



Max Planck Institute
for Psycholinguistics

First things first: Cross-linguistic analyses of event apprehension

Muqing Li¹, Johannes Gerwien² & Monique Flecken³

Radboud University Nijmegen¹

Heidelberg University Language and Cognition Lab²

Max Planck Institute for Psycholinguistics³

Introduction

Event apprehension: initial phase of visual processing

- Extraction of 'gist' in as little as 20-400ms
- Identification of scene coherence, event structure & roles (Henderson, 2011; Biederman et al., 1982, Potter, 1975; Griffin & Bock, 2000)
- Prone to modulation by task demands (Castelhano & Henderson, 2007)

First Fixation (FF) location in event description task: result of calculations made during event apprehension (Gerwien & Flecken, 2016)

- Influenced by stimulus exposure time (300-500-700ms)
- Does not correlate with linguistic encoding specificity
- Crosslinguistic differences (German & Spanish) only with brief stimulus exposure (300ms)



Research questions

- To what extent do the demands of different **linguistic tasks** influence apprehension?
→ FF locations on event stimuli, brief exposure (300ms)
- Does the specific **language** spoken by the participant play a role during this process?
→ Dutch vs. Mandarin Chinese (topic drop, aspect, RVCs)

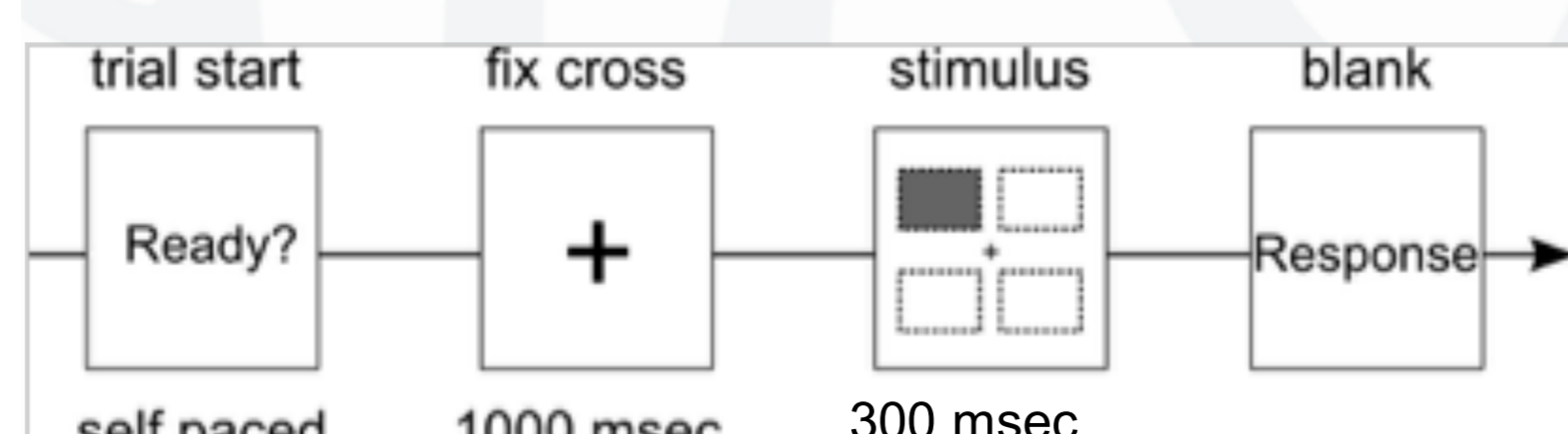
Design

Participants

- 24 NS of Dutch, 24 NS of Mandarin Chinese

Stimuli

- 48 pictures of causative events (4 diff. actors) + fillers
- Presented randomly in one of four screen positions for 300ms
- Position of agent/action in the picture was counterbalanced
- Block design - each participant performed 3 tasks:
 1. Nonverbal task (N=24 participants),
 2. Event description (N=24)
 3. Agent/Action naming (N=12 each) (order pseudo-rand.)
- SMI Red-M eye tracker (250Hz)



Tasks

- **Nonverbal** picture recognition task (stimuli N=16)
"Respond when you see a picture that you have seen before already"
- **Event** description task (stimuli N=16)
"Describe the event: what is happening in the picture?"
- **Agent** identification task (stimuli N=16)
"Here are 4 agents (Els, Ans, Tom, Suus). Study them. When you see one of them in a picture, say their name"
- **Action** naming task (stimuli N=16)
"Name the action that you see"

Analyses

- First fixation locations: Y-coordinates of FF on stimuli
- Verbal data: encoding specificity
 - Agent specificity: "a woman" (vs. "someone")
 - Action specificity: "cutting" (vs. "doing")
 - Object specificity: "a cucumber" (vs. "something")

Results

- **Task demands** influence First Fixation locations
- **Language background** affects First Fixation locations:
 - Dutch participants dissociate fixation behaviour in Action naming & Event description; Mandarin participants do not
 - Overall, minor language differences in encoding specificity
 - FF locations do not correlate with verbal output

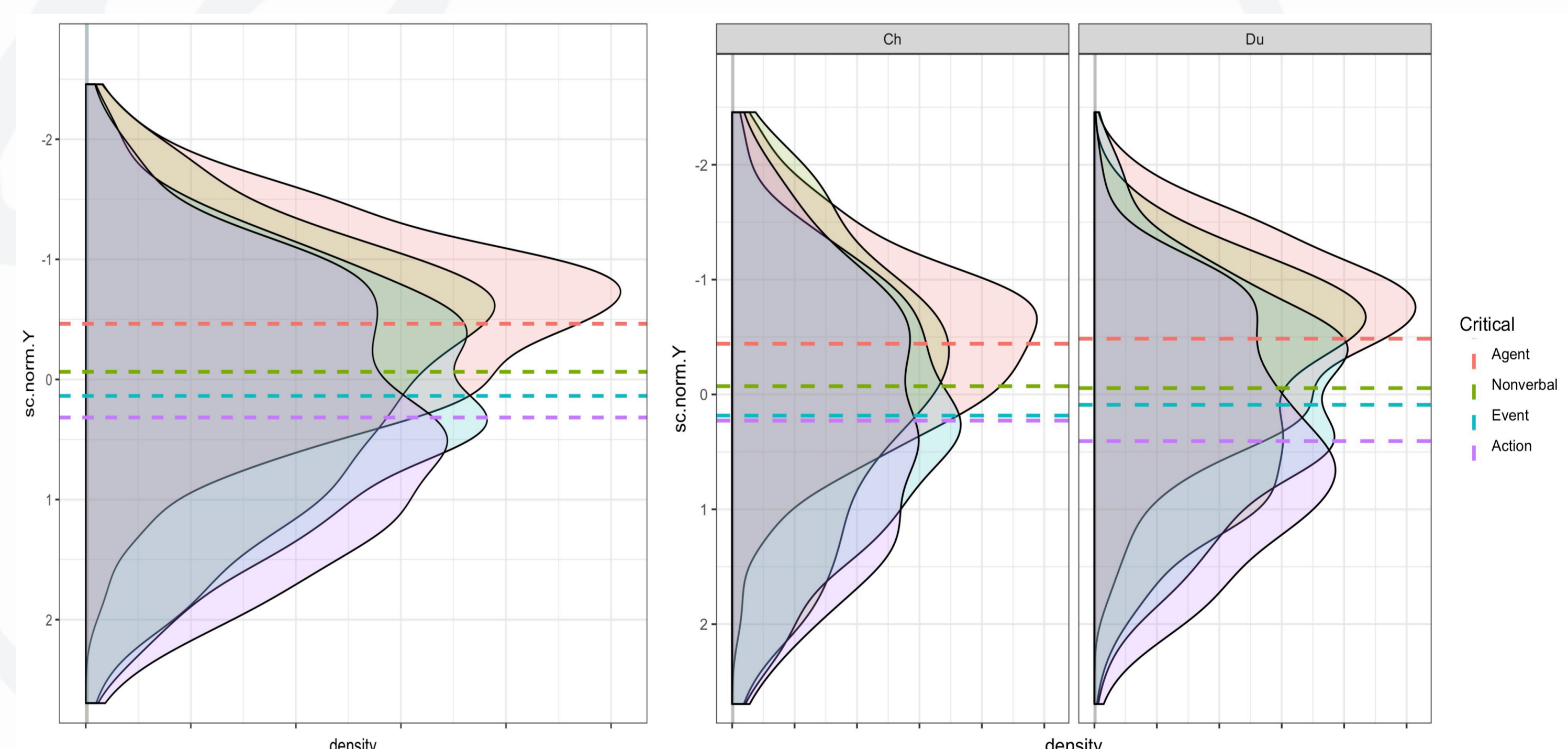


Figure: First Fixation location distributions in the four tasks (left) and per language group (right)

Conclusions

- First Fixations reflect pre-linguistic processing, i.e., apprehension
- Apprehension is modulated by linguistic task demands
- Apprehension of events is similar to apprehension of actions in Mandarin Chinese, but not in Dutch
- Apprehension differs across speakers of different languages → invites further research!