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Subject vs. object binding as evidence for degrees of clausal subordination

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Adverbial clauses between subordination and coordination
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Content

Adverbial Clauses

- **temporal**

(1) Anna listens to music **while** she runs through the park in the morning.

→ structures **event** of associated clause

→ **C**entral **A**dverbial **C**lause (**CAC**) Haegeman (2004), Frey (2011)

- **adversative**

(2) Anna relaxes in the evening, **while** she runs through the park in the morning.

→ structures **discourse** for associated clause

→ **P**eripheral **A**dverbial **C**lause (**PAC**) Haegeman (2004), Frey (2011)

Adverbial Clauses

- **temporal**

  (3) Anna hört Musik, **während** sie morgens durch den Park joggt.

→ structures **event** of associated clause

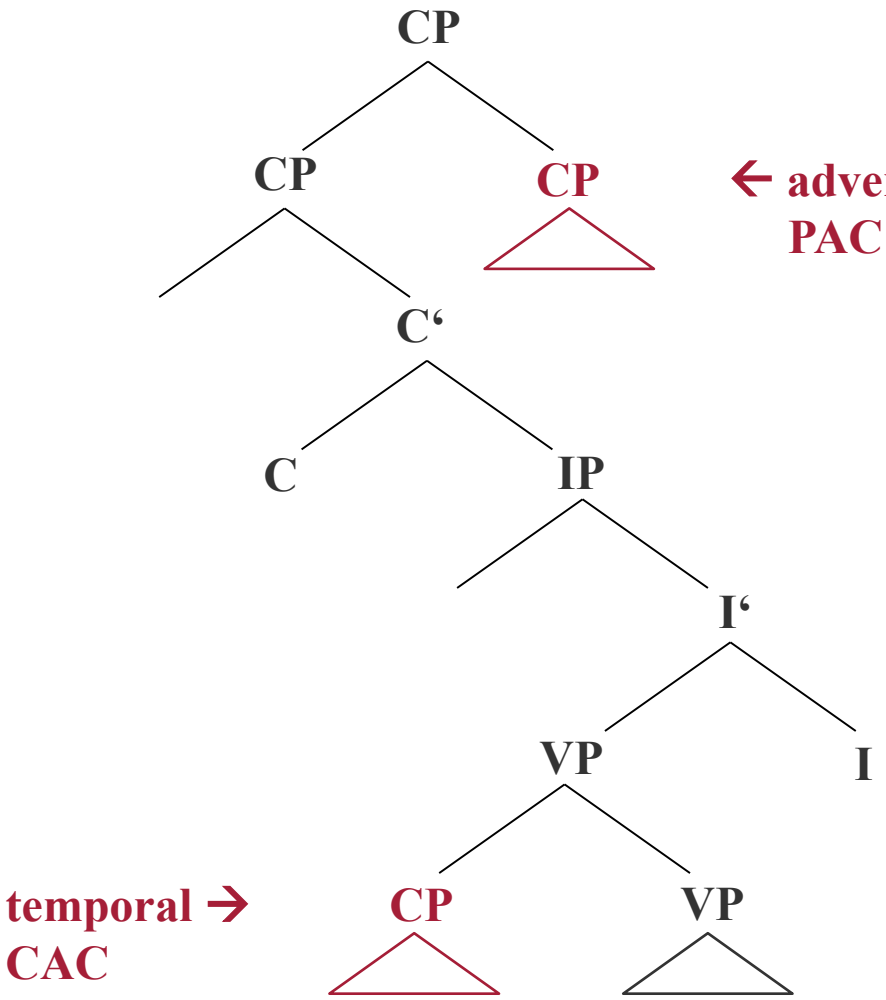
→ **C**entral **A**dverbial **C**lause (**CAC**) Haegeman (2004), Frey (2011)

- **adversative**

  (4) Anna relaxt abends, **während** sie morgens durch den Park joggt.

→ structures **discourse** for associated clause

→ **P**eripheral **A**dverbial **C**lause (**PAC**) Haegeman (2004), Frey (2011)



← adversative PAC

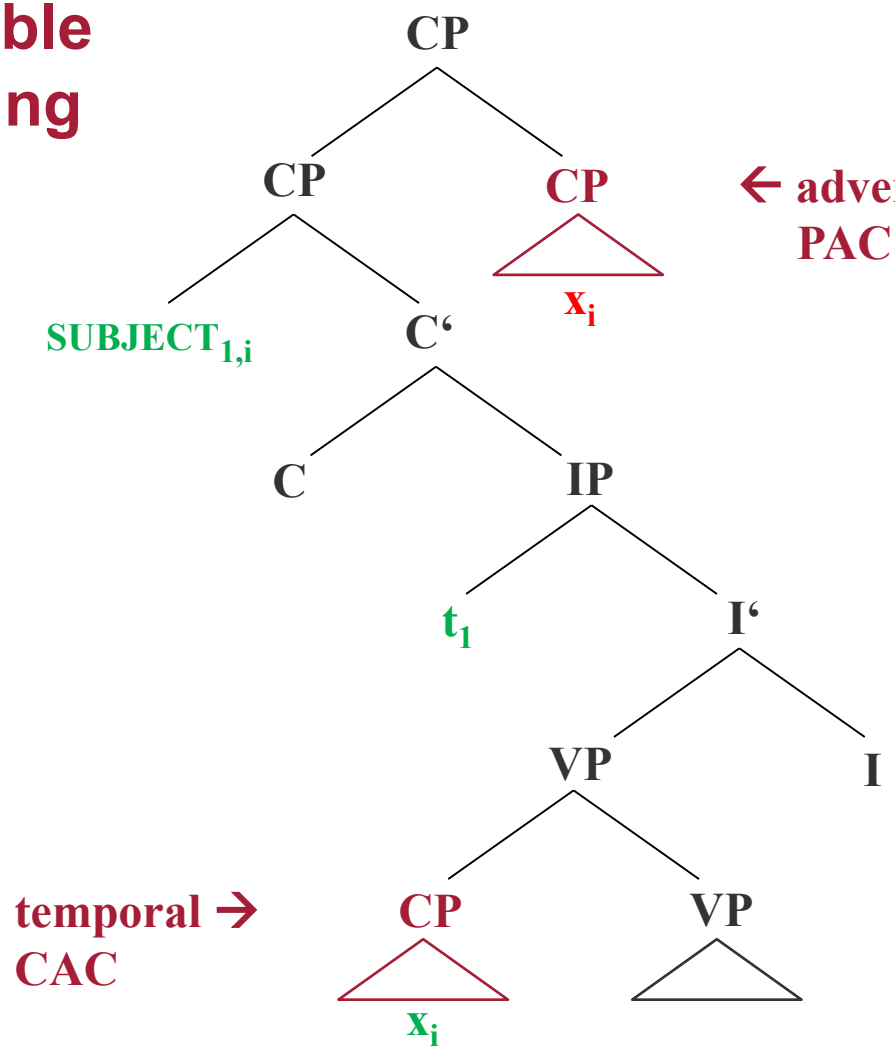
temporal → CAC

→ **Binding dependent on hierarchical structure**

→ Variable Binding (Büring 2005):
-QP c-commands variable
-QP and variable are co-indexed

see also Badan & Haegeman (2022: 15-16))

Variable Binding



→ **Binding dependent on hierarchical structure**

→ Variable Binding (Büring 2005):
-QP c-commands variable
-QP and variable are co-indexed

Experiment on binding by the subject

Aims:

- comparison of German CAC and PAC using variable binding
- can we identify a difference in the binding behaviour of CAC and PAC?

Experiment on binding by the subject

Method:

- 2 connectors: temporal & adversative *während* 'while'
- 8 items
- 4 conditions
- 15 standard items → scale of acceptability
- acceptability judgements – *Thermometer Judgements* (Featherston 2009)
- data of 40 German native speakers

Experiment on binding by the subject

Conditions:

- order of clauses:
  - → matrix clause > adverbial clause
  - → adverbial clause > matrix clause

- position of QP and variable:
  - → QP in matrix clause, variable in adverbial clause
  - → variable in matrix clause, QP in adverbial clause

Experiment on binding by the subject

Material: CAC: temporal ***während*** 'while'

(i) a. **Jeder Mitarbeiter$_i$** plante das nächste Meeting, während **er$_i$** gestern mit der Bahn nach Hause fuhr. → **MqAv** ✚
'Every colleague$_i$ planned the next meeting while he$_i$ went home by train yesterday.'

b. **Er$_i$** plante das nächste Meeting, während **jeder Mitarbeiter$_i$** gestern mit der Bahn nach Hause fuhr. → **MvAq** ▬
'He$_i$ planned the next meeting while every colleague$_i$ went home by train yesterday.'

c. Während **jeder Mitarbeiter$_i$** gestern mit der Bahn nach Hause fuhr, plante **er$_i$** das nächste Meeting. → **AqMv** ▬
'While every colleague$_i$ went home by train yesterday he$_i$ planned the next meeting.'

d. Während **er$_i$** gestern mit der Bahn nach Hause fuhr, plante **jeder Mitarbeiter$_i$** das nächste Meeting. → **AvMq** ✚
'While he$_i$ went home by train yesterday every colleague$_i$ planned the next meeting.'

M = Matrix clause A = Adverbial clause q = quantifier v = variable

Experiment on binding by the subject

Material: PAC: adversative ***während*** 'while'

(ii) a. **Jeder Mitarbeiter$_i$** machte heute spät Feierabend, während **er$_i$** gestern früh nach Hause ging. → **MqAv**
'Every colleague$_i$ called it a day late today, while he$_i$ went home early yesterday.'

b. **Er$_i$** machte heute spät Feierabend, während **jeder Mitarbeiter$_i$** gestern früh nach Hause ging. → **MvAq**
'He$_i$ called it a day late today, while every colleague$_i$ went home early yesterday.'

c. Während **jeder Mitarbeiter$_i$** gestern früh nach Hause ging, machte **er** heute spät Feierabend. → **AqMv**
'While every colleague$_i$ went home early yesterday, he$_i$ called it a day late today.'

d. Während **er$_i$** gestern früh nach Hause ging, machte **jeder Mitarbeiter$_i$** heute spät Feierabend. → **AvMq**
'While he$_i$ went home early yesterday, every colleague$_i$ called it a day late today.'

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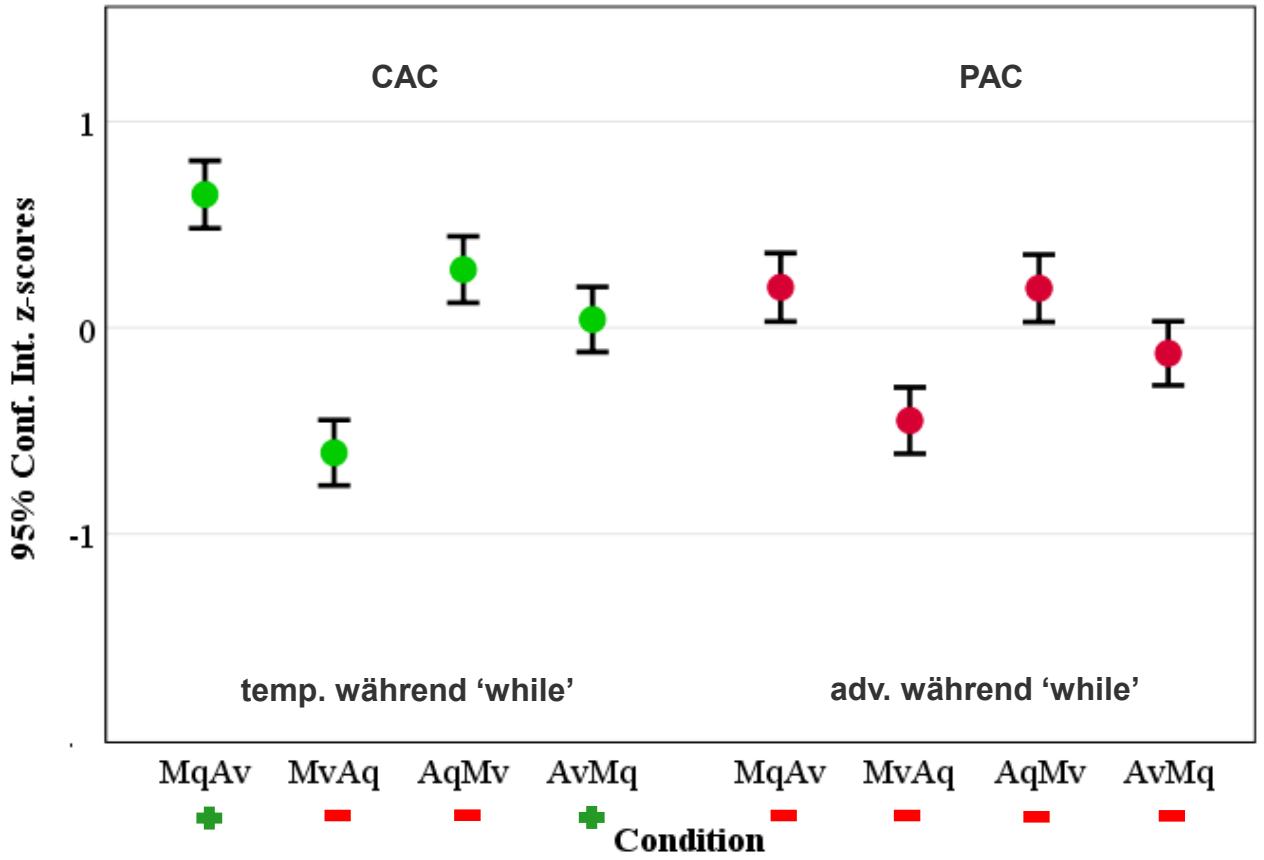
Experiment on binding by the subject



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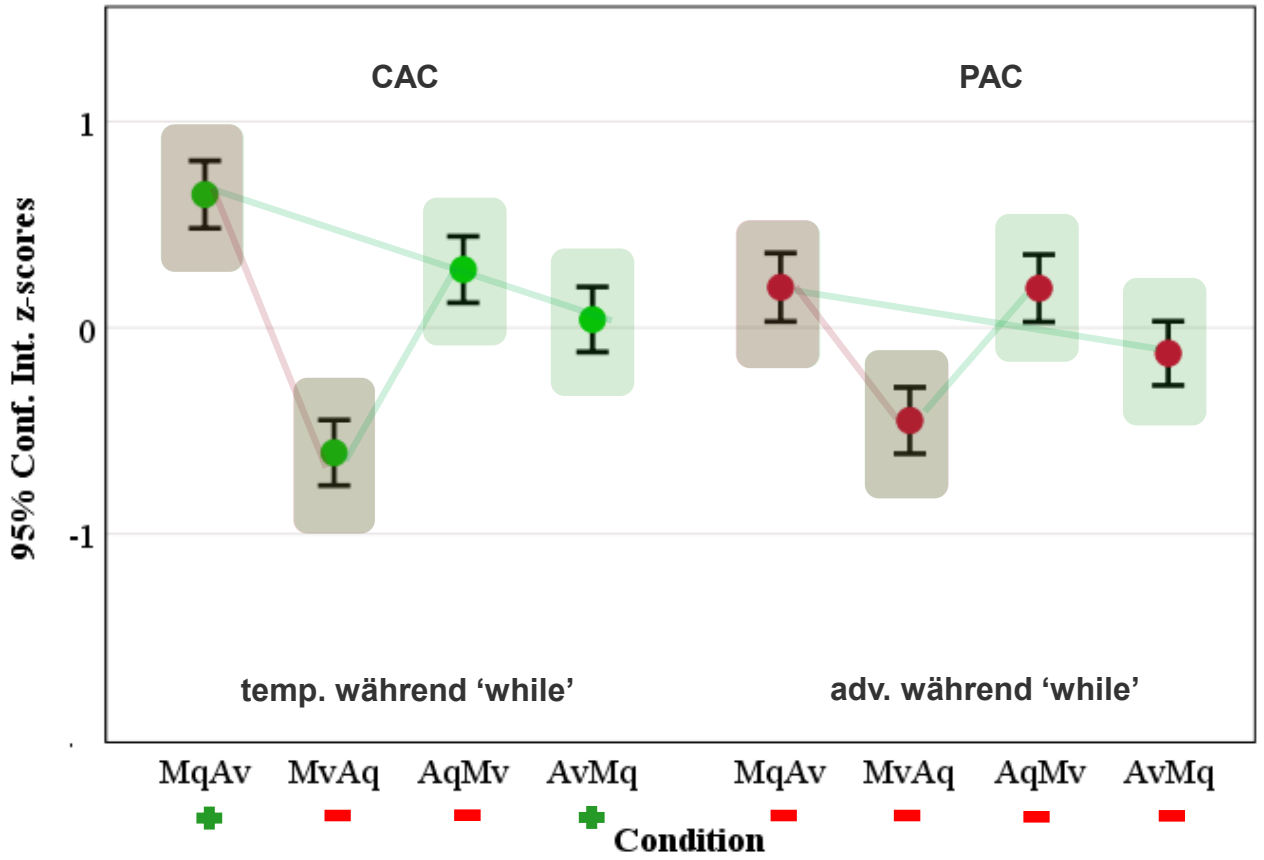


Experiment on binding by the subject

Results

- method seems valid :
  → clear pattern of results
  → experimental series allows generalisation:
  same type of adverbial clause → same pattern of results

- predicted (c-command) difference between CACs and PACs visible
  → PAC: less cost for potential binding violation (MqAv → MvAq)

Experiment on binding by the subject

Analysis

- more factors involved than c-command

→ at least: linear precedence effect: QP>v

→ CAC and PAC equally affected

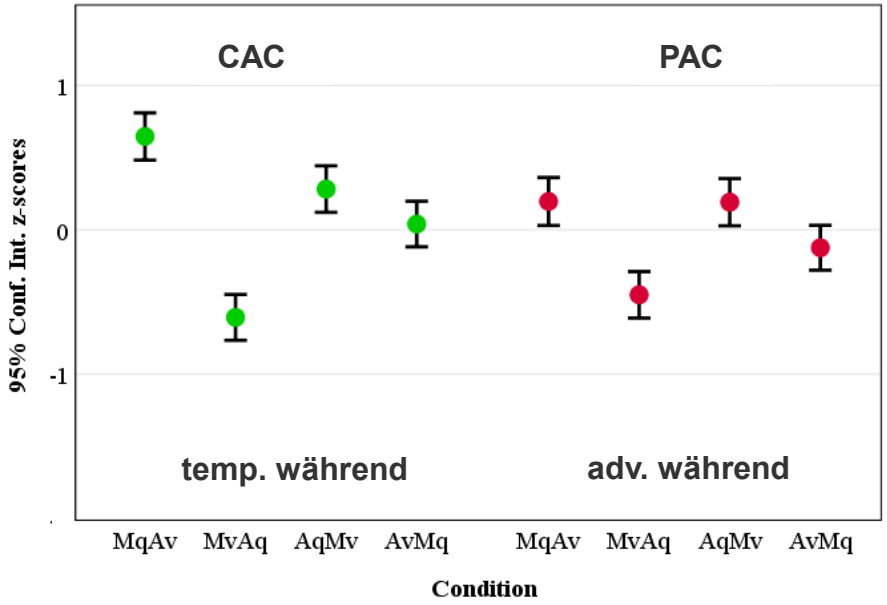
→ MqAv → AvMq; MvAq → AqMv

→ hierarchy effects:

→ c-command (CAC)

→ processing effects (PAC)

- 3 factors involved?



Experiment on binding by the subject

Analysis

- proposal: reduce 3 to 2 factors → more economical

→ c-command responsible for hierarchical structure within clauses

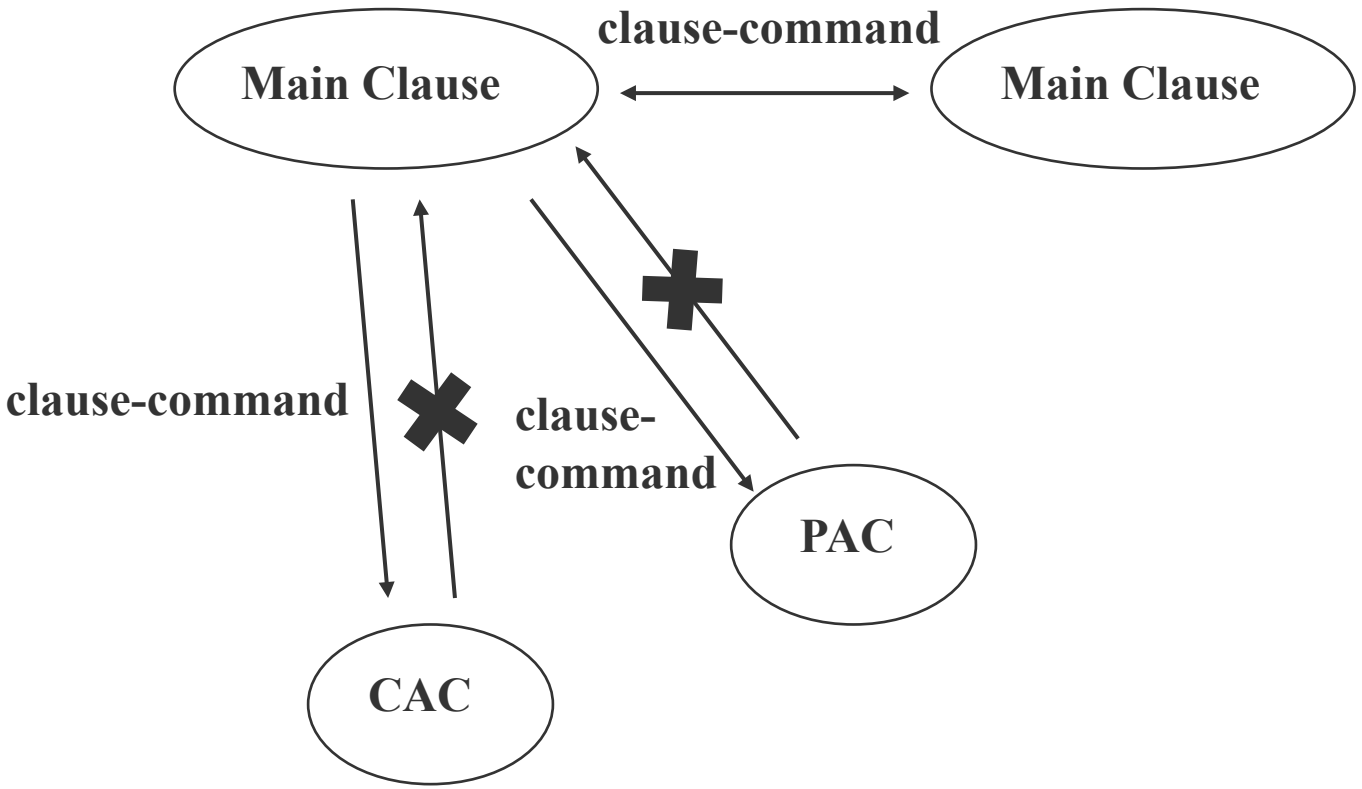
→ ***clause-command*** responsible for hierarchical structure **between clauses**

  → allows any command relation unless it is upwards

  → effect dependent on hierarchical difference between clause types

  → success of anaphoric relations between clauses reacts to hierarchy

Clause-command



Experiment on binding by the subject

Analysis

- data explained by 2 factors:

→ structural hierarchy controlled by clause-command

→ linear precedence (QP >v)

Experiment on binding by the subject

Predictions

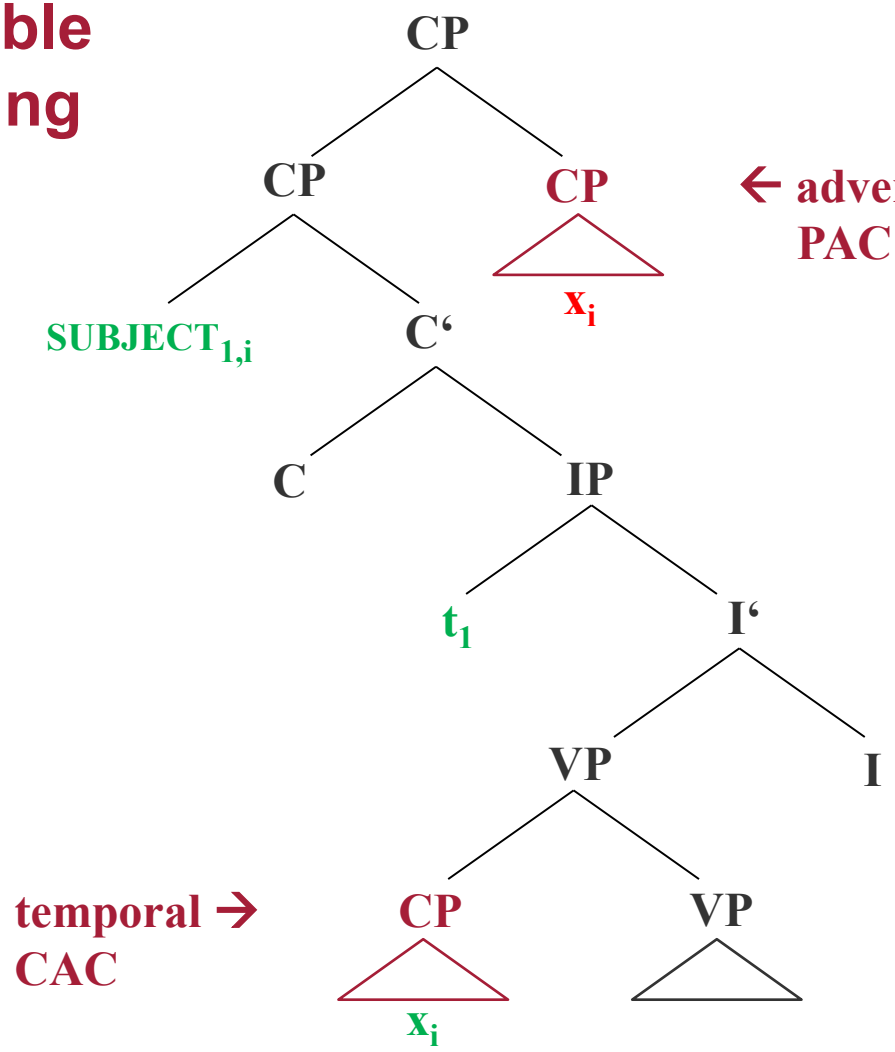
- clause-command: clear prediction for position of QP

  → position of QP **not** relevant for anaphoric relations between clauses

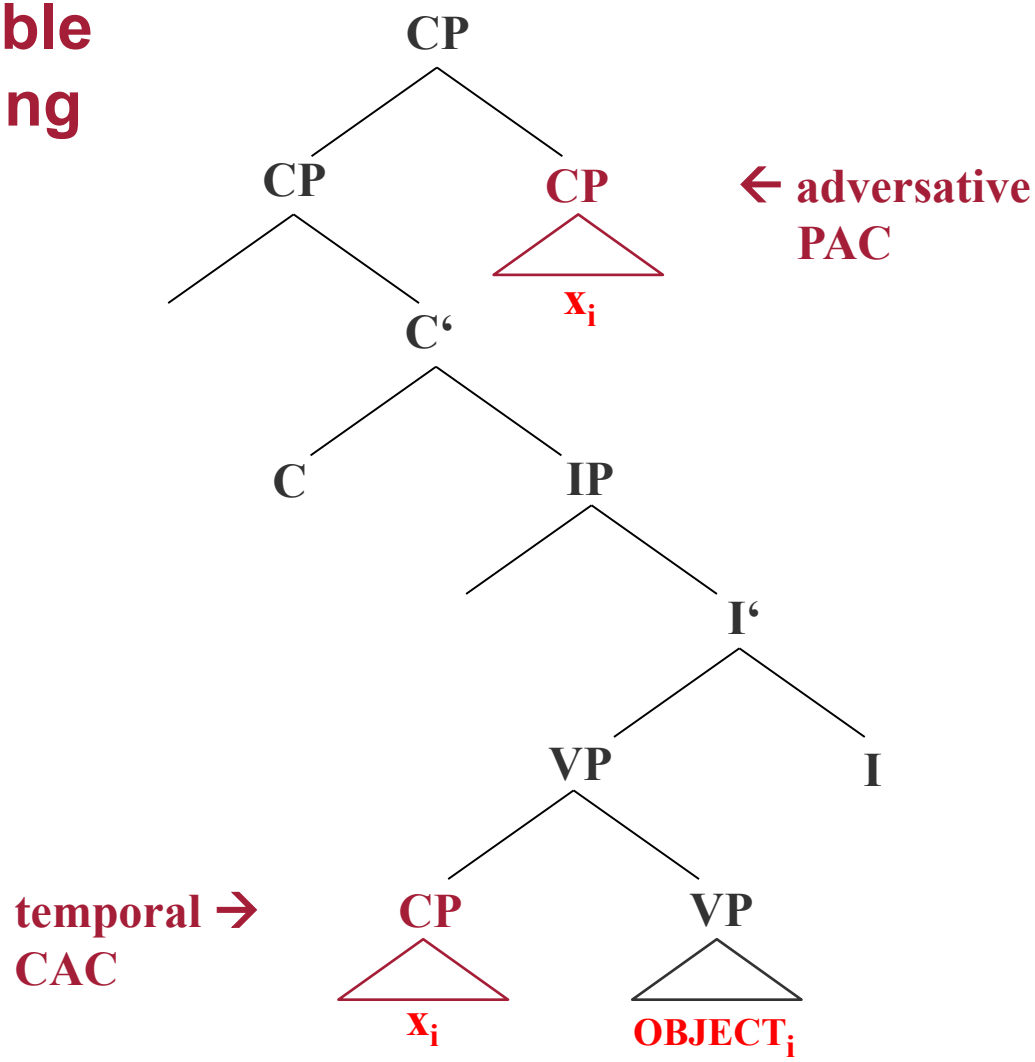
  → decisive factor: hierarchical relation between clauses

- **next experiment:** how will **object binders** behave?

Variable Binding



Variable Binding



Experiment on binding by the object

Method:

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- 8 items
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- 15 standard items → scale of acceptability
- acceptability judgements – *Thermometer Judgements* (Featherston 2009)
- so far data of 31 German native speakers

Experiment on binding by the object

Material: CAC: temporal ***während*** 'while'

(iii) a. Die Sonnenstrahlen wärmten heute **jeden Gärtner$_i$**, während **er$_i$** den Obstbaumschnitt durchführte. → **MqAv**

'The sunbeams warmed every gardener$_i$ today while he$_i$ cut the fruit trees.'

b. Die Sonnenstrahlen wärmten **ihn$_i$** heute, während **jeder Gärtner$_i$** den Obstbaumschnitt durchführte. → **MvAq**

'The sunbeams warmed him$_i$ today while every gardener$_i$ cut the fruit trees.'

c. Während **jeder Gärtner$_i$** den Obstbaumschnitt durchführte, wärmten **ihn$_i$** die Sonnenstrahlen heute. → **AqMv**

'While every gardener$_i$ cut the fruit trees the sunbeams warmed him$_i$ today.'

d. Während **er$_i$** den Obstbaumschnitt durchführte, wärmten die Sonnenstrahlen heute **jeden Gärtner$_i$**. → **AvMq**

'While he$_i$ cut the fruit trees the sunbeams warmed every gardener$_i$ today.'

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Experiment on binding by the object

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Experiment on binding by the object

Material: PAC: adversative ***während*** 'while, whereas'

(iv) a. Die Sonnenstrahlen wärmten heute **jeden Gärtner$_i$**, während **er$_i$** gestern vom Regen nass wurde. → **MqAv**

'The sunbeams warmed every gardener today while he got wet from the rain yesterday.'

b. Die Sonnenstrahlen wärmten **ihn$_i$** heute, während **jeder Gärtner$_i$** gestern vom Regen nass wurde. → **MvAq**

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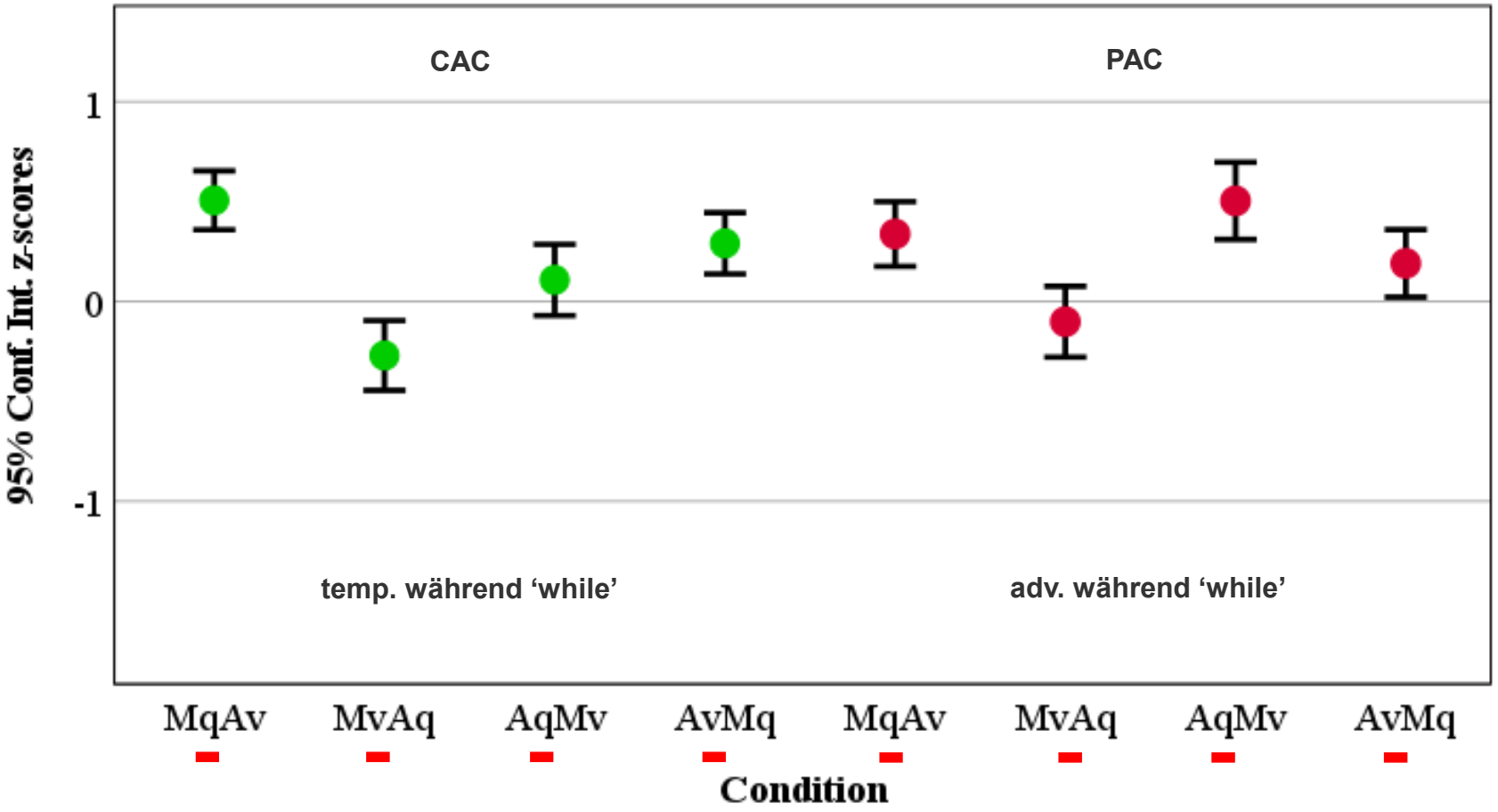

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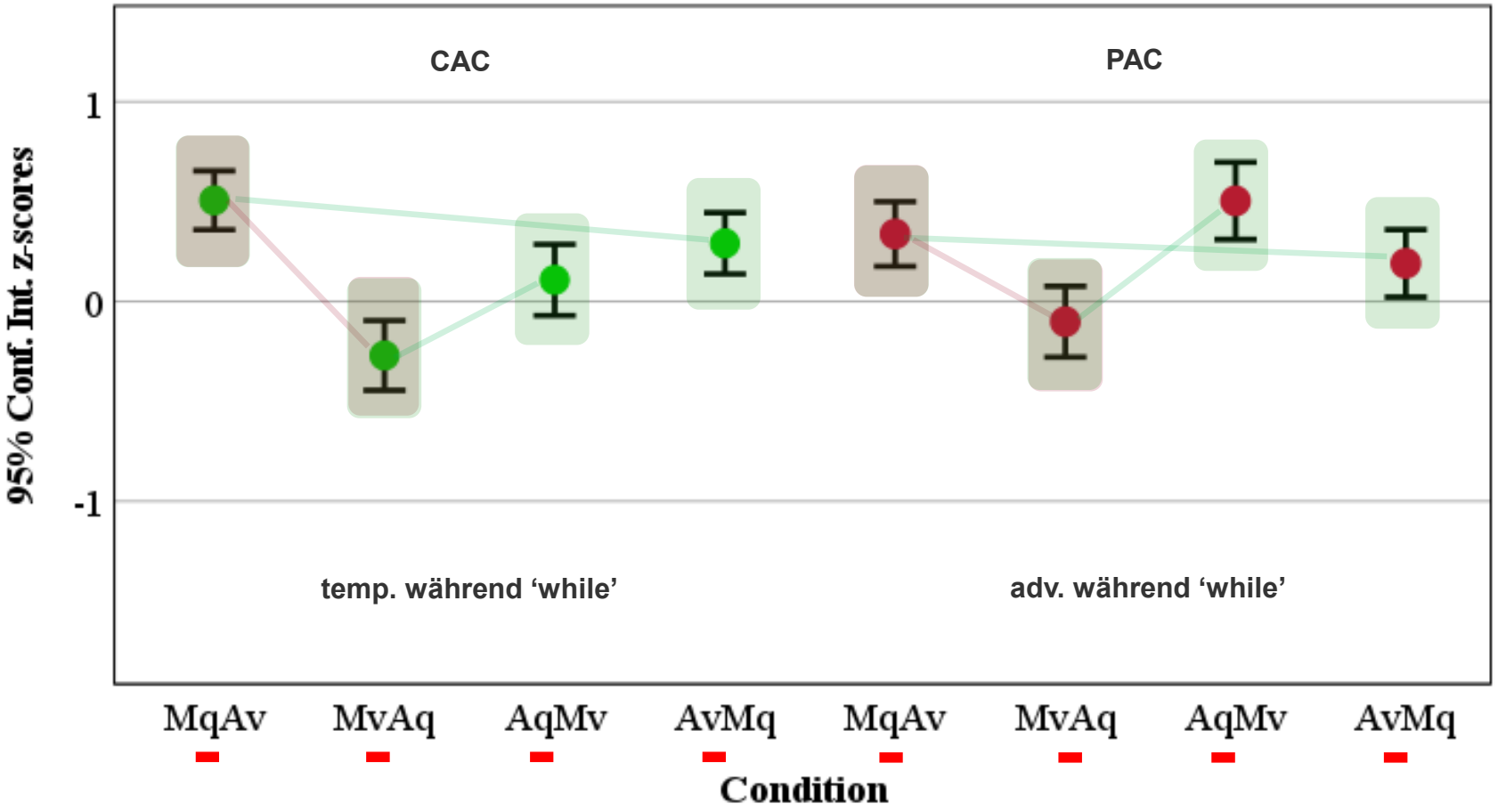

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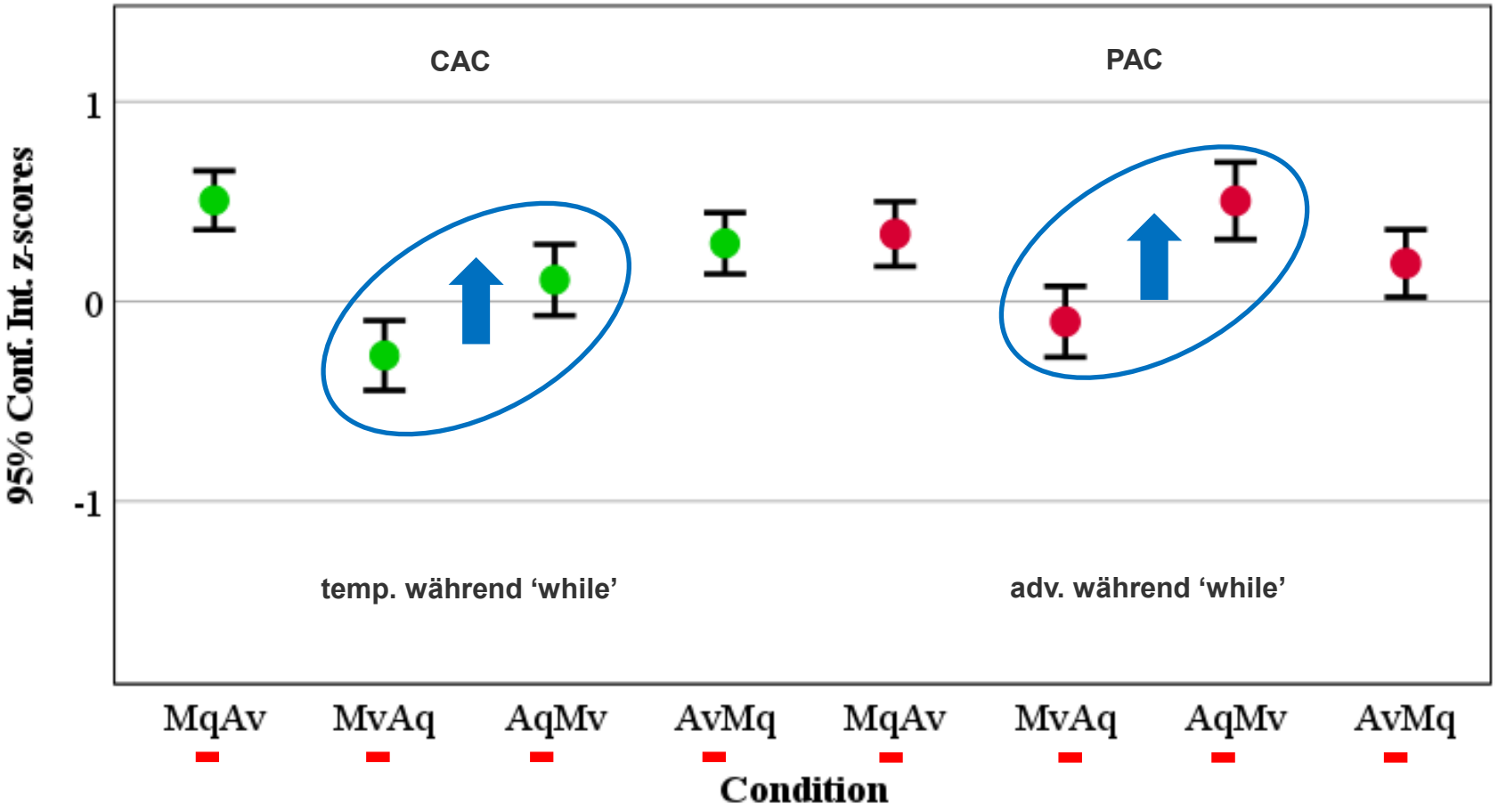

Experiment on binding by the object

Results

- pattern of results similar to subject binding

- CAC and PAC affected by same linearity precedence effect
  → QP>v

- PAC: less cost for potential binding violation (MqAv → MvAq)
- our starting assumption: CAC cannot be bound by object:
  → but shows more violation cost than PAC

- clause-command seems able to explain data once more

Conclusion

1. theoretical predictions seem to be supported
   → introspective judgements supported by experimental data
   → different structural behaviour of CACs and PACs

2. data supports clause-command as decisive factor between clauses, c-command within clauses

3. results comparable with Bader & Webelhuth (to appear): gradient effects in anaphoric relations across clauses.

4. next experiment: use only object positions for both potential binder and variable

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Thank you very much for your attention.