(Anti-)Control in German: evidence from comparative, corpus- and psycholinguistic studies

Patrick Brandt, Beata Trawiński & Angelika Wöllstein

Abstract

The present investigation targets the phenomenon commonly called control. Many languages including German and Polish employ non-finite clauses (besides finite clauses) as propositional complements. The subject of these complement clauses is left unexpressed and must generally be interpreted co-referentially with the subject or object of the matrix clause (subject or object control). However, there are also infinitive-selecting verbs that do not allow for a co-referential interpretation of the embedded subject – semantically, the embedded infinitives of these anti-control verbs are thus less dependent on or less unifiable with the matrix proposition. In Polish anti-control constructions, non-finite complements are overtly marked with the complementizer żeby, suggesting that they are structurally more complex (namely, containing a C-projection) than the non-finite complements in control constructions lacking żeby (modulo special contexts, viz. ‘control switch’). In a comparative perspective, the paper brings corpuslinguistic and experimental evidence to bear on the question whether surface appearances notwithstanding, the infinitival complements of anti-control verbs in German should similarly be analyzed as truly sentential, i.e., C-headed structures.

1 Background

German exhibits finite (1a) as well as non-finite clauses (1b) serving as propositional complements:

(1) a. Der alte Mann hatte zugegeben, dass er seine Frau nach 48 Jahren Ehe umgebracht habe.
   the old man had admitted that he his wife after 48 years marriage killed has.
   ‘The old Man had admitted that he had killed his wife after 48 years of marriage.’
   (RHZ99/SEP.05297 Rhein-Zeitung, 07.09.1999)

b. In der ersten Verhandlung hatte der Mann noch geleugnet,
   in the first trial had the man still denied
   gefahren zu sein.
   driven to be
   ‘In the first trial, the man had still denied that he was driving.’
   (RHZ02/SEP.20527 Rhein-Zeitung, 26.09.2002)

* We wish to thank the audiences at the ZAS/IDS workshop Komplementsätze in Mannheim in December 2014 and at the DGfS workshop Co- and Subordination in German and other languages in Leipzig 2015 for discussion of (parts of) the work presented here. Special thanks go to two anonymous reviewers for their very helpful comments.
Finite complement clauses (except for w-clauses) must be introduced by the complementizer dass (‘that’), while non-finite complement clauses are never introduced by a complementizer – they are solely status-marked. More specifically, a non-finite complement clause requires a zu-infinitive, that is, a non-finite form of the 2nd status (2).

\[(2) \quad \text{Otto glaubt, (}*\text{dass)* uns gefunden zu haben}_\text{2ST} \]

\[\text{Otto believes that us found to have} \]

\[\text{‘Otto believes to have found us.’} \]

One of the widely discussed issues concerning finite and non-finite complement clauses in German lies in the degree of their syntactic (des)integration (Reis 1997). In this regard, finite (verb-final) complement clauses are analyzed as complementizer-projections (C-projections), whereas non-finite complement clauses are analyzed either as C-projections (selected by control verbs) or as lower structural projections selected by optionally clustering control verbs, cf. Haider (1991, 1993, 2010). The two structural classes of non-finite complement clauses correspond to the distinction between incoherent and coherent constructions, respectively, as defined in Bech (1955/57). In essence, coherent constructions display mono-clausal behavior, and can be described in terms of clause union, while incoherent constructions behave like biclausal structures. According to Reis (2001) and Grosse (2005), the incoherent construction is the unmarked one in German (cf. as well section 5).

As far as zu-infinitives are concerned, they can be used both in incoherent and coherent constructions. The respective syntactic structures as proposed in Haider (2010) and Rapp/Wöllstein (2013) are exemplified in (3) and (4).

\[(3) \quad [[C [C \ Vp \ zu \ V-en]]]\]

\[(4) \quad [[Vp \ zu \ V-en] V+modal] \]

---

1 Besides the complementizer dass (‘that’), German complement clauses can also be introduced by the complementizer ob (‘whether’). However, in the present study, we exclusively focus on verb-final dass-clauses.

2 The term status goes back to Bech (1955/57, 2nd ed. 1983) and his distinction between three types of status in German associated with three types of non-finite verbal forms: 1st status (bare infinitives), 2nd status (zu ‘to’-infinitives) and 3rd status (past participles).

3 Non-finite clauses containing bare infinitives (1st status) are also possible in German. However, they may only be used as subjects in sentence initial position.

4 For a systematic overview of the numerous phenomena that correlate with clause union, see Haider (2010: section 7.5).


6 Concerning finite complement clauses introduced by dass, we follow the general assumptions and adopt a structure along the lines of (6) without the PRO subject. \[[(C \ Vp \ zu \ V-fin)]]\]
In accordance with (3) and on commonly made assumptions, Rapp/Wöllstein (2013: 352) analyze zu-infinitival complements of control verbs as structures containing a silent PRO-subject (Chomsky 1981). These incoherent structures are C-projections and must be embedded and selected; embedding categories are verbs, adjectives, nominals and the complementizers um 'in order to', ohne 'without' and anstatt 'instead of'. By contrast and as argued in Haider (1991, 1993, 2010), control verbs that optionally cluster with zu-infinitives give rise to clause union effects as they select just a V-projection. Clustering verbs are typically semantically modal and the selected zu-infinitive is the direct object. If the zu-infinitive occurs left-adjacent to the embedding V°, it is part of the V-projection (=clustering infinitive(s)), cf. (4).

Interestingly, the use of finite or non-finite complement clauses is subject to variation in German. Which types of complement clauses are actually possible or rather available and which factors precisely determine the selection of the complement type has been widely discussed in the literature, cf. Rapp (2015) on conditions determining the selection and usage of finite (=dass-clauses) and non-finite complements (=zu-infinitives); several articles in Meibauer/Steinbach/Altmann (2013) discuss clause types and clausal realization of complements and adjuncts.7 Beyond general assumptions and considerations about clausal complementation and syntactic structure (cf. Zifonun et al. 1997 and Levin/Rappaport Hovav 2005), the question arises how the variation in complement selection is motivated in concrete usage (depending on the embedding verb) under the premise of well-formedness of both complement types (Wöllstein 2015).

Regarding the distinction between finite and non-finite propositional complements, the following claims seem to be commonly accepted for German (cf. also Wöllstein 2015: 96f.):

a. If V-predicates allow zu-infinitives, dass-clauses are also possible but not vice versa; zu-infinitives count as formal varieties of dass-clauses, cf. (5).

b. zu-infinitives are more dependent semantically on the embedding structure than finite clauses as regards in particular their temporal interpretation and the interpretation of their thematic subject; this correlates with the lack of formal finiteness features.

Most centrally for our discussion, the subject of finite clauses is interpreted independently from the arguments of the embedding V-predicate (6c), whereas the thematic subject of infinitives is regularly identified with an argument of the matrix clause, cf. (6b).

Specifically, the overt realization of the subject constituent is not possible in zu-infinitives due to the grammatical underspecification regarding person and number (6a). Let us refer to the basic difference between finite complements and non-finite complements with respect to their subjects with the following tentative characterization: Finite clauses typically introduce a new subject whereas infinitival complement clauses do not; the thematic subject here generally co-refers with a matrix argument.8

There are however structures embedding infinitival complements whose thematic subject may not be identified with a matrix argument; anti-control verbs occurring in such structures are abnicken ‘let sth. through on the nod’, absegnen ‘to give one’s blessing’, akzeptieren ‘to accept’, anmerken ‘to note’, anordnen ‘to rule’, begrüßen ‘to embrace’, billigen ‘to approve’, gutheißen ‘to approve’, honorieren ‘to honor’, kritisieren ‘to criticize’, verlangen ‘to claim’, würdigen ‘to appreciate’. The pattern of anti-control is illustrated in (7).9

---


9 We should note that for certain anti-control verbs, infinitival complementation appears to be highly marked. As a reviewer points out, verbs like abnicken or absegnen are not easily construed with infinitival complements and indeed we did not find examples in our corpus data; however, there were not many examples of these verbs with finite complements either, namely, altogether 15. Furthermore, some verbs categorized as anti-control verbs here can occasionally behave like subject-control verbs as in the corpus example in (i).

---

(i) Als einziges Delegationsmitglied hatte der deutsche Grünen-Politiker Cohn-Bendit verlangt, Orte zu besuchen, in denen Massaker verübt worden waren. 

‘The German politician Cohn-Bendit of the Green Party was the sole member of the delegation who had demanded to visit places where massacres had been committed.’

(A98/FEB.09070 St. Galler Tagblatt, 13.02.1998)
Otto ordered the cat to stroke.

'Otto ordered to stroke the cat.'

Given that the semantic (in)dependence of embedded propositional structures and their syntactic realization (finite vs. non-finite) clearly correlate, it is worth asking whether the semantic difference between control and anti-control has a syntactic reflex as well. Indeed, semantically parallel patterns from Polish point in this direction: Roughly, anti-control structures in Polish are singled out in that they involve infinitival complements that are introduced by a complementizer-like element ęęby ‘so that’ (cf. section 3).

The following section 2 presents the results of earlier corpus studies that empirically establish a connection between the (dependent vs. independent) interpretation of the embedded thematic subject and the (non-finite vs. finite) realization of the embedded proposition. In section 3, we take a closer look at the Polish data. Section 4 discusses the central ingredients of the analysis of control patterns more generally; in terms of the occurrence and function of the complementizer ęęby, a core opposition appears to hold between what are traditionally called subject control verbs (versprechen ‘to promise’) on the one hand and anti-control verbs (anordnen ‘to rule’) on the other hand. Section 5 presents corpuslinguistic as well as initial experimental evidence that point to the conclusion that in German, infinitival complements of anti-control verbs allow for an incoherent construal only while control verbs allow for both a coherent as well as an incoherent construal. Finally, section 6 sums up the discussion.

As discussed to some extent in section 4, extralinguistic factors may play a decisive role regarding the instantiation of control configurations. E.g., regarding anti-control verbs, passivization of the complement clause regularly leads to the option of control as illustrated in the example in (ii):

(iii) Das Land habe bei Gericht in Wels beantragt, sofort verständigt zu werden, when the verdict effective be explained Michael Cecon of the Personalabteilung des Landes am Donnerstag.

‘The country had requested at the court in Wels to be informed immediately when the verdict were effective. Michael Cecon of the staff department explained.’

(N99/JUL.31686 Salzburger Nachrichten 30.07.1999)

In contrast, passivization of the complement clause of subject-control verbs regularly prohibits control. The actual control (coreference) relations in particular examples have not been annotated for the research presented here but are taken into account in a more comprehensive study that is still under way. We observe there that passivization of complement clauses is overrepresented in the case of anti-control verbs but underrepresented in the case of subject-control verbs in a way that is statistically highly significant while there is no significant effect regarding object-control verbs (p < 2.22e-16).
2 Distribution and selectional properties of German anti-control verbs

An explorative study of grammatical variation concerning the realization of propositional complements as finite or non-finite clauses (Wöllstein 2015) showed that each appropriate embedding verb exhibits a specific variation. This variation was captured by means of a zu-Index, calculated from the total frequency of infinitival (zu-)complements divided by the total frequency of finite (dass-)complements. E.g., versuchen ‘try’ occurs about 400 times more often with a zu-infinitive complement than with a dass-complement, yielding a high zu-Index of 383,194. In contrast, feststellen ‘ascertain’ occurs more than 500 times more often with a dass-complement than with a zu-complement, yielding a low zu-Index of 0.0017. The zu-Index values indicate that while subject and object control verbs have a clear preference for infinitival complements, anti-control verbs overwhelmingly occur with finite complement clauses. Specifically, while there was generally a strong asymmetry between controlverbs and anti-control verbs in terms of the frequency of infinitival vs. finite complements, the difference between object control verbs (e.g., bitten ‘ask’) and anti-control verbs with respect to the selection of infinitival complements was highly significant, as depicted in the following graph.

---

10 All corpuslinguistic findings are based on an extraction carried out on January 30th, 2014, from the database KoGra-DB (Corpus Grammar Data Base) annotated with TreeTagger. The KoGra-DB is itself based on the DeReKo (German Reference Corpus) that is hosted at the Institut für Deutsche Sprache (IDS) in Mannheim, Germany and comprised about 25 billion sentence tokens at the time. At the point of extraction, the database consisted of 200,303,766 sentence tokens. In order not to prejudice the inquiry as well as achieve a feasible precision, the extraction was purely structure-based, targeting infinitival or finite structures respectively that are adjacent to the lexical verb (given in its participial form as marking the right sentence bracket), yielding 240,578 complex sentence tokens containing a zu-infinitive in the Post-field (distributed over 4570 verb types), 31,812 sentences containing a zu-infinitive in the Middle field (distributed over 1101 verb types) and 826,857 complex sentences containing a finite sentence in the Post-field (distributed over 5966 Types; finite sentential complements cannot occur in the Middle field in German).

11 As a reviewer points out, the zu-index is zero if there are no infinitival complements at all. Conversely and more problematically, the zu-index is not defined if there are no finite complements (as division by zero is impossible). The simplest solution lies in smoothing the index by always adding 1 to both numerator and denominator. Alternatively, the proportion of zu-infinitives could be used without loss of information. Regarding our data, no cases that were problematic in the mentioned regard occurred.
In the terms introduced above, it appears to hold that the higher the dependency of the interpretation of the embedded subject is on the matrix proposition, the more frequently the embedded proposition will be realized as an infinitival clause. Conversely, independence of the embedded subject leads to finite realization of the embedded proposition in actual usage. In the following section we will investigate whether the semantic contrast of (anti-) control provides any effects cross-linguistically.

3 The Polish data

In Polish, as in German and many other languages, we can distinguish between subject and object control. However, diagonally to this distinction, a structural distinction can be made between control constructions with the complementizer *żeby* (*so that*) (10)–(11) and control constructions without it (8)–(9).

12 We follow Bondaruk (2004) in translating the Polish *żeby* as *so that*. However, we would like to point out that many sentences with *żeby* can be expressed in English by other means, for instance by an infinitival verb form. Moreover, besides *żeby*, there are also other, less common complementizers that can introduce non-finite complement clauses in Polish, namely *aby* and *by*. They can be treated as variants of *żeby*.

\[\text{(8) }\text{Otto, obiecał (*żeby) PRO, pogłaskać kota. (subject control)}\]
\[\text{Otto promised so-that stroke cat} \]
\[\text{‘Otto promised to stroke the cat.’} \]

\[\text{(9) }\text{Otto, dał Ewie, (*żeby) PRO, pogłaskać kota. (object control)}\]
\[\text{Otto let Ewa so-lhal stroke cat} \]
\[\text{‘Otto let Ewa stroke the cat.’} \]

\[\text{(10) }\text{Otto, przekonał Ewę (*żeby) PRO, pogłaskać kota. (object control)}\]
\[\text{Otto persuade Ewa so-that stroke cat} \]
\[\text{‘Otto persuaded Ewa to stroke the cat.’} \]
(11) Otto, zarządził, *(żeby) PRO_{ij} pogłaskać kota. (anti-control)
    Otto ordered so-that stroke cat
    ‘Otto ordered to stroke the cat.’

The examples include verbs requiring (10)–(11) or not allowing (8)–(9) *żeby to introduce the non-finite clause. However, some Polish verbs can select non-finite complement clauses both with and without *żeby. This class of verbs comprises volitional verbs, such as checieć (‘want’) or wolęć (‘prefer’), as well as a number of other verbs, such as pragnąć (‘desire’), zdecydować (‘decide’), lubić (‘like’) etc. (cf. Bondaruk 2004, Witkoś 2008, Citko 2012). The facultative use of *żeby is illustrated in (12).

(12) a. Otto, chce PRO_{ij} wcześnie wstać. (subject control)
    Otto wants early get-up
    ‘Otto wants to get up early.’

b. Otto, chce *żeby PRO_{ij} wcześnie wstać. (anti-control)
    Otto wants so-that early get-up
    ‘Otto wants for others to get up early.’

The examples in (8)–(12) indicate that there is a correlation between the presence of the complementizer *żeby and the (lack of) control. More precisely, *żeby seems to block co-reference between PRO and the matrix subject (cf. (11) and (12b)), while its absence licences subject control (cf. (8) and (12a)). However, the presence of *żeby has no effect on object control. As the examples in (9) and (10) show, PRO can be identified with the matrix object irrespective of whether or not the complementizer *żeby appears. These preliminary observations are summarized in Table 1.

Table 1: The correlation between the presence of the complementizer *żeby and the (lack of) control

<table>
<thead>
<tr>
<th></th>
<th>*żeby</th>
<th>*żeby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-control</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Object control</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Subject control</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Another piece of evidence that *żeby blocks co-reference with the matrix subject is provided by finite complement clauses with dropped pronominal subjects, which is illustrated in (13).

(13) Otto, chce, *żeby pro_{ij} wcześnie wstał. (anti-control)
    Otto wants so-that early got-up.3.SG
    ‘Otto wants him to get up early.’

Note that in finite complement clauses which are introduced by other complementizers – more precisely, by the complementizer *że – no similar effects are observed. As the example in (14) demonstrates, dropped pronominal subjects in such sentences can be controlled by matrix subjects or receive an arbitrary interpretation.
Otto Claims that early got-up.3.SG

‘Otto claims that he got up early.’

However, there are a number of phenomena that seem to challenge the presumed correlation between the presence of *zeby* and the lack of subject control. These phenomena include reflexive verbs, passive constructions and verbs such as *marzyć* (‘dream’) or *planować* (‘plan’) (cf. also Citko 2012). As the respective examples in (15)–(17) show, the PRO subjects can be identified with the matrix subjects in spite of the fact that the complement clauses are obligatorily introduced by *zeby*.

(15) Otto, zamartwia się,* (zeby) PRO, nie zaspać.

‘Otto worries that he will oversleep.’

(16) Ewa, została zmuszona, *(zeby) PRO, poglaskać kota.

‘Ewa has been forced to stroke the cat.’

(17) Otto, marzy, *(zeby) PRO, poglaskać kota.

‘Otto is dreaming to stroke the cat.’

These alleged counterexamples can be explained as follows: In (15), the matrix clause includes the reflexive pronoun *się*, which is controlled by the matrix subject *Otto*. Given this co-referential relation within the matrix clause, it cannot be clearly determined which of the two matrix NPs acts as the controller of PRO. Accordingly, it cannot be determined whether (15) presents a case of subject or object control. Moreover, our above observation that *zeby* does not affect the object control strongly suggests that the PRO subject in (15) is indeed controlled by the reflexive pronoun *się* rather than by the NP *Otto*.

The sentence in (16) includes a passive construction, the active counterpart of which is given in (18).

(18) Otto, zmusił Ewę, *(zeby) PRO, pogłaskać kota.

‘Otto forced Ewa to stroke the cat.’

As can be seen from (18), the matrix predicate *zmusić* ‘force’ is an object control verb, that is, it serves to code coreference between the matrix object and the subject of the embedded non-finite clause. Passivizing this type of sentence, a control switch occurs: The role of the controller is taken over by the matrix subject. Exactly this is the case in (16). In other words, matrix subjects in passive constructions like (16) are in fact the underlying objects, which is why the complementizer *zeby* is allowed there. Another major factor is that – in consequence of passivization – the matrix subject is not directly responsible for the embedded action.
The lack of a responsibility relationship between the matrix subject and the embedded action can also be observed in (17). However, in contrast to (16), where this relation is structurally conditioned, it is due to the lexical meaning of the matrix predicate in (17). The verb marzyć (‘dream’) denotes a relation between its subject-argument and the embedded event such that the subject has no influence on this event. More verbs of this kind are planować (‘plan’), modlić się (‘pray’), starać się (‘strive’) and others. The absence of responsibility obviously affects the typical anti-control effect triggered by zęby. This phenomenon has been also observed in subjunctive finite clauses introduced by zęby, where the subject is typically disjoint in reference from the matrix subject (a phenomenon commonly referred to as obvation). To sum up, there is a close connection between the use of the complementizer zęby and control phenomena in Polish. Zęby introduces non-finite complement clauses with PRO controlled by an arbitrary controller, by the matrix object or the matrix subject which is not responsible for the embedded action. In non-finite clauses without zęby, PRO may not receive an independent interpretation but must be controlled either by the matrix object or by the matrix subject (which may, as in (8), or may not, as in (12a), be responsible for the embedded situation). In terms of subject control, we can conclude that the presence of zęby indicates that the entity responsible for the embedded action is not the matrix subject.

Table 2: The correlation between the presence of the complementizer zęby and the (lack of) control

<table>
<thead>
<tr>
<th></th>
<th>zęby</th>
<th>zęby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-control</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Object control</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>Subject control – responsibility</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Subject control + responsibility</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>

13 The term RESPONSIBILITY was introduced into the discussion of control phenomena by Farkas (1988). She defines a relation RESP of responsibility between individuals (‘initiators’) and situations such that the individuals bring the situations about (Farkas 1988, 1992, 88). In the unmarked case of subject control verbs, the initiator will be identified with the understood subject of the embedded clause. In the case of object control verbs, a rule of marked controller choice ensures that the individual whose actions are determined by the initiator is identified with the understood subject of the embedded clause. Köpcke and Panther (1993) argue for using just one rule of PRO identification at the cost of introducing a novel quasi-thematic role of "prospective agent".

14 Note that modlić się (‘pray’) and starać się (‘strive’) are reflexive verbs, and as such might be treated as object control triggers as suggested for (15).

15 Besides Polish subjunctives (Bondaruk 2004, Citek 2012), the phenomenon of obvation has been also attested in other languages, such as French (Tsouzas 1996, Farkas 1992), Italian (Johnson 1985, Kempchinsky 2009), Spanish (Dobrovie-Sorin 2001, Kempchinsky 2009) or Russian (Avrutin and Babynoyysev 1994).

16 A reviewer points out that the presence or absence of zęby in Polish object control structures may also be affected by responsibility of the subject. It would therefore be interesting to examine different classes of (accusative and dative) object control verbs with a view to a possible correlation between the appearance of zęby and responsibility properties of the subject.
There is a general consensus among both traditional grammarians and formal linguists that the categorial status of ęby is that of a complementizer. Accordingly, non-finite complement clauses introduced by ęby are to be analyzed as CPs, that is, as incoherent structures. A number of tests are available in Polish which demonstrate that ęby blocks clause union, such as clitic climbing, reflexive passive, long scrambling, genitive of negation, negative polarity items, or anaphor binding (cf. Bondaruk 2004, among others).

4 Subjects and agentivity

We have seen that ęby in Polish blocks control by an NP under two conditions: A) the NP is in subject position, and B) it is ‘agentive’—in the sense that the NP referent is responsible for the embedded action. A number of facts speak in favor of regarding identification of PRO with the matrix agent as the one case that is strictly—i.e., quasi-syntactically—regulated, while other possible configurations—e.g., the identification of a less agentive PRO with a matrix argument that is not the prospective agent—are “elsewhere” cases resulting from an interplay of less important factors. For example, there are languages such as Kavalan (Austronesian) that only allow true agent (“actor”) arguments of the matrix predicate to control truly agentive PRO in the embedded clause; in order to achieve actor subject control with predicates that surface as object control verbs in other languages, Kavalan resorts to causativizing the embedded predication (Chang/Tsai 2001: 3, taken from Stiebels 2015: 422; pa = possessor agreement, AV = actor voice).

\[
\text{(19) pawRat a tina-na, tu sunij [ ,pa-qaynep)]}
\]

\[
\text{force NOM mother-3sg.pa ACC child CAUS.AV-sleep}
\]

‘his mother forces her child such that she causes him/her to sleep’

There is somewhat less transparent corpuslinguistic evidence for German as well that having a matrix agent control PRO is the regular case hence preferred choice. Namely, when we look at corpus data, it turns out that passivization of the matrix clause is much less frequent with subject control predicates than with object control or anti-control predicates. The table and plot show that comparing subject to object control predicates in particular, matrix passivization is highly significantly underrepresented with regard to subject control verbs.

Tab. 3: The correlation between active/passive and control

<table>
<thead>
<tr>
<th></th>
<th>Matrix active</th>
<th>Matrix passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object control</td>
<td>2665</td>
<td>1570</td>
</tr>
<tr>
<td>Anti-control</td>
<td>2694</td>
<td>790</td>
</tr>
<tr>
<td>Subject control</td>
<td>2689</td>
<td>186</td>
</tr>
</tbody>
</table>
The rationale for avoiding matrix passive with in particular subject control predicates is that matrix passivization eliminates (or hides) the agentive controller and therefore prevents the regular strategy of identifying agents from being used.\textsuperscript{18} We saw above regarding Polish that subject control verbs are singled out in that insertion of \textit{zeby} – a syntactically substantive operation – really only has a clear effect on controller choice with respect to the class of subject control verbs, while object control appears not to be affected.\textsuperscript{19}

As we said above, “control switch” phenomena argue strongly that what is central to the identification of infinitival subjects (PRO) is a notion of responsi-

\textsuperscript{17} The chi\textsuperscript{2} test that the plot is based on acknowledges the different probabilities of occurrence of active vs. passive realization of the matrix clause: it is represented by the different widths of the respective columns. The size of the fields represents the share of the totality of cases (i.e., the sum of all fields corresponds to 100 percent of the cases). Light blue and light red represent significant over- and underrepresentation and dark blue (lower left and upper right field) and dark red (upper left and lower right field) represent highly significant over- and underrepresentation respectively.

\textsuperscript{18} A reviewer remarks that the sparsity of matrix passive with subject-control verbs could be motivated by an inclination to avoid impersonal passives, contrary to fact, however, we would then expect matrix passive to be sparse as well in the case of anti-control verbs or object-control verbs. We agree that it is the elimination of the controller that matters, where the controller happens to be a traditional agent in the case of subject-control verbs (i.e., the proper and the prospective agent coincide in the case of just subject-control verbs).

\textsuperscript{19} At the same time, Carol Chomsky’s (1969) work suggests that children acquire subject control verbs much later than object control verbs; this need not be surprising to the extent that there are specialized mechanisms that are responsible for referential relations between superordinate and subordinate subjects that have to be learned.
bility (Farkas 1988) as constituting a central ingredient to agentivity. As is well known, passivization or particular types of modalization in the embedded clause may lead to a change in control, cf. e.g. the subject and object control structures in (20a) and (20b) respectively.

(20) a. Otto, promised Ede, PRO, to be allowed to buy a computer.
    b. Otto, asked Ede, PRO, to be allowed to buy a computer.

Controller choice appears to be switched from the matrix subject to the matrix object in (20a) as an effect of passivization "downstairs". In (20b), controller choice is switched from the matrix object to the matrix subject. Under the approach of Köpcke/Panther (1993) that is designed specifically to explain the German data, what happens is that "deagentivizing" PRO in the embedded clause prevents the regular strategy of identifying agents from being used. As a consequence, other options arise of identifying PRO with matrix arguments that are not the (prospective) agent.20 Looking more closely, we can observe that the eventual interpretation of control switch structures is not very robust, cf. e.g. (21), built on an example by Wegener (1989: 218ff).

(21) Emma promised Ulla PRO to be picked up from school.

Depending on the extralinguistic relation between the two individuals mentioned, either one may appear to control the embedded PRO; e.g., we would take Ulla to be the controller if she were Emma’s daughter, but would rather pick Emma as the controller if she were Ulla’s daughter. The particular relation we chose for illustration shows just what is crucial, namely, the question of who is deemed responsible regarding the embedded predication, or just not responsible in the case of control switch. The leeway that we observe fits the analysis of Köpcke/Panther (1993) well in that according to their approach, it is really only the identification of (prospective) agents that is strictly conditioned grammatically.

We assume then that a control verb assigns a feature [±responsible] to one of its arguments as a matter of lexical specification. Depending on the embedded predicate, PRO will be [±responsible] and will be identified with the [±responsible] matrix argument or it will not be [±responsible], opening up other options, including what is known as control switch but also arbitrary control. In order to model the anti-control effect induced by zebi, we assume for simplicity’s sake that zebi acts in the capacity of a switch reference marker that is located in C, effecting that the embedded subject is to be interpreted differently from the matrix subject that is [±responsible].21

20 Note, incidentally, that control switch phenomena show that control cannot be captured by means of lexical information alone.
21 There are different possibilities to technically implement this; a solution in the spirit of Farkas (1988) and recently Citko (2012) consists in having zebi introduce an independent initiator, i.e., an individual responsible for the embedded situation. Farkas (1988) suggests that in order to prevent just subject control (but not object control) from applying 'across' zebi, it has to be ensured that the disjoint reference effect is defined only for pairs of arguments the first of which is an initia-
Before we turn to investigating empirically the construal of anti-control infinitives in German, let us add another piece of evidence suggesting that the relation between the distribution of \( \text{zeby} \) in Polish and the \( zu \)-index calculated for the German data is not arbitrary. If we look at the Polish equivalents of the German anti-control verbs with a low \( zu \)-Index, we can see that they do not allow infinitival complementation at all (modulo the use of \( \text{zeby} \) in the case of \text{anordnen}) but opt for finite and gerundial realization of their propositional complements, cf. the overview in the following table.

Tab. 4: Comparison of anti-control verbs in German and Polish

<table>
<thead>
<tr>
<th>( zu )-Index</th>
<th>German</th>
<th>Polish</th>
<th>Infinitive</th>
<th>( \text{zeby} + ) infinitive</th>
<th>( \text{zeby} + ) finite</th>
<th>( ze + ) finite</th>
<th>Gerund</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.122</td>
<td>\text{anordnen}</td>
<td>zarządzać /</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
</tr>
<tr>
<td></td>
<td>\text{to rule}</td>
<td>zarządzić</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.030</td>
<td>\text{anerkennen}</td>
<td>pochwałać</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
</tr>
<tr>
<td></td>
<td>\text{to honor}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.013</td>
<td>\text{kritisieren}</td>
<td>krytykwać</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
</tr>
<tr>
<td></td>
<td>\text{to criticize}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.142</td>
<td>\text{respektieren}</td>
<td>respektować</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
</tr>
<tr>
<td></td>
<td>\text{to respect}</td>
<td>(to)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.080</td>
<td>\text{würdigen}</td>
<td>docenić /</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
<td>( x )</td>
</tr>
<tr>
<td></td>
<td>\text{to appreciate}</td>
<td>docenic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5 Empirical investigation of the construal of anti-control infinitives in German

Let us then turn to the question regarding a possible structural difference between (subject) control constructions and anti-control constructions in German. As we noted in section 1, corpus data clearly show that control verbs and anti-control verbs differ as regards their selectional behavior: Most typically, control verbs take infinitives, but anti-control verbs most typically take finite clauses as complements. Assuming that finite clauses are always CPs but that infinitives
may be VPs (monoclusal) or CPs depending on whether they are construed coherently or incoherently (cf. the remarks in section 1 and Rapp & Wöllstein 2013), we can probe into the structure of superficially identical infinitival complements by looking at the known characteristics and tests regarding the dimension of (in)coherence – put bluntly, the question is whether there is reason to assume that the infinitival complements of anti-control verbs are really CPs, as would follow if they hosted something like the invisible counterpart of Polish zieby in C. Testing for (in)coherence is no simple matter as incoherent construal is always an option; e.g., any infinitive that appears extraposed (in the Post-field) is taken to be incoherently construed according to traditional wisdom, hence corresponds to a CP by assumption (but cf. Wöllstein-Leisten 2001 for qualifications). As a consequence, a coherent construal is only possible if the infinitive appears in the middle field, i.e., before the non-finite parts of the verbal complex in German. The pair in (22) illustrates the known difference in long scrambling as testing for coherent (22a) vs. incoherent (22b) construal.

(22) a. Noch gestern hat ihn die Maria einmal zu heiraten gehofft.
   *Only yesterday has him the Maria some.time to marry hoped*
   ‘Only yesterday Mary was still hoping to marry him at some time.’

b. ?*Noch gestern hat ihn die Maria gehofft einmal zu heiraten. 
   *Only yesterday has him the Maria hoped some.time to marry 
   ‘Only yesterday Mary was still hoping to marry him at some time.’

Corpus data show that positioning infinitives in the middle field is an overall dispreferred option, presumably for reasons of parsing. Comparing the ratios of infinitives in the middle field and in extraposed position respectively as related to verb type, it does turn out that infinitives in the middle field that belong to anti-control verbs are clearly underrepresented in comparison to infinitives in the middle field that belong to subject control (or object control) verbs. Table 5 gives the absolute numbers for the accusative object, dative object, subject control and anti-control verb classes; figure 3 visualizes the results.22

22 The counts are the result of the extraction from the KoGra-DB that was mentioned in section 1 (30.01.2014). This extraction was restricted to infinitives adjacent to a verbal participle as marking the right sentence bracket in German. The one apparent counterexample to the generalization that infinitives selected by anti-control verbs occur in the Post-field is given in (i).

(i) Es trägt die Unterschrift des Präfekten der Glaubenskongregation, Kardinal Joseph Ratzinger – mit dem Vermerk, Johannes Paul II habe den Text “gebilligt und zu veröffentlichen angeordnet”.
   *It bears the signature of the prefect of the belief congregation cardinal Joseph Ratzinger – with the comment that J.P. II has approved and ordered its publication.* 
   (N94/Okt 37997 Salzburger Nachrichten, 15.10.1994)

One could argue that in (i), the coordination with gebilligt ‘approved’ enforces the middle field position; intuitively, though, positioning in the Middle-field is also possible without it. Note though that the crucial part of the sentence appears in citation form, as if originally stemming from a stamp.
Plausibly, having an infinitive occur in the middle field is motivated largely by allowing for its coherent construal (cf. section 1). If the infinitives of anti-control verbs do not construe coherently, there is no reason to have them in the middle field that would counterbalance the preference for extraposed infinitives (that is arguably rooted in parsing). The virtual absence of infinitives of anti-control verbs in the middle field is a first indication that anti-control verbs construe incoherently rather than coherently, hence correspond to CPs.

Other prima facie counterexamples regularly involve infinitives that serve as explications of nouns rather than being selected by the verb (cf., e.g., she approved of the proposal to publish the text).

While the probability for an infinitival complement of occurring in the middle field is overall low, it is highly significantly underrepresented in the case of accusative object control verbs (dark red upper right field) and virtually absent for anti-control verbs; in the case of dative object control verbs middle field position is significantly overrepresented (light blue middle right field), in the case of subject control verbs it is highly significantly overrepresented (dark blue lower right field).
Investigating corpuslinguistically the coherent vs. incoherent construal of infinitives as showing, e.g., in the possibility of long scrambling as illustrated above in (22) is not feasible as infinitives in the middle field are quite rare already; accordingly, infinitives in the middle field out of which long scrambling has taken place will be too rare to deliver robust results, if one manages to find them at all.\(^{24}\) In order to see whether a coherent construal of infinitives of anti-control verbs is at all possible, we therefore designed a questionnaire comprising a production and a judgment task both of which concerned structures involving long scrambling.\(^{25}\) In the production part, subjects were asked to place a pronoun in one of three positions as in (23).

\begin{equation}
\text{(23) Das Geld war weg, obwohl ___ die Bank ___ zu erstatten versprochen hatte.}
\end{equation}

\begin{equation*}
\text{the money was out although the bank to refund promised had}
\end{equation*}

\begin{equation}
\text{‘The money was out although the bank had promised to refund it.’}
\end{equation}

In (23), the first slot corresponds to the position resulting from long scrambling, which should be possible only under a coherent construal of the infinitive. The second position corresponds to the base position which should be always possible. The third position is in fact ruled out due to basic restrictions on word order in German. There were two sentences of the type in (23) for each of the classes of subject control, object control and anti-control verbs in each individual questionnaire.\(^{26}\) In the 52 questionnaires that were evaluated, the third position was never chosen. Regarding the difference of interest between first (‘coherent’) vs. second (‘coherent or incoherent’) position, only tiny differences occurred depending on verb class that were not significant.\(^{27}\)

\(^{24}\) Searching the corpus for these structures is technically very difficult. The search space cannot be kept strictly local as the long-scrambled pronoun is separated from the verb selecting it. As remarked above, we had to rely heavily on adjacent structures when we carried out the general extraction of infinitival complementation structures in order to achieve acceptable precision.

\(^{25}\) In earlier attempts, we tried to elicit judgments for scopal possibilities as well that are similarly taken to indicate the possibility of a coherent construal; e.g., the negation in (i) appears to be able to take non-local (superordinate) scope, which is indicative of a coherent construal.

\begin{equation}
\text{(i) Der Entführer bekam mildernde Umstände, weil er keine Gewalt anzuwenden gedroht hatte}
\end{equation}

\begin{equation}
\text{‘Mitigating circumstances were acknowledged for the kidnapper because he did not threaten to use violence.’ (lit.: ‘... because he threatened to use no violence.’)}
\end{equation}

The relevant constructions appear to be too involved to yield clear intuitions on the part of lay subjects; the tests revealed virtually no differences in judgments also between quite clearly coherent versus quite clearly incoherent construals (judging by the literature and our own intuitions).

\(^{26}\) There were altogether three sentences for each class, which were evenly distributed over three different versions of the questionnaire featuring as well different orderings of the examples.

\(^{27}\) As a reviewer rightly points out, the result of the production experiment invites one to consider that coherent construal might be an option across the board. One would need to test more items and control for possibly intervening factors in more refined ways to get more reliable and possibly more telling results.
The second part of the questionnaire again contained two (of altogether three, cf. footnote 27) sentences for each verb dass. This time, the subjects were asked to judge complete sentences on a scale between 1 (fully acceptable) and 5 (completely unacceptable), 3 marking a neutral judgment ("mittelprächtig", meaning approximately "so-so" or "relatively acceptable"). This time, the sentences all featured pronouns in long-scrambled position as supposedly indicating a coherent construal of the infinitive. (24) is an original example.

(24) Das Buch war schnell vergriffen, nachdem es der Kritiker zu lesen greaten hatte. recommended had
've The book was quickly sold out after the critic had recommended to read it.'

The results of the judgment task were promising; in particular, the sentences involving anti-control verbs were judged significantly worse than object control and in particular subject control sentences. The following graph visualizes the results of the Kruskall-Wallis test that was computed on the basis of the median values associated with the items of each verb group.

Fig. 4: Scrambling vs. verb class.28

These results must be taken with caution, as independent reasons could well be responsible for the differences in judgments.29 Nonetheless, we take them as ini-

---

28 The median value of the anti-control sentences is almost 3.5 (3.499997) with no spreading below 3. The median of the (dative) object control sentences is almost 3 (2.999998) with no spreading above this value and the median of the subject control sentences is almost 2.5 (2.499986) with (almost) no spreading above this value. (We chose dative object control test sentences and not accusative object control sentences because the latter give rise to two adjacent accusative NPs under the relevant construal which were found to cause parsing problems in earlier tests.) This is a highly significant result with p < 0.0001 (p = 0.000000023333).

29 As mentioned, having an anti-control verb select an infinitive to start is by itself rather exceptional (cf. section 1). While the information structure was controlled for (the scrambled pronoun picking up the reference of an NP presented as the topic of the matrix sentence), particular vocabulary items or likeliness of the depicted situations might well have influenced judgments and should be controlled for as far as possible in future experiments. There were no fillers in the questionnaire either as we wanted to keep the effort on the part of the test subjects as small as possible. We agree with a reviewer’s point that infinitival complementation in anti-control structures per se might be
tial experimental evidence for a more complex — in essence: C-headed — obli-
gatory incoherent structure associated with anti-control verbs as opposed to regu-
lar control verbs.

6 Summary

Starting from the observation that the semantic (in)dependence of embedded
propositional structures correlates with their non-finite (dependent) or finite (in-
dependent) syntactic realization, this paper investigated possible structural dif-
fences between control structures (versprechen, raten) on the one hand and
anti-control structures (anordnen, anerkennen) on the other hand. Specifically,
patterns of anti-control in Polish systematically involve the complementizer
żeby, suggesting that the relatively semantically more independent infinitival
complements of anti-control verbs are projections of a complementizer projec-
tion, whereas regular control structures may correspond to lower structural pro-
jections.30

Regarding German, an analogous structural difference is not directly visible,
but would be expected to shine through empirically in the realm of the coherent
vs. incoherent construal of infinitival complements as reflecting more dependent
or unifiable (coherent construal) vs. more independent and less unifiable propo-
sitional complementation (incoherent construal). Corpuslinguistic evidence
shows that in sharp contrast to regular control patterns, the complements of anti-
control verbs are overwhelmingly realized as finite structures, i.e., trivially in-
coherently construing complementizer projections. To the extent that the com-
plements of anti-control verbs are realized as infinitives in German naturally oc-
curring data, their positioning in the middle field as enabling coherent construal
(but otherwise hampering parsing) is virtually absent, suggesting that a coherent
construal may not be possible for infinitival complements of anti-control struc-
tures. Preliminary results of psycholinguistic experiments involving long scram-
bling appear to support this hypothesis, similarly suggesting that in contrast to
regular control infinitives, anti-control infinitives construe only incoherently. If
infinitival anti-control complements in German are C-projections as their Polish
cousins clearly seem to be, these differences follow straightforwardly.

behind the effect, so future experiments should control for this. Again, there is as well a need for
more test items and careful control for possibly interfering factors.

30 A reviewer points out that while the analytical consequences of the differences between sub-
ject-control verbs and anti-control verbs come out rather clearly, they remain relatively vague for ob-
ject-control verbs. Regarding object-control, our findings so far suggest that within this group, da-
tive (indirect) object and accusative (direct) object control constructions must be distinguished. E.g.,
direct object control goes with infinitival complementation more prominently than dative object con-
trol and appears to be less influenced by extralinguistic factors; to note, accusative controllers must
generally be superficially expressed unlike dative controllers. Structurally, direct objects appear to
be in a more local configuration with sentential complements than indirect objects, making it likely
that different linking mechanisms might be at play.
References


97


Mannheim

Patrick Brandt, Beata Trawiński, Angelika Wöllstein

Institut für Deutsche Sprache, R 5, 6-13, 68161 Mannheim, e-mail: {brandt, trawinski, woellstein}@ids-mannheim.de