# REJECT?! ON THE PROSODY OF NON-ACCEPTANCE

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## ABSTRACT

This production study examines two rejecting speech acts (ReA) in German: plain rejections and rejecting questions (RQs), which encode speaker uncertainty regarding the rejecting act. In comparison to assertions, the ReA show increased prosodic prominence of the nuclear accent but no specialized contours signalling disagreement as observed in other languages [24]. Rejections have a falling final contour. RQs come with two different rising contours known from other questions but may also end in a fall. Both illocutionary meaning components—non-acceptance and uncertainty—have gradient prosodic effects.

**Keywords:** prosody, rejection, rejecting question, disagreement, German

## 1. INTRODUCTION

Rejections and certain checking questions express that the speaker *S* does not wish to accept the truth of a proposition *p* which is associated with a preceding utterance by an interlocutor. Rejections express that *S* will not accept *p* into the common ground (CG). Rejecting questions leave room for the possibility that *S* might err, so that it is uncertain if *p* should not be accepted into the CG. To illustrate, when *S* hears, *Benny is thinking about buying raffle tickets*, *S* might conclude that Benny wants to buy raffle tickets (= *p*). *S* might disagree and say, *Benny doesn't want to buy raffle tickets!*, thus rejecting *p*. Alternatively, *S* might hear, *Benny mentioned spending his money on the fair.*, and ask, *Surely, he doesn't want to buy raffle tickets?!*, thereby suggesting to reject *p*.

Non-acceptance or, more generally, disagreement has prosodic reflexes, which have been discussed both in relation to specific intonation contours [24], and in relation to specific utterance types. Rejections have been suggested to come with the so-called *contradiction contour* (CC) [17, 19, 24], which in English is a low rise contour that is preceded by a fall before the final low pitch accent. It has received various transcriptions, e.g. %H (L*) L* L-H% [11]. The CC occurs with full-clause rejections of negative or positive polarity in English [11, 19], and also with rejecting uses of response particles like Catalan *sí* 'yes' [10]. However, as [23] point out, in English the CC not only rejects but also indicates that the addressee should already be aware of the truth of the speaker's utterance. Relatedly, in Catalan the CC can be used to 'state the obvious' [1, 8]. In fact, the CC seems to be generally ambiguous [23].

In German, the prosody of rejection has been studied for utterances with VERUM focus [13], which reject a conjecture or previous assertion by highlighting the truth of the current utterance, and for corrections with narrow focus. VERUM focus is marked by an accent on the finite verb in an overall falling contour in German. The accent has been reported to be (^)H* L- in utterances rejecting negative assertions [32], and L*+H in negative utterances rejecting a conjecture [30]. In corrections, the narrowly focused element is marked by the more frequent occurrence of more prominent pitch accents (L+H*), higher maximum F0, higher F0 excursion and greater duration in comparison to non-corrective narrow focus, and by reduced accentuation in the prenuclear region [3, 21].

Regarding non-accepting questions, previous research has described various *incredulity contours* (IC) in different languages, which have been proposed to mark disagreement [24]. In English the IC is a rise-fall-rise contour (L*+H L-H%) [11, 17, 34], which, depending on phonetic details, may also mark uncertainty [33] or lack of commitment [34] in a more general sense. Dutch uses the same contour to mark incredulity, while Catalan uses a neutral question contour (L* HH%) but with expanded F0 range [7]. In Puerto-Rican Spanish, incredulity is marked by a fall-rise-fall (L*HL%) [2].

In German, non-acceptance in questions has been studied in indignant echo questions, which express incredulity, and in various surprised questions. German echo questions come with the sharply rising final L* H-^H% contour familiar from information-seeking polar questions (which may also end in a fall [14, 16]). In echo questions, the L* accent is on the in-situ *wh*-word [25]. Indignant echo questions show a lower L* target, a steeper and higher rise and longer duration of the *wh*-word, and have higher prenuclear pitch than echo questions that are asked for other reasons (e.g., noisy environment, missing new infor-

mation) [25]. Surprised declarative and polar questions also have a later and higher final rise than their information-seeking counterparts [15] and a slower speaking rate [21].

In this paper we explore the prosody of two rejecting speeach acts (ReA) in German: rejections and rejecting questions (RQs) [26, 27, 29]. Both ReA reject a conjecture that suggests itself as an implication of an utterance by the interlocutor. Rejections plainly reject the conjecture; RQs signals speaker uncertainty regarding the rejecting act. In addition, both ReA indicate that the interlocutor should have been aware that the implied conjecture is false, which is a discourse type that does not license VERUM focus. The meaning components just described are marked transparently by modal particles (MPs). The rejections in our study contain the MP *doch*, which signals a conflict with a previous utterance and reminds the interlocutor that they should be aware of the conflict because the CG contains information that is incompatible with their previous utterance [31]. The RQs contain the MP combination *doch wohl*, which unambiguously marks the illocutionary force of this question type; *wohl* typically signals speaker uncertainty [35].

We compare the ReA with assertions. This three-way comparison enables us to examine the prosodic contributions of (i) the rejecting meaning component combined with the signal that the interlocutor should be aware of the truth, and (ii) the uncertainty (interrogative) meaning component. In a previous prosodic study of RQs in Swedish [28], (negative) RQs were compared only to (negative) rejections, and were found to exhibit the regular characteristics of question marking in Swedish.

## 2. METHOD

We tested utterances without negation, see (1), which were embedded in dialogue contexts (abbreviated here). There were three conditions: the target utterance was an assertion (As), a rejection (R) or a RQ.

(1) Speaker 2: *[...] A lucky fellow like Benny has many options in the fair, right?* (As) || *It looks like Benny wants to try out all the roundabouts in the fair.* (R, RQ).

Speaker 3 (= participant):

As: Benny will da dann Lose kaufen.
*B. wants there then raff.t. buy*

R: Benny will doch dann Lose kaufen!

RQ: Benny will doch wohl Lose kaufen?!

'Benny wants to buy raffle tickets (there then / then, as you know / surely).'

In the dialogues, three speakers chat about friends. Speakers 1 and 2 (prerecorded; presented in written and auditory form) set the scene, and speaker 2 either asks a fairly general tag question *p?* (condition As), or utters a supposition which allows the conjecture that a proposition *p* concerning the plans of a friend is false (R, RQ). Speaker 3 (= participant) then reacts to the question *p?* in an utterance containing adverbs instead of MPs (As), rejects the conjecture by declaring the obvious truth of *p* in a *doch*-utterance (R), or suggests the obvious truth of *p* in a *doch-wohl* utterance (RQ); followed by an assertion. All target utterances have broad VP focus, which in the R and RQ conditions is corrective.

18 native speakers of German (5 male; aged 19-32, mean: 25.2) participated in the experiment. They were students of the University of Cologne at the time of the experiment and were either paid for their participation or received course credit.

The recordings were annotated in Praat [4] by trained research assistants (GToBI guidelines [12]). The raw data was imported into R using rPraat [5].

## 3. RESULTS

Rejections and assertions were realized with falling contours except for one rejection with the IC familiar from English. Most RQs (64%) also had falling contours, 30% were rising, the remainder were mostly incomplete falls after nuclear [L+]H* accents, or late falls (≈ H-L%). There was considerable inter-individual variation in the RQs. 4 participants produced only falling RQs, 1 produced only rising RQs; 13 produced primarily falling, and 5 primarily rising RQs. See Fig. 1 for averaged normalized contours.

In the statistical analysis, we fitted two (generalized) linear mixed models for each dependent variable: one with assertions as baseline, comparing the two ReA separately, and one comparing the two ReA with each other. We report Holm-Bonferroni-adjusted *p*-values. Significance levels are as follows: $^{***} = p < 0.001$, $^{**} = p < 0.01$, $^{*} = p < 0.05$.

**Utterance-level measures.** The speaking rate was the same in all three speech acts. Mean intensity was higher in rejections than in assertions ($b = 0.5, SE = 0.17, t = 2.9^{*}$), and in RQs than in assertions, but not significantly so. Intensity range was highest in assertions and lowest in RQs, with rejections intermediate. Only the difference between RQs and assertions was significant ($b = -0.92, SE = 0.26, t = -3.5^{**}$). F0 range was higher in both ReA than in assertions (R: $b = 2.2, SE = 0.35, t = 6.2^{***}$; RQ: $b = 2.3, SE = 0.34, t = 6.7^{***}$). Mean F0 was higher in rejections than in assertions

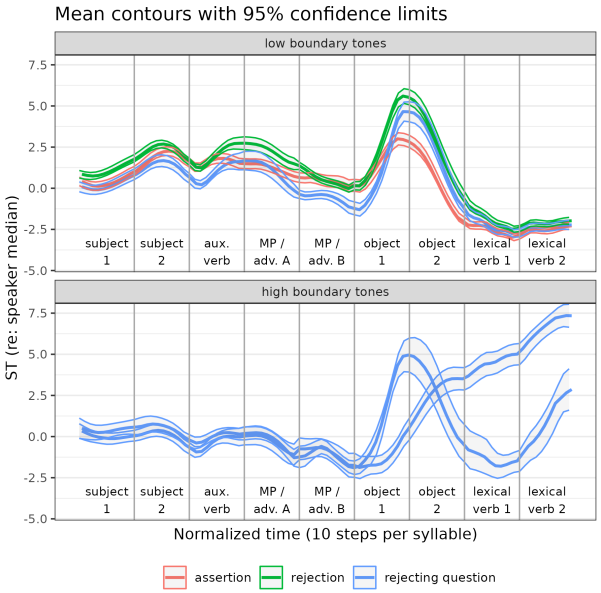


**Figure 1:** Average contours split by speech act and boundary tone height. High boundary tones are further split into low rises ([L+]H* L-H%) and high rises (L* H-^H%).

($b = 0.66, SE = 0.15, t = 4.4^{**}$), and it was non-significantly higher in RQs than in assertions.

**Accent placement and accent types.** Fig. 2 shows the distribution of accentuation and accent types across syllables in all speech acts. Regarding accent placement, we found that the subject was accented less often in the ReA than in assertions (R: $b = -1.5, SE = 0.52, z = -2.9^{**}$; RQ: $b = -1.7, SE = 0.52, z = -3.2^{**}$). Since the object was accented extremely often across conditions (As: 100%; R/RQ: > 95%), we could not fit a model. The auxiliary was accented non-significantly more often in the ReA than in assertions. All other syllables were accented too rarely to fit a model.

Regarding accent types, the proportion of L+H* accents (amongst all accents) was higher on the object in the ReA than in the assertions (R: $b = 1.7, SE = 0.3, z = 5.3^{***}$; RQ: $b = 2.1, SE = 0.3, z = 6.6^{***}$). The proportion of L* accents was lower on the subject in the ReA than in assertions (R: $b = -0.9, SE = 0.2, z = -3.6^{***}$; RQs: $b = -1.1, SE = 0.24, z = -4.4^{***}$). L* accents on the object only occurred in RQs. H+!H* only occurred on the object in assertions (usually as the second accent in a hat pattern), while !H* only occurred on the object in the ReA and usually followed a very prominent accent on the auxiliary, i.e. !H* accents were arguably post-nuclear pitch accents.

The rising contours in RQs were unevenly split between those with L* vs. (L+)H* nuclear accents: L* occurred in 52 utterances (48 followed by H-^H%),

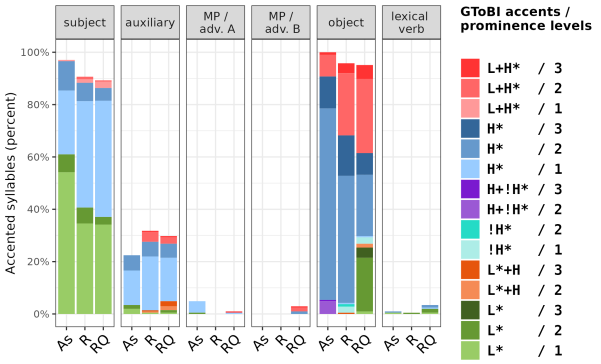


**Figure 2:** GToBI accent types and DIMA prominence level combinations per syllable and condition

and (L+)H* in 135 (14 followed by L-H%; 11 by one participant). The other (L+)H* utterances either had low boundary tones or incomplete falls.

**Syllable/word-level measures.** For space reasons we do not report numerical details for these measures here (see `osf.io/xerfg`). Fig. 3 shows the relative duration (foot, i.e. both syllables) and mean intensity for subject, object and lexical verb. Fig. 4 shows the F0 measures. We carried out separate analyses for objects with H* accents vs. objects with L+H* accents. Table 1 presents all significant differences (at least $p < 0.05$) and effect directions.

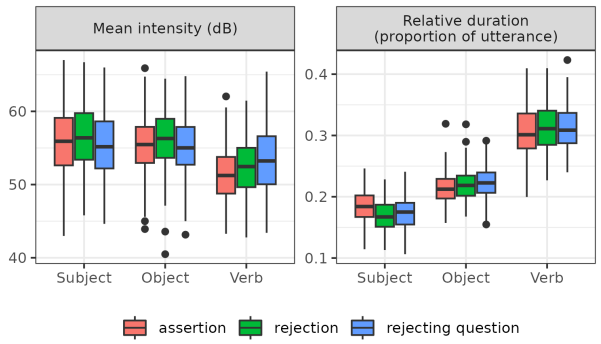


**Figure 3:** Mean intensity (accented syllable) and relative duration (word) for subject, object and lexical verb.

## 4. DISCUSSION

Our results indicate that the meaning components rejection and uncertainty/interrogativity have prosodic reflexes in ReA. For the rejections we did not observe a specific CC but there are many differences with assertions. RQs share characteristics with other German questions but also with rejections.

Overall, both ReA show an increased prominence of the nuclear accent on the object in comparison to

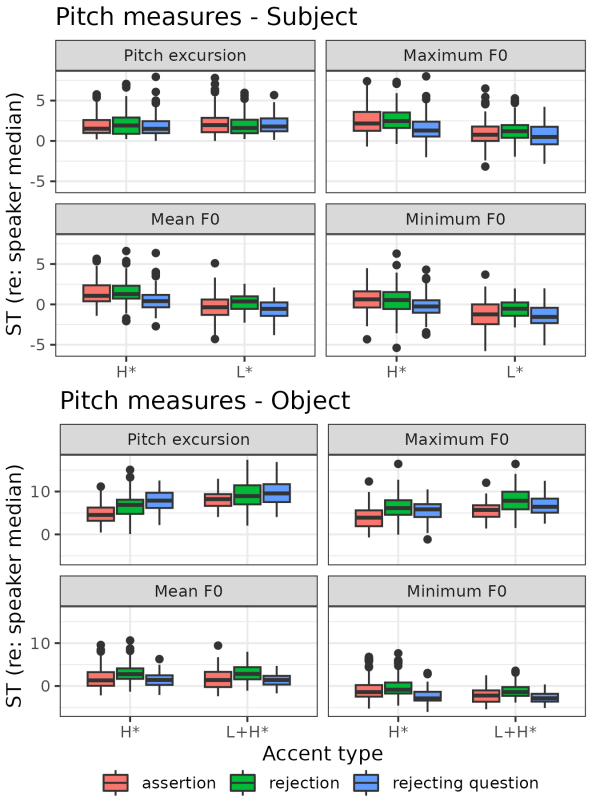


**Figure 4:** Pitch-related measures for subject and object, split up by speech act and accent type

assertions, with more L+H* accents, higher maximum F0, greater F0 excursion for H* accents and longer duration. These effects are known from narrow object focus in corrections, but since in the current ReA there is no narrow focus but broad VP focus, the effects are more likely to be an illocutionary effect of the rejecting meaning component, as might be the longer duration and higher intensity in the post-nuclear region.

While utterance-level pitch range was higher in both ReA (which arguably is driven by the higher nuclear pitch accent in rejections and the high boundary tone in RQs), mean utterance-level pitch was higher only in rejections. This most likely results from the overall higher prenuclear pitch, which also shows in the higher pitch of L*-accented subjects in rejections. This observations is unfamiliar from work on the prosody of disagreement but accords with findings for emotional arousal [6, 18]: higher mean pitch is associated with higher emotional arousal ([25] on indignant echo questions). A rejection arguably is a face-threatening act, and is thus plausibly associated with higher emotional arousal. Just suggesting a rejection with a RQ might be less face-threatening, so that the emotional arousal is lower than in rejections, as is indicated by the lack of higher prenuclear pitch.

**Table 1:** Summary of significant differences for syllable/word-level measures of accented subjects (S), of accented objects in falling contours (O), of non-accented verbs (V); for F0 split by accent type

| | | R:As | RQ:As | RQ:R |
|---|---|---|---|---|
| **S** | duration | < | < | > |
| | intensity | > | - | < |
| **S: H*** | $F0_{exc}$ | - | - | - |
| | $F0_{max}$ | - | < | < |
| | $F0_{min}$ | - | < | < |
| | $F0_{mean}$ | - | < | < |
| **S: L*** | $F0_{exc}$ | - | - | - |
| | $F0_{max}$ | > | < | < |
| | $F0_{min}$ | > | - | < |
| | $F0_{mean}$ | > | < | < |
| **O** | duration | > | > | > |
| | intensity | > | - | < |
| **O: H*** | $F0_{exc}$ | > | > | > |
| | $F0_{max}$ | > | > | - |
| | $F0_{min}$ | - | < | < |
| | $F0_{mean}$ | > | - | < |
| **O: L+H*** | $F0_{exc}$ | - | - | - |
| | $F0_{max}$ | > | - | < |
| | $F0_{min}$ | > | - | < |
| | $F0_{mean}$ | > | - | < |
| **V** | duration | > | > | - |
| | intensity | > | > | > |

RQs are also marked as distinct from rejections by two rising contours: The L* H-^H% contour is familiar from other indignant and surprised questions [15, 25], and from information questions [12, 20]. The (L+)H* L-H% contour has been suggested to mark the expectation of a quick, non-elaborating *yes-no*-answer [22] . Intuitively, this fits the illocution of RQs: the addressee is reminded that they should agree with the speaker. The contour also has been suggested to mark polite offers [9, 12], which is incompatible with the illocution of RQs. Falling RQs show only subtle differences with rejections: lower minimum and mean F0, which might be an effect of the arguably lower emotional arousal of RQs.

In sum, the rejecting and the uncertainty meaning components have many prosodic reflexes, although rejections and RQs are not always clearly distinguished. Overall, the prosody of non-acceptance seems to depend on specific discourse conditions, as is reflected in differences with earlier findings on other types of rejections and disagreeing questions.

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