

Shared Agency and Motor Representation

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Shared Agency

Two sisters cycling to school together.

Members of a flash mob simultaneously open their newspapers noisily

Parallel but Individual Agency

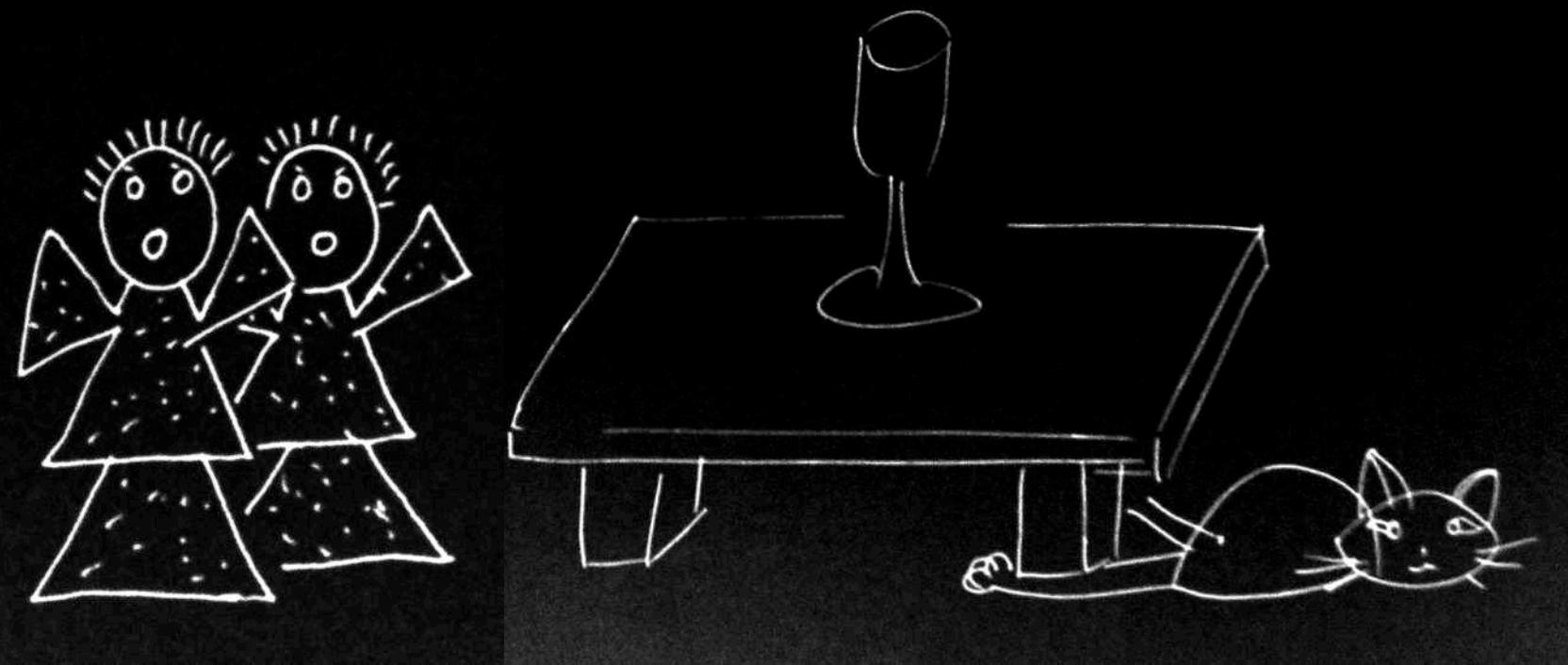
Two strangers cycling the same route side-by-side.
(cf. Gilbert 1990)

Onlookers simultaneously open their newspapers noisily
(cf. Searle 1990: 92)

What is the relation between a purposive ^{joint}action and the goal or goals to which it is directed?

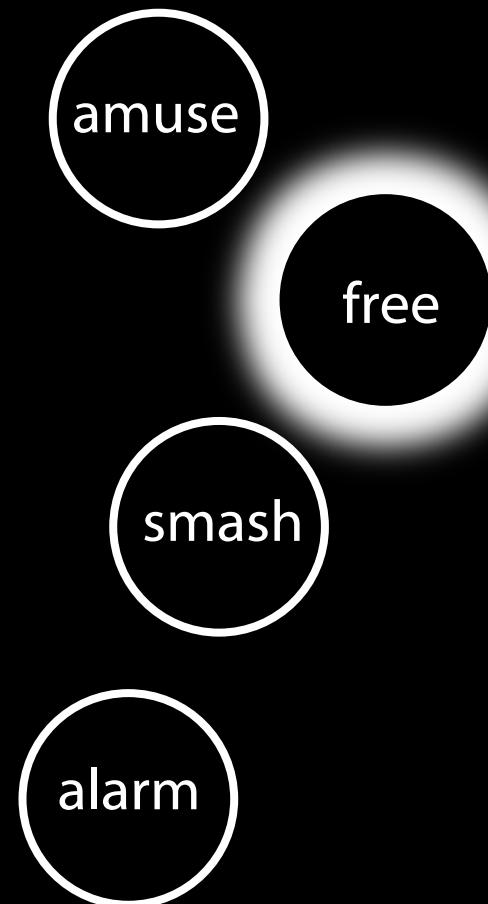
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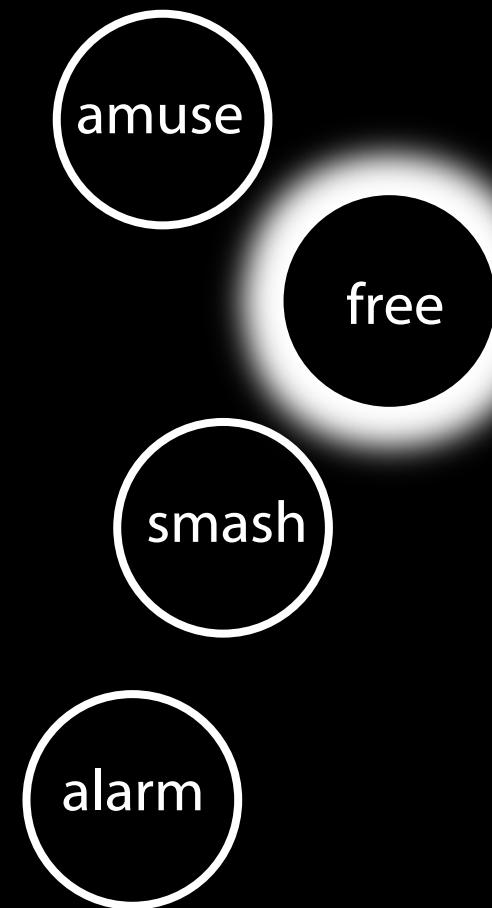
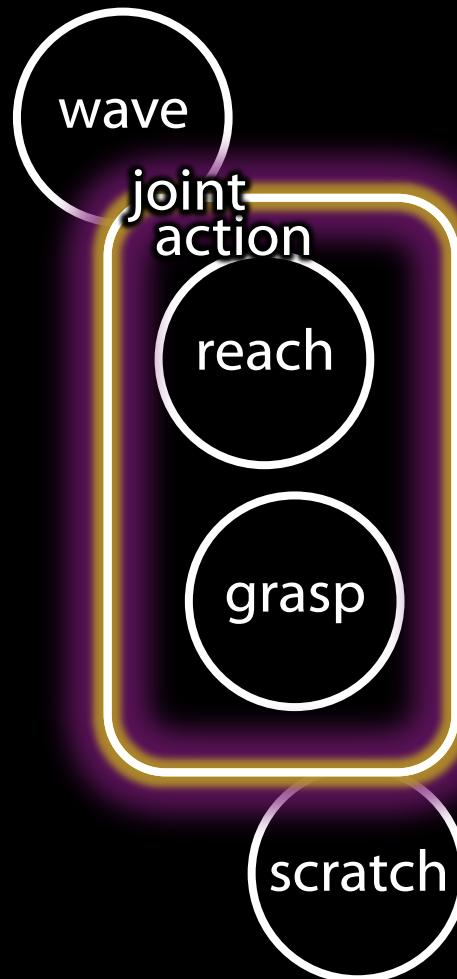


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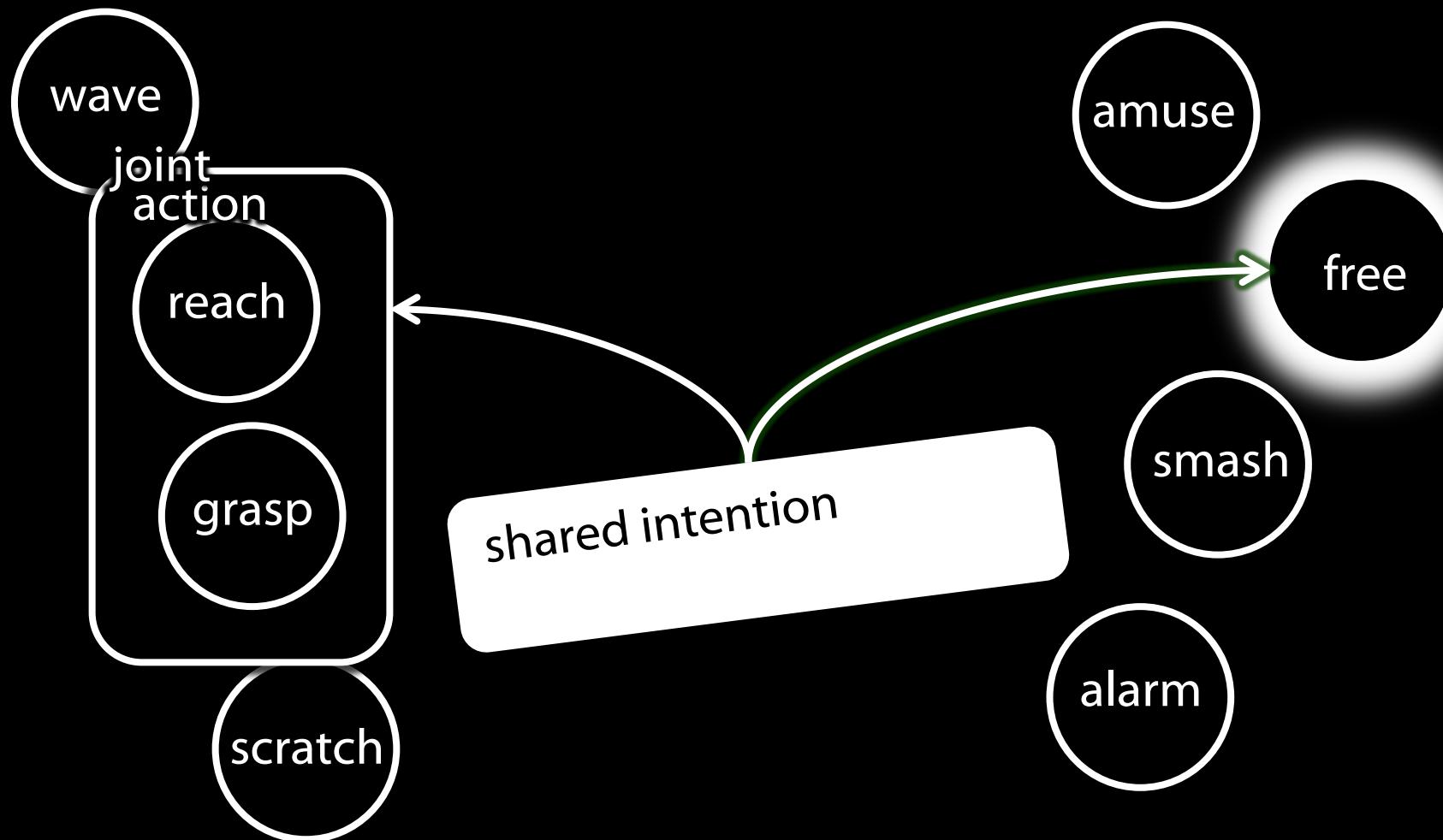
joint
action



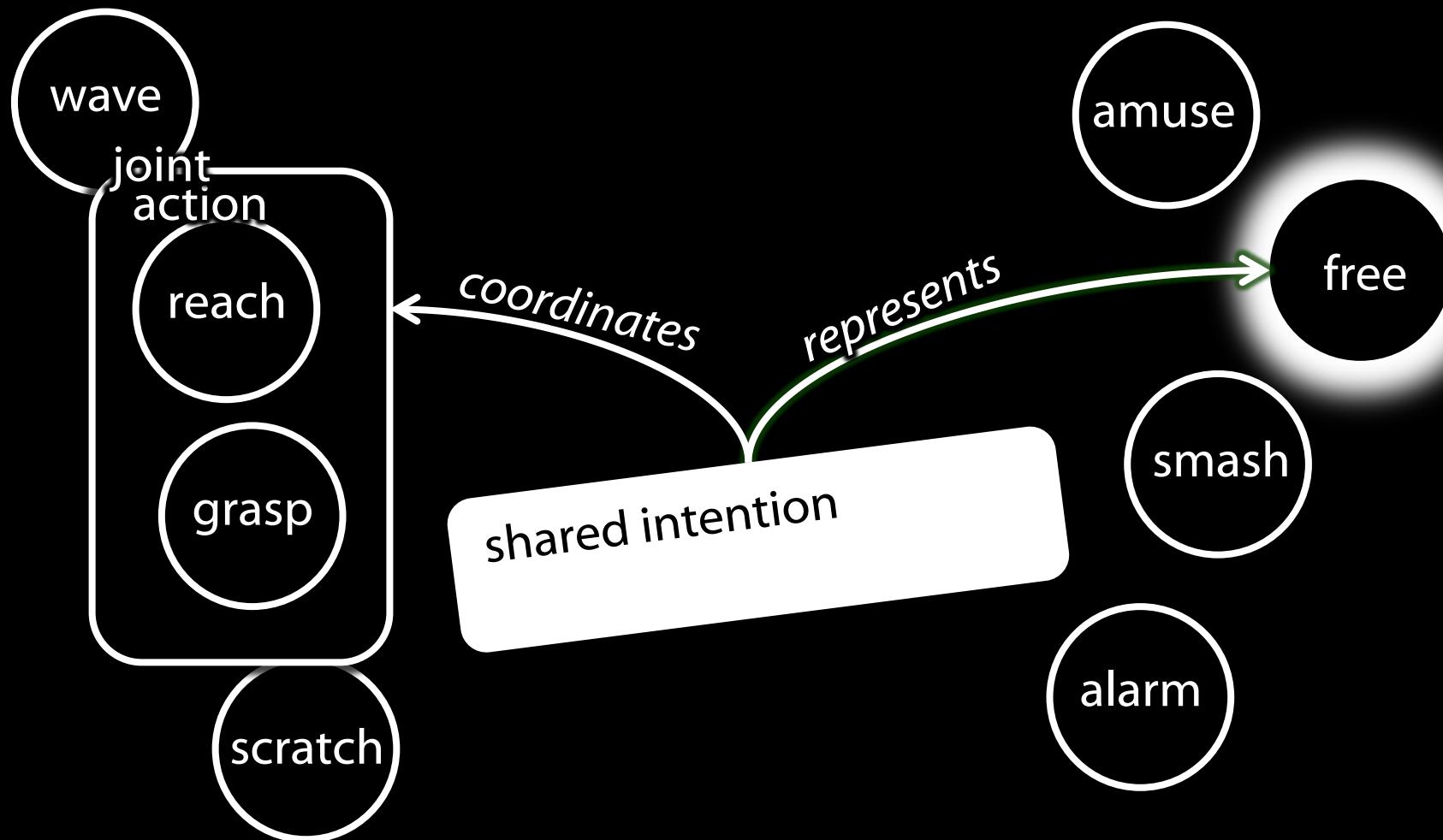
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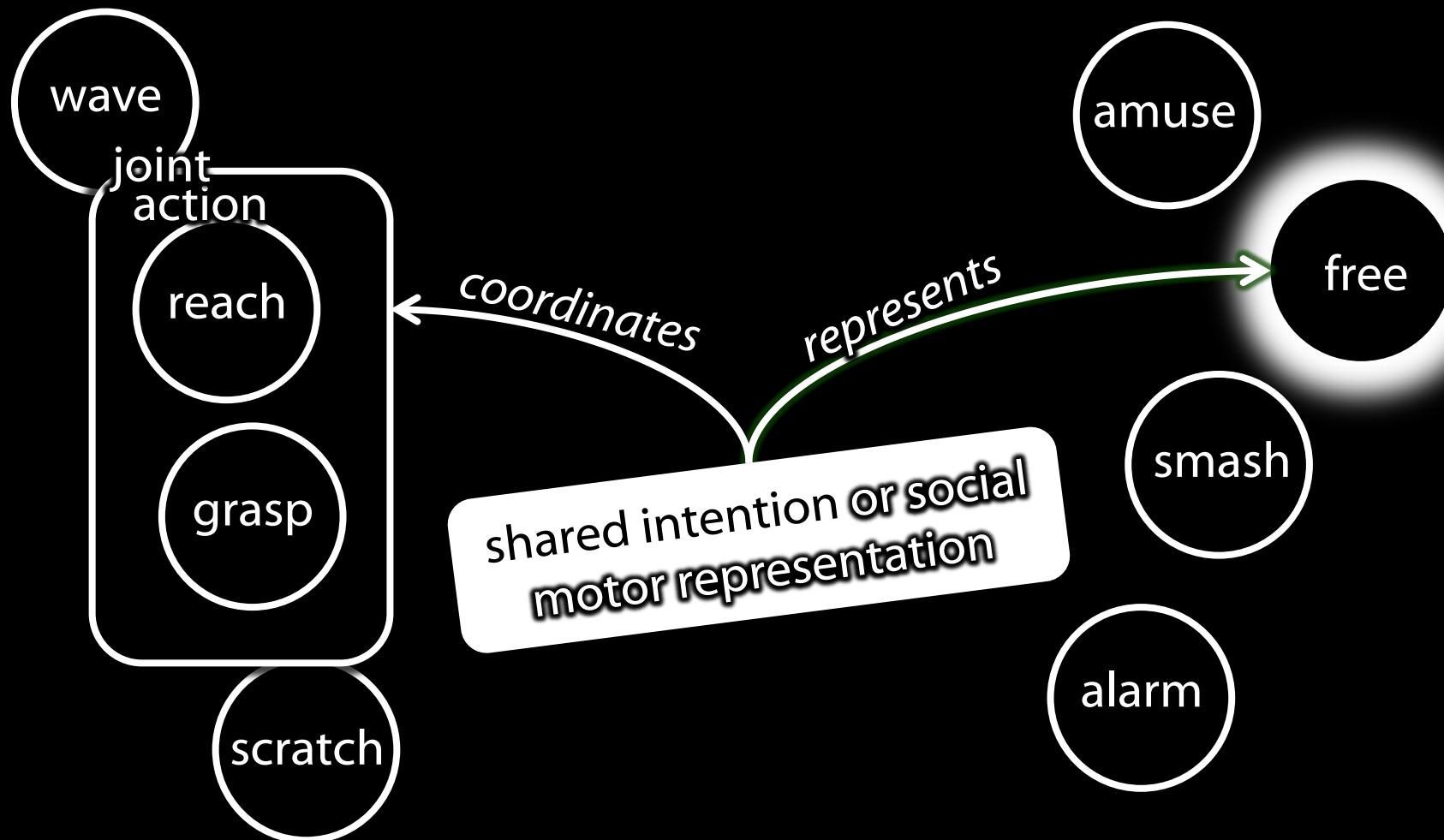
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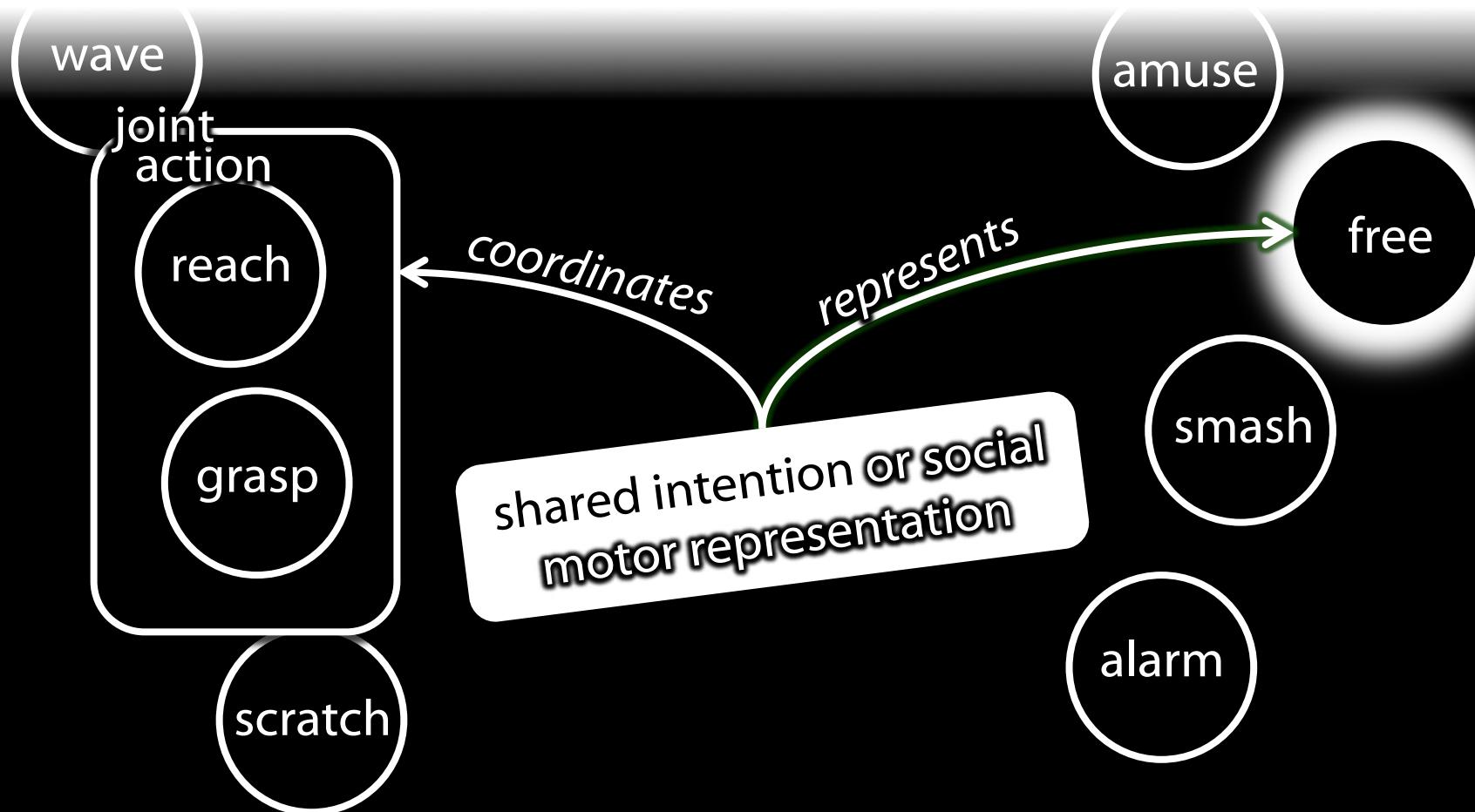


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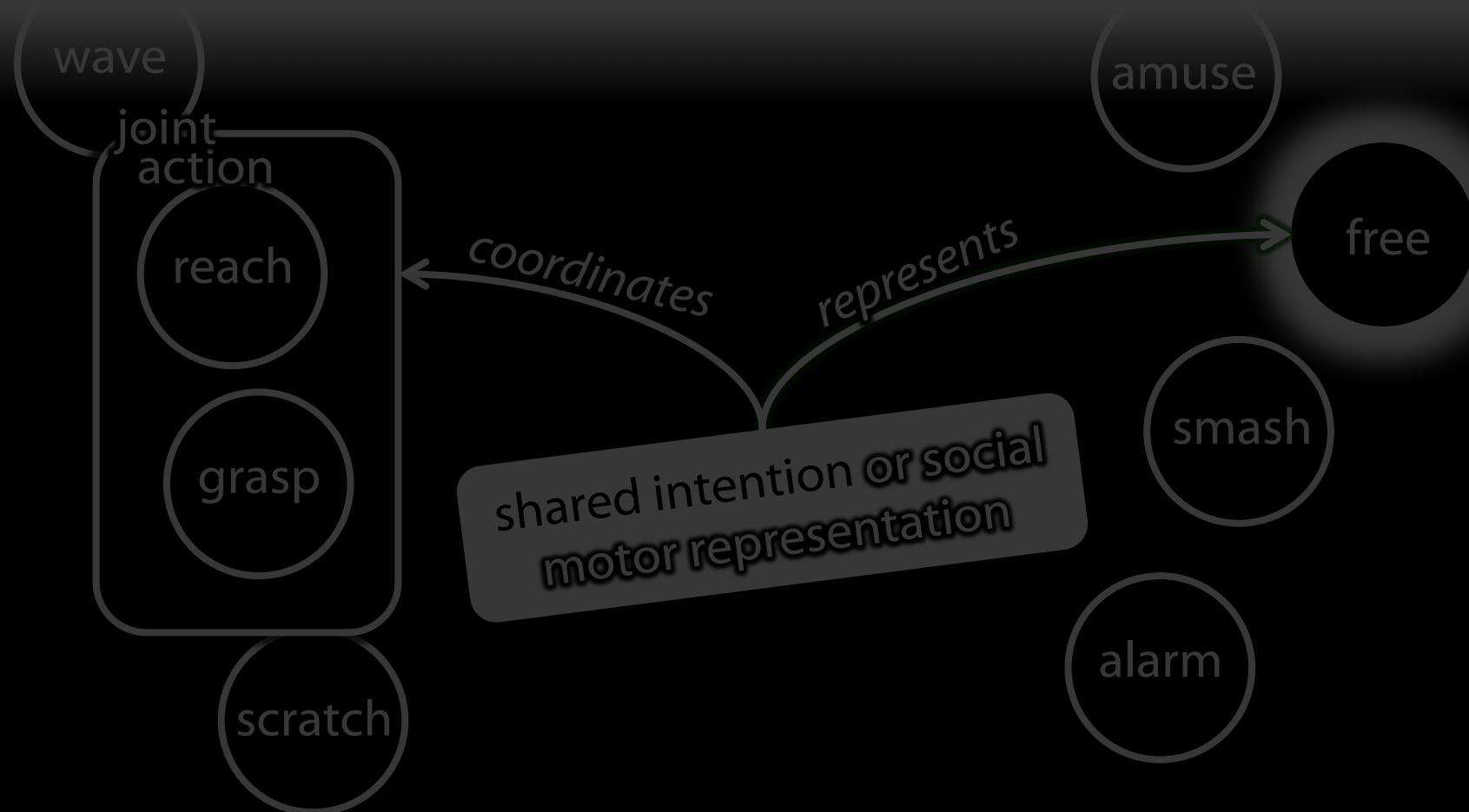
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(Alonso 2009, pp. 444-5)



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G is a distributive goal: it is an outcome to which each agent's actions are individually directed and it is possible that all actions succeed relative to this outcome.

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Parallel but Individual Agency

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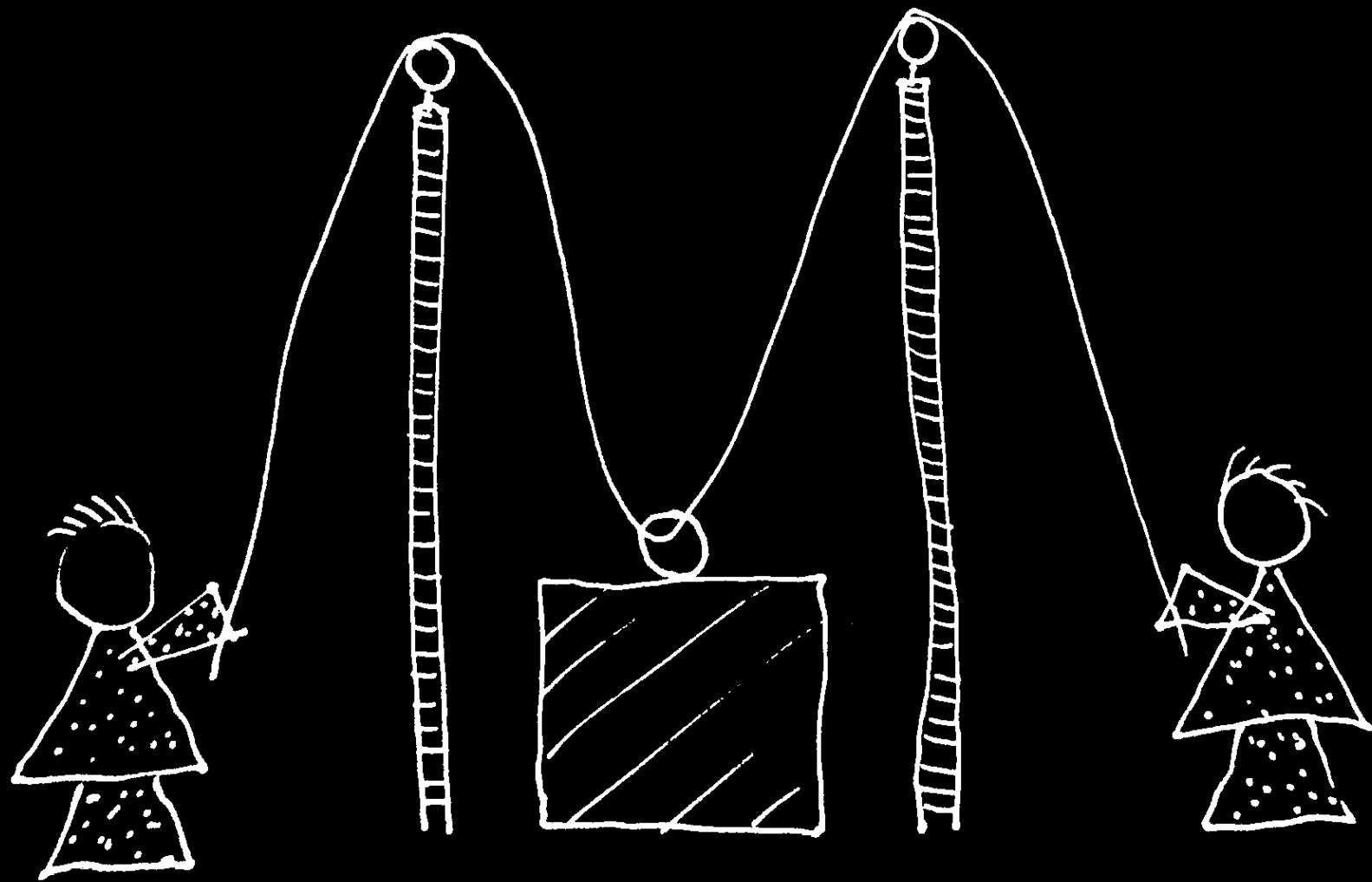
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- (a) it is a distributive goal;
- (b) the actions are coordinated; and
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agent-neutral

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planning
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action on the part of each agent,

reciprocal, parallel
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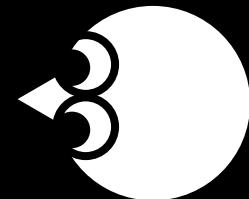
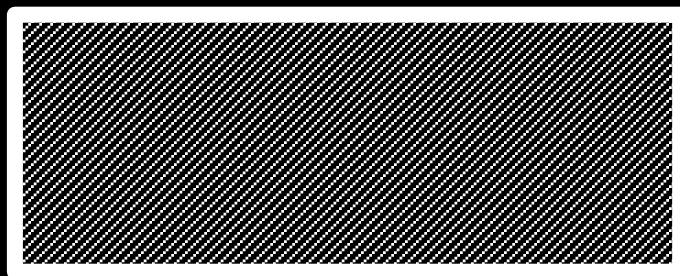
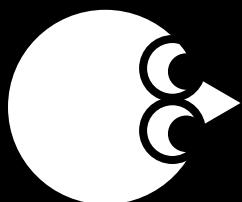
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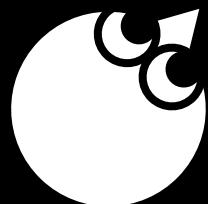
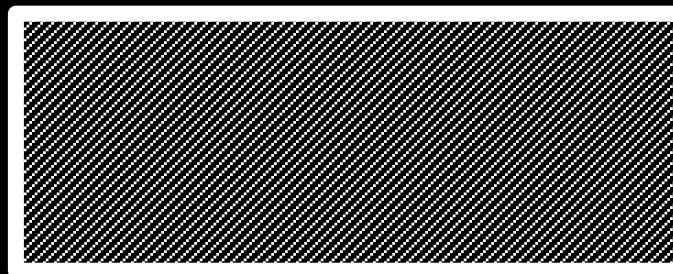
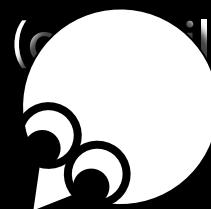
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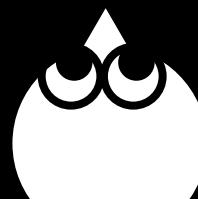
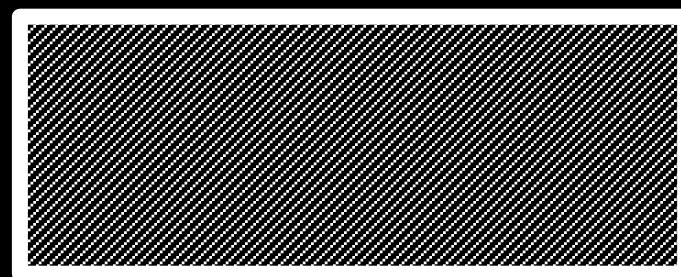
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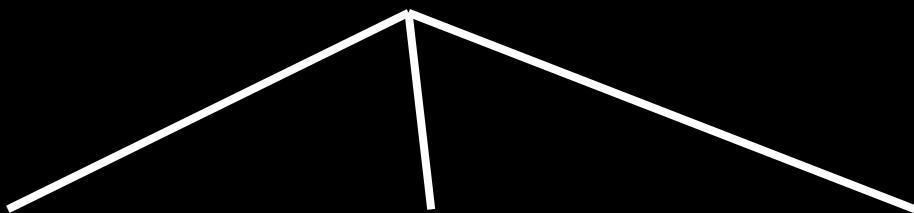
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motor

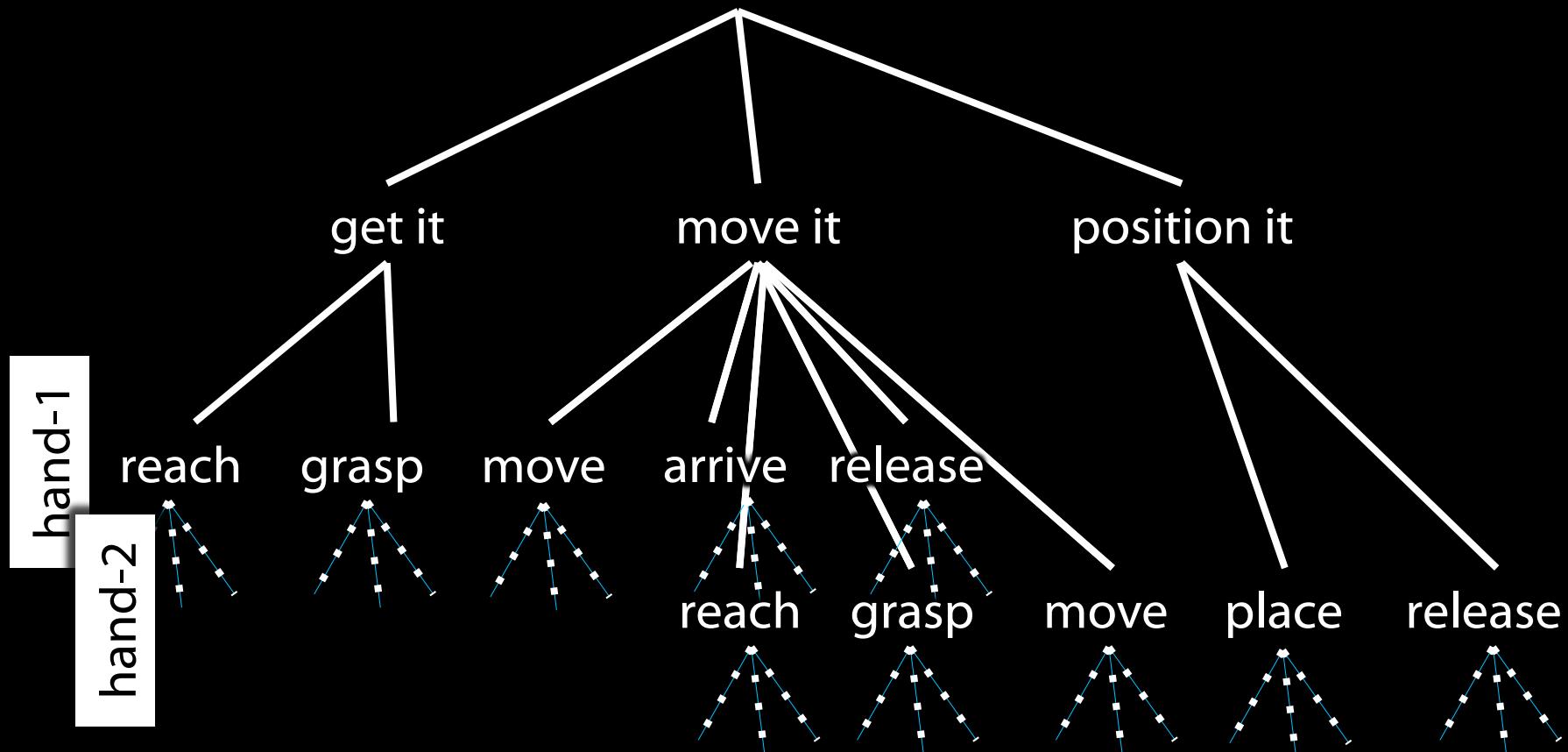
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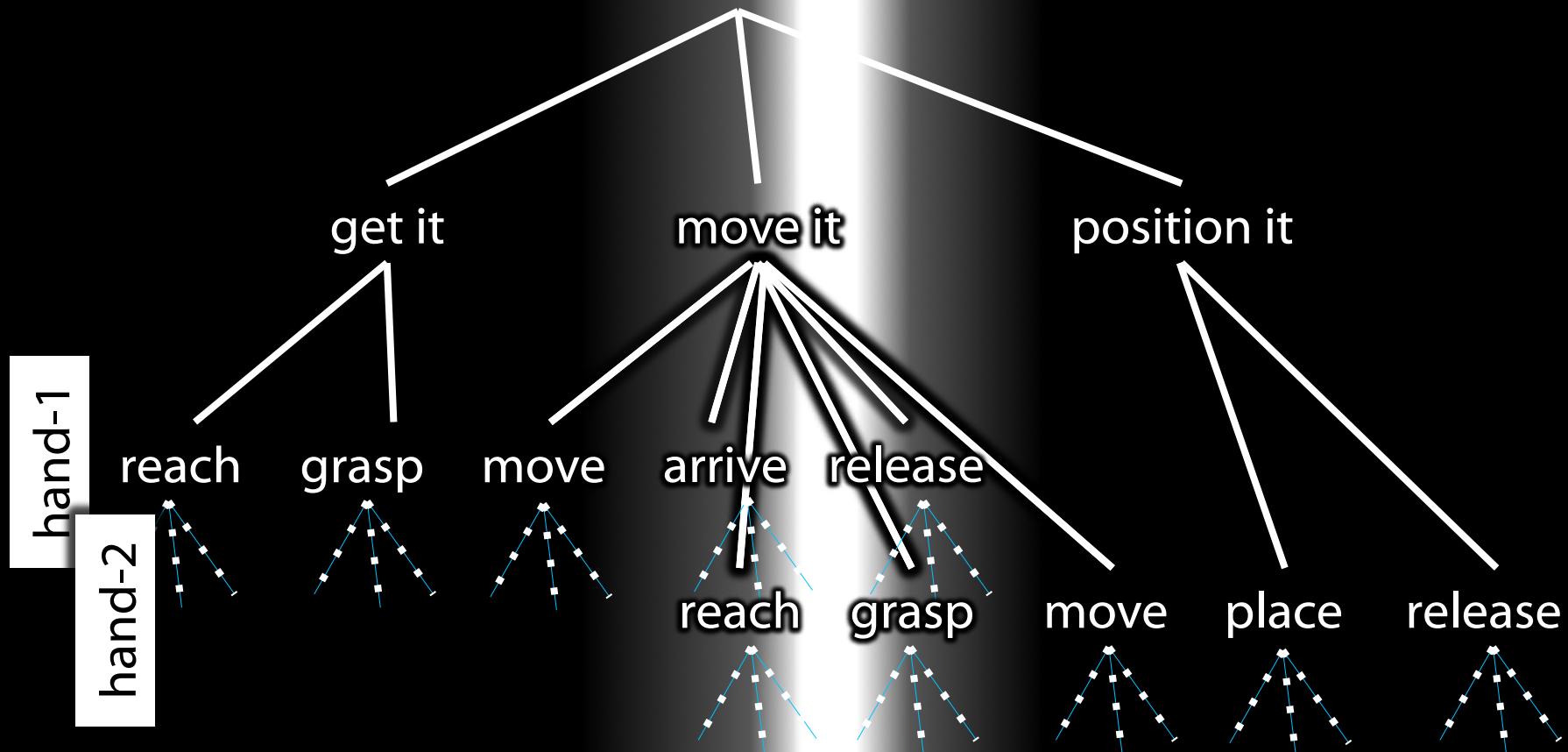
Move it from there to here



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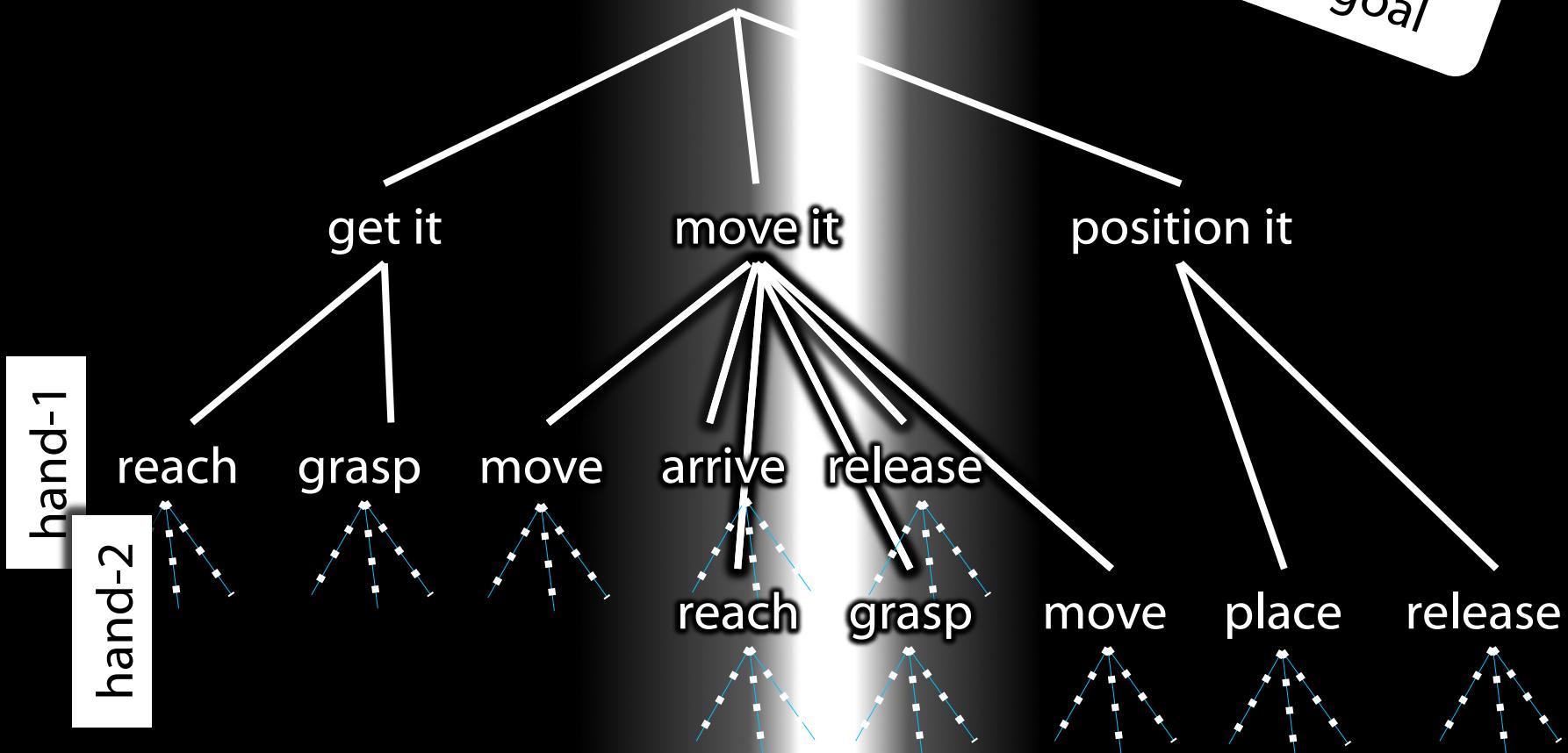


Move it from there to here



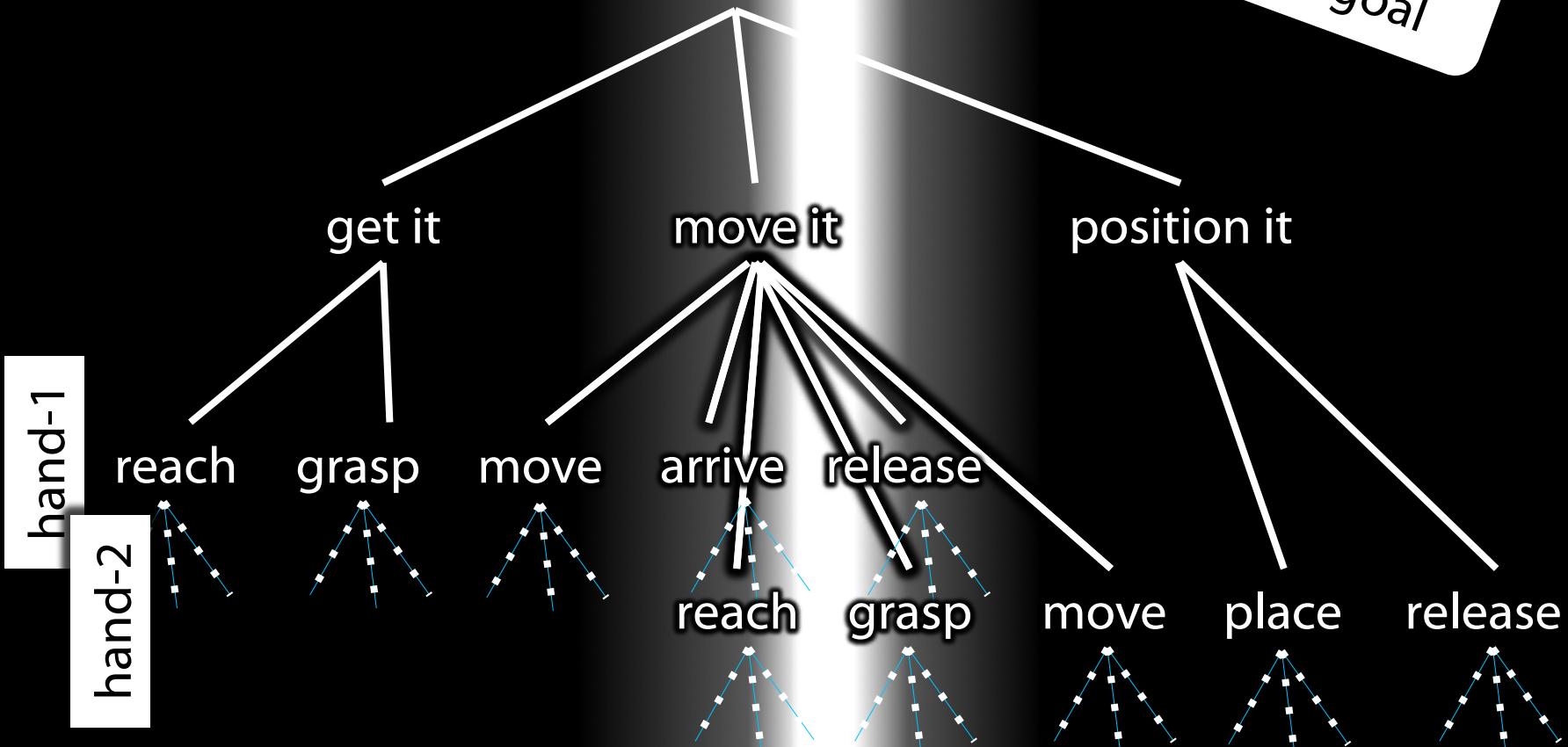
*joint action:
same goal*

Move it from there to here



Move it from there to here

*joint action:
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*similar timing
problem*

Move it from there to here

joint action:
same goal

get it

move it

position it

hand-1

reach

grasp

move

arrive

release

hand-2

reach

grasp

move

place

release

similar timing
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shared motor action

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- 1. we each have a motor representation of G;
- 2. we are each disposed to inhibit some (not all) of the resulting planning or actions;
- 3. we each expect that if G occurs, we will all be agents of it; and
- 4. (1) and (2) because (3)

shared motor representation of G
****FIX WHAT THIS IS****

***Shared Intention & Shared Motor
Representation play complementary roles:

cooking dinner vs. moving from here to here
riding to school together vs. arriving at a certain
point



< different content >

< different format >



Head southeast on Rue Cujas toward Rue Victor Cousin. Turn right onto Rue Saint-Jacques....

Take RER B and get out at the Luxembourg station, from there it's less than 5 minutes walk.



< different content >

Head southeast on Rue
Cujas toward Rue
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The Interface Problem

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Some joint actions involve
both shared intention and
shared motor representation

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- i. represent outcomes;
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Two outcomes, A and B, *match* in a particular context just if, in that context, either the occurrence of A would normally constitute or cause, at least partially, the occurrence of B or vice versa.

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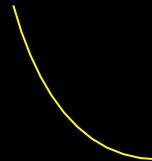
Follow that route

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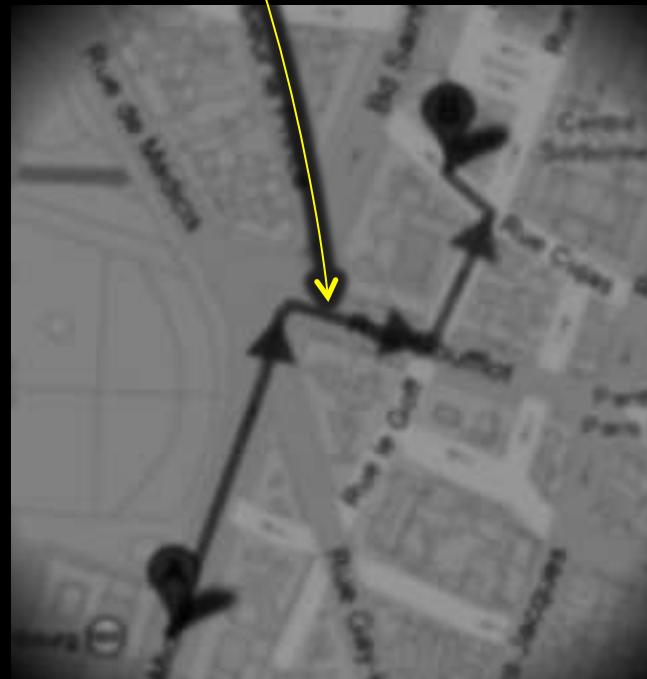


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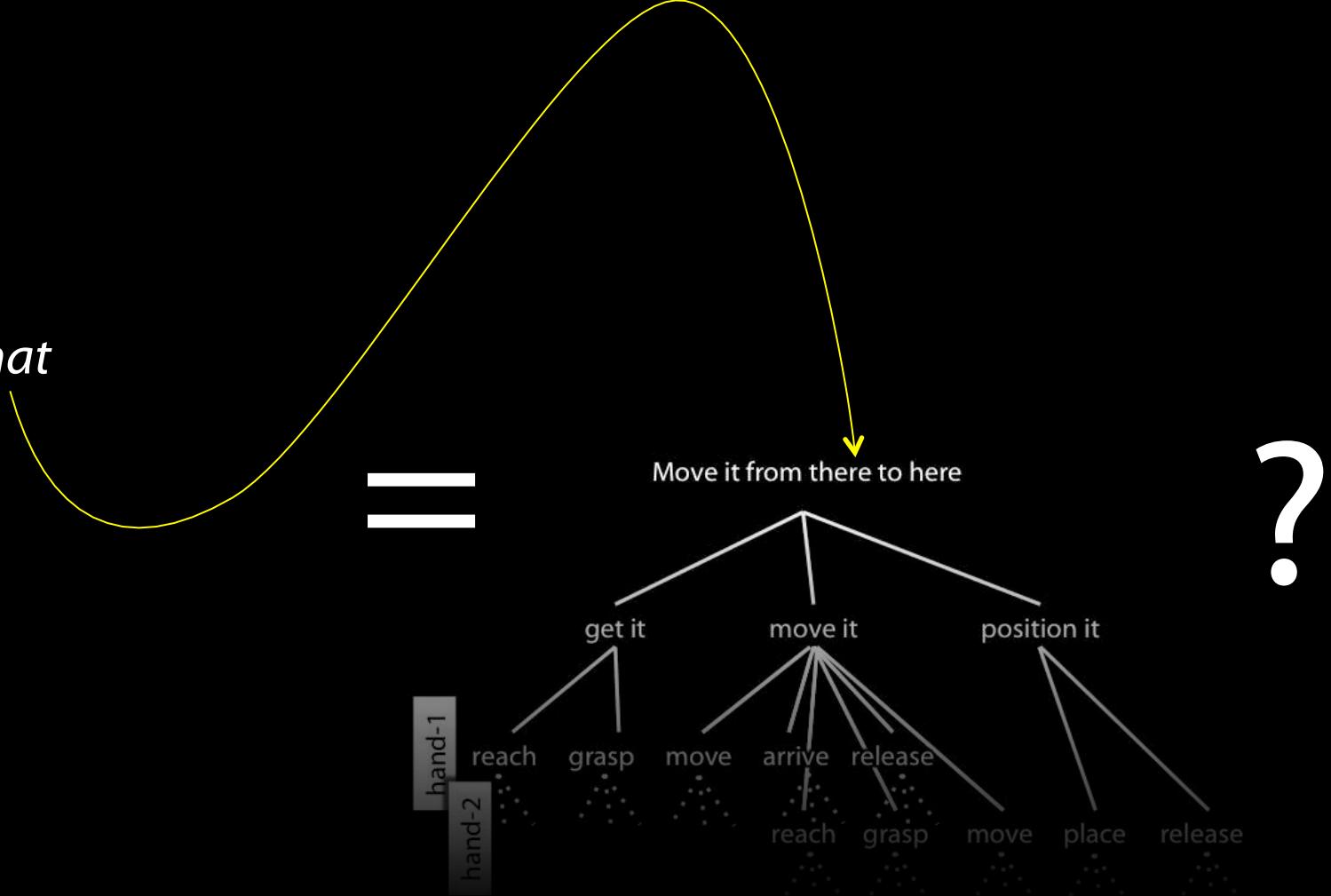


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Do that



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Planning Others' Actions (slides from Natalie Sebanz)

Kourtis et al., subm.



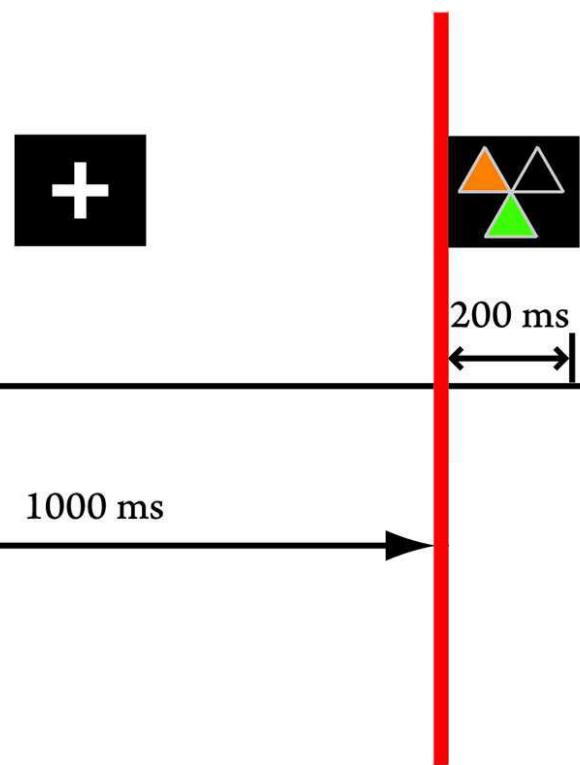
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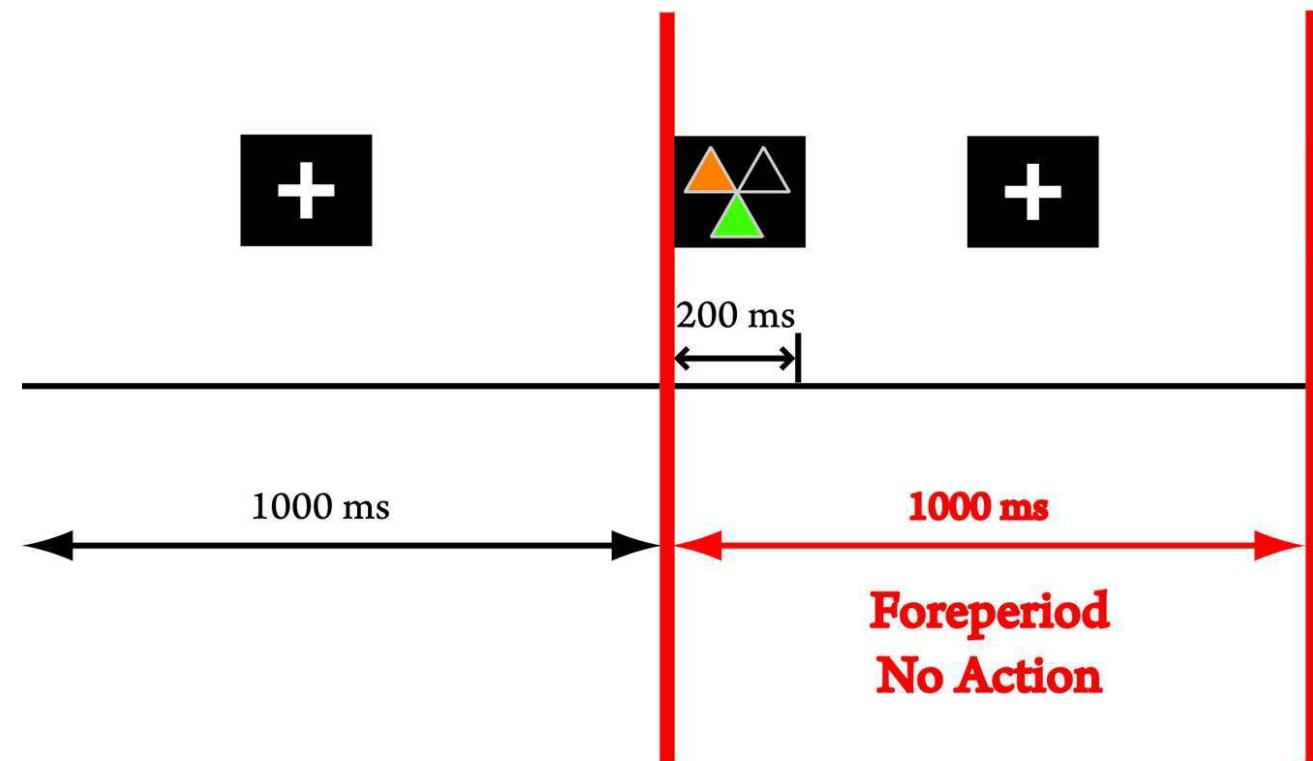
Cue Stimulus



Kourtis et al., subm.



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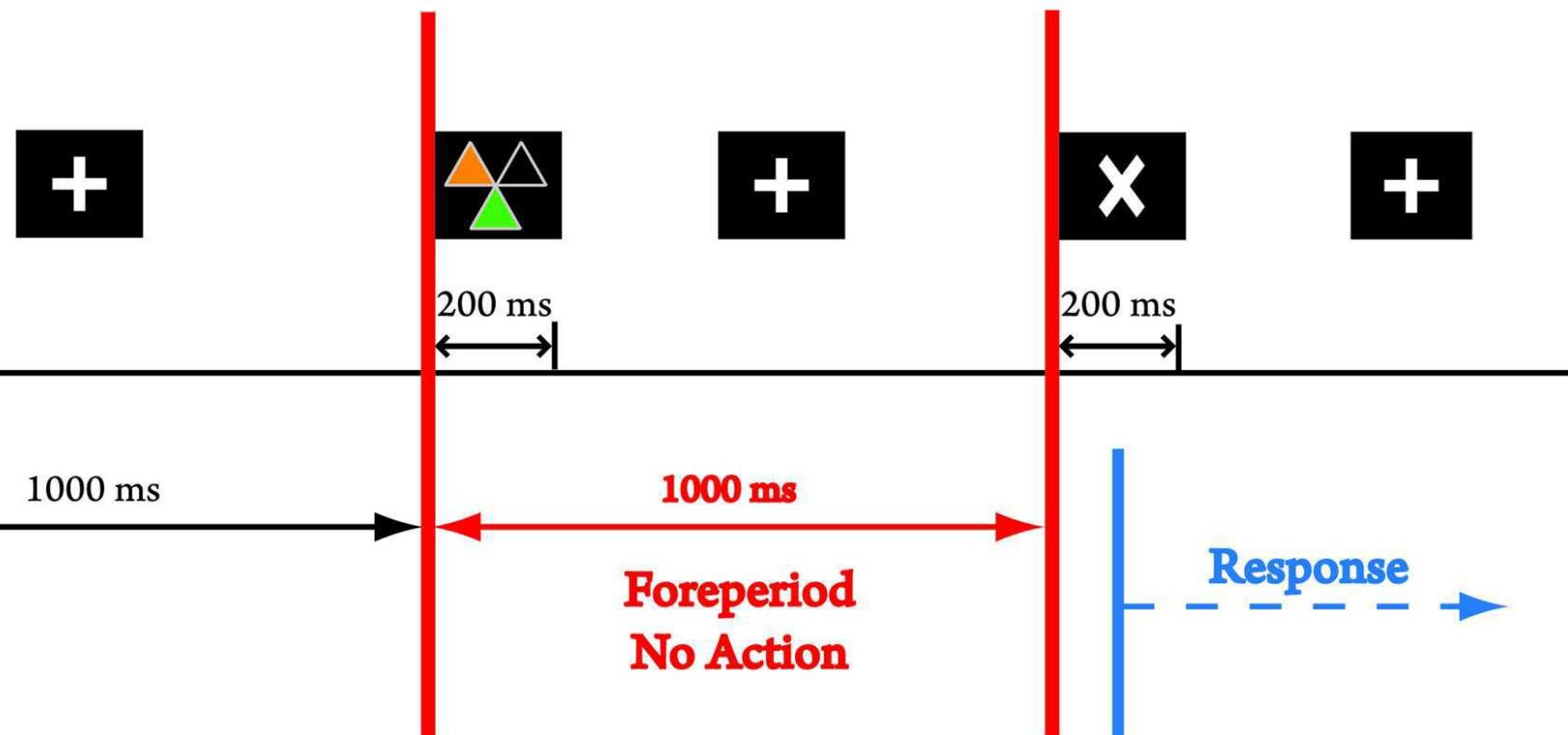


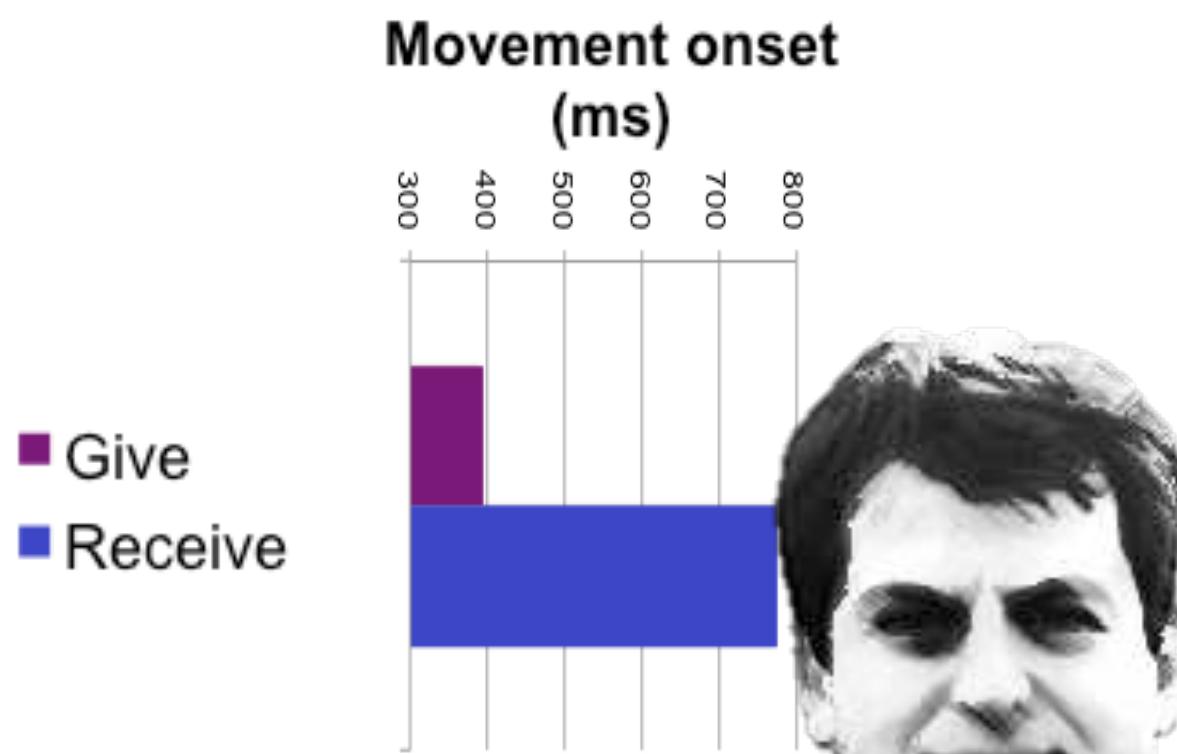
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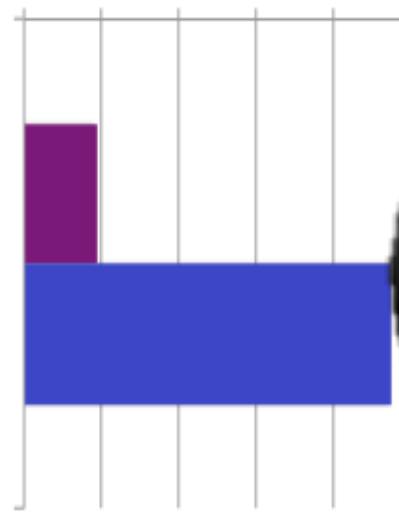
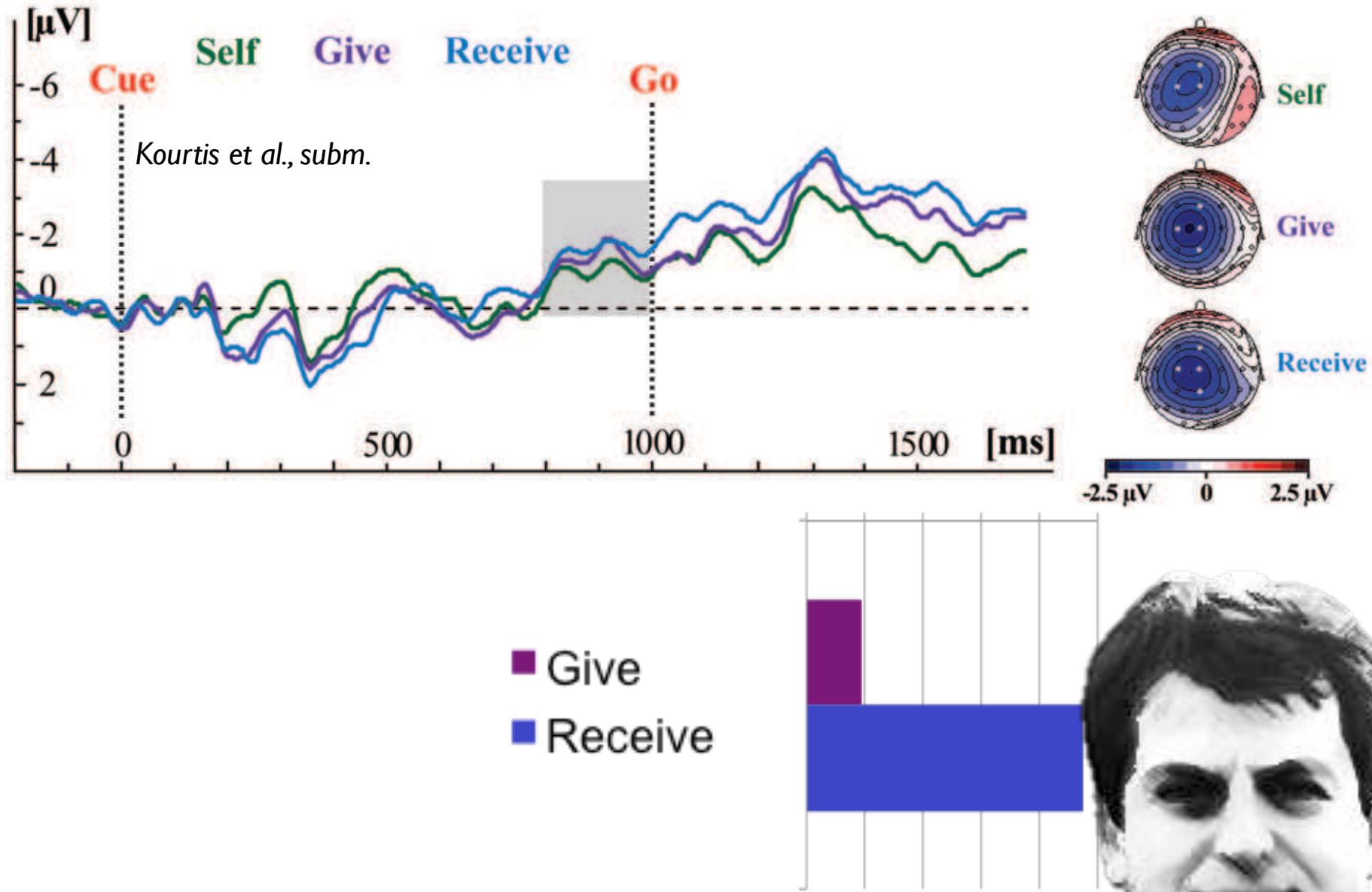


Cue Stimulus

Imperative Stimulus



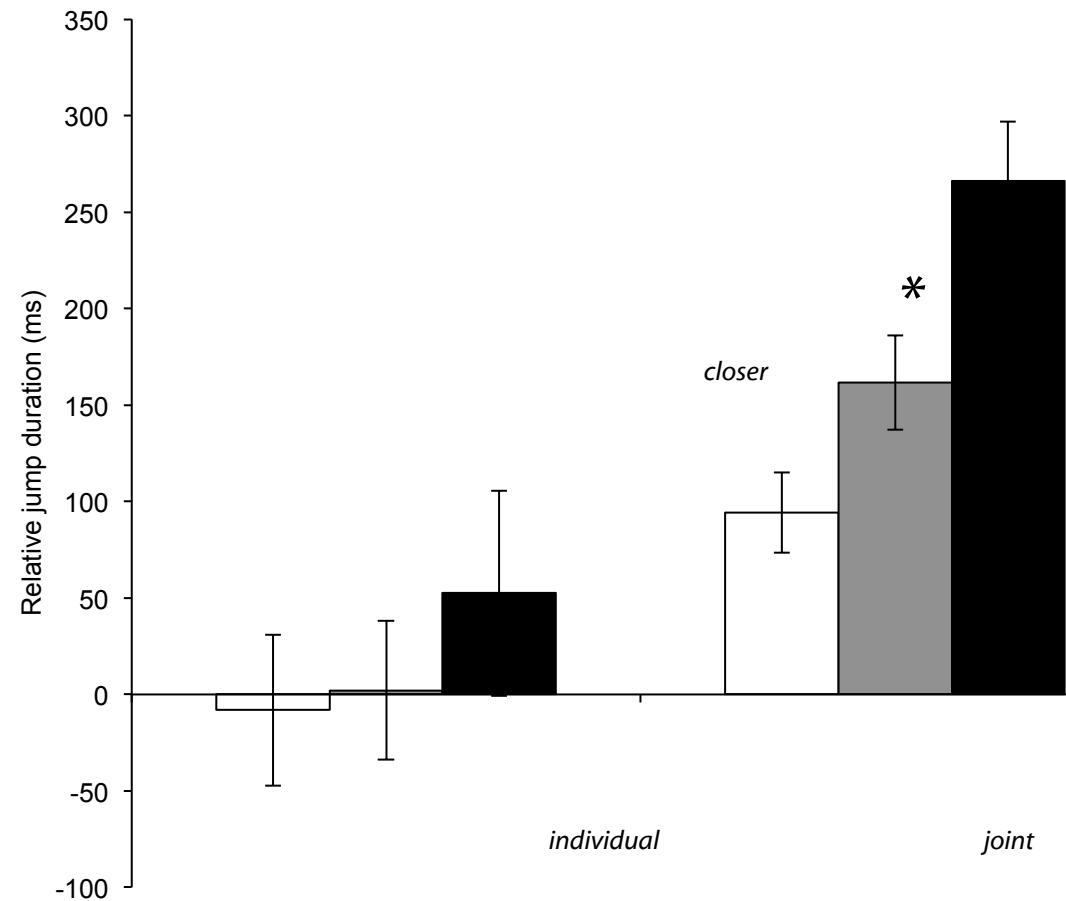
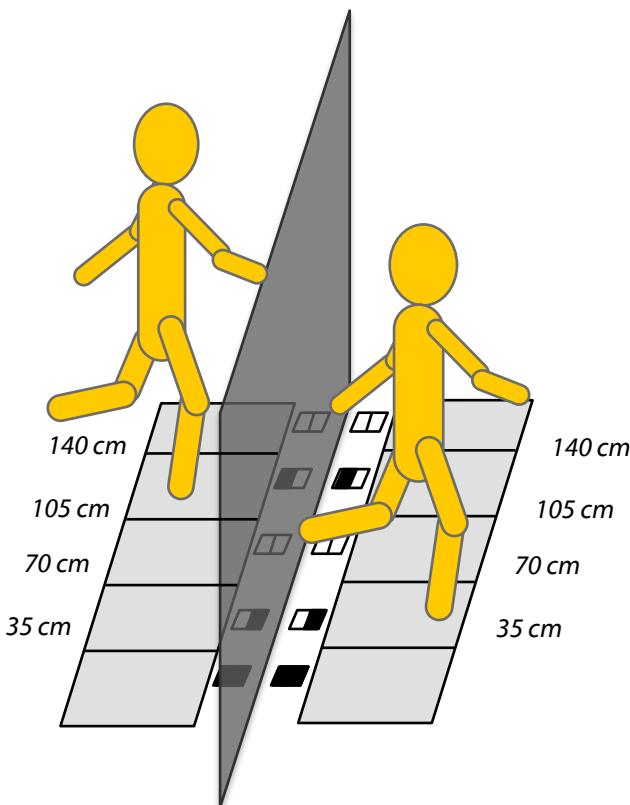






Planning others' actions can inform planning for one's own (slides from Cordula Vesper)

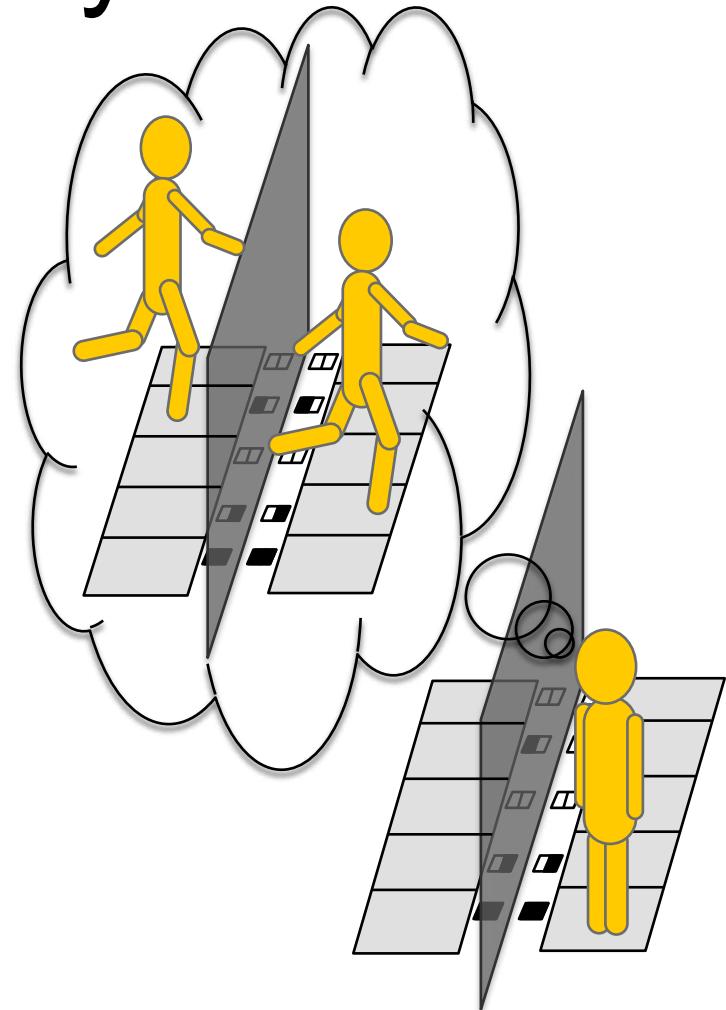
Joint jumping task (performance): „Land at the same time!“



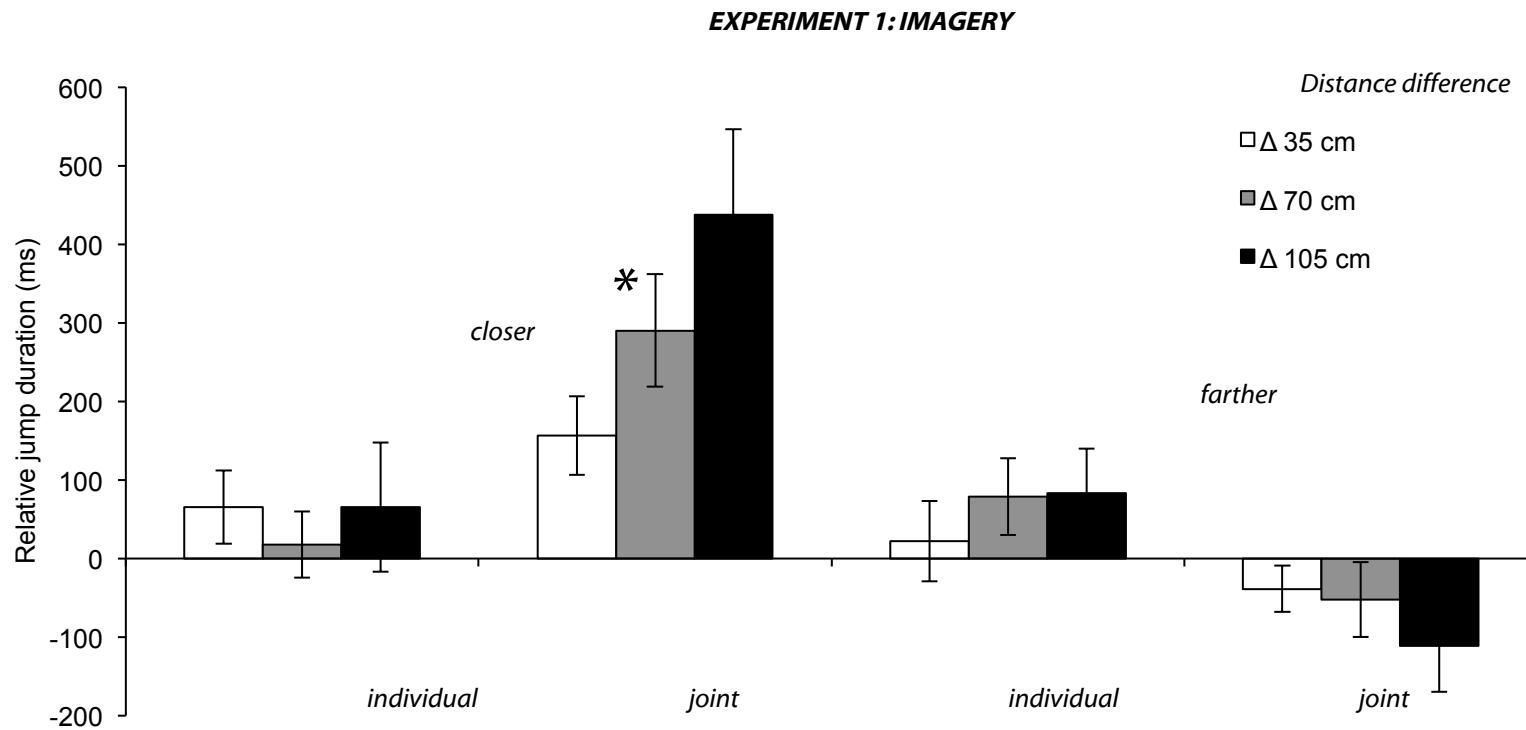
Imagery

Joint jumping imagery

- Task: “Imagine to jump while landing at the same time as another person on the other side of the occluder!”
- Measurement: Self-reported duration of imagined jump



Imagery

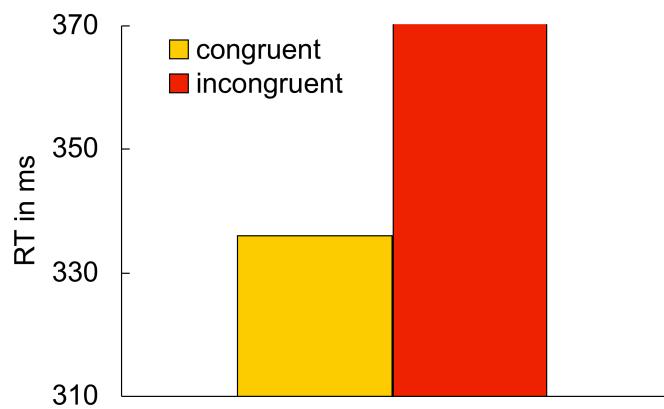
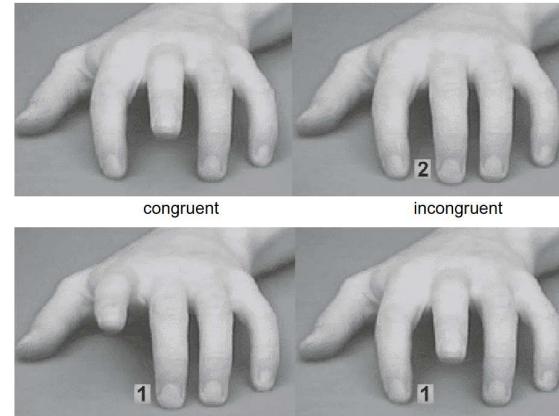




Group-level action planning?

Experimental paradigm is based on the phenomenon of ‘perception-action matching’: Observing an action creates a tendency to perform this action. That is, individual action plans are activated based on the observation of individual actions.

As a consequence, performing an action that is similar to the observed action is easy while performing an action that is opposite to the observed action is more difficult (e.g., Brass et al., 2001).



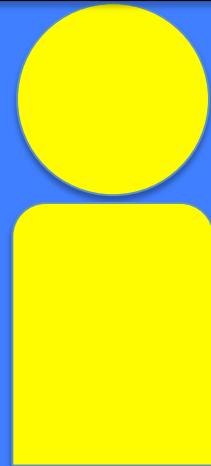
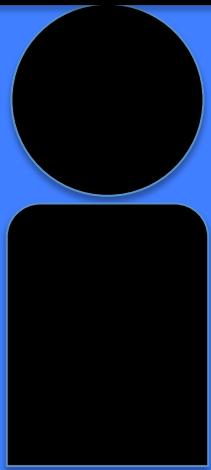
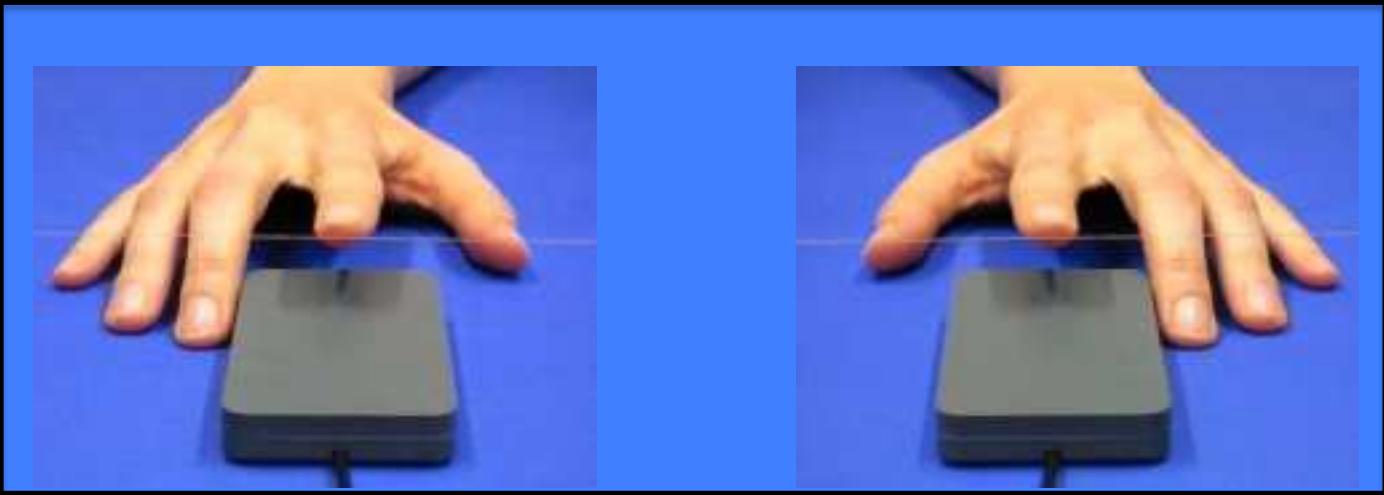
**In some joint actions, the agents have a single representation of the whole outcome
(slides from Natalie Sebanz)**

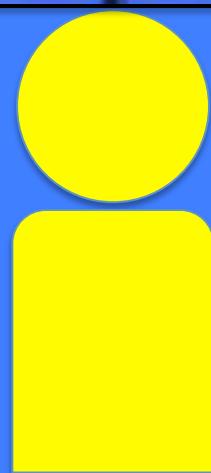
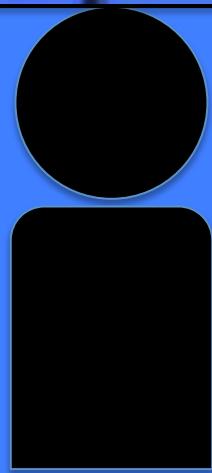
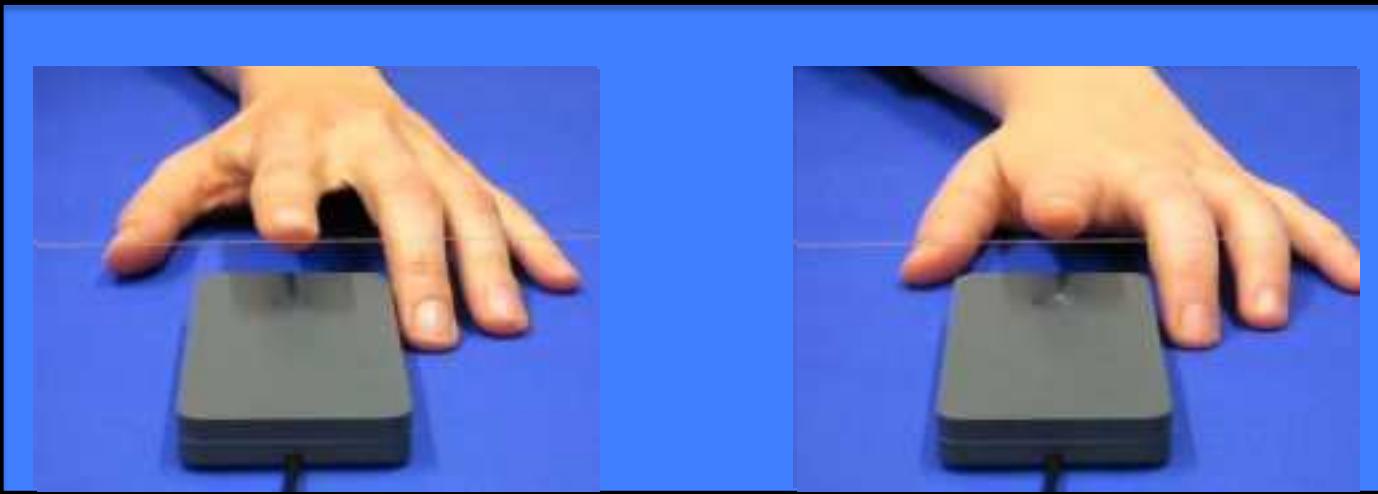
Group-level action planning?



If co-actors form group-level action plans, then observing joint action should create a tendency to perform joint actions (perception-action matching at an inter-group level).

It should be more difficult to perform joint actions when observing individual actions.





Participant's task is to press a key when the right hand is moving.

Congruent condition: Confederate moves when left hand is moving and when both hands are moving.



C



P



C





P





C



P

Participant's task is to press a key when the right hand is moving.

Incongruent condition: Confederate moves when left hand is moving and when right hand is moving, but not when both hands are moving.



C



P



C





C



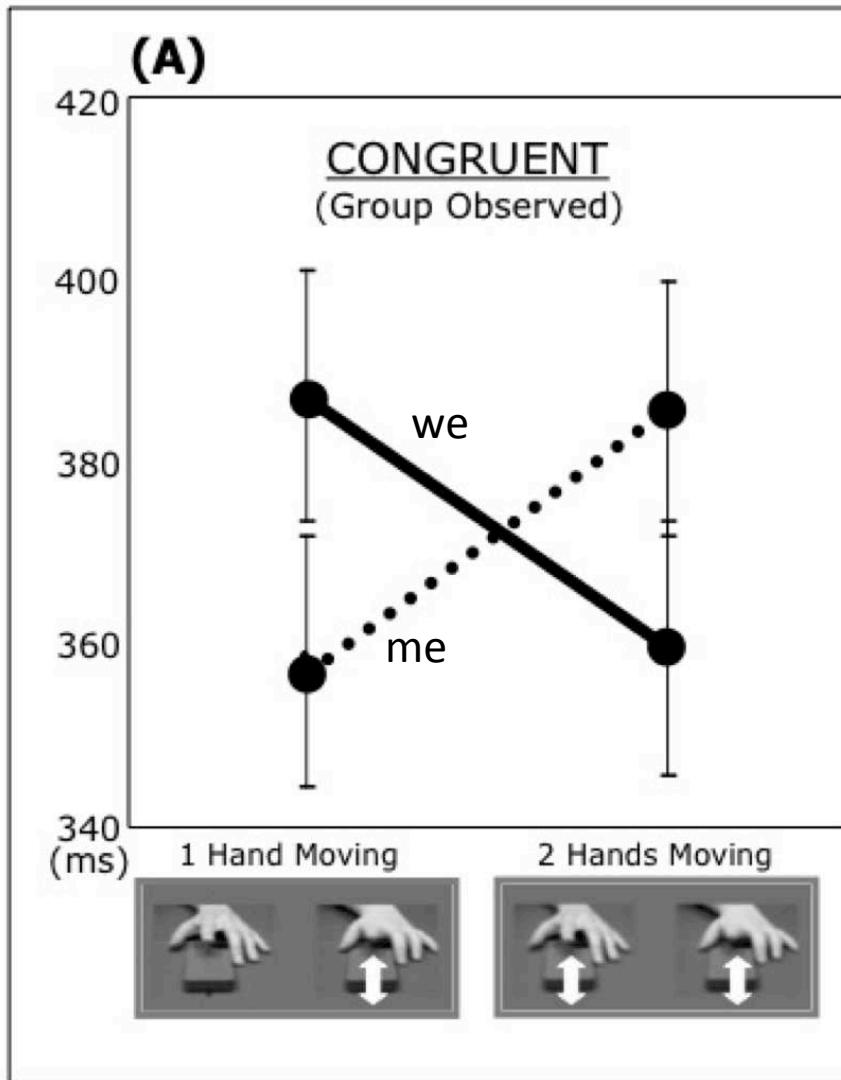
P

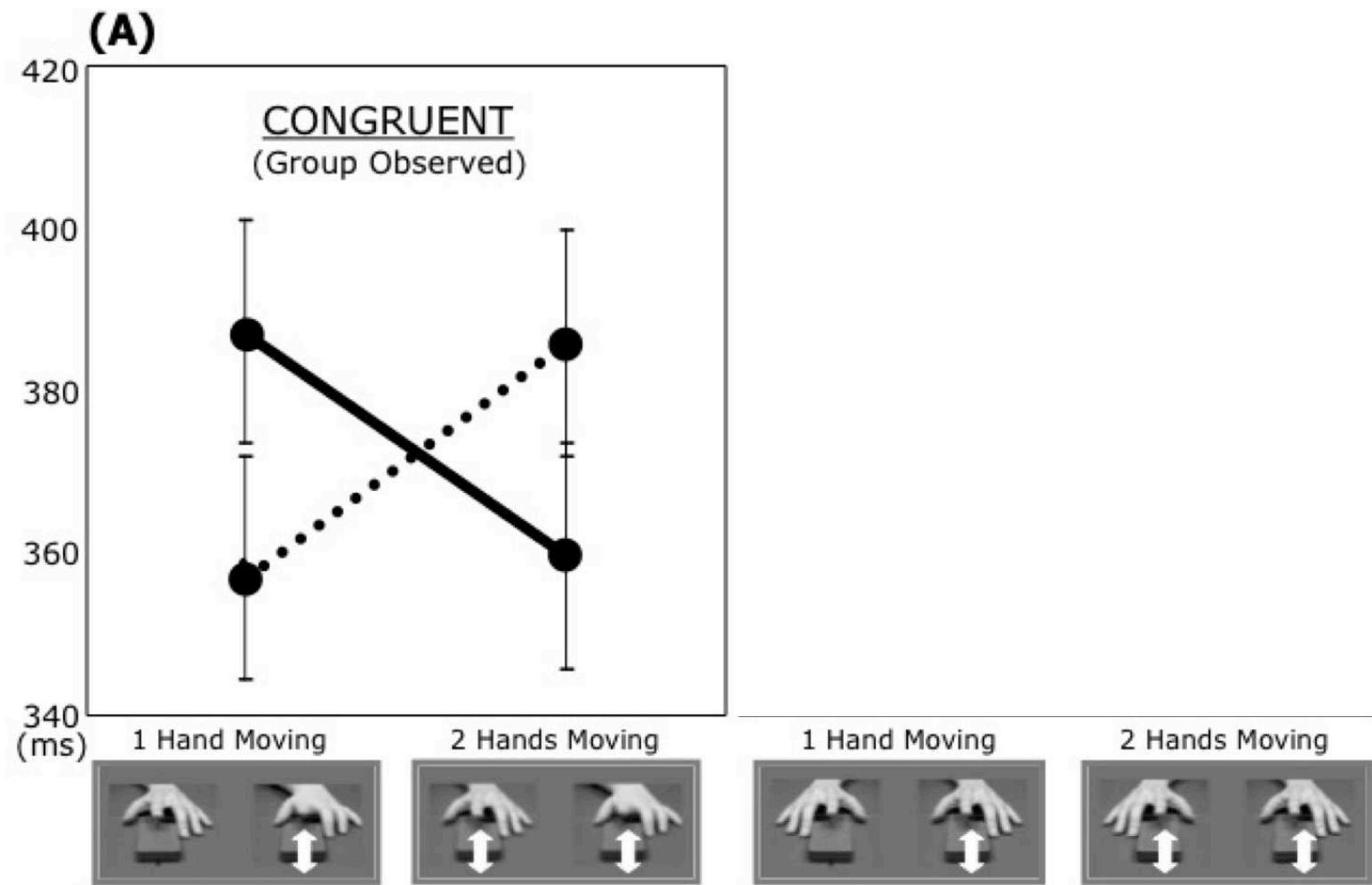


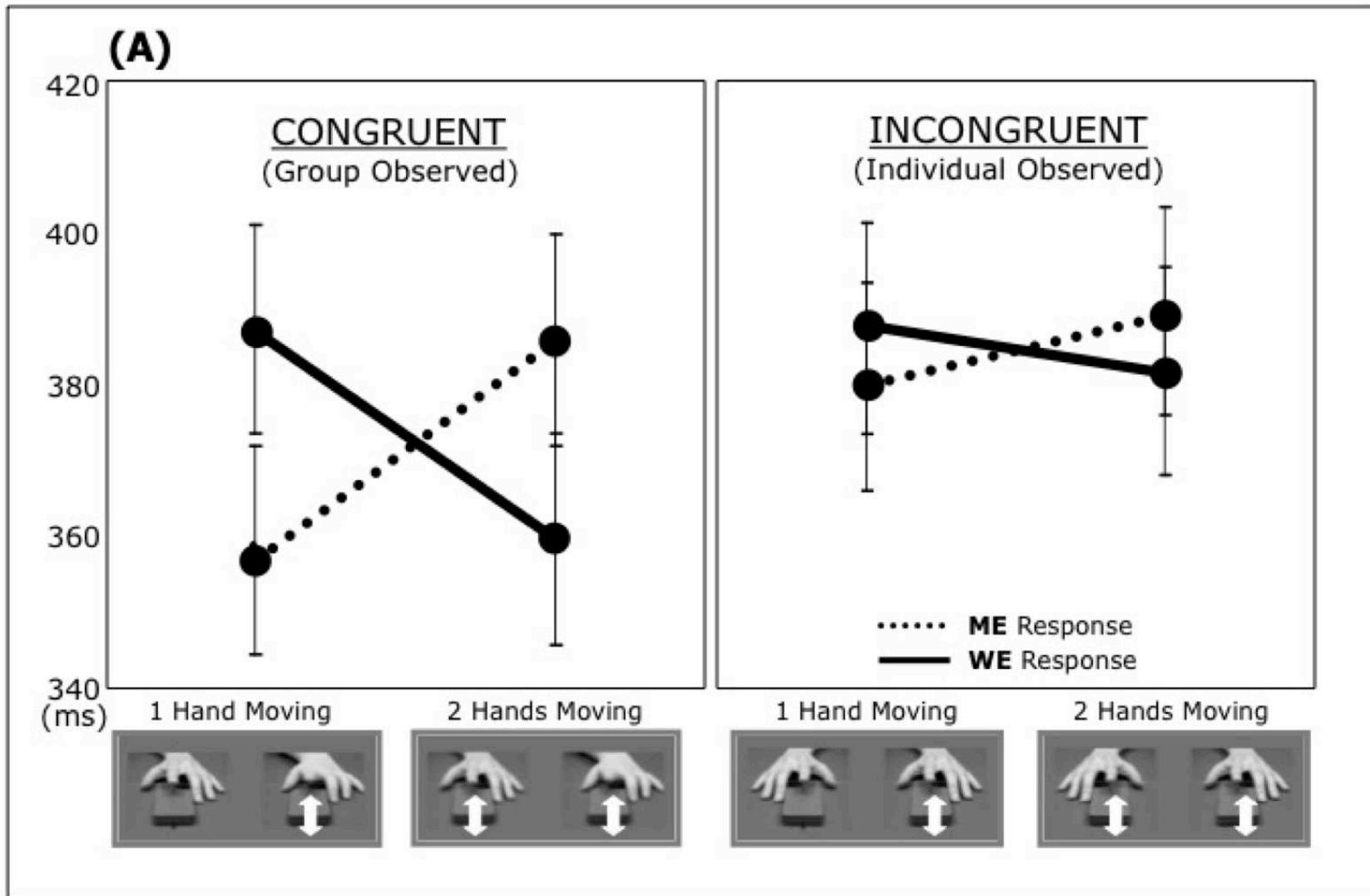


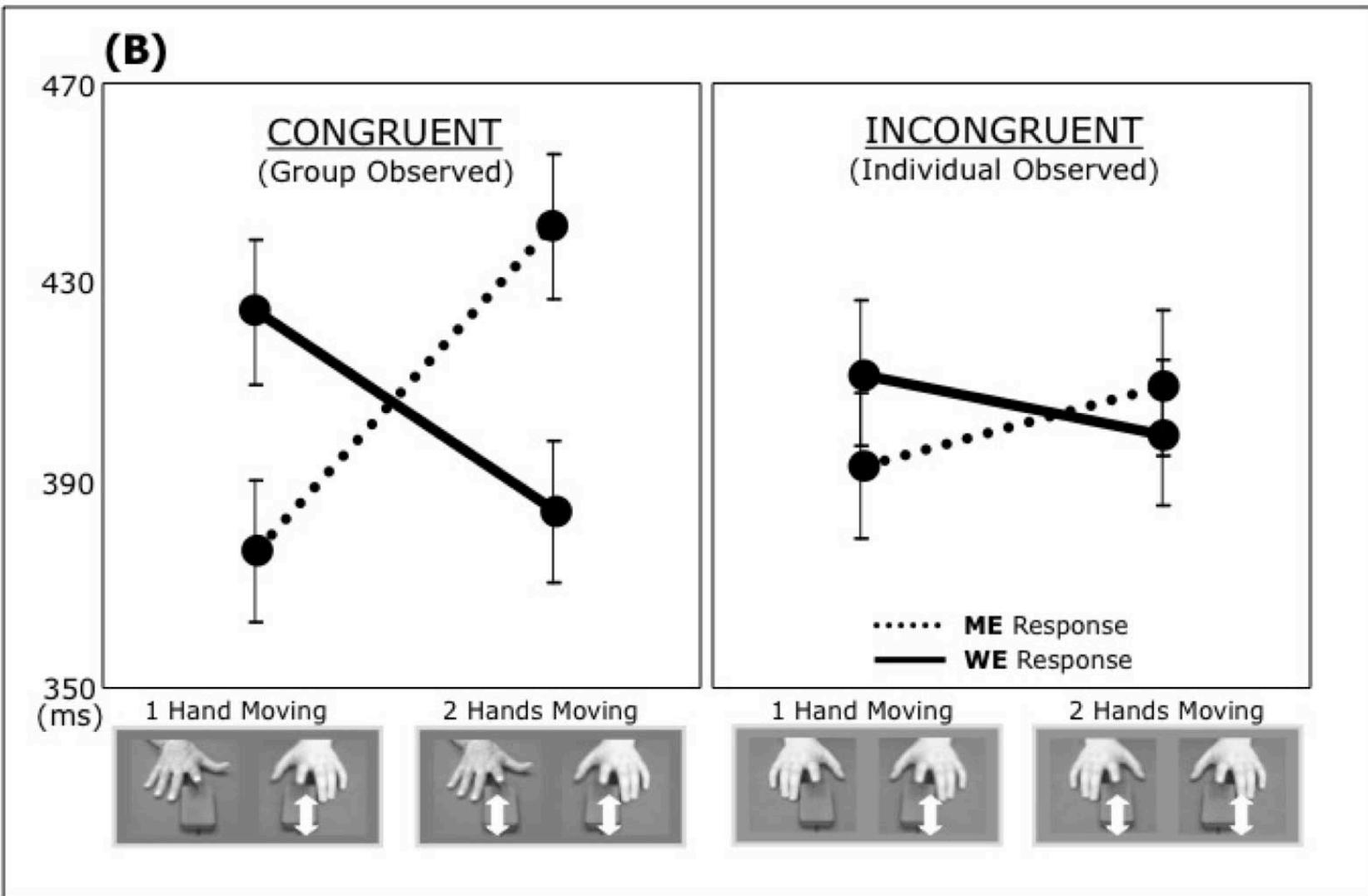
P











Evidence for...

Perception-action matching at an inter-group level.

Observing actions being performed simultaneously by two agents activates a corresponding action plan. This action plan specifies an agent's own action in relation to their co-actor's action (possibly in terms of perceptual events). Performing an individual action in response to an observed joint action is difficult, because the joint action plan activated through joint action observation needs to be replaced by an individual action plan.