Introduction

• German noch (= ‘still’) can have an additive reading similar to that of auch (= ‘also’, ‘too’) (1) 1. How do they differ?

(1) Otto hat auch/noch einen SCHNAPS getrunken.
Otto has prt a Schnaps drunk.
“Otto also drank a SCHNAPS.”
→ Otto had something else

• MAIN CLAIM: both indicate that a previously partially answered question under discussion (QUD) is re-opened, but:
  – auch: QUD reopened with respect to new focus alternatives,
  – noch: QUD reopened with respect to a new topic situation

• We present the results of an experiment testing this latter claim

1 Background

1.1 Additive particles and the QUD

• Auch and noch contribute an additive presupposition in (2).
• They are focus-sensitive2 (Beaver & Clark 2008, i.a.): Their meaning contribution changes when the placement of the focus changes3.

(2) a. Dann hat Jan auch/noch Bill Susi vorgestellt.
then has Jan prt Bill Susi introduced.
“Then, Jan also introduced Bill to Susi.”
PRESUPP: Jan had introduced somebody else to Susi.
b. Dann hat Jan Bill auch/noch Susi vorgestellt.
then has Jan Bill prt Susi introduced.
“Then, Jan also introduced Bill to Susi.”
PRESUPP: Jan had introduced Bill to somebody else.

• Focus indicates alternatives (Rooth 1992, i.a.), (3-a)
• They can be modelled as alternative answers to a question under discussion (QUD, Roberts 1996/2012) (3-b)

(3) Yvonne ate PIZZA

a. Focus alternatives: {Yvonne ate pizza, Yvonne ate spaghetti, Yvonne ate soup, ...}
b. Question under discussion: What did Yvonne eat?

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1In the examples, small caps are used to indicate stress (where relevant), bold font and italics are used for highlighting the important parts of the example. # is used for infelicity, ?? and ? for marginal felicity.

2There is also a stressed variant of auch, which associates with preceding out-of-focus constituents (Krifka 1999). We will not discuss this variant here.

3In contrast to also, auch prefers to be as close to the focus as possible (see Büring & Hartmann 2001’s Closeness Principle).
Re-opening QUDs: Which alternatives play a role? M. Grubic & M. Wierzba

- Under a QUD account, **additive particles** indicate that the current QUD is already partially answered in the recent context (e.g. Beaver & Clark 2008, Jasinskaja & Zeevat 2009).

(4) Q1: What did Yvonne eat? Q2: What did Yvonne eat?
Yvonne ate SOUP Yvonne also ate PIZZA

1.2 Differences between ‘auch’ and additive ‘noch’

- Eckardt (2007), Umbach (2012), Grubic (2018): **auch** and **noch** differ with respect to the nature of the re-opened QUD
  - unstressed **auch**: further alternatives included, i.e. in (4), pizza was not a considered alternative in Q1
  - However, **disagreement on noch**!

- Eckardt 2007: **Noch** involves a ‘fixed and stable’ domain of alternatives — odd in (5) as soon as it becomes clear that the speaker is randomly listing even numbers.4

(5) 2 ist eine gerade Zahl, 4 ist noch gerade, 6 ist noch gerade, #78 ist noch gerade...
  ‘2 is an even number, 4 is ‘noch’ even, 6 is ‘noch’ even, 78 is ‘noch’ even.’.

- Eckardt’s proposal: **noch** indicates that a QUD is re-opened with respect to a subset of the previous alternatives (6)

(6) Q1: What (of 1-10) is an even number?
Q2: What (of 3-10) is an even number?

- **Umbach (2012)**: the domain of alternatives is extended with **noch**, too. She argues that this can be seen in questions (7):
  - **noch** is standard (extends the domain of alternatives)

(7) (Little Lisa tells her mother what happened when she visited the zoo with Auntie.)
  a. Mother: Und was ist im Zoo noch passiert?
  ‘What else happened at the zoo?’
  b. Auntie: Und was ist im Zoo auch passiert?
  ‘What happened at the zoo, too?’ (# mother)

- Umbach (2012): The only difference between **auch** and **noch** is that alternatives are ordered (by time of mention) with **noch**.
- For example, according to Umbach (2012)
  - The alternatives are ordered by time of mention in (8-a)
  - ...but by ‘real time’ in (8-b).

(8) (Otto hat ein Bier getrunken. ‘Otto had a beer’)
  a. Dann hat er noch einen Schnaps getrunken.
  ‘Then he drank a schnaps in addition.’
  b. Dann hat er auch einen Schnaps getrunken.
  ‘Then he drank a schnaps in addition.’

(9) Q1: What (of water, beer) did Otto drink?
Q2: What (of schnaps, wine) did Otto drink? (beer≺M schnaps)

- **Grubic (2018)**: **Noch** indicates that the QUD is re-opened with respect to a new **topic situation** (10).5
  - Topic situation = the situation that the sentence is about
  - roughly equated with Klein (1994)’s topic time, the interval about which the utterance makes a claim (Kratzer 2019:§3)
  - Temporal or locative adverbials provide further information about the topic situation (Klein 2008)
  - No restriction placed on the domain of alternatives: it can remain the same or differ.

(10) Q1: In S1, what (of beer, wine, water, schnaps) did Otto drink?
Q2: In S2, what (of beer, wine, water, schnaps) did Otto drink?

- This explains Umbach’s data, e.g.:

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- **Note that she compares this with stressed **auch**, see (i).**

(1) 2 ist eine gerade Zahl, 4 ist auch gerade, 6 ist auch gerade, 78 ist auch gerade...
  ‘2 is an even number, 4 is even too, 6 is even too, 78 is even too.’

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- **This is reminiscent of the idea in Dimroth (2002) that stressed **noch** associates with the topic time, but differs in that the topic situation is not the associate of **noch**.**
A) *Noch* is most felicitous with e.g. *dann* (‘then’) because it shifts the topic situation

(11) Otto had a beer.
   a. *Dann* hat er noch/auch einen Schnaps getrunken.
      “And he also drank a schnaps.”
   b. Er hat auch/noch einen Schnaps getrunken
      (intended:) “He also drank a schnaps.”

B) By reopening the same QUD with respect to different alternatives in (12-b), the speaker reminds the addressee that relevant alternatives were neglected in the first answer.

(12) (Little Lisa tells her mother what happened when she visited the zoo with Auntie.)
   a. Mother: Und was ist im Zoo noch passiert?
      ‘What else happened at the zoo?’
   b. Auntie: Und was ist im Zoo auch passiert?
      ‘What happened at the zoo, too?’ (# mother)

C) this account can also account for the possibility of combining *auch* and *noch*
   - *Auch* requires an extended domain of alternatives (compatible with a shift in topic situation)
   - *Noch* requires a topic situation shift (compatible with an extended domain of alternatives)

(13) Otto had a beer.
Otto hat auch noch einen Schnaps getrunken.
‘Otto also drank a schnaps.’
(PRESUPP: Otto drank something else (e.g. a beer))

• Summary of the previous accounts:
  - Unstressed *auch* extends the domain of considered alternatives
  - Different ideas for *noch*: its QUD involves...
    * a subset of the antecedent QUD’s domain of alternatives (Eckardt 2007)
    * alternatives ordered by time of mention (Umbach 2012)
      (whereas *auch* usually involves the same topic situation)
  - In the following, a prediction made by the latter account will be discussed and tested.

2 Experiment

Unique prediction of Grubic (2018): difference between *auch* and *noch* when there is an overt topic situation shift.

(14) (Last Saturday, Daniel cleaned the kitchen, the bedroom and the living room.)
Diesen Samstag hat er auch die anderen zwei Räume geputzt this Saturday has he also the other two rooms cleaned
‘This Saturday, he also cleaned the other two rooms.’
(Accommodated: This Saturday he cleaned the kitchen, the bedroom and the living room)

* Auch compatible with presupposition accommodation *

Unique prediction of Grubic (2018): difference between *auch* and *noch* when there is an overt topic situation shift.

(15) (Last Saturday, Daniel cleaned the kitchen, the bedroom and the living room.)
Diesen Samstag hat er noch die anderen zwei Räume geputzt this Saturday has he also the other two rooms cleaned
‘This Saturday, he additionally cleaned the other two rooms.’
(Not accommodated: This Saturday he cleaned the kitchen, the bedroom and the living room.)

* noch incompatible with presupposition accommodation *

2.1 Experimental setup

Main idea of our experiment:

- Systematically manipulate how plausible the interpretation with/without accommodation would be.
  - Assumption: this will allow us to see whether accommodation is possible/necessary for the particles.

Participants and procedure:

- web-based questionnaire
Re-opening QUDs: Which alternatives play a role? M. Grubic & M. Wierzba

- context presented in written form
- target sentence presented auditorily
- two paired tasks:
  - felicity rating (1-5)
  - forced-choice question checking for accommodation (e.g., for (15): ‘how many rooms did Daniel clean last Saturday?’)
- option of providing a comment
- 24 native speakers of German, recruited via Prolific

Design and materials:

- $2 \times 3$: PARTICLE (auch/noch – within items) $\times$ PLAUSIBILITY (baseline/acplaus/acimpl – between items)
- plausibility was tested in a pre-test
- Latin-Square design
- 24 items, 24 fillers
- the experiment was preregistered before data collection: [https://osf.io/92wyg](https://osf.io/92wyg)

Three kinds of items: 1. baseline

Both readings (with/without accommodation) are plausible.

(15) (Last Saturday, Daniel cleaned the kitchen, the bedroom and the living room. [Then he had to stop]. This Saturday...)

hat er auch/noch die anderen zwei Räume geputzt
has he also the other two rooms cleaned
‘he also cleaned the other two rooms’
→ Acc.: He cleaned 5 rooms this Saturday (plausible)
→ Non-acc.: He cleaned 2 rooms this Saturday (plausible)

Three kinds of items: 2. acplaus

The reading with accommodation is more plausible.

(15) (Yesterday on her way to work, Lara rode her bike for the first 2km. [Then her bike broke down.] Today...)

hat sie auch/noch die letzten drei Kilometer mit dem Fahrrad
has she also/still the last three kilometers with the bike covered
‘she also rode her bike for the last three kilometers.’
→ Acc.: She biked for 5km today (plausible)
→ Non-acc.: She biked for 3km today (implausible)

Three kinds of items: 3. accimpl

The reading with accommodation is implausible/impossible.

(15) (During the summer holiday, Quentin drank five bottles from his wine supply. He kept two for later. In the winter holiday,)

hat er auch/noch die letzten Flaschen ausgetrunken
has he also/still the last bottles drunk.up
‘he (also) finished the last bottles.’
→ Acc.: In the winter holiday, he drank 7 bottles (impossible)
→ Non-acc.: In the winter holiday, he drank 2 bottles (plausible)

- **Felicity hypothesis:** when accommodation is plausible (acplaus), the acceptability ratings of noch should decrease in comparison to the baseline, while auch remains acceptable (interaction plausibility $\times$ particle).

<table>
<thead>
<tr>
<th>baseline</th>
<th>acceptability</th>
<th>accommodation</th>
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<tbody>
<tr>
<td>auch</td>
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<tr>
<td>noch</td>
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<table>
<thead>
<tr>
<th>acplaus</th>
<th>acceptability</th>
<th>accommodation</th>
</tr>
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<tbody>
<tr>
<td>auch</td>
<td>high</td>
<td>yes</td>
</tr>
<tr>
<td>noch</td>
<td>low</td>
<td>(?)</td>
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- **Accommodation hypothesis:** when accommodation is implausible (accimpl), the accommodation rate for auch should decrease in comparison to the baseline, while it stays low for noch (interaction plausibility $\times$ particle).

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<thead>
<tr>
<th>baseline</th>
<th>acceptability</th>
<th>accommodation</th>
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<tbody>
<tr>
<td>auch</td>
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<tr>
<td>noch</td>
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<table>
<thead>
<tr>
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<th>acceptability</th>
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<td>no</td>
</tr>
<tr>
<td>noch</td>
<td>high</td>
<td>no</td>
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### 2.2 Results & Discussion

- **Experiment results:** rating task
- **Ratings** (5 = ‘very good’, 1 = ‘very bad’):

<table>
<thead>
<tr>
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<th>accimpl</th>
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<tr>
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<tr>
<td>1.00</td>
<td>0.75</td>
<td>0.00</td>
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  **Felicity hypothesis confirmed:** significant interaction PLAUSIBILITY (baseline vs. accplaus) × PARTICLE
  
  \( z = 3.23, p = 0.001 \)

- **Experiment results:** question task

<table>
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<th>accimpl</th>
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<tbody>
<tr>
<td>40%</td>
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<td>75%</td>
<td>5%</td>
<td>7%</td>
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<tr>
<td>5%</td>
<td>7%</td>
<td>7%</td>
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  **Accommodation hypothesis confirmed:** significant interaction PLAUSIBILITY (baseline vs. accimpl) × PARTICLE
  
  \( z = -2.43, p = 0.02 \)

- **Open issue:**
  - Even in the acclaus condition, relatively high ratings with noch (median: 4) — some infelicitous filler items (e.g. with presupposition failure) had much lower ratings.

### 3 Summary & Outlook

**Summary:**

- We presented the results of an experiment testing whether an overt change of the topic situation (using a temporal adverbial) plays a role for the behaviour of auch and noch.
- Findings are compatible with the predictions of Grubic (2018)
  - **noch** most acceptable with a shift in topic situation
  - **Auch** acceptable in both cases (but the interpretation changes)

**Outlook:**

- Role of pragmatics (e.g. the Gricean maxim of manner) for particles like auch?
- Unified account of noch in its different uses as a scalar particle (e.g. Israel 1997)?
References


Appendix A: Pretest Plausibility

- 36 items, 2 conditions (two possible continuations)
- Forced-choice task: the continuation is...
  - Possible and plausible
  - Possible but implausible
  - Impossible

- 3 kinds of items: both (a) and (b) plausible (baseline), only (a) plausible (accimpl), only (b) plausible (accplaus)

Yesterday on her way to work, Lara rode her bike for the first 2km. For the last 3km she unfortunately had to push her bike, because her bike broke down.

a. Today on her way to work she rode her bike for the last 3km
   (i.e. only the part of the way that she didn’t cycle yesterday)

b. Today on her way to work she rode her bike for the whole 5km
   (i.e. including the way that she cycled yesterday)

<table>
<thead>
<tr>
<th></th>
<th>accplaus</th>
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<th>accimpl</th>
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<td></td>
<td>cont.</td>
<td>rep.</td>
<td>cont.</td>
<td>rep.</td>
</tr>
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<td>89%</td>
<td>96%</td>
<td>3%</td>
</tr>
<tr>
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<td>10%</td>
<td>4%</td>
<td>5%</td>
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<tr>
<td>impossible</td>
<td>15%</td>
<td>1%</td>
<td>0%</td>
<td>93%</td>
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Appendix B: Fillers (main experiment)

- 12 items **wieder** vs. **nochmal** (both meaning ‘again’)
  - 4 x restitutive again
    (# nochmal, wieder ✓)
  - 4 x repetitive again
    (nochmal ✓, wieder ✓)
  - 4 x presupposition failure
    (# nochmal, # wieder)

- Question always: How often ...? (once, several times)

(17) (When Marie came to her office this morning, she opened the window. Then she grew cold.)
   A few minutes later, she closed the window again.

(18) (Two weeks ago, Michaela sent an e-mail to Henri. He didn’t answer.)
   Yesterday, she sent him an e-mail again.

(19) (On Monday afternoon Gerd saw a documentary about Köln on TV. He regretted that he had never been there.)
   On Monday evening, he booked a trip to Köln again.