

SHORT REPORT

Embedded imperatives: Empirical evidence from Colloquial German

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We offer experimental data from Colloquial German that involve imperative morphology in speech reports and in the scope of *wh*-elements. We confirm two independent restrictions on these phenomena, whose statistical significance provides evidence for the existence of embedded imperatives in Colloquial German in general.*

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1. IMPERATIVE MARKING AND DEPENDENT CLAUSES. Natural language sentences are standardly classified as belonging to one particular clause type each. This categorization results from the observation that particular sentential form types are associated with different canonical functions. Crosslinguistically, languages tend to distinguish at least declaratives (associated with assertions), interrogatives (associated with questions), and often imperatives (associated with orders); see Sadock & Zwicky 1985. The core of the clause-type paradigm that results for English is exemplified in 1.

- (1) a. You are nice to your colleagues. (declarative)
b. Are you nice to your colleagues? ((polar) interrogative)
c. Be nice to your colleagues! (imperative)

It is important to keep in mind that the relation to a particular function is merely prototypical in nature. Declaratives can equally well be used to make promises or give commands, and imperatives can equally well be used to give advice or express wishes. The classification of the form type depends on its prototypical use and pertains to a linguistic expression independently of its actual use in a particular communication.

Even if imperatives are naturally classified as belonging to such a paradigm of clause types, they tend to differ from declaratives and interrogatives in at least two respects. First, while declaratives and interrogatives allow for the same set of verbal moods (e.g. indicative, subjunctive) in many languages, imperative clauses are characterized by particular verbal forms (imperative morphology). The occurrence of imperative morphology is thus generally taken to mark a clause as belonging to the imperative type, that is, as being an imperative. Moreover, even if the form types of declaratives and interrogatives allow for a great degree of variability in grammatical categories such as person, tense, and aspect, the special mood associated with the imperative often lacks some of these oppositions.¹

Second, in contrast to declaratives and interrogatives, imperatives tend to lack corresponding formally related embedded sentences ('Just occasionally imperatives can be

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¹ Conversely, Aikhenvald 2010 points out that for some languages, imperatives display oppositions in tense and person marking that are absent from other clause types.

used in bona fide dependent clauses'; Aikhenvald 2010:109). It may not be surprising that there are no embedded imperatives that, by virtue of their literal meaning, serve to actually command anyone to do anything: after all, embedded interrogatives as in 2a are not normally used to ask questions, either. Yet, it is surprising that the form elements characteristic of imperatives are not standardly used to express reports of directive speech acts; compare the ungrammaticality of 2b.

- (2) a. Mary asked Sue who had come to the party.
 b. *Mary told Sue that don't come to the party.

In the literature, the fact that, crosslinguistically, imperative marking is not systematically used to contribute to expressions other than main clause imperatives has until recently been reflected in the claim that the imperative form type and hence the morphology that marks it constitute root phenomena (e.g. Sadock & Zwicky 1985, Palmer 1986, Han 2000). This seems particularly plausible in view of the apparent exceptions that had been studied in detail, namely imperative(-like) coordinands of conjunctions and disjunctions that receive a conditional interpretation (Bolinger 1967).²

- (3) Come closer and I'll shoot. ≈ 'If you come closer, I'll shoot.'

Since such examples lack an obvious relation to commands or orders, they have repeatedly been claimed to contain not an imperative, but a superficially similar type of embedded clause (e.g. Han 2000, Russell 2007). If this move is plausible for all instances of apparent imperative marking in dependent sentences, it might be tempting to assume that imperative clauses are, qua form type, bound to figure in a directive speech act and that this involves a level of meaning that cannot serve as input to the compositional semantic process.³

Independently of the status of examples like 3, the recent theoretical literature discusses various exceptions to the allegedly general ban of formal characteristics of imperatives (in particular, imperative morphology) from dependent clauses. Much of this discussion regards imperatives in reports of directive speech acts (Old Germanic: Rögnvaldsson 1998, Platzack 2007; Modern High German (MHG): Schwager 2006; Slovenian: Rus 2005; Korean: Pak et al. 2004; Modern English: Crnič & Trinh 2009; Japanese: Kaufmann 2012). While this body of literature argues convincingly against a general ban on embedded imperatives, little is being said about what could be the reason that embedded imperatives are crosslinguistically rare (or are at least perceived as being rare), and in particular, why the cases that are being discussed come with all sorts of syntactic, semantic, or pragmatic restrictions. For example, the verb form of an embedded imperative in Korean lacks part of the marking associated with imperatives as found in the main clause (Han 2000 considers this evidence against embedding of imperatives in Korean; Pak et al. 2004 offers a different explanation). Rögnvaldsson (1998) and Platzack (2007) adduce examples from various Old Germanic languages that contain morphological imperative marking in dependent clauses introduced by a complementizer. The authors do not comment upon the semantically marked status of these reports: all of them are semantically vacuous in the sense that the reporting construction does not express displacement from the actual utterance situation ('I (hereby)

² See von Stechow & Iatridou 2009 for a recent overview. Moreover, the possibility of conjoining and disjoining two imperative clauses may itself be taken to constitute an example of embedded imperatives. Since this option is crosslinguistically unmarked and behaves in a semantically predictable way, it is clearly different from the phenomena under consideration here and is thus left aside.

³ Other authors have argued that the compositional semantic process extends to directly speech-act-related objects (Kamp 1973, Krifka 2001).

tell you that' (cf. Schwager 2006, 2008)). Further restrictions concern the matrix predicates (see Portner 2007 for discussion). In other languages, the examples under consideration are limited to colloquial varieties (see MHG in the following, and English as discussed in Crnić & Trinh 2009).

Ultimately, a satisfactory theory of imperatives should shed light on the marked status of embedded imperatives and the idiosyncrasies they are associated with crosslinguistically. While far from able to offer such a theory here, we believe that this enterprise and the understanding of imperative clauses in general will benefit greatly from a careful examination of single embedding phenomena. In the following, we investigate two such phenomena in colloquial MHG (to the best of our knowledge, observed first in Schwager 2004;⁴ see also Schwager 2006) that contradict the formerly uncontested assumption that MHG does not have embedded imperatives (other than maybe in conditional coordinations; see for example Platzack & Rosengren 1997). Given the controversial status of these data, we offer experimental evidence for their existence. In particular, we confirm two independent restrictions on these phenomena, and we consider the statistical significance of these effects strong evidence for the existence of embedded imperatives in MHG in general.

2. EMBEDDED IMPERATIVES IN MODERN HIGH GERMAN. Schwager 2006/Kaufmann 2012 observes that, in colloquial speech, MHG allows for two types of constructions where the characteristics of main clause imperatives, in particular, imperative morphology, appear in a clause that is not a main clause imperative: (i) complements of speech reports, as in 4, and (ii) WH-clauses, as in 5.

- (4) Peter hat dir doch gestern schon gesagt, geh da morgen hin.
 Peter has you PRT yesterday already told go.IMP there tomorrow PRT
 'Peter has already told you yesterday that you should go there tomorrow!'
- (5) Wem gib das Buch?
 who.DAT give.IMP the book
 roughly: 'Who should you give the book to?'

Examples of the first type involve the use of an embedded imperative to report a previous directive speech act, as have been observed for a number of other languages as well. The embedded imperative is similar to the string that could have been used in the original utterance that is now being reported. It is therefore tempting to treat it as an instance of direct speech. Kaufmann argues that this can be excluded on the basis of how indexical elements are interpreted. In direct speech, indexicals are anchored to the original utterance; in indirect speech, they are anchored to the actual utterance situation in which the report takes place. An example like 4 under the interpretation given would thus be an instance of indirect speech (in the place of *morgen* 'tomorrow', the original utterance, which happened on the day before the report, would have used an expression referring to the day that comes two days after it). Kaufmann observes further that such speech reports come with a restriction on the relation between reporting and reported situation that looks like a weaker version of what she noted about the Old Germanic examples. She formulates the addressee constancy restriction in 6.

- (6) **ADDRESSEE CONSTANCY REQUIREMENT:** The addressee of the reporting context has to be the same person as the addressee of the reported context.

⁴ An example from which appears in Rus 2005, who does not comment on his source.

Examples of the second type have not received any discussion in the theoretical literature.⁵ These data are surprising, since we find imperative morphology in a main clause that at the same time contains a fronted WH-element that, in German as in many other languages, is normally considered a reliable indicator of a WH-interrogative. If, in addition, imperative morphology is taken to mark imperative clauses, then examples like 5 pose a challenge to the assumption that clause types are mutually exclusive in any given language.⁶ On closer inspection, examples like 5 come with an interesting restriction: they can never be used for information-seeking questions. They are, however, felicitous as rhetorical questions or as echo questions. Focusing on the latter possibility for the moment, it turns out that the currently prevalent assumptions on echo questions do not predict a conflict in clause type if a string like 5 occurs as an echo question (Artstein 2002). Despite the surface similarity to genuine interrogatives, fronting of (the obligatorily stressed) WH-items in echo questions is considered an instance of focus movement, rather than of interrogative WH-movement. The interrogative-like meaning (a set of propositions; cf. Hamblin 1973) results as the set of focus alternatives generated through variation over the position of the WH-item. Thus, despite their interrogative-like surface structure, echo questions are taken to belong to the clause type of the sentence they intend to echo. Semantically, echo questions do not inquire directly about the state of affairs they mention, but rather what has been claimed (argued, asked, ...) regarding that state of affairs. They are thus assumed to contain an additional layer of a speech report, and the denotation for 5 is predicted to be as given in 7 (Ginzburg & Sag 2000).

(7) {*The previous speaker said that you should give the book to John, The previous speaker said that you should give the book to Mary, ...* }

The details of how this speech report component is introduced—that is, if this is a syntactic, semantic, or pragmatic process—are still under debate. But many ways of resolving this issue result in the prediction that WH-imperatives as used for echo questions should behave similarly to reported speech examples.⁷ We find that, indeed, just like speech reports proper, echo questions are subject to the addressee constancy requirement. Our experimental data show that WH-imperatives are felicitous as echo questions only if a third participant directs his inquiry to the original addressee of the imperative, as exemplified in 8 (i.e. Peter is the addressee of both the echoed/‘reported’ and the echoing/‘reporting’ speech event). It would, in contrast, be unacceptable if the original addressee Peter himself used the WH-imperative to inquire from a third party or from Maria what she had said to him.

⁵ But see Aikhenvald (2010:251), who mentions possibly related phenomena in Tatar and Chukotko-Kamchatkan languages.

⁶ These data are different from biclausal examples as discussed by Reis and Rosengren (1992); see (i).

(i) Wen sag mal dass du getroffen hast?
 who say.IMP PRT that you meet.PRF.PRT have
 ‘Tell me who you met.’

In 5 the imperative clause is the matrix sentence (*sag ... ‘say’*). It embeds a WH-interrogative from which extraction has taken place into the higher clause.

⁷ Note in particular that, just like speech reports proper, echo questions can be realized as more or less exact repetitions of a previous utterance (quotes) or as depending on the additional reporting component. Fronted WH-items (as in our WH-imperatives) and shifted indexicals count as indicative of the latter type, and we are in the following focusing on such nonquotational echo questions only.

(8) Maria to **Peter**:

Gib dem Lehrer mein Buch!
 give.IMP the teacher my book
 ‘Give my book to the teacher!’

Hans to **Peter**:

WEM gib ihr Buch?
 who.DAT give.IMP her book
 ‘WHO should you give her [i.e. Maria’s] book to?’

In contrast to echo questions, rhetorical questions are generally considered genuine interrogative sentences (Han 1999). If this is taken seriously, the occurrence of a string like 5 as a rhetorical question indicates that whatever marks a sentence as a WH-interrogative can cooccur with imperative morphology. This raises two issues. First, if these are genuine interrogatives, why can’t they be used as information-seeking questions? Second, if clause types are mutually exclusive, we cannot in the face of such sentences maintain the claim that WH-marking indicates interrogative clause type and imperative morphology indicates imperative clause type. Schwager 2006/Kaufmann 2012 argues that the absence of information-seeking WH-imperative questions falls out nicely from her treatment of imperative clauses: imperative morphology signals the presence of a modal operator that is similar to the modal verb *should* in its at-issue semantics, but triggers presuppositions on the contextual status of the kind of modality this expresses (e.g. necessity according to what the speaker commands, necessity according to what the speaker wants, etc.). Crucially, it is required that in the context of the conversation the speaker counts as having perfect knowledge of what is necessary in the relevant sense—something that is typically met for her own commands or wishes. Following previous work by Zimmermann (2000) on disjunctions, Kaufmann calls this the EPISTEMIC AUTHORITY CONDITION. In contrast, it is generally assumed that a speaker can felicitously ask an information-seeking question only if it is not taken for granted by the interlocutors that she knows the answer. Consequently, there cannot be a context that would permit the use of a sentence carrying imperative morphology on the main verb to inquire into the truth of the corresponding proposition. Imperative morphology, would, in contrast, ensure part of the requirements of rhetorical questions, namely that the speaker herself is taken to know the answer. The contrast in acceptability between WH-imperatives as information-seeking and as rhetorical questions is confirmed as the secondary question of the experiment we conducted.

We think that the existence of bona fide WH-interrogatives with imperative morphology on the main verb has a strong impact on how we conceive of the marking of clause types. While, traditionally, there was a strong tendency to associate each clause type with its own (covert) operator, recent work on the topic leans toward a compositional treatment (Portner & Zanuttini 1999, Grosz 2011). WH-imperatives as occurring in rhetorical questions constitute strong evidence for this point of view.

3. EXPERIMENTAL VALIDATION OF THE DATA. We set up a questionnaire to provide experimental support for the core findings of what has been discussed in §2.

- **THE EFFECT OF ADDRESSEE SHIFT (PRIMARY INTEREST).** The acceptability of imperatives embedded in speech reports proper (i.e. under *sagen* ‘say’) and in nonquotational echo questions declines if a different person is addressed in reporting vs. reported context. To provide evidence for this, we compared imperatives to declaratives formed with the modal verb *sollen* ‘should’, for which embedded construals

are considered unproblematic. The test items used to investigate this are called TEST-1 ITEMS.

- THE EFFECT OF EPISTEMIC AUTHORITY (SECONDARY INTEREST): The acceptability of nonechoic (i.e. genuinely interrogative) WH-imperatives is affected by the epistemic position attributed to the speaker (knowledge or ignorance). The test items used to investigate this are called TEST-2 ITEMS.

We decided to investigate both effects on the same questionnaire because the echo question-related subset of the test-1 items was exactly similar in form, task, style (colloquial, confined to spoken language), and, as we hoped, complexity, to the test-2 items.

The judgments we collected confirmed the effect both of addressee shift and of epistemic authority. Yet, our data did not reveal any clues as to what parameters influence speakers' acceptance of embedded imperatives in general and their susceptibility to the effects investigated.

3.1. METHODS.

PARTICIPANTS. We recruited seventy-nine participants via a website that described the intended experiment. The website was advertised in three undergraduate classes at the University of Vienna, Austria, the University of Frankfurt, Germany, and the University of Göttingen, Germany, respectively. People interested in the study were encouraged to contact us via email to allow us to evenly distribute the participants over the four versions of the questionnaire (see the design section). The participants in Vienna were offered credit points as a reward for their participation in the experiment; the participants from the German universities volunteered without such a reward. While the website was advertised explicitly for students of introductory linguistics classes, some students forwarded it to friends and relatives, leading to the participation of a few non-linguists (fewer than five). The age span of the participants turned out to be nineteen to fifty-eight. Participants were also asked to provide information about their level of education, linguistic background, and regional influences.

DESIGN. The investigation was conducted in German. We used two sets of experimental items, namely test-1 items to investigate the effect of addressee shift on the acceptability of imperatives in speech reports proper and in echo questions, and test-2 items to investigate the effect of epistemic authority on the acceptance of nonechoic WH-imperatives.

Each of the test-1 items used to investigate the effect of addressee shift was presented in four conditions that were distributed over four versions of the questionnaire in a Latin square design: each participant saw each item once and in only one condition. The test-2 items were set in one particular condition each and, like the fillers we used, did not vary over the four versions.

The questionnaire was divided into two experimental parts. This split did not correspond to the distinction between test-1 vs. test-2 items, but to task type and surface syntactic form of the test items. In both of these respects the test-1 items for speech reports proper were different from the test-1 items for echo questions and the type-2 items, whereas the latter two were similar. Consequently, as far as test items were concerned, the first part of the questionnaire contained only test-1 items (investigating the primary interest for reported speech proper), and the second part contained test-1 items (investigating the primary interest for echo questions) as well as all the test-2 items.

Both parts of the questionnaire contained twelve test-1 items in one of four conditions each and twelve other items of the same task type and of similar surface syntactic form (fillers or test-2 items). In both parts of the questionnaire, each subject saw each

condition three times. In the first part of the questionnaire, which was concerned with the effect of addressee shift on imperatives in reported speech proper, the task was always a three-alternative choice among possible interpretations of an indexical. The experimental items were interspersed with fillers to mask the interest of the study. All fillers contained short dialogues similar to the test-1 items and likewise drew on the information conveyed by an indexical and asked either when some event mentioned in the exchange happened or which of the people mentioned played a particular role in it. The second part of the questionnaire contained the test-1 items that were concerned with the effect of addressee shift on echo questions. In the place of mere fillers, we mostly used the test-2 items (eleven out of twelve items; one was a genuine filler). For all experimental items in the second part (test-1 and test-2) and the one filler, the task was a binary acceptability judgment. Test-1 items and fillers/test-2 items were presented in a randomized order, which was the same for all four versions of the questionnaire. The first experimental part of the questionnaire started with four fillers to get the participants acquainted with the task; the second part started with one test-2 item and a filler. All experimental items and all fillers were followed by an optional field labeled *Begründung* ‘explanatory statement’; we inspected the comments given there by participants, without subjecting them to systematic analysis (see the discussion in §3.3).

Test-1 items. The four conditions of the test-1 items in both parts of the questionnaire (part 1: RS test-1 items for reported speech proper; part 2: echo question test-1 items for echo questions) resulted from the two independent variables: (i) SENTENCE-TYPE (‘imperative’ vs. ‘*soll*-declarative’, i.e. declarative formed from the modal verb *sollen* ‘should’), and (ii) ADDRESSEESHIFT (‘no.shift’ vs. ‘shift’; that is, whether the addressee in reported/echoed and reporting/echoing context was the same or not). The dependent variable was constituted by a choice regarding the referent of an indexical (three-valued INTERPRETATION for RS test-1 items) or the binary judgment of acceptability (binary ACCEPTABILITY_{test1} for echo question test-1 items). The acceptability rating was chosen to be binary for two reasons. First, we wanted to be able to directly compare the two sets of test-1 items: for the RS test-1 items, we inferred a binary distinction from whether the interpretation of the indexical was available that corresponded to an embedded construal. Second, we assumed that scalar choices of acceptability would result in a heavier influence of various pragmatic considerations about the degree to which a grammatically degraded string could be employed successfully for the purpose of the ongoing conversation.

The first part of the questionnaire tested the readings of imperative clauses in reported speech proper, that is, in the complement of *sagen* ‘say’. The punctuation was chosen to be as neutral as possible, so as to allow for an interpretation as either direct speech or indirect speech. Each example contained an indexical whose interpretation differed depending on whether the complement clause was interpreted as direct or indirect speech. Participants were asked to establish the referent of the indexical in the given scenario. Specifically, they had to choose from three options: the reading that indicated a construal as direct speech (quote), the reading that indicated a construal as indirect speech (embedded), or the explicit judgment that both readings were available. While the first two appeared in random order, the last option was always that both readings were available. Examples of test items in all four conditions are given in 9 to 12 (the answer part was the same for all four conditions and is omitted here in all but the first; throughout, the indication of an item’s condition, emphasis on the parts that change across the conditions (boldface), and the English translation did not appear in the questionnaire).

- (9) CONDITION 1: SentenceType: imperative, AddresseeShift: no.shift
 Am Donnerstag beim Frühstück sagt Veronika zu Oskar: Warum **fragst du** jetzt plötzlich mich, wann **du** zur Prüfung antreten **sollst**? Dein Kollege hat **dir** doch gestern in der Mensa klar gesagt, **mach** sie morgen.—Wann soll Oskar zu Prüfung antreten?
 ◦ am Donnerstag
 ◦ am Freitag
 ◦ beide Interpretationen sind möglich
 Begründung (optional):
 ‘On Thursday, Veronika is saying to Oskar at breakfast: Why **are you** now all of a sudden **asking** me when **you should** take the exam? Your colleague told **you** yesterday, **take.IMP** it tomorrow.—When should Oskar do the exam? ◦ on Thursday/◦ on Friday/◦ both interpretations are possible.
 Explanatory statement (optional):’
- (10) CONDITION 2: SentenceType: *soll*-declarative, AddresseeShift: no.shift
 Am Donnerstag beim Frühstück sagt Veronika zu Oskar: Warum **fragst du** jetzt plötzlich mich, wann **du** zur Prüfung antreten **sollst**? Dein Kollege hat **dir** doch gestern in der Mensa klar gesagt, **du sollst** sie morgen **machen**.—Wann soll Oskar zur Prüfung antreten?
 ‘On Thursday, Veronika is saying to Oskar at breakfast: Why **are you** now all of a sudden **asking** me when **you should** take the exam? Your colleague told **you** yesterday, **you should take** it tomorrow.—When should Oskar take the exam?’
- (11) CONDITION 3: SentenceType: imperative, AddresseeShift: shift
 Am Donnerstag beim Frühstück sagt Veronika zu Oskar: Warum **fragt Alex** jetzt plötzlich mich, wann **er** zur Prüfung antreten **soll**? Dein Kollege hat **ihm** doch gestern in der Mensa klar gesagt, **mach** sie morgen.—Wann soll Alex zur Prüfung antreten?
 ‘On Thursday, Veronika is saying to Oskar at breakfast: Why **is Alex** now all of a sudden **asking** me when **he should** do the exam? Your colleague told **him** yesterday, **take.IMP** it tomorrow.—When should Alex take the exam?’
- (12) CONDITION 4: SentenceType: *soll*-declarative, AddresseeShift: shift
 Am Donnerstag beim Frühstück sagt Veronika zu Oskar: Warum **fragt Alex** jetzt plötzlich mich, wann **er** zur Prüfung antreten **soll**? Dein Kollege hat **ihm** doch gestern in der Mensa klar gesagt, **er soll** sie morgen **machen**.—Wann soll Alex zur Prüfung antreten?
 ‘On Thursday, Veronika is saying to Oskar at breakfast: Why is Alex asking me when he should take the exam? Your colleague told **him** yesterday, **he should take** it tomorrow.—When should Alex take the exam?’

The second part of the questionnaire tested the influence of the same two factors, SentenceType and AddresseeShift, but now in echo questions. In order to ensure a nonquotational construal of the echo questions (see §2 above), all stimuli contained fronted WH-items or shifted indexicals and were thus tested for acceptability rather than interpretation.

The participants were asked for a binary judgment of acceptability: could the echo question be used to ask for a piece of information the speaker had missed about the previous utterance (yes/no)? We took acceptance to indicate an embedded construal. Examples of test items in all four conditions are given in 13 to 16.

- (13) CONDITION 1: SentenceType: imperative, AddresseeShift: no.shift
Paul und Annika sitzen im Büro. Da steckt Melanie den Kopf zur Tür herein.
 Melanie: Bevor ich's vergesse. Frag deinen Mann doch bitte nach der Kraxe.
Paul zu Annika: Frag deinen Mann nach WAS?—**Paul** hat offenbar nicht verstanden, was Melanie gesagt hat. Ist **Pauls** Äußerung geeignet, um **bei Annika** nachzufragen, nach was sie ihren Mann fragen soll?
 ° ja
 ° nein
 Begründung (optional):
 ‘**Paul and Annika** are sitting in the office. At some point, Melanie pokes her head in. Melanie: Lest I forget it. Please ask your husband for the back-basket. **Paul to Annika: Ask.IMP your** husband for WHAT?—Obviously, **Paul** did not understand what Melanie had said. Is **Paul's** utterance a suitable means to inquire **from Annika** what she should ask her husband for? °yes/°no
 Explanatory statement (optional):’
- (14) CONDITION 2: SentenceType: *soll*-declarative, AddresseeShift: no.shift
Paul und Annika sitzen im Büro. Da steckt Melanie den Kopf zur Tür herein.
 Melanie: Bevor ich's vergesse. Frag deinen Mann doch bitte nach der Kraxe.
Paul zu Annika: Du sollst deinen Mann nach WAS **fragen?**—**Paul** hat offenbar nicht verstanden, was Melanie gesagt hat. Ist **Pauls** Äußerung geeignet, um **bei Annika** nachzufragen, nach was sie ihren Mann fragen soll?
 ‘**Paul and Annika** are sitting in the office. At some point, Melanie pokes her head in. Melanie: Lest I forget it. Please ask your husband for the back-basket. **Paul to Annika: You should ask** your husband for WHAT?—Obviously, **Paul** did not understand what Melanie had said. Is **Paul's** utterance a suitable means to learn **from Annika** what she should ask her husband for?’
- (15) CONDITION 3: SentenceType: imperative, AddresseeShift: shift
 Annika sitzt im Büro. Da steckt Melanie den Kopf zur Tür herein.
 Melanie: Bevor ich's vergesse. Frag deinen Mann doch bitte nach der Kraxe.
Annika zu Melanie: Frag meinen Mann nach WAS?—**Annika** hat offenbar nicht verstanden, was Melanie gesagt hat. Ist **Annikas** Äußerung geeignet, um **bei Melanie** nachzufragen, nach was sie ihren Mann fragen soll?
 ‘Annika is sitting in the office. At some point, Melanie pokes her head in. Melanie: Lest I forget it. Please ask your husband for the back-basket. **Annika to Melanie: Ask.IMP my** husband for WHAT?—Obviously, **Annika** did not understand what Melanie had said. Is **Annika's** utterance a suitable means to inquire **from Melanie** what she should ask her husband for?’
- (16) CONDITION 4: SentenceType: *soll*-declarative, AddresseeShift: shift
 Annika sitzt im Büro. Da steckt Melanie den Kopf zur Tür herein.
 Melanie: Bevor ich's vergesse. Frag deinen Mann doch bitte nach der Kraxe.
Annika zu Melanie: Ich soll meinen Mann nach WAS fragen?—**Annika** hat offenbar nicht verstanden, was Melanie gesagt hat. Ist **Annikas** Äußerung geeignet, um **bei Melanie** nachzufragen, nach was sie ihren Mann fragen soll?

‘Annika is sitting in the office. At some point, Melanie pokes her head in. Melanie: Lest I forget it. Please ask your husband for the back-basket. **Annika to Melanie: I should ask my** husband for WHAT?—Obviously, **Annika** did not understand what Melanie had said. Is **Annika’s** utterance a suitable means to inquire **from Melanie** what she should ask her husband for?’

Test-2 items. The test-2 items appeared only in the second part of the questionnaire and tested the influence of the epistemic position (knowledge or ignorance) attributed to the speaker (binary independent variable EPISTEMICAUTHORITY) on the acceptability of nonechoic (i.e. genuinely interrogative) WH-imperatives (binary dependent variable ACCEPTABILITY_{test2}). Across items, we let the scenarios vary according to whether they suggested that the speaker knew the answer (rhetorical question; EpistemicAuthority: plus) or did not know the answer (genuine information-seeking question; EpistemicAuthority: minus). Six examples were presented in a context that suggested that the speaker knew the answer; five examples suggested genuine information-seeking questions. The participants were asked to judge the acceptability of the WH-imperative in the given scenario. Example 17 is one of the items that suggest that the speaker knows the answer, and 18 is one of the items that suggest that the speaker does not know the answer.⁸

(17) Anke zu Benni: Was soll ich nur für das Grillen morgen einkaufen?

Benni zu Anke: Was kauf schon ein für’s Grillen? Wie wär’s mit Grillfleisch, Würstchen und einer Kiste Bier!?

Benni findet offenbar, dass es doch auf der Hand liegt, was Anke zum Grillen einkaufen soll. Ist Benni’s Äußerung geeignet, um das zu verstehen zu geben?

- ja
- nein

‘Anke to Benni: What shall I buy for tomorrow’s BBQ? Benni to Anke: What buy.IMP PRT for a BBQ? What about some meat, sausages, and a crate of beer? Obviously, Benni thinks that it is evident what Anke should buy for the BBQ. Is Benni’s utterance a suitable means to express this attitude? °yes/°no’

(18) Susanne erzählt Olaf, dass sie am Abend auf das Baby ihrer Freundin aufpasst.

Olaf: Da wär ich ja total überfordert. Wie wickel so ein Baby?

Olaf will offenbar von Susanne wissen, wie man ein Baby wickelt. Ist Olaf’s Äußerung geeignet, um dies von Susanne zu erfragen?

- ja
- nein

‘Susanne tells Olaf that she will babysit her friend’s baby that same evening. Olaf: I’d be at a total loss. How diaper.change.IMP a baby? Obviously, Olaf wants Susanne to explain to him how to change a baby’s diaper. Is his utterance a suitable means to obtain this information from Susanne? °yes/°no’

PROCEDURE. The four versions of the questionnaire were made accessible separately via the online tool SurveyMonkey (<https://www.surveymonkey.com/>). All participants

⁸ As we tried to keep them as literal as possible, the translations may sound more stilted than the originals. For the crucial WH-imperative, the grammatical structure is indicated in the translation. Speakers who accept these sentences seem to interpret them along the lines of ‘Well, what should you buy for a BBQ?’ and ‘How does one change a baby’s diaper?’.

were asked to carefully read a brief introduction that informed them that they would be asked to answer a questionnaire consisting of three parts, where the first served to collect some biographical information and was followed by two experimental parts. We asked them to evaluate the data as belonging to colloquial spoken German and explicitly instructed them not to think of whether the examples constituted ‘good German’ according to a standard reference grammar (*Duden*).

DATA TREATMENT. We first inspected the data in a spreadsheet. The columns corresponding to the optional explanatory statements proved too unsystematic for a statistical analysis and we eliminated them (see the discussion in §3.3). Throughout, missing values were eliminated from the analysis. One participant, who had stopped answering the questionnaire shortly after the beginning of the second part, was excluded. Another participant was excluded because she classified herself as a nonnative speaker of German. To test for possible effects of age or region, two categorial vectors (AGEGROUP: levels ‘Age1’ (19–28; forty-eight participants), ‘Age2’ (29–38; twenty-three participants), ‘Age3’ (39–58; six participants); and REGION: levels ‘Northern German’, ‘Middle German’, ‘Bavarian’, ‘Austrian’, ‘Suebian’, and ‘Alemannic’) were added post hoc. We based these assessments on the participants’ descriptions in reply to the questions of whether they spoke a dialect and what region they consider to have influenced their variety of German most. For the RS test-1 items in the first part (reported speech proper under *sagen* ‘say’), the answer options in terms of the reference of an indexical element were translated manually to ‘e’ (for the interpretation corresponding to the embedded construal), ‘q’ (for the interpretation corresponding to the quoted construal), and ‘b’ for the answer that both interpretations were available. For the echo question test-1 items in the second part, given our theoretical assumptions, acceptance amounts to an interpretation of the imperative as embedded in the reporting construction corresponding to an echo question (cf. 7) and was therefore also encoded as ‘e’; rejection was encoded as ‘o’ (for ‘out’). Given our assumptions, both the value ‘q’ for the three-valued dependent variable Interpretation in the first part and the value ‘o’ for the binary Acceptance_{test1} in the second part indicated that no embedded construal was available (in the sense of indirect speech under the overt matrix predicate *sagen* ‘say’, or under the reporting operator induced in echo questions, respectively). To evaluate the effects of AddresseeShift and SentenceType, and in particular of their interaction, on the possibility of embedded interpretations on the overall data set (i.e. in both indirect speech and echo questions), we automatically added a numerical representation of the responses, encoding ‘e’ as 1 and both ‘q’ (for RS test-1 items that were apparently construed as direct speech only) and ‘o’ (for rejected echo question test-1 items) as 0.

For the test-2 items (occurring in part 2 of the questionnaire only), the binary dependent variable Acceptance was encoded numerically (1 for acceptance, 0 for rejection).

3.2. PREDICTIONS AND RESULTS. In the following, we discuss in turn the predictions and results for the two interests we investigated. The data were analyzed with the lmer program of the lme4 package (Bates & Maechler 2010). This package is supplied in the R system for statistical computing (R Development Core Team 2010) under the GNU General Public License (version 2, June 1991).

PRIMARY INTEREST: INFLUENCE OF ADDRESSEE SHIFT ON ACCEPTABILITY OF EMBEDDED IMPERATIVES (test-1 items). We expected that a shift in the addressee parameter between reporting and reported context would lead to a decline in acceptance of embedded construals for imperatives, but not for *soll*-declaratives. We expected the effect of the addressee shift on imperatives to be reflected in significantly fewer interpretations of in-

dexicals that indicated the indirect speech construal for RS test-1 items and a significantly lower acceptance of echo question test-1 items when appearing in condition 2 (SentenceType: imperative, AddresseeShift: shift). For the RS test-1 items, both the indirect speech interpretation (encoded as ‘e’) and the judgment that both interpretations were available (encoded as ‘b’) would indicate an embedded construal. In principle, since the punctuation was deliberately chosen to be neutral so as to block neither the indirect nor the direct speech construal, direct speech was (nearly always) expected to be an (additional) option (hence, answer ‘b’, rather than ‘e’). RS test-1 items in condition 4 (AddresseeShift: shift, SentenceType: modalized-declarative) constitute an exception: in this case, the direct speech construal was expected to be dispreferred for independent reasons (the third-person pronoun in subject position lacked a suitable antecedent in the scenario described; see 12).⁹ Based on nonbalanced investigations of speaker judgments preceding the experiment, we expected that imperatives would in general be accepted less readily as occurring in indirect speech and in echo questions, and therefore that test items with SentenceType: imperative would receive fewer ‘e’/‘b’ answers.

RESULTS. Table 1 displays the relative frequency of acceptance of an embedded construal (corresponding to answers ‘e’ and ‘b’) and its standard derivation over the four conditions resulting from SentenceType (imperative vs. *soll*-declarative) and AddresseeShift (minus vs. plus). Due to the different task types, the possibility of embedded constrictals was indicated by both ‘e’ and ‘b’ (in contrast to ‘q’ for ‘quoted’) for the three-valued answer variable Interpretation with RS test-1 items, and by only ‘e’ in the binary Acceptance_{test1} with echo question test-1 items (in contrast to ‘o’ for ‘out’). The percentages for the underlying answer options are displayed in Table 2.

	CONDITION			
	IMP, NO.SHIFT	IMP, SHIFT	<i>soll</i> , NO.SHIFT	<i>soll</i> , SHIFT
MEAN	.60	.40	.82	.85
SD	.49	.49	.39	.36

TABLE 1. Relative frequency of acceptance of embedded construal (in reported speech proper and echo questions) dependent on SentenceType and AddresseeShift.

RS TEST-1 ITEMS				
ANSWER	CONDITION			
	IMP, NO.SHIFT	IMP, SHIFT	<i>soll</i> , NO.SHIFT	<i>soll</i> , SHIFT
‘b’	.33	.38	.25	.22
‘e’	.48	.19	.68	.75
‘q’	.19	.43	.06	.03

ECHO QUESTION TEST-1 ITEMS				
ANSWER	CONDITION			
	IMP, NO.SHIFT	IMP, SHIFT	<i>soll</i> , NO.SHIFT	<i>soll</i> , SHIFT
‘e’	.73	.61	.95	.94
‘o’	.27	.39	.05	.06

TABLE 2. Relative frequencies of choices for Interpretation (‘b’oth, ‘e’mbdedded, ‘q’uoted) in reported speech proper and for Acceptance_{test1} (‘e’mbdedded, ‘o’ut) in nonquotational echo questions, dependent on SentenceType and AddresseeShift.

⁹ In principle, a similar preference for RS test-1 items in condition 3 (AddresseeShift: no.shift, SentenceType: *soll*-declarative) could not be excluded: German *du sollst* ‘you should’ is preferably descriptive—in contrast to *du solltest* (historically, its subjunctive), which can easily be interpreted as performative (we are not aware of theoretical literature on this distinction). Yet, even when understood as direct speech, descriptive interpretations of the utterances were not entirely implausible in the given scenarios, which is why we expected less of a bias against an additional direct speech construal for RS test-1 items in condition 3.

The factors corresponding to the two independent variables SentenceType (imperative vs. *soll*-declarative) and AddresseeShift (plus/minus) were contrast coded. Visual inspection of the data for reported speech proper (see Figure 1) revealed that the participants tended not to perceive the reported speech data as ambiguous and that the corresponding answer option ‘b’ (that both direct and indirect speech interpretation were available, depicted as black bars) was influenced only to a relatively small degree by the effects under consideration. For these reasons, we excluded the ‘b’ answers from the following analysis (see discussion, §3.3).

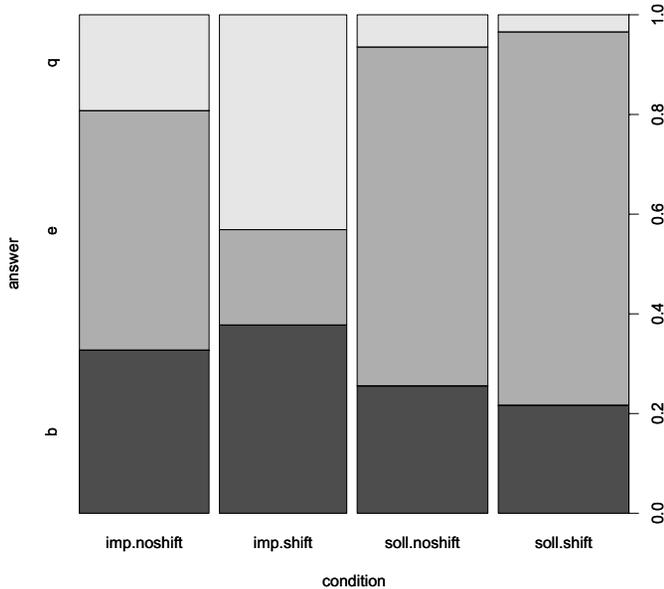


FIGURE 1. Relative frequencies of choices dependent on SentenceType (imperative vs. *soll*-declarative) and AddresseeShift (same or different addressee in reported vs. reporting context) for reported speech proper (answers represent interpretations of an indexical as witnessing: ‘e’ an embedded construal, ‘q’ a quoted construal, ‘b’ the explicit judgment that both were possible).

We performed a logistic regression on the probability of choosing an embedded construal with SentenceType and AddresseeShift and their interaction as fixed effects. For both items and subjects we included random intercepts as well as random slopes for the main effects and the interaction. There is a significant main effect of SentenceType such that imperatives were in general less likely to be construed as embedded (reflected in value ‘e’ of Interpretation for RS test-1 items and of Acceptance_{test1} for echo question test-1 items; $\beta = -4.35$, $SE = 0.48$, Wald $Z = -9.12$, $p < 0.05$). There is no significant effect of AddresseeShift (Wald $Z = 0.92$, $p > 0.3$). There is a significant interaction of SentenceType and AddresseeShift ($\beta = -4.03$, $SE = 0.81$, Wald $Z = 4.97$, $p < 0.05$). As shown in Figure 2, for items of SentenceType: *soll*-declarative, there is no effect of AddresseeShift, but for items of SentenceType: imperative, the effect is there. While the effect of the interaction between SentenceType and AddresseeShift is significant overall, Figures 3 and 4 show that it is more pronounced for speech reports proper than for echo questions.

We performed a further analysis to control the family-wise error weight. We used a Bonferroni-correction, lowering the criterion of significance to 0.025. We restricted the

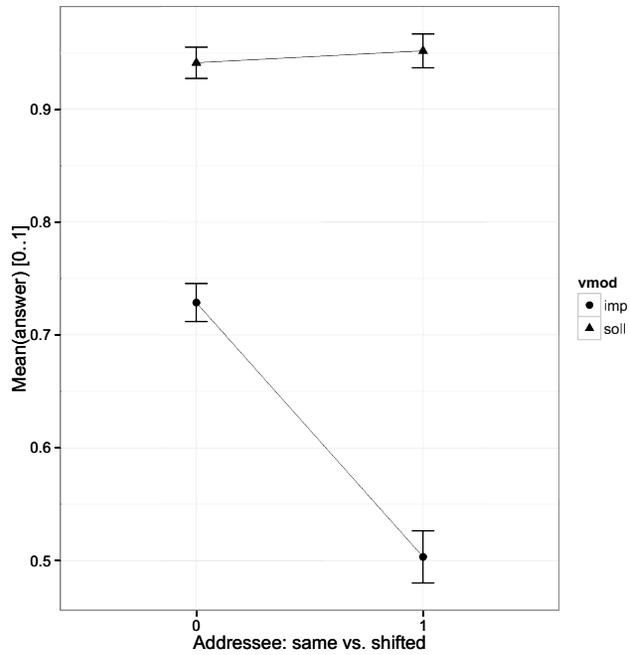


FIGURE 2. Mean frequencies of choices for embedded construals (as witnessed by interpretations of indexicals that suggest indirect speech construals and acceptance of nonquotational echo questions) dependent on SentenceType and AddresseeShift.

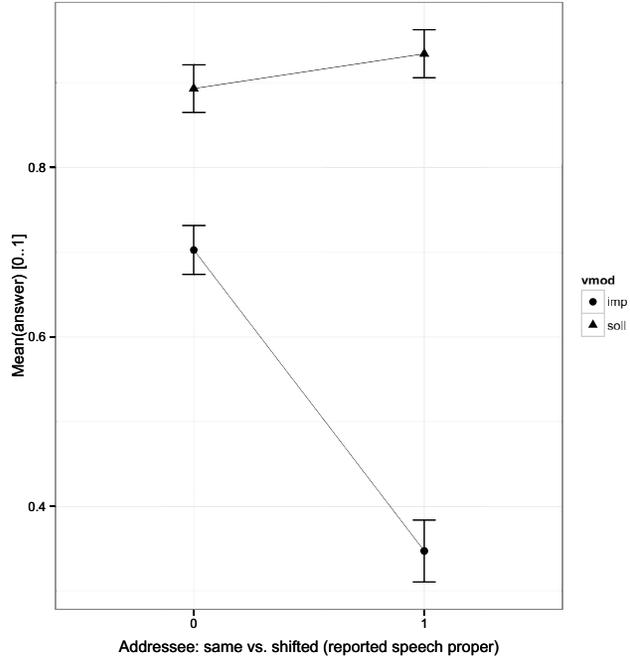


FIGURE 3. Mean frequencies of choices for embedded construals in reported speech proper (as witnessed by interpretations of indexicals that suggest indirect speech construals) dependent on SentenceType and AddresseeShift.

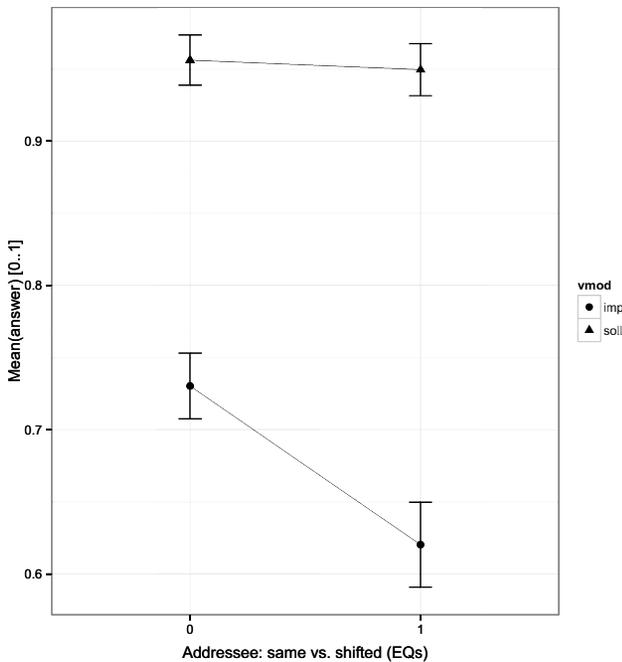


FIGURE 4. Mean frequencies of choices for embedded construals in echo questions (as witnessed by acceptance of nonquotational echo questions) dependent on SentenceType and AddresseeShift.

data to the items of SentenceType: imperative and performed a logistic regression with AddresseeShift as the fixed effect, and for both items and subjects with random intercepts and random slopes for the main effect.

On this set, the model found a significant effect of AddresseeShift on the probability of the imperative being accepted as embedded ($\beta = -1.63$, $SE = 0.41$, Wald $Z = -3.97$, $p < 0.025$). As suggested for the entire data set comprising both *soll*-declaratives and imperatives by Figs. 3 and 4, the effect was more pronounced for the reported speech items ($\beta = -12.66$, $SE = 4.07$, $p < 0.025$) than for the echo questions, where it was not significant at the 0.025 level ($\beta = -1.19$, $SE = 0.57$, $p < 0.05$).

SECONDARY INTEREST: INFLUENCE OF EPISTEMIC AUTHORITY ON THE ACCEPTABILITY OF NONECHOIC *WH*-IMPERATIVES (test-2 items). Our theory predicts that nonechoic *WH*-imperatives would be accepted considerably less often in contexts that suggest speaker ignorance (genuine information-seeking questions) than in contexts that suggest speaker knowledge (rhetorical questions). Here, too, nonbalanced investigations of speaker judgments preceding the experiment led us to expect that at least some participants would reject nonechoic *WH*-imperatives in general.

RESULTS. The five test items without epistemic speaker authority (i.e. the cases that suggest genuine information-seeking questions) were judged as acceptable 129 times and as unacceptable 264 times; in ten cases no judgment was provided. The six items that involved epistemic authority of the speaker were judged acceptable in 317 cases, as unacceptable in 140 cases, and received no judgment in five cases. The corresponding percentages for items that received a judgment are given in Table 3. It reveals that the proportion of acceptance vs. rejection is more than reversed under the influence of EpistemicAuthority.

CONDITION	ANSWER	
	ACCEPTABLE	UNACCEPTABLE
minus	.34	.66
plus	.69	.31

TABLE 3. Acceptance of nonechoic WH-imperatives depending on Epistemic Authority.

We performed a logistic regression on the probability of acceptance with Epistemic Authority (i.e. the epistemic status of the speaker suggested by the scenario) as a fixed effect, which was contrast coded. We included random intercepts as well as random slopes for the main effect for both subjects and items. The model revealed a main effect of Epistemic Authority such that nonechoic WH-imperatives were more likely to be accepted in contexts where the speaker was assumed to know the answer and was thus taken to be asking a rhetorical (or otherwise non-information-seeking) question ($\beta = 4.81$, $SE = 0.73$, Wald $Z = 6.61$, $p < 0.05$).

3.3. DISCUSSION.

PRIMARY INTEREST: INFLUENCE OF ADDRESSEE SHIFT ON ACCEPTABILITY OF EMBEDDED IMPERATIVES (test-1 items). Our results demonstrate that, in general, embedded imperatives are not accepted as readily as modalized declaratives. But embedded imperatives are significantly less likely to be accepted in cases where reported and reporting context disagree on who is being addressed, while *soll*-declaratives are not affected in this way. This effect of a shift in the addressee parameter is exactly what we expected based on our own introspections and preceding nonbalanced assessments of speaker judgments.

For the part of the experiment that investigated reported speech proper (i.e. embedding under the matrix predicate *sagen* ‘say’), the fact that each speaker judged at least some instances as direct and some as indirect speech confirms our assumption that the orthographic presentation chosen was sufficiently neutral (moreover, none of the participants commented on this issue in any of their explanatory statements). Interestingly, our theoretical assumptions predicted all imperative sentences and most of the *soll*-declaratives that are acceptable as indirect speech to be acceptable as direct speech as well. Yet, there was a strong tendency to choose only one of the possible interpretations (see Fig. 1). For *soll*-declaratives in condition 4, the quoted interpretation was expected to be dispreferred; a weaker bias in favor of the embedded construal was acknowledged for condition 3 (see the predictions in §3.2). But crucially, imperatives were expected to always at least allow a construal as direct speech (therefore, ‘b’ rather than ‘e’), but they were not systematically judged as ambiguous, either. Moreover, as became obvious from Fig. 1, the distribution of the answer value ‘b’ (‘both interpretations possible’) showed little variation over the effects under consideration. For these reasons, we suspect that the ‘b’ answers largely reflected uncertainty on the participants’ side, which is why we excluded these data points from the linear regression analysis.

For the part investigating echo questions, the effects were generally weaker, and we received some explanatory statements that suggested that the participants had misconstrued their task and were evaluating the utterance for certain pragmatic aspects of suitability (roughly: ‘this is ungrammatical, but will be understood’, or ‘the utterance could be misunderstood’). Since we had no way of telling whether, in the absence of an explanatory statement, speakers had used the semantic criteria we had hoped them to employ, we did not exclude any data based on the explanatory statements. Ultimately, these problems suggest that follow-up investigations—in particular, on echo questions—should be conducted by on-line experiments (e.g. visual-world paradigm).

Despite the relatively high acceptance of embedded imperatives among our subjects,¹⁰ not all speakers of German we talked to independently of the experiment accepted embedded imperatives. Post hoc splits of our subjects according to regional influences as suggested by their self-descriptions and according to age group did not suggest any interesting patterns, in addition to the numbers becoming too small to provide a robust data basis. Therefore, we did not include the variables Region and Age-Group as predictors in our models. Follow-up investigations with carefully selected groups of participants should be conducted to shed light on what factors determine the acceptance of embedded imperatives in principle and the susceptibility to the effect of the addressee shift in particular.

SECONDARY INTEREST: INFLUENCE OF EPISTEMIC AUTHORITY ON THE ACCEPTABILITY OF NONECHOIC WH-IMPERATIVES (test-2 items). Our results demonstrate that nonechoic WH-imperatives are significantly less likely to be accepted in a context where the speaker lacks the information required to answer the WH-question than in a context where the speaker is assumed to already know the answer. These findings support the theoretical assumptions discussed in §2: imperatives presuppose that the speaker has perfect knowledge of the modal state of affairs in question; hence, genuinely interrogative (i.e. nonechoic) WH-imperatives about this particular state of affairs can never be felicitous as information-seeking questions but occur naturally as rhetorical questions.

Similarly to what we observed above for the echo question test-1 items, we received some explanatory statements that suggested that speakers had misconstrued their task and were evaluating the utterance for certain pragmatic aspects of suitability (roughly: ‘this is ungrammatical, but will be understood’). Here, too, since we had no way of telling whether, in the absence of an explanatory statement, speakers had used the semantic criteria we had hoped them to employ, we did not exclude any data based on the explanatory statements.

Our investigations preceding this experimental study suggested that not all speakers of German accept nonechoic WH-imperatives. This expectation was confirmed by the existence of eight participants who outright rejected all eleven of the test-2 items, independently of the epistemic position attributed to the speaker (for comparison: twelve participants accepted all of them, independently of the epistemic position attributed to the speaker). According to our informal post hoc classification, the eight participants who consistently rejected the nonechoic WH-imperative data came from four different areas (including both Austrian and Northern German speakers) and from all three age groups. Therefore, while we are confident that our study has established a clear effect of (contextually acknowledged) epistemic authority on the acceptability of nonechoic WH-imperatives with a significant part of our participants, it does not offer any insights as to what determines the varieties of German that display the phenomenon.

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¹⁰ Of 747 imperative test-1 items that received answers at all, 456 were accepted as occurring in embedded position (for reported speech proper, reflected in interpretations of the indexicals that suggested the construal as indirect speech as at least one possibility, encoded as ‘e’ and ‘b’, respectively; for echo questions by acceptance of the echo-utterance as a suitable means, encoded as ‘e’). Three of the seventy-seven participants whose data were integrated in the model interpreted all reported imperatives they were presented with as quotational, independently of whether the addressee was shifted.

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