

# Changes in Partner Models Effects of Adaptivity in the Course of Explanations

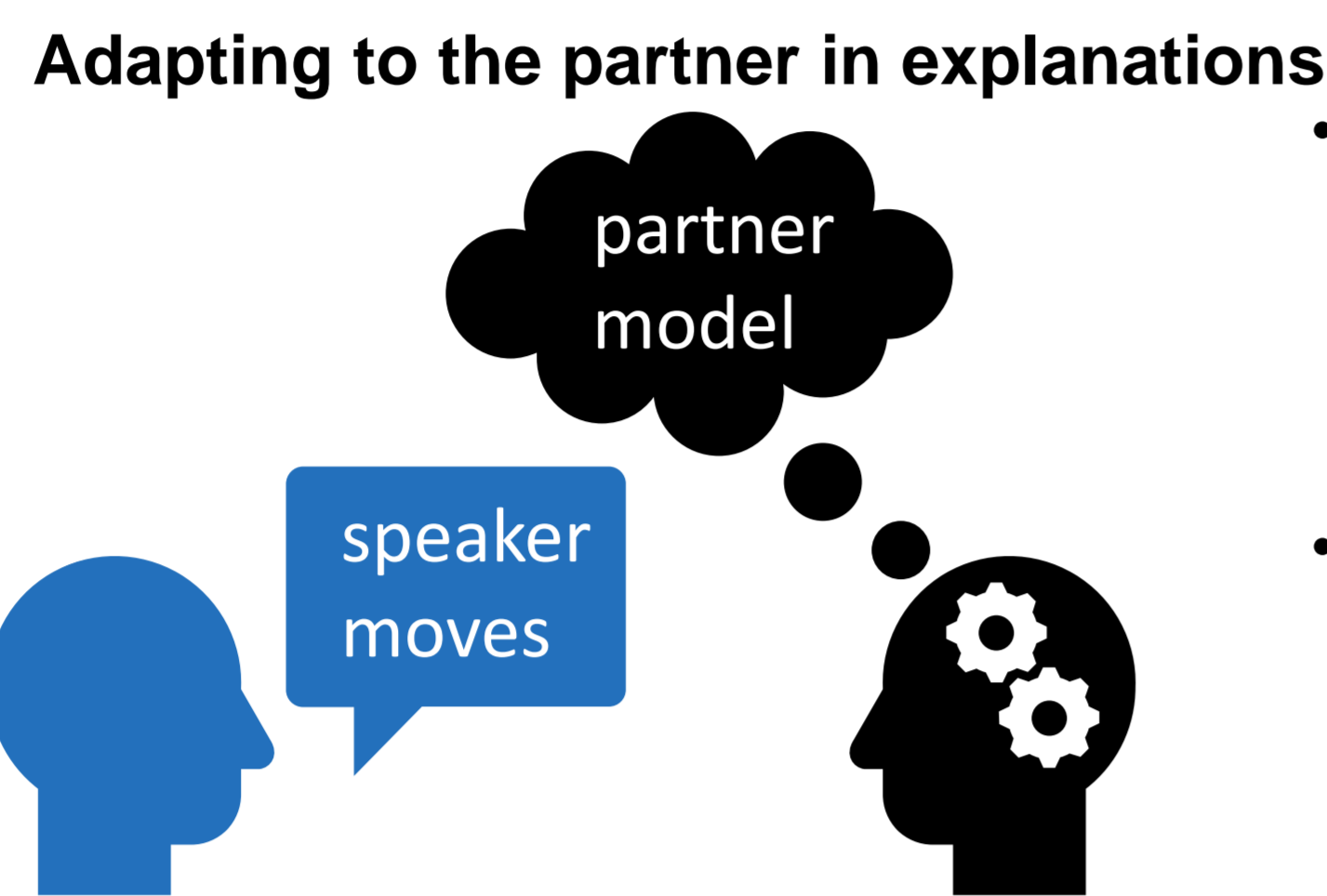
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## INTRODUCTION

- Interactive behaviour, speakers responsive to addressees' behaviours [1]
- Speaker move: a statement including a single idea by a speaker within a turn [2]



### Assumptions:

Depending on partner model (PM) verbal behaviour varies [5]  
→ partners jointly organise the interaction [1,6]

- Explanations more effective if they are adaptive & consider explainees' prior knowledge, skills or cognitive abilities [3]
- Mental representations of the partner (partner model, PM) precondition to adapt to the partner [4]

### Research questions

- Do explainers (EXs) PMs of explainees (EEs) change during an explanation?
- How are PMs associated with EEs' interactive behaviours?

## METHOD

**Participants** 59 game explanation dyads, a total of 118 participants, from the ADEX corpus, 113 L1, 5 L2 German speakers (age  $M = 25$  years,  $SD = 8.76$ ).



Figure 1: Study design



Partner model 1 (PM1) Speaker Moves x Partner model 2 (PM2)

### Analysis

RQ2: Association

RQ1

Changes: PM1 → PM2

## COGNITIVE & INTERACTIVE ADAPTIVITY

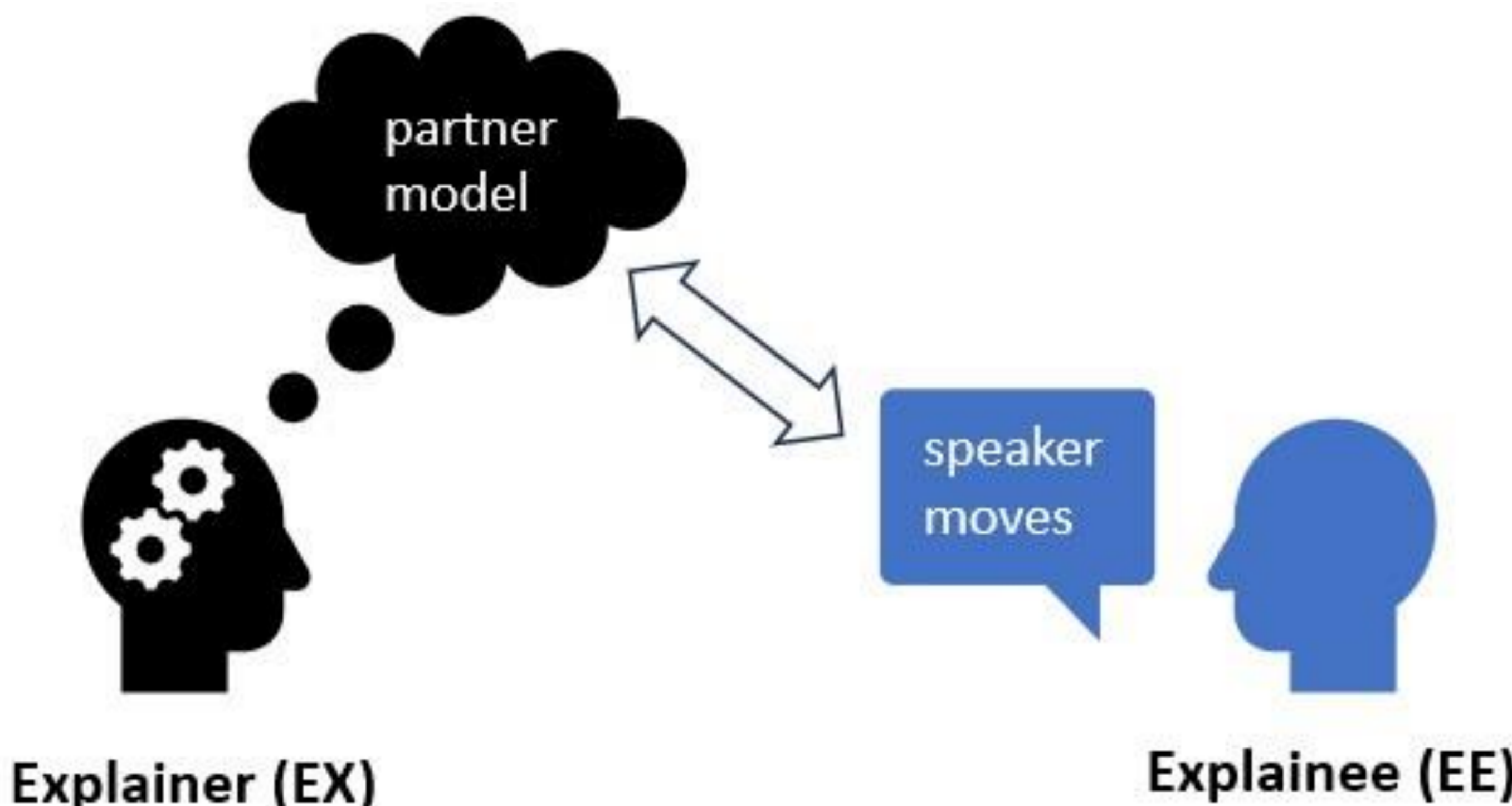
### Hypotheses:

We expect significant correlations between EEs' speaker moves & EX partner model of EE

- EEs asking factual questions and paraphrasing partner ↔ higher perceived knowledge [8]
- EEs asking questions, summarising, paraphrasing & providing additional information ↔ perceived as more cooperative & co-constructive [8]
- EEs asking questions ↔ perceived as more interested and motivated in the explanation [8]

### Cognitive: Mental representation

Investigated PM dimensions [5,3]
Knowledge
Intrinsic motivation
Extrinsic motivation
Interest in explanation
Joy
Co-construction
Co-operation



### Interactive: Verbal behaviour

Speaker Moves [9,10,11]
Additional info
Summarising info
Paraphrasing partner
Factual question
Reassurance question
Personal question
Procedure question

Full list of speaker moves



## RESULTS

### Research question 1:

PM Changed (heightened): knowledge, interest in explanation, joy, co-construction & co-operation.

### Research question 2 a-c Spearman correlation:

Only significant correlations,  $r > .25$  are reported.

### PM dimensions:

PM dimensions	Speaker moves:
Knowledge	Summarising info (.32)
Intrinsic motivation	Paraphrasing partner (.27)
Extrinsic motivation	Factual question (.31)
Interest in explanation	Reassurance question (.26)

→ bringing together the concepts of cognitive & interactive adaptivity

## DISCUSSION

- First evidence for changes of PM during an explanation based on verbal behaviours of the partner → insights into co-construction of everyday explanations, EX PM adapts to the EE speaker moves
  - Practical implications for designing explaining (systems) like XAI, with the aim to enhance social aspects [12,13]
  - Highlight relevance of EE verbal behaviour for developing an adequate PM
  - Future work: explore causal insights into the interplay between EEs' moves & PM
- Limitations:**
- Short explanations hard to come from a global to local PM
  - Explaining cognitive demanding → maybe not enough resources available for adaptation [14]

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