# On the semantics and prosody of contrast -- with production data from questions and exclamatives

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# Contrast is a very intuitive notion

Bill went to London and Pete went to Rome.

Bill didn't go to Rome, Pete went to Rome!

Bill went to Rome and Pete went to Rome.

Bill went to Rome **but** Pete went to Rome, too.

Bill went to Rome **after** Pete went to Rome.

...or so it seemed.

# Contrast is a very intuitive notion (?)

To investigate contrast, intuitive notions of contrast might not be very helpful.



CONTRASTIVE      NOT CONTRASTIVE
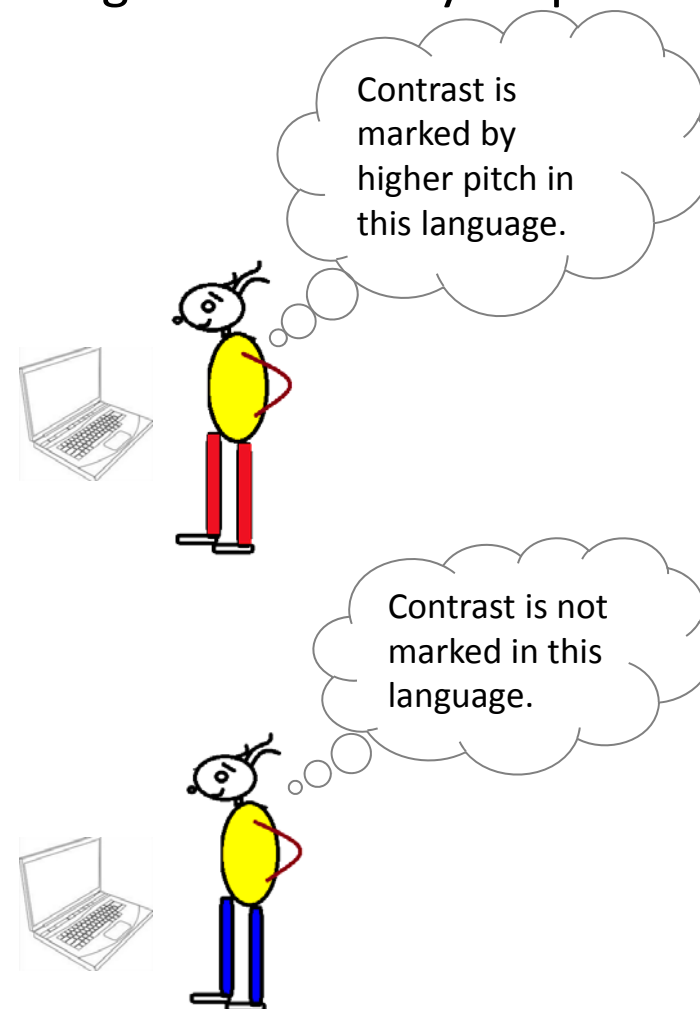
# Today's talk

- Systematic investigation of the notion of contrast

- Proposal (cf. Repp, in press)

  - to adopt a more fine-grained approach to contrast and to distinguish different 'kinds' of contrast on two levels:
    - contrast between constituents (the alternatives)
    - contrast between discourse segments

  - to dispense with <u>general</u> claims of the sort *"contrast is marked in language x in way y"* – at least as long as there is not sufficient empirical coverage for language *x*

- Presentation of new data from two production experiments investigating

  - the interplay of contrast and information status (givenness)
  - in speech acts other than assertions: questions & exclamatives

# Elements of contrast: constituent alternatives

- All the above examples contained pairs of *overt* **alternatives**:

  *(1) Bill – Pete; London – Rome*

  ↳ generally considered a good indicator for the presence of contrast

- A stricter view on contrast (É. Kiss 1998; also Bolinger 1961; Chafe 1976):

  A *restricted* **set of overt alternatives** in the context which are *clearly identifiable* by the discourse participants.

  *(2) A: Did Pete or Bill go to Rome?   (3) A: Who of these two lied?*
  *    B: Pete did.                           B: Pete did.*

  [contrastive]

  *(4) A: Did someone go to Rome?      (5) A: Who lied?*
  *    B: Pete did.                         B: Pete lied.*

  [non-contrastive]

# Elements of contrast: constituent alternatives

- A very popular view that is even stricter (e.g. Halliday 1967; Chafe 1976; Kenesei 2006; Neeleman and Vermeulen 2012).

    The context must contain an alternative such that substituting the original with the alternative results in a false statement = **exclusion of alternatives**

    *(6) Bill didn't go to Rome! Pete went to Rome!*

    Not contrastive on this view:

    *(7) Bill went to Rome and Pete went to Rome, too.*
    *(8) Bill went to Rome and Pete went to London.*
    *                              (...and Pete also went to Rome)*

⇨ This view brings **exhaustivity** ( ≈ meaning of *only*) into the picture.

⇨ Most of the time, though, this view boils down to a condition on the **discourse type** rather than on the alternative set (see below).

# Elements of contrast: constituent alternatives

- An alternative strict view (e.g. Halliday 1967; Frey 2006, 2010).

  The alternative selected by the speaker is **unexpected**, or in some other way **remarkable / standing out from** other alternatives.

  *(9) Bill went to London and Pete went to the Moon!*

  Other researchers view unexpectedness as only loosely connected with, or independent from contrast (e.g. Zimmermann 2008; Brunetti 2009).

There are also more generous views:

- Alternatives **need not be overt**. An alternative may remain unexpressed but must be contextually or situationally salient, or predictable (e.g. Halliday 1967; Chafe 1976; Pierrehumbert and Hirschberg 1990)

  *(10) Pete FLEW to Heringsdorf!*

# Elements of contrast: constituent alternatives

- Another generous view

  Alternatives **always contrast** with each other (Vallduví and Vilkuna 1998; Selkirk 2008; Katz and Selkirk 2011), independent of
  - their overtness
  - the makeup of the alternative set (identifiable, restricted)
  - operators that operate on alternative set (exclusion or not)
  ↬ Identical to the notion of focus in Alternative Semantics (Rooth 1985, 1992)

(11)   A: _What_ did Pete do?
       B: Pete _lied_.     [contrastive]

(12)   Pete even _lied_.   [contrastive]

(13)   Pete hadn't done his homework. When the teacher asked him, Pete
       _lied_. [not contrastive; new information]

# What to conclude from this overview

- Opinions on what contrast is differ dramatically even if one only looks at possible restrictions on the (set of) alternatives.

- As a consequence, statements like *In language x contrast is marked in way y* might mean very different things depending on the definition chosen by the investigator

- A priori, languages might differ in their grammatical sensitivity to particular characteristics of the (set of) alternatives, e.g.

  When it comes to prosodic or morpho-syntactic reflexes of contrast, the *alternatives = contrast* view might be

  - correct for language A
  - incorrect for language B

- **Thus, we must distinguish between different classes of alternative sets and test for grammatical reflexes of these different classes.**

# Hypothesis about contrasting constituents (*C-Const* )

An F-marked constituent $\beta_F$ is a **candidate** for being a contrastive constituent in a sentence if one of the conditions in (a)–(c) holds:

(a) There is a constituent $\alpha$ in a preceding sentence, $[\![\alpha]\!]^\circ \neq [\![\beta]\!]^\circ$, such that $[\![\alpha]\!]^\circ \in [\![\beta_F]\!]^f$

(14) *John went to Rome and [Pete$_F$] went to Rome, too.*

$\alpha = John$     $\beta = Pete$     $[\![\beta_F]\!]^f = \{John, Pete\}$

**= explicit alternative** (*ExplAlt*)

# Hypothesis about contrasting constituents (*C-Const* )

An F-marked constituent $\beta_F$ is a **candidate** for being a contrastive constituent in a sentence if one of the conditions in (a)–(c) holds:

(a) There is an ***explicit alternative*** *(ExplAlt)*

(b) There are constituents $\alpha_1, \ldots, \alpha_n$ ($n>1$) in a preceding sentence or preceding sentences such that $[\![\beta_F]\!]^f = \{ [\![\alpha_1]\!]^\circ, \ldots, [\![\alpha_n]\!]^\circ \}$

(15) *John and Pete went to Rome. [Pete$_F$] never came back.*

$\quad \alpha_1, \alpha_2 = $ *John, Pete* $\qquad \beta = $ *Pete* $\qquad [\![\beta_F]\!]^f = $ *{John, Pete}*

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ ***= explicit alternative set*** *(ExplAltSet)*
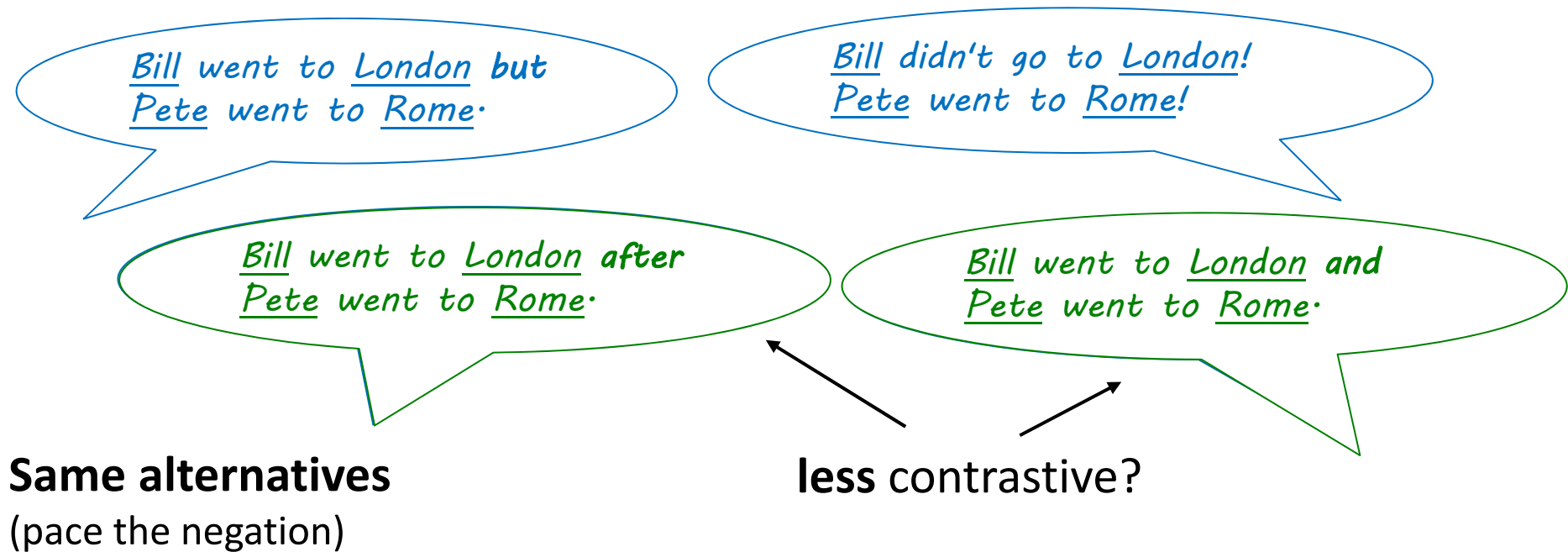
# Hypothesis about contrasting constituents (*C-Const* )

An F-marked constituent $\beta_F$ is a **candidate** for being a contrastive constituent in a sentence if one of the conditions in (a)–(c) holds:

(a) There is an ***explicit alternative (ExplAlt)***

(b) There is an ***explicit alternative set (ExplAltSet)***

(c) There is a constituent $\alpha$ in a preceding sentence such that $[\![\alpha]\!]^{\circ}$ corresponds to $[\![\beta_F]\!]^f$, where 'correspond to' subsumes relations between kinds and their representatives, plural individuals and their atomic parts, generalized quantifiers and elements of their witness sets.

(16) *Some of the boys went to Rome. [Pete$_F$] never came back.*

$\alpha$ = *some of the boys*     $\beta$ = *Pete*     $[\![\beta_F]\!]^f$ = *{John, Pete, Hal, Dean}*

*= implicit alternative set (ImplAltSet)*

## Hypothesis about contrasting constituents (*C-Const* )

An F-marked constituent $\beta_F$ is a **candidate** for being a contrastive constituent in a sentence if one of the conditions in (a)–(c) holds:

(a) There is an *explicit alternative (ExplAlt)*

(b) There is an *explicit alternative set (ExplAltSet)*

(c) There is an *implicit alternative set (ImplAltSet)*

This hypothesis will form part of a larger hypothesis about the role of contrast in grammar – see below.

# Elements of contrast: discourse contrast

*Bill went to London but Pete went to Rome.*

*Bill didn't go to London! Pete went to Rome!*

*Bill went to London after Pete went to Rome.*

*Bill went to London and Pete went to Rome.*

**Same alternatives**
(pace the negation)

**less** contrastive?

- In these examples, the intuitive degree of contrastiveness is associated with different discourse relations:

  corrections > adversative relations (*but*) > simple juxtapositions (*and, after*)

⇨ Contrast in general is a gradable phenomenon (Molnár 2006, Paoli 2009, Calhoun 2010; also cf. Bolinger 1961; Lambrecht 1994; Asher and Lascarides 2003)

# Elements of contrast: discourse contrast

- All discourse theories have a discourse relation CONTRAST:

    CONTRAST: there must be similarities as well as dissimilarities between two discourse segments

| SDRT (Asher & Lascarides 2003) | Wolf & Gibson (2005) | RST (Mann & Thompson 1988, Mann & Taboada 2015) |
|---|---|---|
| CONTRAST | CONTRAST<br>VIOLATION OF EXPECTATION | CONTRAST<br>CONCESSION<br>ANTITHESIS (incl. corrections) |

(17) *Bill went to London (but/and) Pete went to Rome.* [CONTRAST]
(18) *Although Bill went to London, Pete went to Rome.* [CONCESSION]
(19) *Bill didn't go to London – Pete went to Rome!* [ANTITHESIS]

- There also is a relation SIMILAR / LIST / PARALLEL, e.g.

(20) *Bill went to Rome and Pete did too.*
(21) *Bill went to London and Pete went to Rome.*

# Elements of contrast: discourse contrast

**Proposal:** Discourses like (21-23) are <u>not</u> contrastive discourses in a substantial sense, i.e. beyond the existence of contrastive constituents.

(21) *Bill went to London <u>and</u> Pete went to Rome.*
(22) *Bill went to London <u>because</u> Pete went to Rome.*
(23) *Bill went to London <u>after</u> Pete went to Rome.*

Only discourses that involve meaning components like *incompatibility* and *violation of expectation* are contrastive from a discourse point-of-view.

- **Violation of expectation**, typically marked by: *but, although, still* e.g.

  *but* ('aber') : first conjunct serves as an argument <u>for</u> some background assumption whereas the second conjunct serves as an argument <u>against</u> it (e.g. Anscombre and Ducrot 1977). ⇨ Conjuncts make **OPPOSING** contributions to question under discussion

- **Incompatibility** ≈ Correction

# Hypothesis about contrastive discourse relations (*C-DRel*)

The degree of contrastiveness of the discourse relation between two discourse segments $d_1$ and $d_2$ increases from *(n)* to *(ii)*.

(n) Smooth discourses (= non-contrastive)

(i) [OPPOSE$_{(i)}$] discourses

(ii) [CORR$_{(ii)}$] corrective discourses

# Hypothesis about contrastive discourse relations (*C-DRel*)

The degree of contrastiveness of the discourse relation between two discourse segments $d_1$ and $d_2$ increases from *(n)* to *(ii)*.

**(n)  Smooth discourses (= non-contrastive)**

a.  [Q-A$_{(n)}$]: $d_1$ is associated with a question meaning, i.e. a set of propositions; the proposition associated with $d_2$ is an element of that set

   (24) A: Who went to Rome?    B: Pete went to Rome.

b.  [SIMILAR$_{(n)}$]: the proposition associated with $d_1$ and the proposition associated with $d_2$ can both be true in the evaluation world

   $d_1$ & $d_2$ make the same kind of contribution to the current question under discussion

   (25) Bill went to London and Pete went to Rome.

   QuD: Did Bill and Pete go abroad last year?

# Hypothesis about contrastive discourse relations (*C-DRel*)

The degree of contrastiveness of the discourse relation between two discourse segments $d_1$ and $d_2$ increases from *(n)* to *(ii)*.

(n)   Smooth discourses (= non-contrastive)

   a.   $[\text{Q-A}_{(n)}]$     *(24) A: Who went to Rome? B: Pete went to Rome.*

   b.   $[\text{SIMILAR}_{(n)}]$ *(25) Bill went to London and Pete went to Rome.*

(i)   **[OPPOSE(i)]:** the proposition associated with $d_1$ and the proposition associated with $d_2$ can both be true in the evaluation world

$d_1$ & $d_2$ make opposing contributions to the current question under discussion

*(26) Bill went to London **but** Pete went to Rome.*

*QuD: Did Bill and Pete go to the UK last year?*

# Hypothesis about contrastive discourse relations (*C-DRel*)

The degree of contrastiveness of the discourse relation between two discourse segments $d_1$ and $d_2$ increases from *(n)* to *(ii)*.

(n)   Smooth discourses (= non-contrastive)

    a.   [Q-A$_{(n)}$]     *(24) A: Who went to Rome? B: Pete went to Rome.*

    b.   [SIMILAR$_{(n)}$] *(25) Bill went to London and Pete went to Rome.*

(i)   [OPPOSE$_{(i)}$]     *(26) Bill went to London but Pete went to Rome.*

(ii)   **[CORR$_{(ii)}$]:** $d_2$ rejects $d_1$ because the propositions associated with $d_1$ and $d_2$ cannot both be true in the evaluation world

    *(27) Bill didn't go to London! Pete went to Rome!*

    or because certain background assumptions for the felicitous use of $d_1$ are not met

    *(28) A: When did Bill go to Rome?    B: Pete went to Rome!*

## Hypothesis about the role of contrast in the grammar (A)

Contrast is a **grammatically relevant notion in the grammar of a language $L$** if in discourses consisting of two discourse segments $d_1$ and $d_2$, $L$ uses grammatical means to mark $d_2$ in the following way:

*(A) Contrast based on type of alternatives:* A constituent that is a candidate for being a contrastive constituent in *C-Const* (*ExplAlt* (*John–Pete*), *ExplAltSet* (*{John,Pete}–Pete*), *ImplAltSet* (*boys–Pete*))

- is marked differently from non-contrastive constituents
- is marked differently from candidate contrastive constituents in at least one class of *C-Const* (*ExplAlt, ExplAltSet, ImplAltSet*) that is different from its own

    The constituent is marked by the same means for all discourse relations in *C-DRel*.

If $L$ marks <u>all</u> the discourse types in *C-DRel* for <u>all</u> contrastive constituent types in *C-Const* by the same means contrast marking is F-marking in $L$, and 'contrast' is focus.

# Hypothesis about the role of contrast in the grammar (B)

Contrast is a **grammatically relevant notion in the grammar of a language $L$** if in discourses consisting of two discourse segments $d_1$ and $d_2$, $L$ uses grammatical means to mark $d_2$ in the following way:

***(B) Contrast based on discourse relations:*** The constituents that are candidates for being contrastive constituents in *C-Const* (ExplAlt (*John-Pete*), ExplAltSet (*{John, Pete}-Pete*), ImplAltSet (*boys-Pete*)

➥ are marked differently when they occur in OPPOSE(i) or CORR(ii) in comparison to when they occur in other discourse relations.

Contrast is a gradable notion if there are differences in the marking of OPPOSE(i) and CORR(ii).

# Testing for contrast

The above hypothesis implies that when investigating contrast, one of the following two test designs should be chosen:

- constituent alternative class is varied, discourse relation is held constant
- constituent alternative class is held constant, discourse relation is varied

This is hardly ever done in e.g. prosodic studies, cf. the following popular paradigm for the investigation of contrast:

(24) Experimenter:  What did Mario say?
     Participant:    That he finished the girl's banana.
     Experimenter:  That he finished the girl's [apple]?
     Participant:    That he finished the girl's [banana]$_{contrast}$.

> No explicit alternative, new constituent, smooth discourse

> Explicit alternative, given constituent, correction

When there is a prosodic difference between the two *banana* we do not know its source: the alternative class or the discourse. However, this difference might be important.

# Prosodic reflexes of contrast in German

The following are some studies that offer a more fine-grained picture of contrast by not conflating discourse type and alternative type:

- Sudhoff (2010): $SIMILAR_{(n)}$ vs. $CORR_{(ii)}$ discourses with two *ExplAlt* constituents per discourse segment. $CORR_{(ii)}$ showed:
    - higher maximum pitch, greater intensity on contrastive constituents
    - lower max pitch on prenuclear accents
    - contrastive constituents are more often realized with rising accents (L*+H or L+H*) rather than with H*

- Baumann, Becker, Grice & Mücke (2007): $Q-A_{(n)}$ vs. $Q-CORR_{(ii)}$ discourses with one *ExplAlt* constituent per discourse segment. $CORR_{(ii)}$ showed:
    - higher relative and absolute pitch peak (upstepped H*)

- Braun (2005, 2006): SIMILAR(n) discourses *with* vs. *without ExplAlt* constituents (given topics). *ExplAlt* constituents showed:
    - higher and/or later F0 peak, longer duration, larger F0 excursion

# New experiments investigating contrast

Two production experiments which:

- investigate acoustic reflexes of information structure by
    - varying the contrastive constituent class of the object noun
    - varying the information status of the object noun referent
    - keeping the discourse relation constant
- in string-identical
    - *wh*-questions
    - *wh*-exclamatives
- with the goal of determining the acoustic correlates of these categories – and their potential interplay in lesser studied speech-act types.

# New experiments investigating contrast

- Prosodic effects of information-structural categories -- mainly investigated for assertions

  Whether information structure is marked by similar means in different speech act types -- rather underexplored

- Claims in literature: exclamations not sensitive to context and thus information structure (cf. Batliner, 1988; Oppenrieder, 1988)

  Repp (2015): givenness is marked prosodically in *wh*-exclamatives although possibly to a slightly lesser extent than in *wh*-questions

- Potential reason for reduced marking of givenness:

  Exclamatives also encode emotional arousal – which might counteract givenness marking by increasing pitch excursion, intensity (on prosodic reflexes of emotional arousal, cf. e.g. Bänzinger & Scherer, 2005; Lieberman & Michaels, 1962; Banse & Scherer, 1996)

# *Wh*-exclamatives and *wh*-questions in German

*Wh*-exclamatives and *wh*-questions are string-identical, and come as:

**(a) verb-second *wh*-structures**

(24)  *Was   war  das  für  ein  Traum*     **! / ?**
       what  **was** that for  a     dream
       'What kind of dream was it**?**' /    'What a dream that was**!**'

**(b) verb-final *wh*-structures**

(25)  *Was    das  für  ein  Traum  war* **! / ?**
       what   that for  a     dream  **was**
       'What kind of dream it was**?** /    'What a dream that was**!**'

*Wh*-exclamatives:  no speech act difference between orders

*Wh*-questions:       verb second = ordinary question
                    verb-final = echo question or embedded question

In Repp (2015) I looked at verb-second structures.

# Two Experiments: verb-final *wh*-structures

- Experiment 1: embedded *wh*-questions
  Experiment 2: *wh*-exclamatives

  Experiments were run with the same speakers in different recording sessions: 9 males and 9 females from the Berlin-Brandenburg region

- Both experiments tested verb-final structures in a **2x2x2 design**:

  - factor '**CONTRAST**', levels: 'CONTRASTIVE', 'NON-CONTRASTIVE'

  - factor **GIVENNESS**, levels: GIVEN, NEW

  - factor **SEX**; earlier experiments have shown differences between male and female speakers in marking of:

    - interrogativity in Dutch (Van Heuven & Haan, 2000)
    - information structure (Röhr & Baumann, 2010; Schmid & Moosmüller, 2013)
    - exclamativity (Oppenrieder, 1988; Repp, 2015)

# The two information-structural factors

| ...wo / Wo | die | schon | überall | Germanen | erforscht | hat | ?/! |
|---|---|---|---|---|---|---|---|
| where | she | already | everywhere | **Germanic.tribes** | researched | has | |

'...where she has done research on Germanic tribes already**?**'

'The many places where she has done research on Germanic tribes**!**'

- Factor '**CONTRAST**' was implemented as follows:

  - **'CONTRASTIVE'** = object noun had an explicit alternative in context (= *ExplAlt*), e.g. *Etruscan tribes – Germanic tribes*

  - **'NON-CONTRASTIVE'** = object noun had no explicit alternative in context

  So, "*contrastive*" means "*with explicit alternative*" in what follows.

- Factor **GIVENNESS**

  - **GIVEN** = object noun in context

  - **NEW** = object noun not in context but context introduced set of implicit alternatives (*ImplAltSet*) of which object noun was member, e.g. *Old-European tribes – Germanic tribes*

# Materials and procedure experiment 1

| | | GIVEN | NEW |
|---|---|---|---|
| **NON-CONTRASTIVE** | | Have you heard? Anna has specialized on _____ for her PhD. | |
| | | **Germanic tribes** | **Old-European tribes** |
| | | Really? I guess she travels a lot to get access to the original records of the _____ | |
| | | **Germanic tribes** | **Old-European tribes** |
| **CONTRASTIVE** | | Have you heard? Anna has specialized on _____ for her PhD. | |
| | | **Etruscans** | **Old-European tribes** |
| | | Indeed, she travels all the time. Recently she was in Italy to visit a burial site of the **Etruscans**. _____ | |
| | | But I think she also travels a lot because of **Germanic tribes**. | But I think she does not only travel a lot because of the **Etruscans**. |

| Do you know by any chance… | …wo | die | schon | überall | **Germanen** | erforscht | hat? |
|---|---|---|---|---|---|---|---|
| | where she | already | everywhere | Germanic.tribes | researched | has |
| | '…where she has done research on Germanic tribes already?' | | | | | | |

# Materials and data analysis experiment 1

Materials:

↳ 8 lexicalizations → 32 experimental items

↳ 16 fillers

Statistical analysis of acoustics carried out on normalized data (no analysis of pitch accents yet):

↳ Residual values for <u>each segment</u> obtained from linear regression models with speaker and lexicalization as predictors

stressed

wo / Wo **|** die    **|**schon   überall      **|** Ger **|MA|**nen    er   **| FORSCHT |** hat

where     she      already   everywhere   Germanic.tribes   researched    has

wh       **|** dpron  **|**    ------adv-----      **|** o1   **|**o2 **|**  --o3.v1--  **|**v2       **|** aux
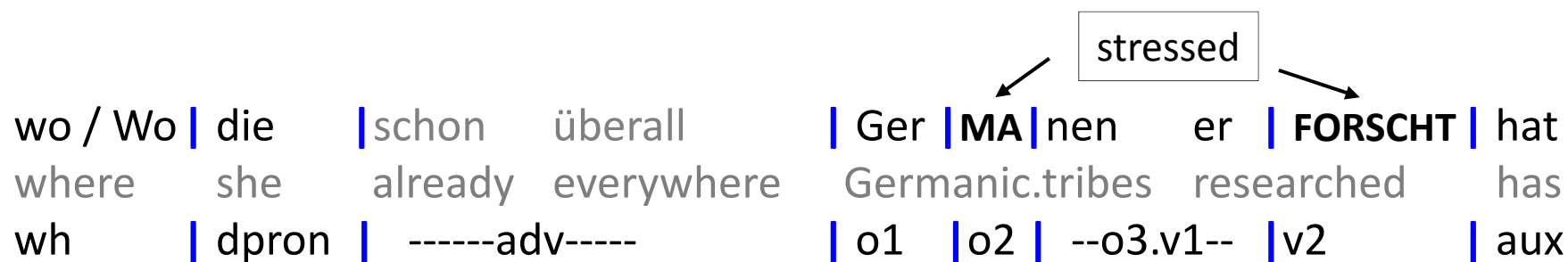
F0 measures in semitones (maximum, minimum, excursion); duration; intensity

# Predictions experiment 1

On the basis of previous research on assertions:

- Main effect of GIVENNESS: given objects should be less prominent than new objects:

  ⇨ lower pitch, shorter duration (e.g. Baumann 2006, 2008; Röhr & Baumann 2010)

- Main effect of CONTRAST: objects with an explicit alternative should be more prominent than objects without explicit alternative:

  ⇨ higher pitch, higher pitch excursion, longer duration, increased intensity; lower pitch in prenuclear region (see above)

Considering that there might be a final rise – the *wh*-questions were embedded in a polar question:

  ⇨ the pitch measures might also be reversed (i.e. lowering of pitch in new vs. given objects, cf. Repp in prep)

# Results experiment 1: Pitch

Time-normalized pitch contour of raw data
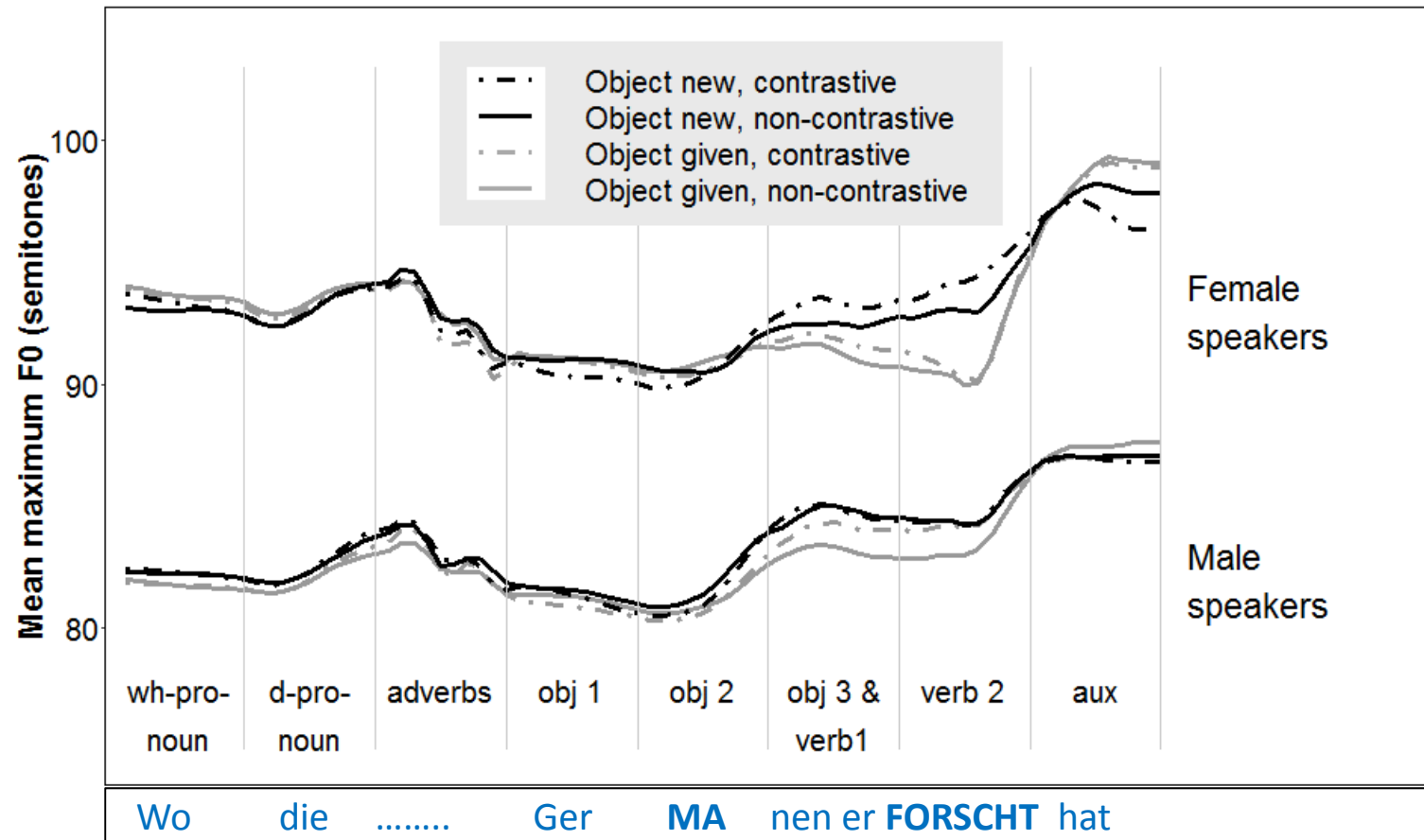


⇨ Final contour rise – matrix polar question
⇨ Pitch differences in and after object region – information-structural manipulation

**Residual maximum F0**
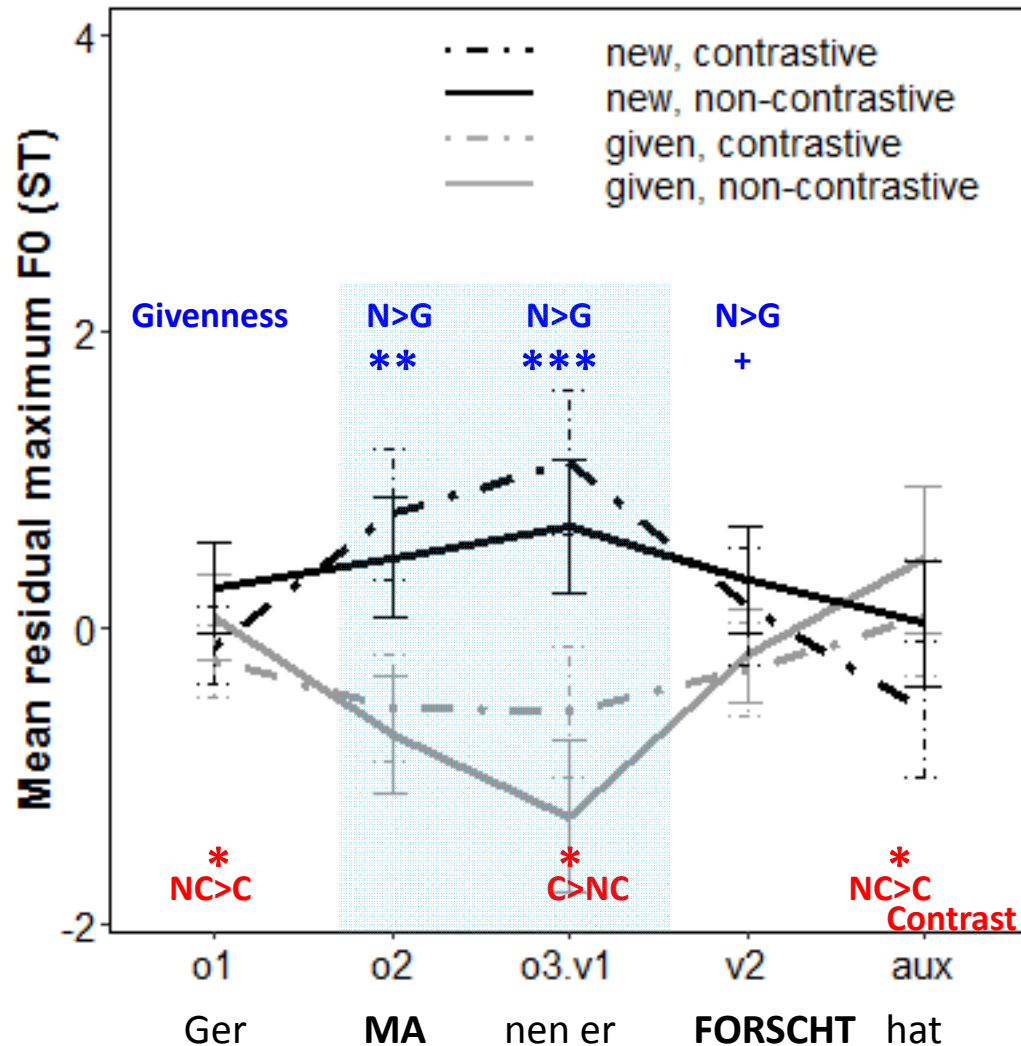


Strong main effects of GIVENNESS in object region: NEW higher than GIVEN

Main effects of CONTRAST:
- post-stressed syllable: CONTRASTIVE higher
- before and after post-stressed syllable – <u>reversed</u> effect

**NO** interaction
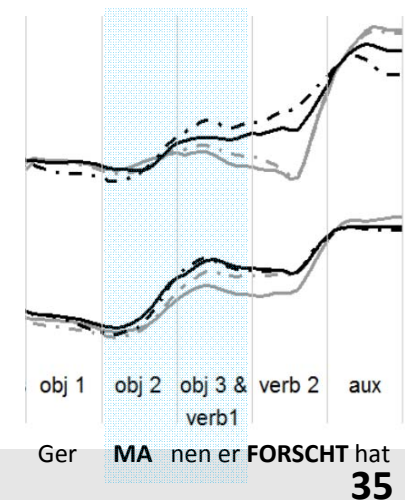
# Results experiment 1: Pitch in the object region

**Residual minimum F0**
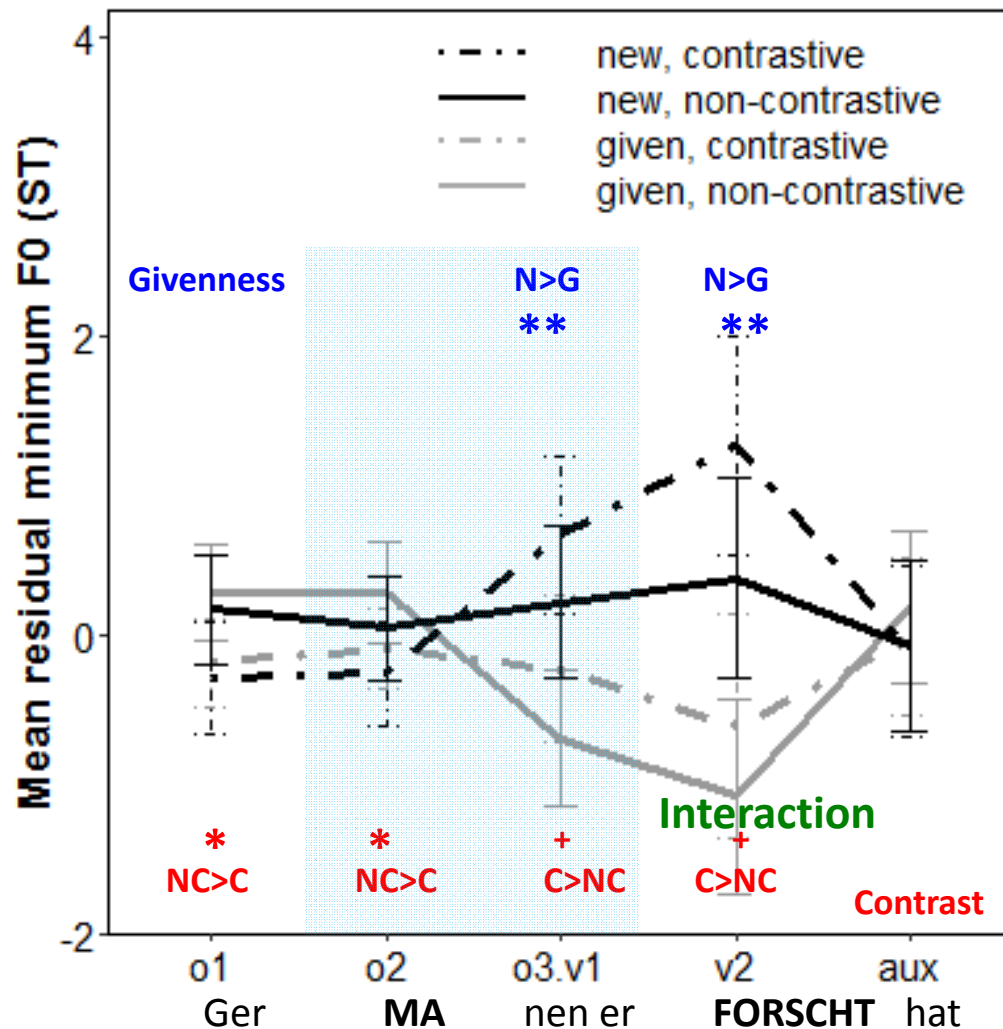


Main effect of GIVENNESS in post-stressed syllables: NEW > GIVEN (later than Max F0 effects)

Main effects of CONTRAST
o in post-stressed syllables (idem)
o reversed before post-stressed

Interaction in post-object region
o Females: no contrast effect in GIVEN
o Males: no contrast effect in NEW
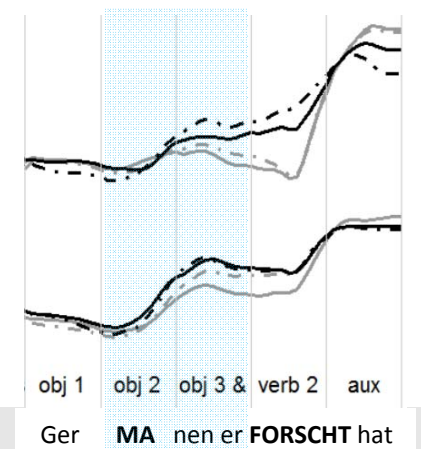
# Results experiment 1: Pitch in the object region

**Residual F0 excursion**
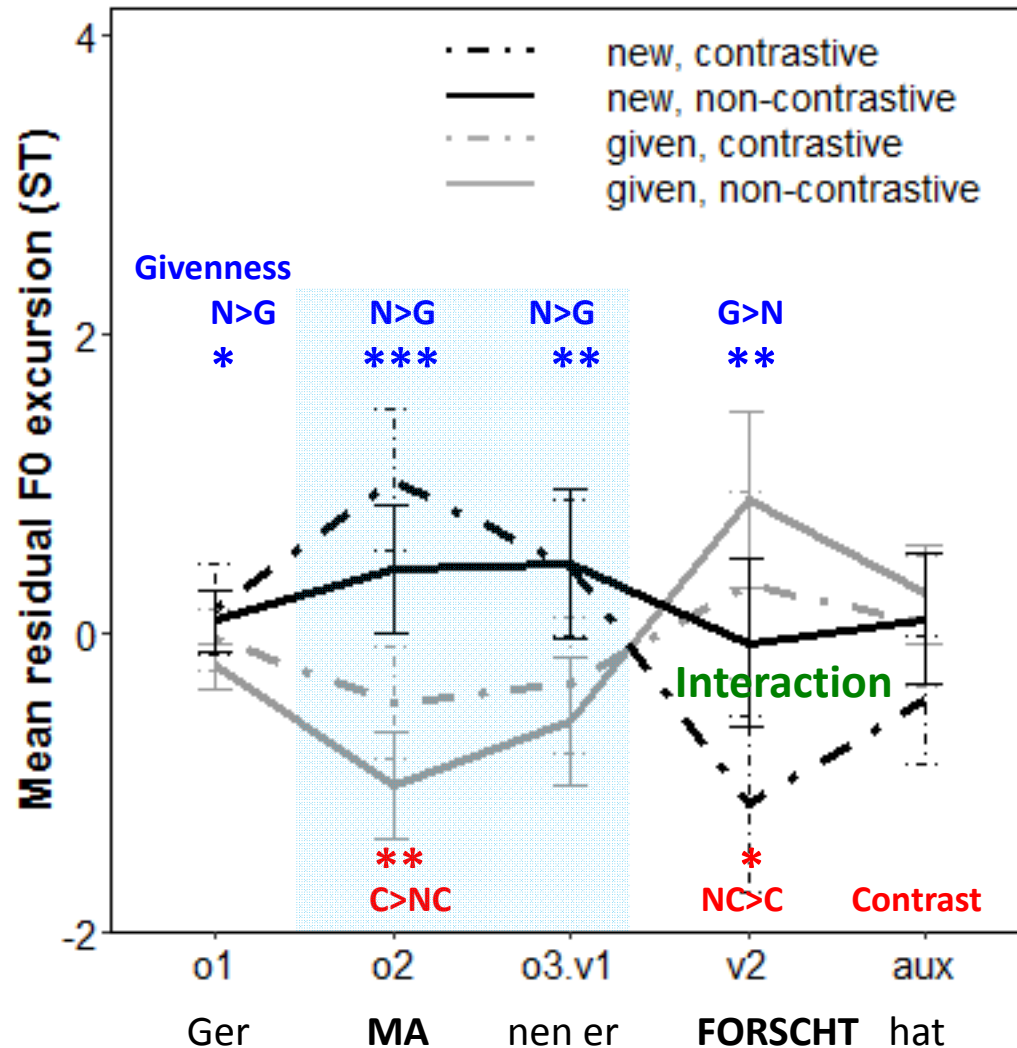


Main effects of GIVENNESS:
- object region: NEW > GIVEN
- post-object region: <u>reversed</u>

Main effects of CONTRAST:
- stressed object syllable: CONTRASTIVE > NON-CONTR.
- post-object: <u>reversed</u>

Interaction post-object (v2):
- Females: NC>C in new objects
- Males: NC>C in given objects
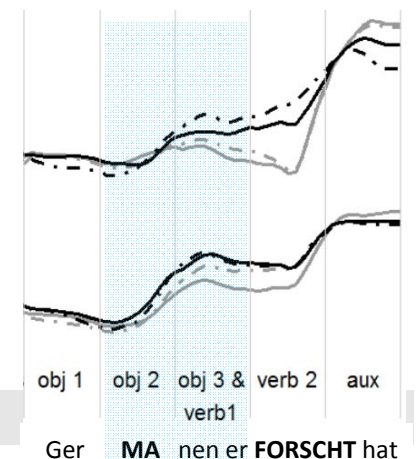
# Results experiment 1: Pitch in the object region

**Pitch alignment**

- Object rise: The maximum pitch is reached earlier for given objects (*)

- Final rise: In female speakers, the rise starts a little later for given objects($^+$): the minimum of the trough before the rise is later



obj 1    obj 2    obj 3 &   verb 2     aux
verb1

Ger     **MA**    nen er **FORSCHT** hat
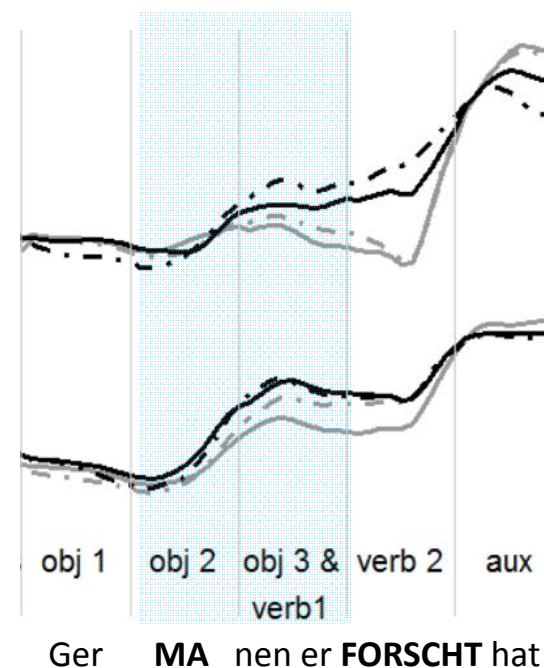
# Results experiment 1: Interim summary pitch

- In comparison to new objects, **given objects** are marked as follows:
    - **stressed object syllable** has lower max F0, lower F0 excursion
    - **post-stressed object syllable** lower max, min F0
    - **verb region**: <u>higher pitch excursion</u>

- In comparison to non-contrastive objects, **contrastive objects** (i.e. objects with an explicit alternative):
    - **stressed object syllable** has a larger excursion
    - **post-stressed object syllable** higher max F0, min F0
    - **outside the object region** <u>lower</u> max F0, min F0, excursion ⇨ makes object region more prominent

- The effects of givenness appear somewhat earlier than those of contrast

- The effects are **mainly additive**, only sometimes are there interactions, which, however, also involve sex of speaker without showing a consistent pattern.

# Results experiment 1: duration and intensity



**Residual duration**

**Residual intensity**

Interaction: Reliable GIVENNESS effect only in female speakers for contrastive objects
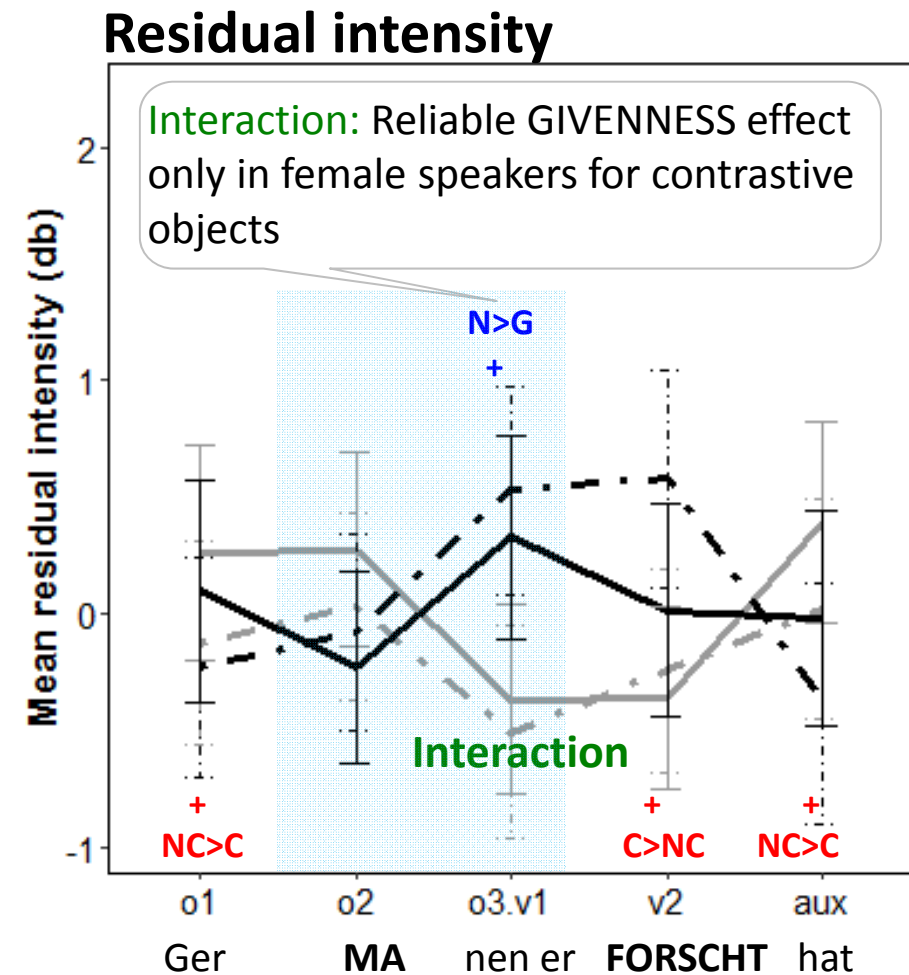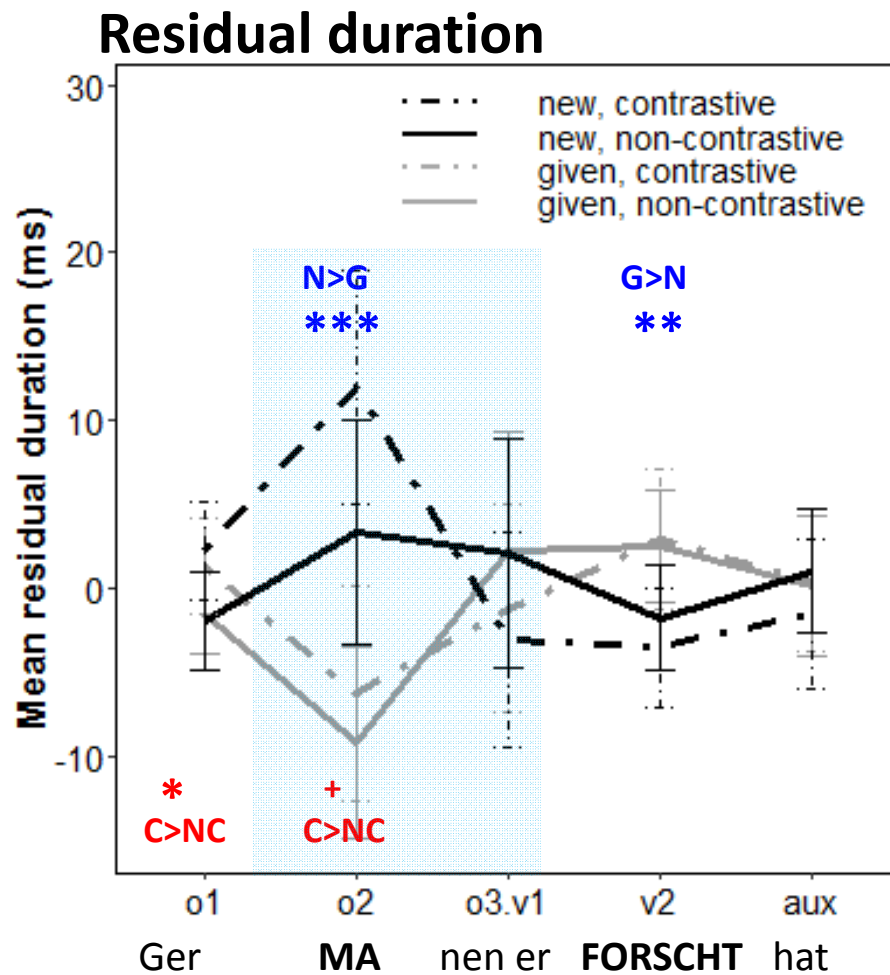
- Duration increases prominence of new objects and of contrastive objects
- Intensity shows weak, late effects, which go in the same direction

# Summary experiment 1

- All measures showed effects both of givenness and of contrastiveness (presence of explicit alternative)

- Newness and contrastiveness are marked with

  - higher pitch measures and higher duration, and to a lesser degree intensity on the object itself

  - lower pitch measures, lower duration, lower intensity outside the object region (although the details differ for individual measures)

  To Do: Investigate correlation with pitch accents

- The givenness differences materialize somewhat earlier than the contrast differences esp. with respect to pitch.

- **Conclusion:** Both information status and the presence of an explicit alternative are marked in questions, and they are marked fairly independently of each other in the sense that each information-structural category has "its own" effect.

# Materials and procedure experiment 2

| | | GIVEN | NEW |
|---|---|---|---|
| **NON-CONTRASTIVE** | | Have you heard? Anna has specialized on _____ for her PhD. | |
| | | **Germanic tribes** | **Old-European tribes** |
| | | | Yes, she told me. She travels all the time to get access to the original records of _____ |
| | | **Germanic tribes** | **Old-European tribes** |
| **CONTRASTIVE** | | Have you heard? Anna has specialized on _____ for her PhD. | |
| | | **Etruscans** | **Old-European tribes** |
| | | | Yes, she travels all the time. Recently she was in Italy to visit a burial site of the **Etruscans**. _____ |
| | | But she also travels a lot because of her beloved **Germanic tribes**. | But she does not only travel a lot because of the **Etruscans**. |

Wo     die     schon     überall     **Germanen**     erforscht     hat!
where she   already   everywhere   Germanic.tribes   researched   has
'The places where she has done research on Germanic tribes already!'

# Materials, analysis and predictions experiment 2

- Materials:  8 lexicalizations ⇨ 32 experimental items
  16 fillers from other experiment

- Analysis as in experiment 1

- Predictions:

  - GIVENNESS: given objects less prominent than new objects, as in experiment 1, but the effects might be weaker (cf. Repp in prep.)

  - Main effect of CONTRAST: contrastive objects more prominent than non-contrastive objects as in experiment 1

  - There should be no final rise.

# Results experiment 2: Pitch
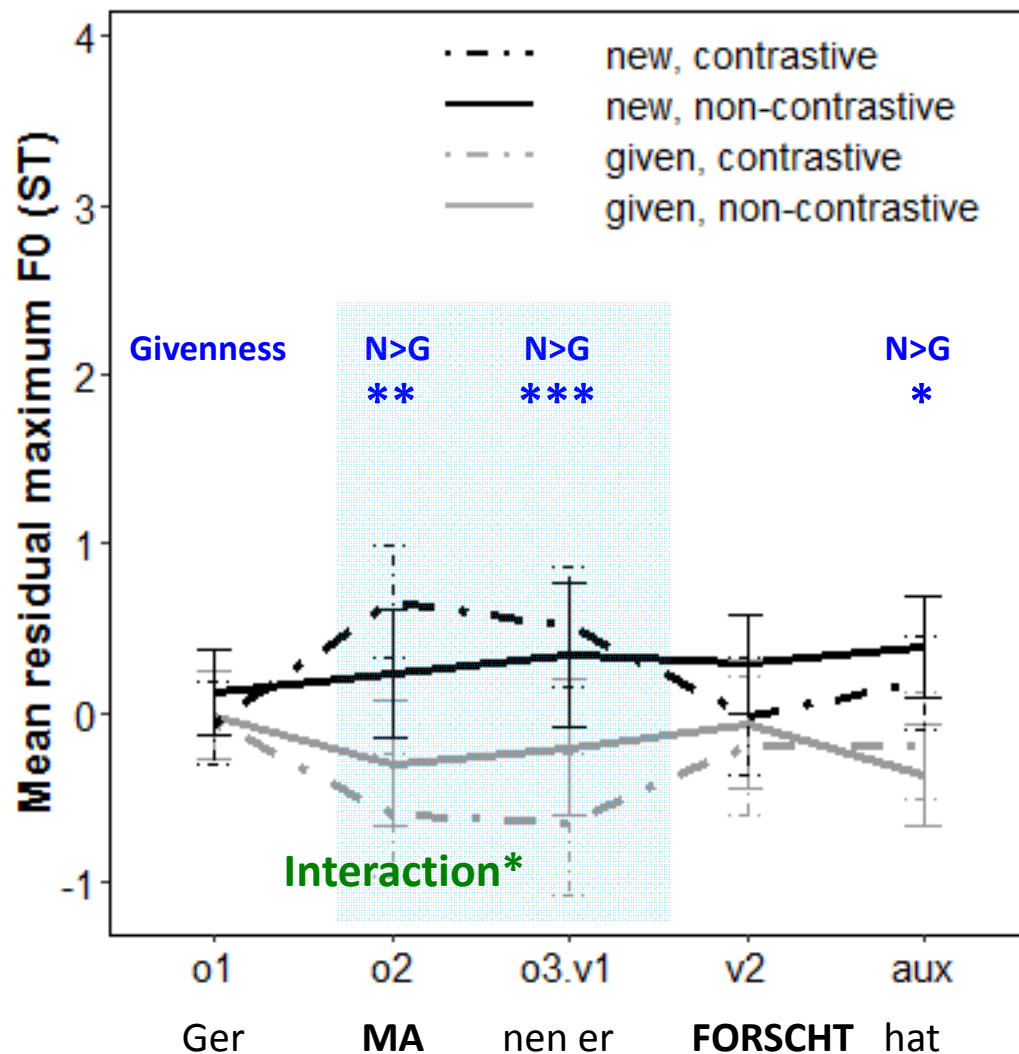
Time-normalized pitch contour of raw data
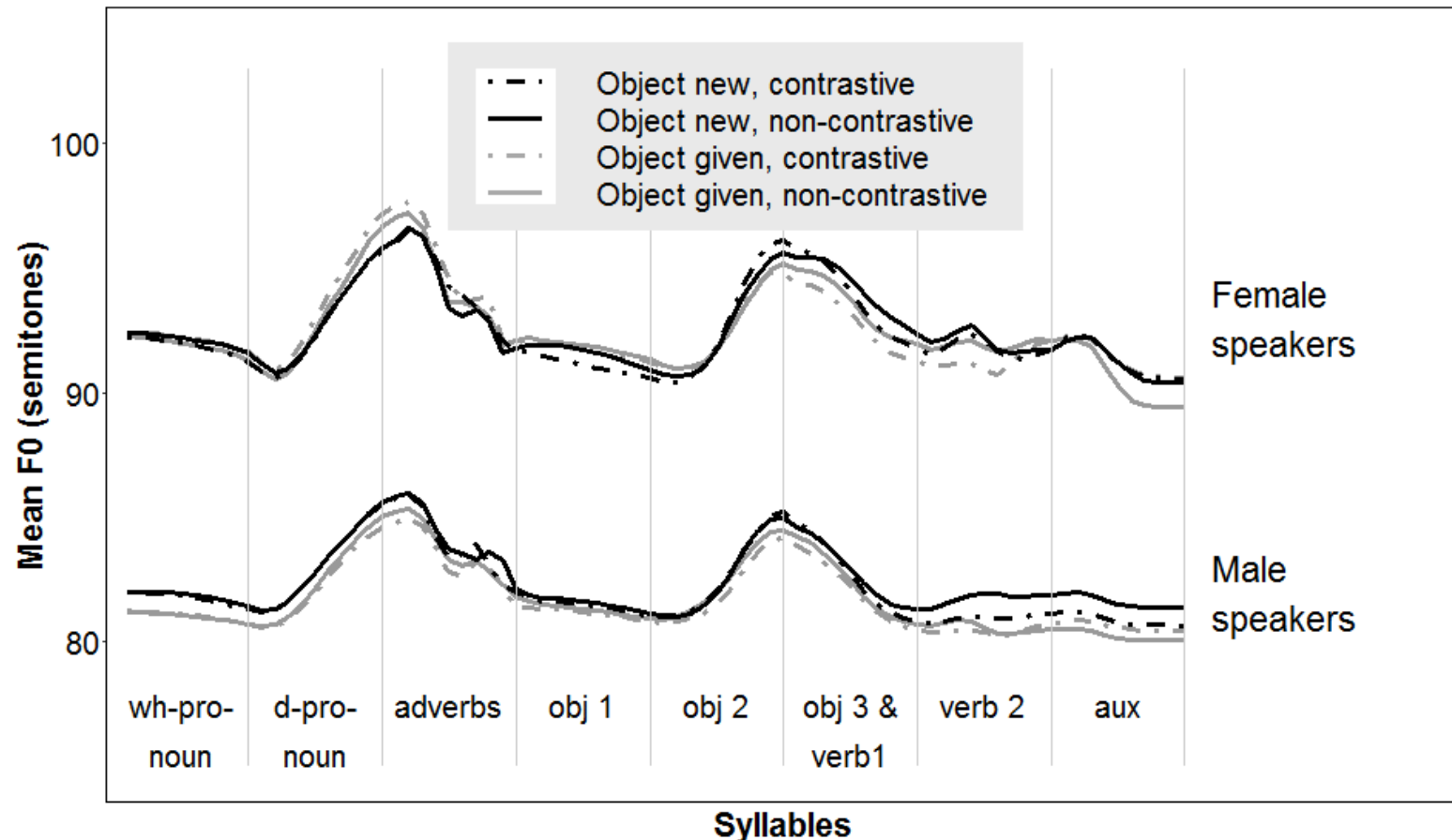


⇨ Final contour falling
⇨ Pitch differences in region of d-pronoun and in object region
   I report object region only. D-pronoun: interactions with speaker sex.

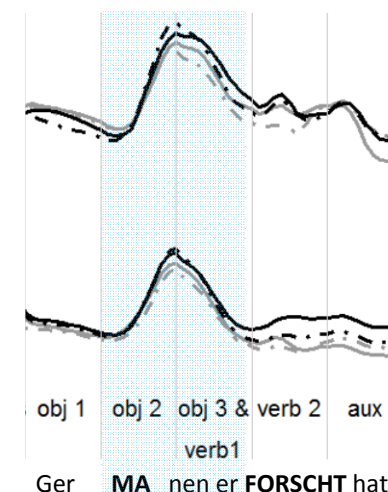# Results experiment 2: Pitch in the object region

**Residual maximum F0**



Main effects of GIVENNESS in object region: NEW > GIVEN

**No** main effects of CONTRAST
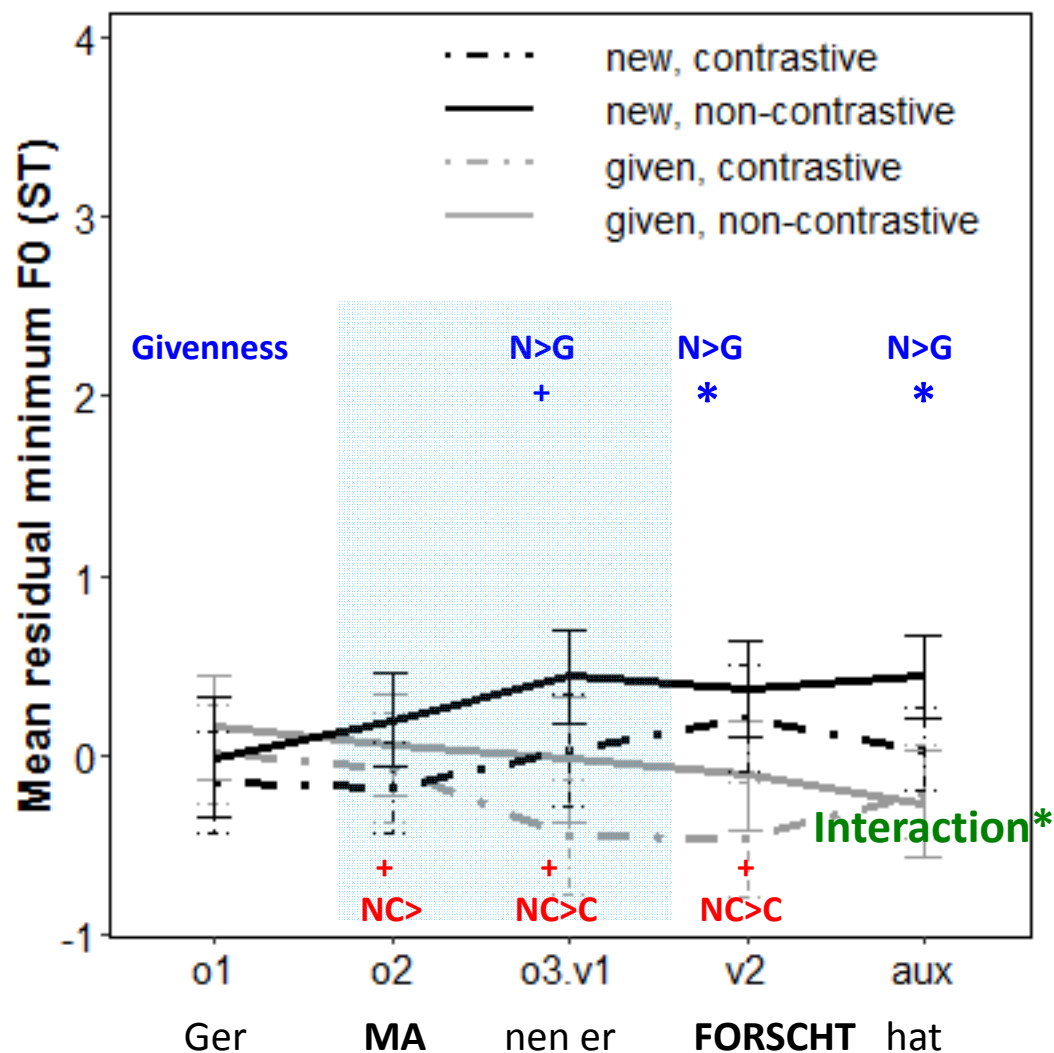
**Interaction** on stressed object syllable:
- GIVENNESS effect only reliable (**) in CONTRASTIVE objects

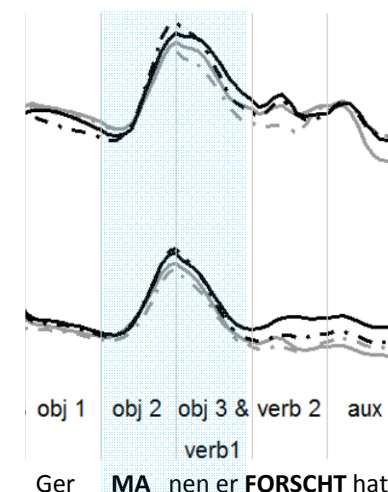# Results experiment 2: Pitch in the object region

**Residual minimum F0**



Main effects of GIVENNESS in object and verb region: NEW > GIVEN
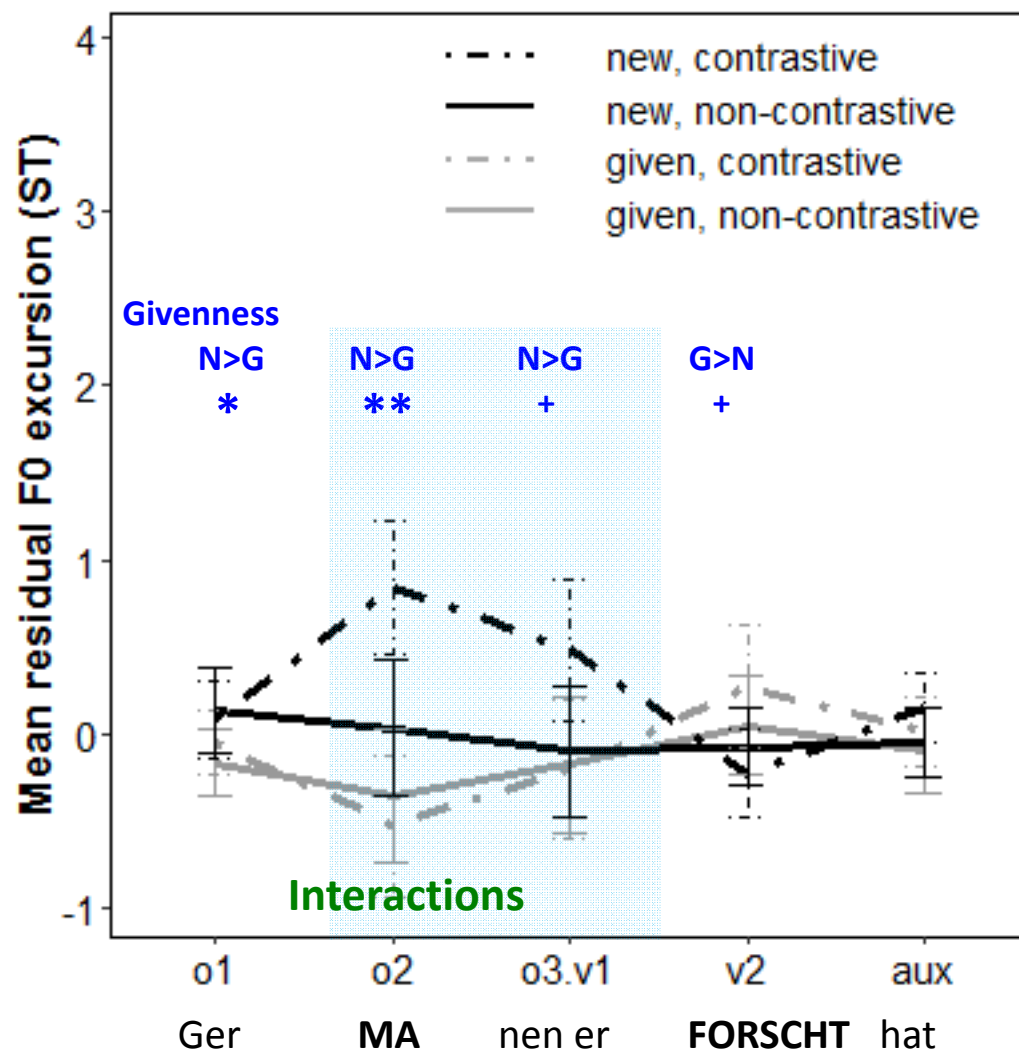
Weak reverse effects of CONTRAST in object & verb region

**Interaction** on auxiliary:

- GIVENNESS effect only reliable (**) in NON-CONTRASTIVE objects

# Results experiment 2: Pitch in the object region

**Residual F0 excursion**



Main effects of GIVENNESS:
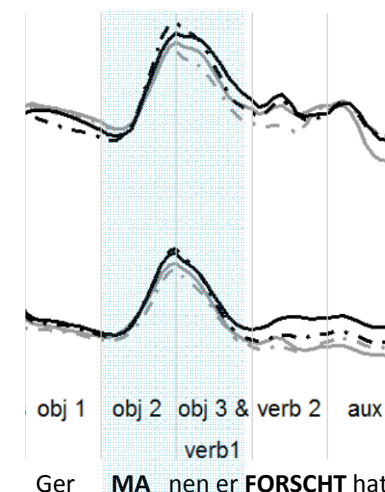
– object region: NEW > GIVEN
– verb region: reverse

No main effects of CONTRAST

**Interactions** on stressed obj:

– **MALEs** show weak / no effects
– GIVENNESS effect only reliable in CONTRASTIVE objects

No alignment effects

# Interim summary experiment 2 pitch

- Overall weak effects, and/or interactions

- In comparison to new objects, **given objects** are marked as follows:
  - **stressed object syllable** has lower max F0, smaller excursion <u>only if the</u> object is <u>contrastive</u>, i.e. **new + contrast = prominence**
  - **post-stressed object syllable** lower max, min F0, excursion *(≈ questions)*
  - **verb +aux region** lower max, min F0 *(≈ questions)*; <u>higher</u> excursion only after non-contrastive object

- In comparison to non-contrastive objects, **contrastive objects** (objects with an explicit alternative):
  - **overall** marginally <u>lower</u> min F0 *(≠ questions)*

- The effects are not additive as in questions. There are only weak contrast effects as well as interactions with givenness marking
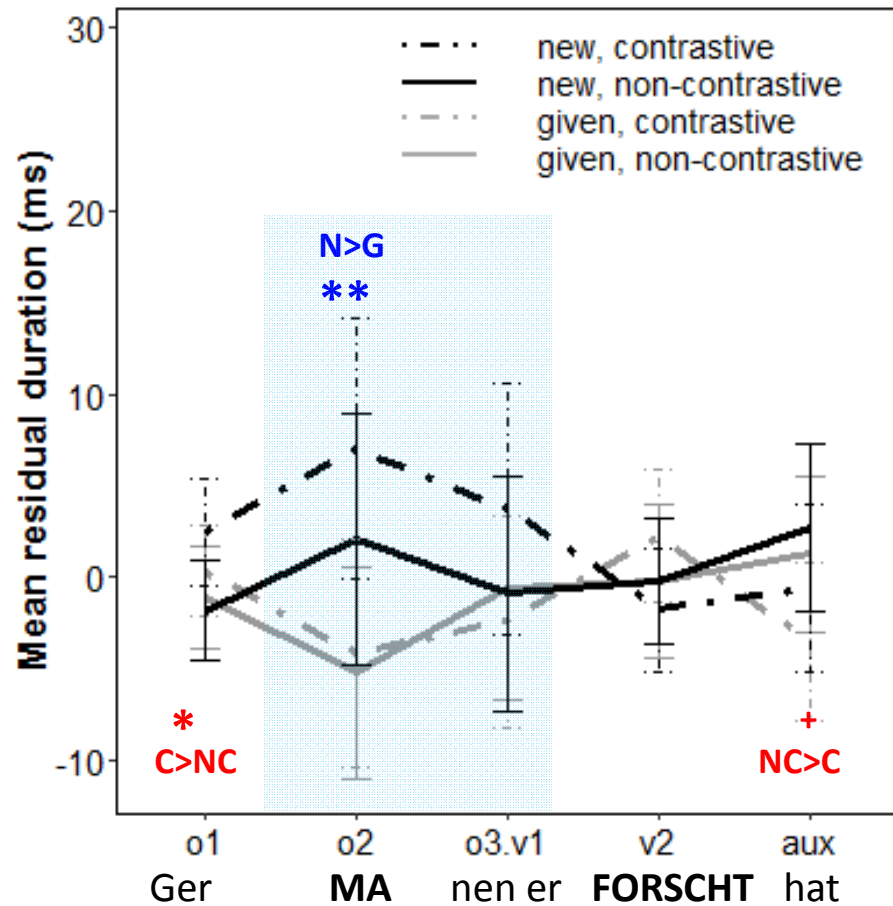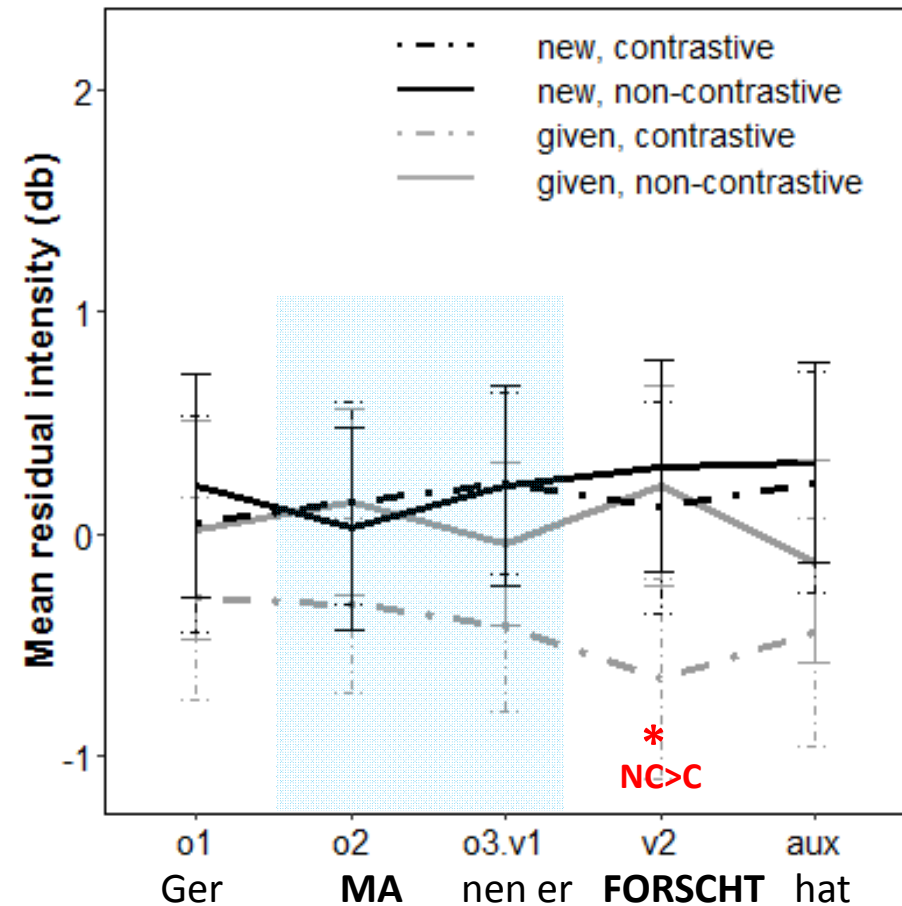
# A visual comparison of questions and exclamatives
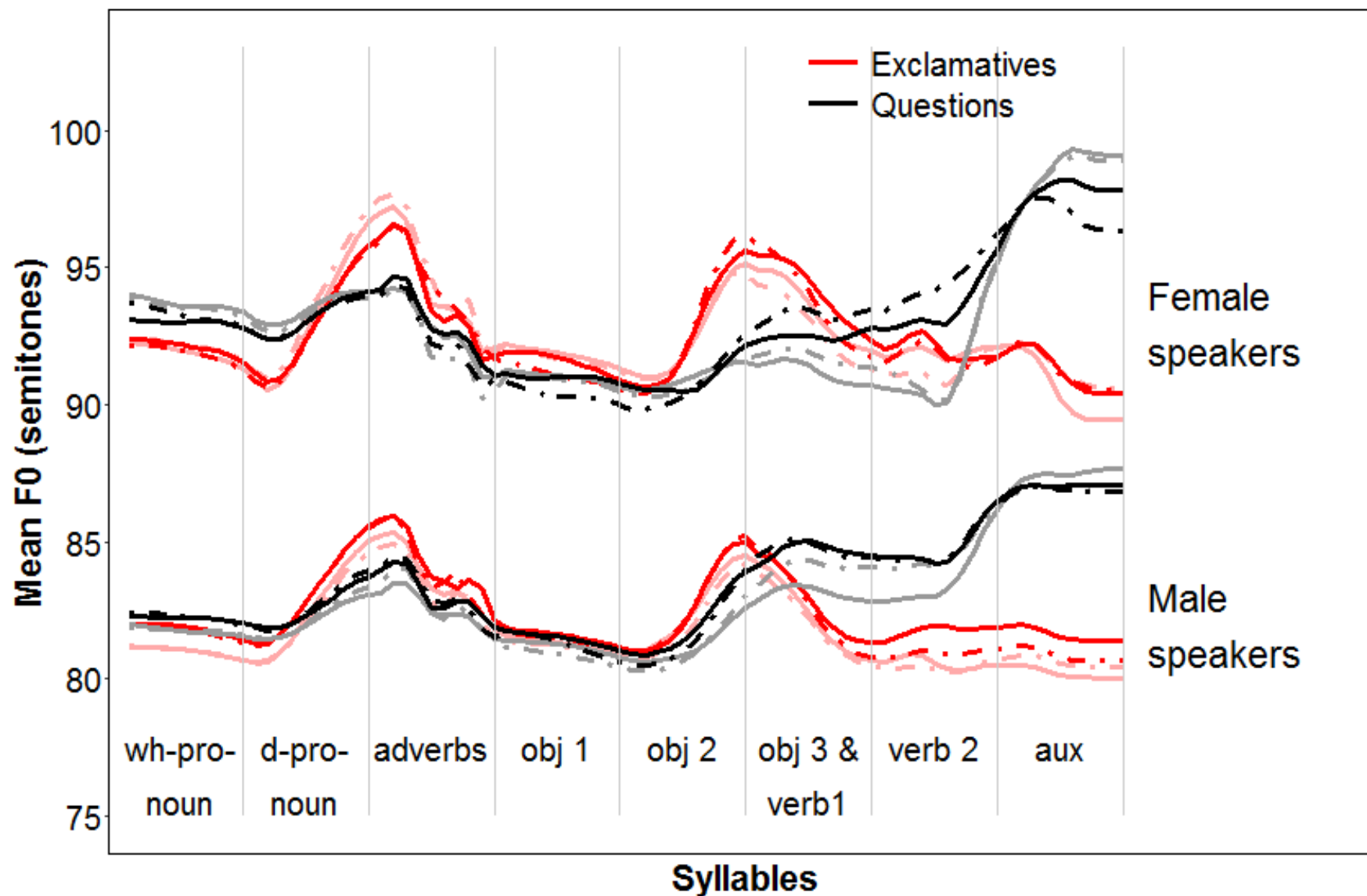
# Results experiment 2: Duration and intensity
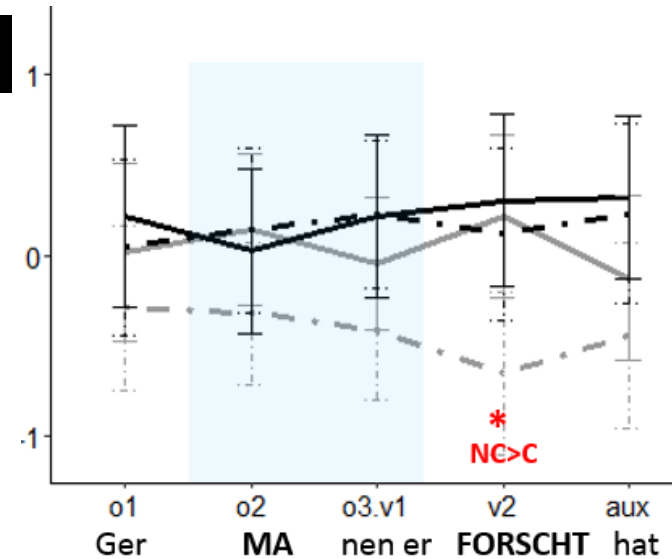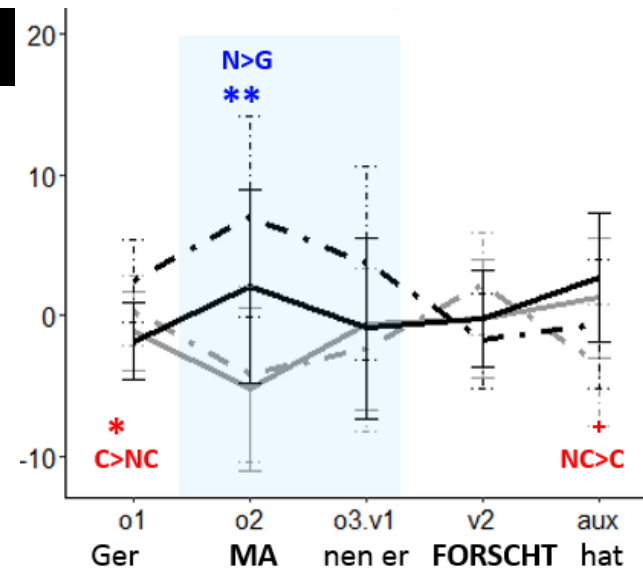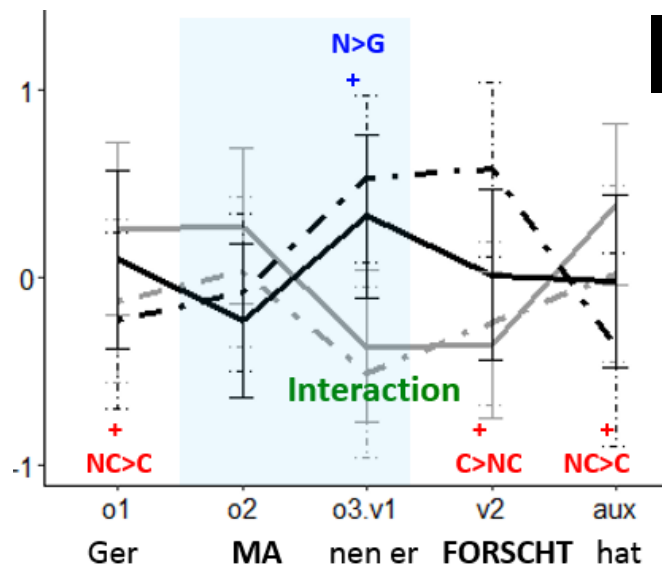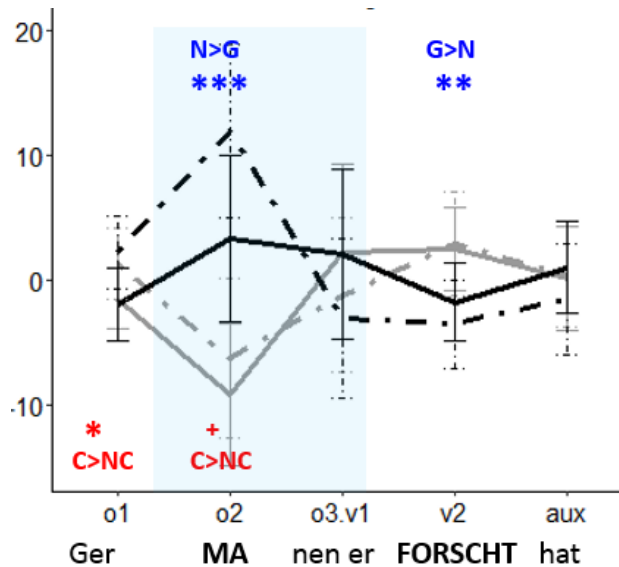
**Residual duration**



**Residual intensity**



- Duration is longer for new objects, contrast has some effect
- Intensity shows <u>reverse</u> effect of contrast in post-object region

# A comparison of questions and exclamatives

# Discussion

- Both the presence of an explicit alternative ('contrast') and givenness are marked prosodically in both questions and exclamatives. However, in exclamatives givenness is marked more clearly than contrast is.

- The prosodic marking is done
    - reliably by pitch (all measures)
    - reliably by duration
    - only spuriously by intensity
  The correlation of these measures with pitch accents still needs to be done

- The effects are mostly additive in questions:
    - newness increases pitch and duration in the critical region
    - the presence of an explicit alternative does too

- Especially in questions, the non-critical regions are marked by a reversal of the pitch and duration measures

- There are some differences between male and female speakers: some at present seem to be erratic, others confirm the earlier finding that female speakers show stronger information-structural effects than male speakers

# Conclusion

- German native speakers show prosodic reflexes of the presence of an explicit alternative in the linguistic context
  - both when the candidate contrastive constituent is new and when it is given
  - both in questions and in exclamatives

- but the two different speech acts show a different sensitivity towards contrast marking, with
  - exclamatives being less sensitive
  - exclamatives showing interactions of givenness and the presence of an explicit alternative

  which might be due to the interplay with prosodic speech act marking: coding of exclamativity and/or of emotional arousal (to be investigated)

# Conclusion

- The fine-grained investigation of the interplay of the presence of an explicit alternative in the context as an implementation of contrast with another information-structural category has shown that phonetic differences arise even for fine-grained semantic-pragmatic distinctions in the area of information structure

- This finding ties in well with fine-grained analyses of givenness distinctions that have been carried out in the last decade (Baumann, Grice, Röhr, Riester and colleagues).

- I suggest that the proposed hypothesis for the investigation of grammatical reflexes of contrast can be used as a blueprint for the seemingly intuitive but actually confusing notion of contrast because it disentangles that notion.

# Thank you

# References

Anscombre, J.C. and Ducrot, O. (1977). 'Deux mais en français?', *Lingua*, 43(1), 23–40.

Asher, N., and Lascarides, A. (2003). *Logics of Conversation.* Cambridge: Cambridge University Press

Banse, R. & Scherer, K. (1996). Acoustic profiles in vocal emotion expression, *Journal of Personality and Social Psychology* 70(3), 614-636.

Bänzinger, T. & K. Scherer (2005) 'The role of intonation in emotional expressions', *Speech Commun.,* vol. 46, no. 3–4, pp. 252–267

Batliner, A. (1988). Der Exklamativ: Mehr als Aussage oder doch nur mehr oder weniger Aussage? Experimente zur Rolle von Höhe und Position des F0-Gipfels. In: Altmann, H. (ed.), *Intonationsforschungen.* Tübingen: Niemeyer, 243–271.Baumann 2006

Baumann, S. 2006. *The Intonation of Givenness – Evidence from German.* Tübingen: Niemeyer.

Baumann, S., J. Becker, M. Grice and Mücke, D. (2007). 'Tonal and articulatory marking of focus in German', in *Proceedings of the 16th International Congress of Phonetic Sciences.* Saarbrücken, 1029–1032.

Bolinger, D. (1961). 'Contrastive Accent and Contrastive Stress', *Language*, 37(1): 83–96.

# References

Braun, B. (2005). Production and Perception of Thematic Contrast in German. Oxford: Peter Lang.

Braun, B. (2006). 'Phonetics and Phonology of Thematic Contrast in German', Language and Speech 49(4): 451–493.

Brunetti, L. (2009a). 'Discourse Functions of Fronted Foci in Italian and Spanish', in A. Dufter and D. Jacob (eds), Focus and Background in Romance Languages. Amsterdam: Benjamins, 43–82.

Calhoun, S. (2010). 'The Centrality of Metrical Structure in Signalling Information Structure: A probabilistic perspective', Language 86(1): 1–42.

Chafe, W. L. (1976). 'Givenness, Contrastiveness, Definiteness, Subjects, Topics and Point of View', in C. N. Li (ed.), Subject and Topic. New York: Academic Press, 27–55.

Frey, W. (2006). 'Contrast and Movement to the German Prefield', in V. Molnár and S. Winkler (eds), The Architecture of Focus. Berlin: Mouton de Gruyter, 235–264.

Frey, W. (2010). 'Ā-movement and Conventional Implicatures: About the grammatical encoding of emphasis in German', Lingua 120(6): 1416–1435.

Halliday, M. A. K. (1967). 'Notes on Transitivity and Theme in English, part 2', Journal of Linguistics 3: 199–244.

# References

Katz, J. and Selkirk, E. (2011). 'Contrastive Focus vs. Discourse-new: Evidence from phonetic prominence in English', Language 87(4): 771–816.

Kenesei, I. (2006). 'Focus as Identification', in V. Molnár and S. Winkler (eds), The Architecture of Focus. Berlin: Mouton de Gruyter, 137–168.

Lambrecht, K. (1994). Information Structure and Sentence Form: Topic, Focus, and the Mental Representations of Discourse Referents. Cambridge: Cambridge University Press.

Lieberman, P. & Michaels, S. (1962) 'Some aspects of fundamental frequency and envelope amplitude as related to the emotional content of speech,' J. Acoust. Soc. Amer., vol. 34, no. 7, pp. 922–927, 1962.

Mann, W.C. and Taboada, M. (2015). The RST website. <http://www.sfu.ca/rst/index.html>.

Mann, W. C., and Thompson, S. A. (1988). 'Rhetorical Structure Theory: Toward a functional theory of text organization', Text 8(3): 243–281.

Molnár, V. (2006). 'On Different Kinds of Contrast', in V. Molnár and S. Winkler (eds), The Architecture of Focus. Berlin: Mouton de Gruyter, 197–234.

# References

Neeleman A. and Vermeulen, R. (2012). 'The syntactic expression of information structure', in Neeleman A. and R. Vermeulen (eds), The Syntax of Topic, Focus, and Contrast: An Interface-based Approach. Berlin: Mouton de Gruyter, 1–38.

Oppenrieder, W. (1988). Intonatorische Kennzeichnung van Satzmodi. In H. Altmann (Ed.), Intonationsforschungen (pp. 69–205). Tübingen, Germany: Niemeyer.

Paoli, S. (2009). 'Contrastiveness and New Information. A new view on focus', *Rivista di Grammatica Generativa* 34: 137–161.

Pierrehumbert, J., and Hirschberg, J. (1990). 'The Meaning of Intonational Contours in the Interpretation of Discourse', in P. R. Cohen, J. Morgan, and M. E. Pollack (eds), *Intentions in Communication*. Cambridge, MA: MIT Press, 271–311.

Repp, Sophie (2015). On the acoustics of wh-exclamatives and wh-interrogatives: Effects of information structure and sex of speaker. In The Scottish Consortium for ICPhS 2015 (Ed.), Proceedings of the 18th International Congress of Phonetic Sciences. Glasgow, UK: the University of Glasgow. ISBN 978-0-85261-941-4. Paper number 319. p. 1-5.

Repp, S. (in press) *Contrast: Dissecting an elusive information-structural notion and its role in grammar.* In Caroline Féry & Shinichiro Ishihara (eds.), OUP Handbook of Information Structure. Oxford: Oxford University Press.

# References

Röhr, C., Baumann, S. 2010. Prosodic marking of information status in German. *Proc. Speech Prosody*, Chicago.

Selkirk, E. (2008). 'Contrastive Focus, Givenness and the Unmarked Status of "discourse-new"', *Acta Linguistica Hungarica* 55: 331–346.

Sudhoff, S. (2010). 'Focus Particles and Contrast in German', *Lingua* 120(6): 1458–1475.

Vallduví, E. and Vilkuna, M. (1998). 'On rheme and kontrast', in P. Culicover and L. McNally (eds), *The Limits of Syntax.* New York: Academic Press, 79–108.Van Heuven & Haan 2000

Wolf, F. and Gibson, E. (2005). 'Representing Discourse Coherence: A corpus-based study', *Computational Linguistics* 31(2): 249–287.

Zimmermann, M. (2008). 'Contrastive Focus and Emphasis', *Acta Linguistica Hungarica* 55: 347–360.