances we found in our set of corpora is actually largely sufficient for statistical studies on the phenomenon.

Moreover, we note that there is a small set of main verbs in this set of sentences which seems to frequently realise the recipient passive. In Table 2, we show the main verbs ordered by their absolute frequency in the extracted recipient passive sentences.

Recall that in our usage-based study, our aim is to investigate the recipient passive as a syntactic paraphrase of the active and the passive voice. Therefore, we have to include all active and passive realisations of the respective verbs in our data set. However, including all verbs that occur at least once with a recipient passive in our data set would result in a sentence collection where the recipient passive corresponds to a very small portion of the realised voices. For instance, the verb sagen (say) occurs in 1,013,324 sentences, whereas only 529 sentences are in recipient passive (≈ 0.052%).

As a solution, we compute the relative frequencies of the recipient passive for each of listed verbs, and limit our data set to those verbs that have a high proportion of realisations in this voice. In Table 3, we present the top 11 list of verbs that have the highest proportion of recipient passive realisations. We note that this subset of verbs is quite coherent with respect to the broad semantic field, i.e. all verbs can be characterized as “transfer” verbs (that is the converse of the main verb’s meaning of the auxiliary bekommen).

Adopting the perspective of the recipient passive as a para-
The resulting data is a collection of 127,654 sentences. In most frequent verb lemmas from our total set of corpora. The syntactic analyses are encoded on two representation levels: constituent structure (c-structure) which encodes constituency and linear order and functional structure (f-structure) representing grammatical functions and morphosyntactic features.

As an example, Figure 1 displays the f-structure for the sentence (15) derived by the German LFG. The f-structure contains a range of syntactic and morphological features that will be very useful for our classification experiments in Section 5., e.g. number and person for nouns (NUM and PERS), nominal and pronominal types (PRON-TYPE and NTYPE), definiteness (DET-TYPE).

| verb          | # occurrences | rec. pass. |
|---------------|---------------|------------|
| zuschicken    | 2,854         | 19.1%      |
| vorsetzen     | 2,247         | 16.8%      |
| zuteilen      | 3,789         | 11.7%      |
| zusprechen    | 5,925         | 9.6%       |
| aushändigen   | 3,286         | 8.8%       |
| zuweisen      | 7,831         | 8.3%       |
| schenken      | 40,371        | 5.3%       |
| servieren     | 8,373         | 5.1%       |
| erstatten     | 10,200        | 5.0%       |
| überreichen   | 9,161         | 4.2%       |
| verleihen     | 33,162        | 1.9%       |

| agent         | active | passive | recipient passive |
|---------------|--------|---------|------------------|
| no agent      | 94.6%  | 3.3%    | 2.1%             |
|               | 0.0%   | 61%     | 39%              |

Table 2: Absolute frequency of ditransitives in the recipient passive (2)

Table 3: Frequency of the recipient passive for specific ditransitives

Using flat PoS patterns, we need deeper linguistic information in order to appropriately analyse the respective contexts of the construction. We use a hand-crafted, broad-coverage Lexical Functional Grammar (Bresnan, 2001) for German (Rohrer and Forst, 2006) for preparing our data set. It integrates a statistical disambiguation module and achieves parsing coverage of about 80% on German newspaper text. The syntactic analyses are encoded on two representation levels: constituent structure (c-structure) which encodes constituency and linear order and functional structure (f-structure) representing grammatical functions and morphosyntactic features.

As an example, Figure 1 displays the f-structure for the sentence (15) derived by the German LFG. The f-structure contains a range of syntactic and morphological features that will be very useful for our classification experiments in Section 5., e.g. number and person for nouns (NUM and PERS), nominal and pronominal types (PRON-TYPE and NTYPE), definiteness (DET-TYPE).

5. Classification Experiments

In this section, we present a classifier that predicts the voice of a ditransitive verb, given its intrasentential context. We used MegaM, a maximum entropy classifier to build a log-linear model for voice prediction.

Since f-structures are syntactic representations which encode the voice of the given ditransitive verb, we have to hide this information to the classifier. We used a small set of hand-written rules in order to map the grammatical functions onto semantic roles. Thus, the subject of a passive is mapped to a theme or recipient, whereas the subject of an active is mapped to an agent.

Furthermore, we have to consider that the realisation of an agent is optional in both regular and recipient passive. If the ditransitive verb does not realise an agent, the probability of the active voice will be zero. To eliminate these trivial cases from our classification, we divide the data into two subsets: (i) ditransitives which realise all 3 roles (agent, recipient, theme), (ii) ditransitives which realise 2 roles (recipient, theme). In Table 4, we report the distribution of the voices in the two subsets.
"Er bekommt von seiner Mutter ein Auto geschenkt."

Figure 1: F-structure for sentence (15)

Table 5: Voice predictions for ditransitives with agent

| Voice          | Score |
|----------------|-------|
| Active         | 99.4% |
| Regular passive| 73.7% |
| Recipient passive| 71.8% |

Table 6: Voice predictions for ditransitives without agent

| Voice          | Score |
|----------------|-------|
| Regular passive| 83.4% |
| Recipient passive| 77.7% |
| Regular passive| 86.6% |
| Recipient passive| 73.1% |

6. Analysis

In the last section, we have shown that it is possible to predict the usage of the recipient passive by means of multiple contextual factors that mainly concern the properties of the predicate arguments. In this Section, we look at some of the features in more detail in order to see whether the model conforms to linguistic tendencies observed in previous work. Doing this, we have to be aware of the fact that our data has been automatically parsed and annotated, and therefore necessarily contains errors.

Table 8 shows the respective argument properties for all three voices. Looking at the pronominality of the arguments (feature "pronoun"), we observe that each argument (agent, recipient, patient) is most often pronominalized in the agent subset. In the no agent subset (i.e. the predominant active voice is excluded), the classifier achieves an accuracy of 81.31% outperforming the regular passive baseline about 20%. We then scored the precision and recall for the passive voices again (Table 6). Without the active voice, precision and recall for the recipient passive improve.

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features is listed in Table 8. For each feature, we also report its frequency for a given argument role in its different voice realisations. This frequencies will be further discussed in Section 6. Note that, in contrast to Bresnan et al. (2001), our features do not include a direct encoding of the informations status or “newness” of a given argument since these cannot be extracted from an LFG f-structure. We hypothesise that we can approximate these properties to a certain extent via morpho-syntactic properties of the arguments. We randomly divide our data set into 90% training sentences and 10% test sentences for both subsets (agent and no agent). In the agent subset, the classifier achieves an accuracy of 98.05% significantly beating the baseline which always predicts an active voice. Since this data set is so heavily unbalanced, it is also interesting to look at the precision and recall for the different voices (Table 5). Despite the strong balance towards the active, the prediction of the recipient passive is still precise with a moderate recall.

In the no agent subset (i.e. the predominant active voice is excluded), the classifier achieves an accuracy of 81.31% outperforming the regular passive baseline about 20%. We then scored the precision and recall for the passive voices again (Table 6). Without the active voice, precision and recall for the recipient passive improve.
the voice where it is realised as the subject. Thus, the agent has a high chance of being pronominal in the active (39.6%), but is not likely to be realised as a pronoun in the passives voices (3.2% and 9.5%). This statistical tendency is in accordance with previous works observing a bias of the canonical subject position to be a slot for given actants (i.e. for those that can be expressed by pronouns) (Aissen, 1999; Bresnan et al., 2001). We find a similar tendency for the person feature. Thus, the agent is more likely to be a non-third person entity in the active than in the passive voices. Features that do not exactly match theoretical hypotheses are "Definiteness" (Def. in Table 8) and "Indefiniteness". We would expect that, for instance, the recipient is often indefinite in the active and regular passive, and less often in the recipient passive. However, the opposite is true (6% in recipient passive vs. 2.2% in active and regular passive). On the other hand, the definiteness features of the agent and patient seem to be consistent with theoretical predictions. An important feature in our classification is the surface order of the arguments. This feature is not discussed in work on English alternations where the word order is fixed. By contrast, in German, the voice alternations interact with word order variation. In Table 8, the distribution of the “Precedes” feature shows that, for each voice, the subject precedes the objects most often (except of the recipient preceding the patient). Furthermore, the (optional) agent precedes the non-subject patient in recipient passive more often (43.5%) than the non-subject recipient in regular passive (26.3%). Actually, in German, it is strongly dispreferred to realise the agent directly after the finite auxiliary of the regular passive, as in Example (16-a). However, this surface order is possible in the recipient passive, see Example (16-b).

(16) a. *Das Formular wird von der Karla dem Karl ausgefüllt.
   "The form is filled in by Karla for Karl.”
   b. Der Karl bekommt von der Karla das Formular
   "The Karl gets by the Karla the form ausgefüllt.
      filled in.
   "The form is filled in by Karla for Karl.”

For the distinction of the regular passive and the recipient passive, we had a feature encoding the presence of a prepositional agent in passive voices. The distribution is given in Table 7 showing that the agent occurs twice as often in the recipient passive as in the regular passive. Thus, it seems that the agent is somehow more prominent in recipient passive than in regular passive. A possible explanation for this pattern could be found in the semi-grammaticalised status of the recipient passive. When the auxiliary bekommen still has a meaning reflex from its main verb, the agent is interpreted as the source of the possession transfer event.

7. Conclusion

We have presented a corpus-based study of the German recipient passive asking whether it is possible to predict the choice of the two meaning-equivalent passive voices in

| Feature | Role | Active | Pass. | Rec. Pass. |
|---------|------|--------|-------|------------|
| Pronoun | agent | 39.6%  | 3.2%  | 9.5%       |
|         | recipient | 40%   | 32.3% | 45.7%      |
|         | patient | 17.7% | 24.9% | 17.8%      |
| ~3rd Pers. | agent | 9.4%  | 0.4%  | 3.6%       |
|         | recipient | 13.9% | 7.9%  | 16.3%      |
| 3rd Pers. | agent | 73.7% | 95.1% | 95.3%      |
|         | recipient | 84.1% | 89.9% | 74.5%      |
| Def. | agent | 15.9% | 49.3% | 38.2%      |
|         | recipient | 26.6% | 31.1% | 13.7%      |
|         | patient | 18.4% | 31.9% | 22.2%      |
| Indef. | agent | 3.8%  | 3.5%  | 8.1%       |
|         | recipient | 2.2%  | 2.2%  | 6%         |
|         | patient | 16.7% | 9.9%  | 23.3%      |
| No Def. | agent | 7.8%  | 18.3% | 10.3%      |
|         | recipient | 7.5%  | 9.6%  | 7%         |
|         | patient | 22.6% | 11.9% | 12.9%      |
| Proper N. | agent | 7.9%  | 12.5% | 13.6%      |
|          | recipient | 7.4%  | 15.1% | 10.5%      |
|          | patient | 6.4%  | 6%    | 10.3%      |
| Common N. | agent | 30.1% | 74.2% | 70.9%      |
| Recipient | recipient | 44.9% | 43.9% | 29.6%      |
|          | patient | 67.3% | 60.1% | 65%        |
| Complex | agent | 14%   | 22.7% | 17.4%      |
|          | recipient | 14.3% | 14.9% | 10.8%      |
|          | patient | 29.1% | 23%   | 23.3%      |
| Quantified | agent | 1.1%  | 0.9%  | 0.4%       |
| Recipient | recipient | 1.7%  | 0.9%  | 2.6%       |
|          | patient | 4%    | 2.9%  | 2.9%       |
| Ag > Rec | 64.4% | 26.3% | 18.3% |
| Ag > Th | 65.6% | 29.5% | 43.5% |
| Rec > Ag | 22%  | 69.2% | 75.7% |
| Rec > Th | 64.7% | 39.7% | 63.7% |
| Th > Ag | 15.5% | 50.5% | 45.9% |
| Th > Rec | 22%  | 37.6% | 19.8% |
| Recipient | 0.8%  | 0.6%  | 10.3% |
| patient | 1.9%  | 4.7%  | 1.7%   |

Table 8: Presence of a prepositional agent in passive voices

German, regular passive and recipient passive. We created a specialised data set of occurrences of German ditransitive verbs. We parsed the sentences with the German LFG parser and extracted contextual features for each involved argument. Giving these feature sets as input to a maximum entropy classifier yield a good performance beating the active voice baseline. This study illustrates that the German recipient passive alternation is subject to soft statistical constraints that can be modelled by means of multiple contextual factors.

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