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Dennis Wegner, Marcel Schlechtweg & Holden Härtl: Optionality and the recovery of temporal information in German verb clusters

Jürgen Pafel: Konditionale und minimale Differenz

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Optionality and the recovery of temporal information in German verb clusters

Dennis Wegner, Marcel Schlechtweg & Holden Härtl

Abstract

While the clause-final placement of finite elements is usually quite rigid in German embedded clauses, verbal clusters mark an exception in that they allow finite temporal auxiliaries to be placed linearly before the verbal elements they embed. The prescriptive rules of Standard German suggest that there is optionality with respect to the two ordering possibilities at least in future clauses. However, previous studies have shown that this also holds for perfect clauses with *lassen* ('let'). Based on two experimental studies focussing on verbal clusters with continuative *lassen* ('let') and perception verbs, which supposedly have similar properties, the present paper aims at investigating a) whether there really is proper optionality with respect to placing the finite auxiliary in a cluster-initial or clause-final position, and b) whether preposing the temporal auxiliary induces advantages for the processing of temporal information.

1 Introduction

Even though German shows an exceptionally stable word order in the verbal domain (in contrast to its large degree of flexibility in other areas like the middle field), there are two syntactic configurations for which this does not hold: verbal clusters introduced by the temporal auxiliaries *werden* ('will') and *haben* ('have'). In embedded clauses, which characteristically lack the main clause V2-effect and thus leave their finite verbs or auxiliaries in the clause-final position rather than moving them to the second position, verbal clusters differ from their simplex counterparts by virtue of triggering restructuring. While the finite main verb taking a DP-complement in (1a) remains in the canonical clause-final position (cf. Zifonun, Hoffmann & Strecker 1997: 1500), the temporal auxiliaries introducing 3-verb clusters in (1b) and (1c) occur in a cluster-initial position, occasionally referred to as the 'upper field' (*Oberfeld*; cf. Bech 1955/1983: 63).

- (1) a. Peter denkt, dass Ida ihn hört.
Peter thinks that Ida him hears
'Peter thinks that Ida hears him.'
- b. Peter denkt, dass Ida ihn **wird** hören können.
Peter thinks that Ida him will hear can
'Peter thinks that Ida will be able to hear him.'

- c. Peter denkt, dass Ida ihn **hat** hören können.

Peter thinks that Ida him has hear can

‘Peter thinks that Ida has been able to hear him.’

According to the prescriptive rules of Standard German (cf. Duden-Grammatik 2016: §684), this non-canonical ordering is available for verbal complexes embedded under the future auxiliary *werden* (‘will’) and the perfect auxiliary *haben* (‘have’).¹ In addition to this ordering, Standard German future clusters headed by *werden* (‘will’) optionally also allow for a clause-final counterpart, as in (2a) (cf. Duden-Grammatik 2016: §685). Those headed by *haben* (‘have’), on the other hand, do not allow for optionality in case a modal auxiliary serves as its immediate complement, as in (2b) (cf. Duden-Grammatik 2016: §684).

- (2) a. Peter denkt, dass Ida ihn hören können **wird**.

Peter thinks that Ida him hear can will

‘Peter thinks that Ida will be able to hear him.’

- b. * Peter denkt, dass Ida ihn hören können **hat**.

Peter thinks that Ida him hear can has

These observations are supported by the results of Bader & Schmid’s (2009) speeded grammaticality judgment tasks, summarised in Table 1.

werden ₁ -V ₃ -Mod ₂	V ₃ -Mod ₂ - werden ₁
84	54
haben ₁ -V ₃ -Mod ₂	V ₃ -Mod ₂ - haben ₁
83	17

Table 1: Judgment data of cases with verbal clusters including a restructuring modal and headed by *werden* or *haben* in Bader & Schmid’s (2009: 188, 193) in %

However, temporal clusters may not only be formed with the help of modal auxiliaries, but crucially also with causative and continuative variants of *lassen* (‘let’)² as well as perception verbs like *hören* (‘hear’), as observable in (3).

- (3) a. Peter denkt, dass Ida ihn die Torte **hat** essen lassen / essen

Peter thinks that Ida him the cake has eat let eat

lassen **hat**.

let has

‘Peter thinks that Ida has let him eat the cake.’

¹ See, amongst others, den Besten & Edmondson (1983: 190), Hinrichs & Nakazawa (1994: 12), and Haider (2003: 110; 2010: 288f.) for further examples and theoretical investigations.

² The continuative variant of *lassen* denotes the continuation of a situation (and allows for passivisation), while its causative counterpart conveys permission (and does not inhibit the formation of passives) (cf. Enzinger 2010; Bader 2014: 4).

- b. Peter denkt, dass Ida ihn **hat** schlafen lassen / schlafen lassen
Peter thinks that Ida him has sleep let sleep let
hat.
has
'Peter thinks that Ida has let him eat the cake.'
- c. Peter denkt, dass Ida sie **hat** singen hören / singen hören **hat.**
Peter thinks that Ida her has sing hear sing hear has
'Peter thinks that Ida has heard her sing.'

With respect to clusters with causative (Caus) *lassen* ('let'), Bader (2014) provides the experimental data in Table 2, which shows that the acceptability of these cases resembles future counterparts with modal auxiliaries, i. e. these do not pattern with perfect cases like (2b), but rather allow for optionality. The same is observable with continuative (Cont) *lassen* ('let').

<i>haben</i> ₁ -V ₃ -Caus ₂	V ₃ -Caus ₂ - <i>haben</i> ₁
87	64
<i>haben</i> ₁ -V ₃ -Cont ₂	V ₃ -Cont ₂ - <i>haben</i> ₁
93	77

Table 2: Judgment data of cases with verbal clusters including causative or continuative *lassen* ('let') and headed by *haben* in Bader (2014: 41–42) in %

The remaining class of perception verbs, as the one in (3c), seems to behave like *lassen* ('let') in perfect clauses, although this has not yet been verified by experimental data. This lack of data also pertains to cases of *lassen* ('let') and the perception verbs with future *werden* ('will').

Based on an experimental study of verbal clusters with perception verbs as well as continuative *lassen* ('let'), the present paper investigates the supposed optionality of placing the auxiliary either in a cluster-initial or clause-final position. A special focus in this investigation is placed on the question of whether the 'preposing' of the finite auxiliary results in advantages for the (temporal) processing of complex clauses.³ Accordingly, the main questions to be addressed in the present paper are a) whether there is optionality between the cluster-initial and the clause-final placement of the finite auxiliary in verbal clusters with perception verbs and continuative *lassen* ('let'), and b) whether the cluster-initial placement of the finite temporal auxiliaries bears processing advantages. To address these issues, a grammaticality-judgment study and a reaction-time analysis were conducted.

³ Note that the term 'preposing' is supposed to refer merely to the linear precedence of the finite auxiliary. Accordingly, we will mostly remain agnostic as to whether this should be taken to have a syntactic reality and how the grammatical operation behind placing the auxiliary in the upper field works (see Wurmbrand 2017 for a concise overview of verb cluster formation in Germanic and its relation to restructuring phenomena).

The paper is structured as follows. Section 2 presents the properties of verb clusters in German, emphasising the role of infinitival morphology in their formation and discussing their morphological and syntactic complexity as well as word order. The third section briefly motivates the hypotheses to be investigated, before Section 4 discusses two new experimental studies. The fifth section then puts things into perspective by relating the individual outcomes and pointing to theoretical implications. The sixth section concludes the paper and reflects upon potential questions for future research. Additionally, the appendix allows for a closer look at the experimental studies and their statistical analysis.

2 Verb clusters in German

Verbal complexes in German consist of a finite auxiliary embedding a non-finite item (a plain infinitival or a past participle), which in turn heads an infinitival main verb. These are hierarchically ordered in the sense that the latter serves as the core of the verbal domain (VP) and is embedded under a relatively ‘light’ verb, i. e. a modal auxiliary, *lassen* (‘let’), a benefactive, or a perception verb.⁴ In case these are embedded under the temporal auxiliaries *werden* (‘will’) or *haben* (‘have’), a reordering effect may ensue, either optionally or obligatorily. This effect is often also discussed with a broader scope under the heading of restructuring or clause union, pointing to the unification of argument structures. Accordingly, while verbal clusters may be formed on the basis of all kinds of main verbs, there are restrictions concerning the light verbal element, henceforth neutrally called restructuring item, as well as the auxiliary introducing the cluster. With respect to the latter, the prescriptive rules of Standard German (cf. Duden-Grammatik 2016: §685) suggest that in addition to *werden* (‘will’) and *haben* (‘have’) finite modal auxiliaries may also embed verbal combinations consisting of a restructuring item and a main verb, as in (4).

- (4) dass er den Kindern **muss** helfen können / helfen können **muss**
 that he the children must help can help can must
 ‘that he must be able to work’

However, as acknowledged in Duden-Grammatik (2016: §685), the ‘preposed’ variant is less frequent and predominantly occurs in the written language. In fact, its grammaticality is challenged by the observation that modal verbs were commonly preposed in verbal complexes from the 17th to the 19th century,

⁴ Prescriptive grammars of German claim that *heißen* (‘bid’) and *machen* (‘make’) may also serve as light verbs in the formation of verbal clusters (cf. Duden-Grammatik 2016: §684). Given that these cases are marginal at best, we will not be concerned with these for the purposes of the present paper.

whereas this has become extremely rare in Modern German, where the standard pattern is V_3 -Restr₂-Mod₁ (cf. Fritz 1992; Meurers 2000: 76; Hinrichs 2016: 65).⁵ Rather than grammatical formations, these may thus be assumed to be idiosyncratic remnants of a prior flexibility that has generally been lost (or is in the process of being lost).

This leaves the two temporal auxiliaries *werden* ('will') and *haben* ('have'). In Standard German the former is less restricted in the sense that it optionally allows for a cluster-initial positioning with all kinds of restructuring elements (cf. Duden-Grammatik 2016: §285). Hence, the clause-final variants in (5) are expected to find their counterparts in preposing structures like those in (6), regardless of whether a modal, a perception verb, continuative or causative *lassen* ('let'), or a benefactive serves as the restructuring item.

- (5) a. dass Ida ihn hören können **wird**
That Ida him hear can will
 'that Ida will be able to hear him'
- b. dass Ida ihn singen hören / schlafen lassen **wird**
that Ida him sing hear sleep let will
 'that Ida will hear him sing / let him sleep'
- c. dass Ida ihn den Kuchen essen lassen **wird**
that Ida him the cake eat let will
 'that Ida will let him eat the cake'
- d. dass Peter ihr die Kisten tragen helfen **wird**
that Peter her the boxes carry help will
 'that Peter will help her carry the boxes'
- (6) a. dass Ida ihn **wird** hören können
That Ida him will hear can
 'that Ida will be able to hear him'
- b. dass Ida ihn **wird** singen hören / schlafen lassen
that Ida him will sing hear sleep let
 'that Ida will hear him sing / let him sleep'
- c. dass Ida ihn den Kuchen **wird** essen lassen
that Ida him the cake will eat let
 'that Ida will let him eat the cake'
- d. dass Peter ihr die Kisten **wird** tragen helfen
that Peter her the boxes will carry help
 'that Peter will help her carry the boxes'

⁵ This observation also pertains to combinations of finite modals with passive periphrases, for which Bader & Schmid (2009: 212) claim that "[i]nverting a modal verb [...] is considered ungrammatical in Standard German".

This is different with perfect clusters: those with a modal serving as the restructuring item obligatorily trigger preposing (cf. Bader & Schmid 2009: 180). Benefactives behave alike, according to Schmid (2002: 56). Thus, (7a) and (7d) are ungrammatical. The other variants, i. e. those with perception verbs and *lassen*, supposedly allow for optionality, reminiscent of the future complexes, hence the grammaticality of (7b) and (7c).

- (7) a. *dass Ida ihn hören können **hat**
That Ida him hear can has
- b. dass Ida ihn singen hören / schlafen lassen **hat**
that Ida him sing hear sleep let has
 ‘that Ida has heard him sing / let him sleep’
- c. dass Ida ihn den Kuchen essen lassen **hat**
that Ida him the cake eat let has
 ‘that Ida has let him eat the cake’
- d. *dass Peter ihr die Kisten tragen helfen **hat**
that Peter her the boxes carry help has
- (8) a. dass Ida ihn **hat** hören können
that Ida him has hear can
 ‘that Ida has been able to hear him’
- b. dass Ida ihn **hat** singen hören / schlafen lassen
that Ida him has sing hear sleep let
 ‘that Ida has heard him sing / let him sleep’
- c. dass Ida ihn den Kuchen **hat** essen lassen
that Ida him the cake has eat let
 ‘that Ida has let him eat the cake’
- d. dass Peter ihr die Kisten **hat** tragen helfen
that Peter her the boxes has carry help
 ‘that Peter has helped her carry the boxes’

As mentioned before, the grammaticality of the modal cases for both future (84% vs. 54%) as well as perfect (83% vs. 17%) cases has been validated in experimental studies (cf. Bader & Schmid 2009: 190; 193). The same holds for perfect cases of causative (87% vs. 64%) and continuative (93% vs. 77%) *lassen* (‘let’) (cf. Bader 2014: 41–42).

In addition to the observation that clusters with modal auxiliaries and benefactives do not allow for clause-final placement of the finite auxiliary, complications arise once we consider that all of the perfect clusters we have seen so far are subject to a cluster-specific exception to the realisation of participial periphrases: the restructuring elements exhibit the so-called *Infinitivus pro Participio*

(henceforth IPP) effect. This entails that the element that we expect to be realised as a past participle comes in the form of a plain infinitive (see, amongst others, Askedal 1991; Vanden Wyngaerd 1994; Eisenberg, Smith & Teuber 2001; Barentzen 2004). IPP is, however, only obligatory with modal auxiliaries in Standard German, whereas the realisation of participial morphology is optionally available at least for *lassen* ('let') and perception verbs (cf. Duden-Grammatik 2016: §662, §663). Strikingly, preposing the auxiliary is never possible in such cases, as observable in (10).

- (9) a. dass Ida ihn singen gehört / schlafen gelassen **hat**
that Ida him sing hear.PTCP sleep let.PTCP has
 'that Ida has heard him sing / let him sleep'
- b. ??dass Ida ihn den Kuchen essen gelassen **hat**
that Ida him the cake eat let.PTCP has
 'that Ida has let him eat the cake'
- c. dass Peter ihr die Kisten tragen geholfen **hat**
that Peter her the boxes carry help.PTCP has
 'that Peter has helped her carry the boxes'
- (10) a. *dass Ida ihn **hat** singen gehört / schlafen gelassen
that Ida him has sing hear.PTCP sleep let.PTCP
- b. *dass Ida ihn den Kuchen **hat** essen gelassen
that Ida him the cake has eat let.PTCP
- c. *dass Peter ihm die Kisten **hat** tragen geholfen
that Peter him the boxes has carry help.PTCP

The cases in (9a) and (9c) show that the overt realisation of participial morphology is possible as long as the finite auxiliary occupies the canonical clause-final position. Experimental data verifies this at least for continuative *lassen* (96% vs. 22%) (cf. Bader 2014: 42). Causative *lassen*, as in (9b), on the other hand, does not permit this (35% vs. 7%) and thus rather patterns with modal auxiliaries (cf. Bader 2014: 41). These do not allow for preposing (7%), as expected (cf. Bader & Schmid 2009: 194).

Based on these considerations, the only cases potentially allowing for optionality in terms of the placement of the auxiliary as well as the realisation of participial morphology in perfect cases are the perception verbs and continuative *lassen* ('let'). On the other hand, modals are out due to the lack of comparability in perfect clauses (obligatory IPP and obligatory preposing) and the same holds for causative *lassen* (obligatory IPP and optional preposing) and benefactives (optional IPP, but obligatory preposing in case of IPP). For the experimental studies investigating optionality and its consequences for the recovery of temporal readings, the only sensible option was therefore to focus our attention on cases with perception verbs and continuative *lassen* ('let').

In addition to the configurations where preposing targets the cluster-initial position, there is another possibility: placing the finite auxiliary in between main verb and restructuring item.

- (11) a. dass Ida ihn hören **wird/hat** können
 that Ida him hear will has can
 ‘that Ida will be able to / has been able to hear him’
- b. dass Ida ihn singen **wird/hat** hören
 that Ida him sing will has hear
 ‘that Ida will hear him / has heard him sing’
- c. dass Ida ihn schlafen **wird/hat** lassen
 that Ida him sleep will has let
 ‘that Ida will/has let him sleep’
- d. dass Ida ihn den Kuchen essen **wird/hat** lassen
 that Ida him the cake eat will has let
 ‘that Ida will/has let him eat the cake’
- e. dass Peter ihr die Kisten tragen **wird/hat** helfen
 that Peter her the boxes carry will has help
 ‘that Peter will help her / has helped her carry the boxes’

This option is not acknowledged in prescriptive grammars, but the acceptability of intermediate positioning gains support from experimental studies. While it is the least acceptable option in future clusters featuring modal auxiliaries (42%), it is almost as good as full preposing (69% vs. 83%) in perfect clusters (cf. Bader & Schmid 2009: 193, 200). Something similar holds for perfect clauses with causative as well as continuative *lassen* (‘let’), where the intermediate option is roughly equivalent to either the cluster-initial or clause-final variant (84% and 67%) (cf. Bader 2014: 41–42). In the following, we will abstract away from these additional possibilities as what we are interested in – namely the processing effect of preposing – hinges on maximising the distance between the preposed auxiliary and the end of the clause. Hence, cases with intermediate positioning are not an ideal testing ground.

In an attempt to maximise the distance, the second experimental study to be discussed below is based on yet another characteristic property of verbal clusters in German: in Standard German constituents that are strongly related to the main verb may intervene between the infinitival main verb and the finite auxiliary in the upper field (cf. Duden-Grammatik 2016: §686). These come in different kinds, as observable on the basis of the examples in (12), (13), and (14), adapted from Askedal (1991: 4), Bader & Schmid (2009: 224) and Duden-Grammatik (2016: §684).

- (12) a. weil er die Arbeit noch nicht hatte *in Angriff* nehmen
because he the work yet not has in attack take
können
can
‘that Max has not yet been able to start the work yet’
- b. dass Marie den Mann hat *an der Ampel* lächeln sehen
that Mary the man has at the traffic.light smile see
‘that Mary has seen the man smile at the traffic light’
- (13) a. dass Malin hat *das Buch* lesen wollen
that Malin has the book read want
‘that Malin has wanted to read the book’
- b. dass er ein Auto hat seiner Tochter kaufen wollen
that he a car has his daughter buy want
‘that he has wanted to buy his daughter a car’
- (14) a. wenn ich nur ein einziges Mal habe *glücklich* sein dürfen
if I only a single time have happy be may
‘that he has wanted to buy his daughter a car’
- b. dass er es habe *genau* erkennen lassen
that he it has.CONJ precisely recognise let
‘that he has supposedly let it precisely be recognised’

Although the prescriptive rules of Standard German do not specify which elements are related strongly enough to intervene between the verbal constituents in a cluster, Hinrichs & Nakazawa (1994: 33f.) suggest the following implicational hierarchy: directional modifiers as in (12a) > direct objects as in (13a) > indirect objects as in (13b). This neglects adverbial modifiers like those in (14), taken from Meurers (2000: 88) and Askedal (1986: 202), which are also able to stand between the preposed finite auxiliary and the rest of the cluster. Teasing these cases apart calls for an approach based on the closeness of non-verbal VP-internal elements to their verbal governors (cf. Kefer & Lejeune 1974: 325).⁶ For the second experimental study reported below, we primarily focussed on PPs serving as locative or directional modifiers as well as on manner adverbs in an attempt to increase the distance between the finite auxiliary and the end of the clause. These two kinds of intervening constituents, i. e. prepositional phrases and adverbs, could be shown to affect acceptability only marginally in

⁶ An anonymous review suggests that there seems to be a preference for the cluster-initial positioning of the finite auxiliary, but apart from that, displacing it to the left or right from that position only slightly decreases acceptability. We do not share this intuition, as having the auxiliary intervene between cluster-internal material always seems to be better than allowing for non-verbal material to intervene in instances of left-dislocation, compare the following variants of (14a): ??*wenn ich habe nur ein einziges Mal glücklich sein dürfen* vs. *wenn ich nur ein einziges Mal glücklich sein habe dürfen*. These intuitions have to be verified by experimental data.

previous studies: the introduction of a PP only leads to a slight drop of acceptability (73% vs. 81%), while including an Adv has no significant effect, unless there also is a PP, which leads to a marginal increase in acceptability (76% vs. 71%) (cf. Bader, Häussler & Schmid 2013: 84).

3 The role of the auxiliary: temporal recovery as a potential trigger

In the previous section, we could see that a non-canonical ordering of the verbal domain in embedded clauses is only licit with the two temporal auxiliaries *haben* ('have') and *werden* ('will'). In fact, apart from the problematic status of modal auxiliaries serving as finite elements heading verbal clusters, the auxiliary *sein* ('be') in perfect periphrases is also not able to undergo preposing. Attempts to trace this back to a general incompatibility of *sein* ('be') with elements embedding infinitival main verb complements fail, as the durative verb *bleiben* ('remain') qualifies for a restructuring item. Rough equivalents of this item do give rise to the IPP as well as reordering in Bernese German and Dutch, for instance. However, this does not hold for German (cf. Schmid 2002: 28, 61f.), as we can see in (15a), and the same holds for passive periphrases, as in (15b) (cf. Haider 2003: 104, Vogel 2009: 312).

- (15) a. dass das Mädchen sitzen *bleiben/ geblieben ist
 that the girl sit.INF remain.INF remain.PTCP be
 'that the girl remained sitting'
- b. dass das Mädchen lachen *hören/ gehört wurde
 that the girl laugh.INF hear.INF hear.PTCP become
 'that the girl was heard laughing'

If we now focus on the observation that the future auxiliary *werden* ('will') and the perfect auxiliary *haben* ('have') differ from the other auxiliaries (modals, passive *werden* 'become' and perfect *sein* 'be') in terms of triggering reordering, it does not seem to be far-fetched to establish a connection to the contribution of temporal information. While modals and passive *werden* ('become') trivially do not contribute temporal properties apart from bearing uninterpretable features allowing them to overtly inflect for finiteness (*uT*), the auxiliary *sein* ('be'), a rough equivalent of which is characteristic for languages exhibiting auxiliary alternation in the perfect, may also be argued to lack any such contribution.

This intuition gains additional support from the formation of more complex clusters featuring the combination of the two temporal auxiliaries: future perfect configurations. In Standard German, these trigger preposing of not just the finite temporal auxiliary *werden* ('will') but crucially also its non-finite complement: the infinitival form of the perfect auxiliary *haben* ('have') (cf. Duden-Grammatik 2016: §684; see also Bader & Schmid 2009: 216).