

The jointness in infants' and young children's joint action and joint attention

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köszönöm תודה *dekuji*
mahalo 고맙습니다
thank you
merci 谢谢 *danke*
Ευχαριστώ شكرا
どうもありがとう *gracias*



- There is something special about human cognition – what is it?
- Our proposal: **shared intentionality**, the skills and motivation to share goals, intentions, and other psychological states with others.
- Shared intentionality is what enables humans (and only humans) to engage in joint attention and joint action and to create cultural practices and institutions together.
- This begins in infancy.

Tomasello, Carpenter, Call, Behne, & Moll (2005)

Outline

- **Joint attention**

- Strict, high-level definition
- But not too complicated for infants

- **Joint action**

- Strict, high-level definition
- But not too complicated for infants
- Once you understand yourself as acting as a ‘we’, what follows?
 - Commitments, obligations, & expectations
 - Preferential liking, trust, helping...

Joint attention



What is joint attention?

Classic definition: a triadic interaction in which two individuals coordinate attention to an object of mutual interest (e.g., Bakeman & Adamson, 1984).



Looking at same thing

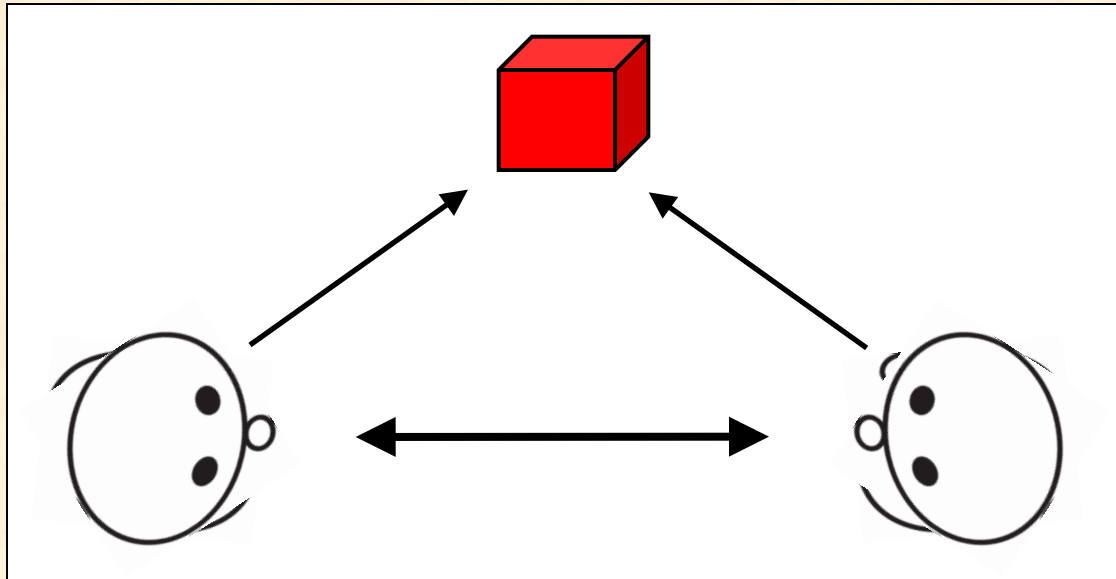


Gaze following

Where is the jointness here?

- No true (active) sharing of attention
- Instead: parallel/common attention

What is joint attention?



- For true joint attention you need some form of mutual knowledge – to **know together** that you are attending to the same thing (Tomasello, 1995).

9-month-old infant in joint attentional engagement





**declarative
gestures**



‘Meeting of minds’: sharing/aligning attention and attitudes

Carpenter (2012); Carpenter & Call (2013); Carpenter & Liebal (2011)

Evidence of this 'knowing together' in 1-year-olds

- One-year-old infants keep track of what they are sharing, and what they have shared with others in the past. They use this to:
 - decide when they need more information from a speaker (Rossano, Carpenter, & Tomasello, under revision)



- make sense of others' communication (e.g., Liebal, Behne, Carpenter, & Tomasello, 2009; Moll, Richter, Carpenter, & Tomasello, 2008)
- decide what to communicate about to others (e.g., Liebal, Carpenter, & Tomasello, 2010)



Other relevant findings

- Older children (preschoolers) even know something about **cultural common ground**: what they know with others they have never met before (Liebal, Carpenter, & Tomasello, 2013).



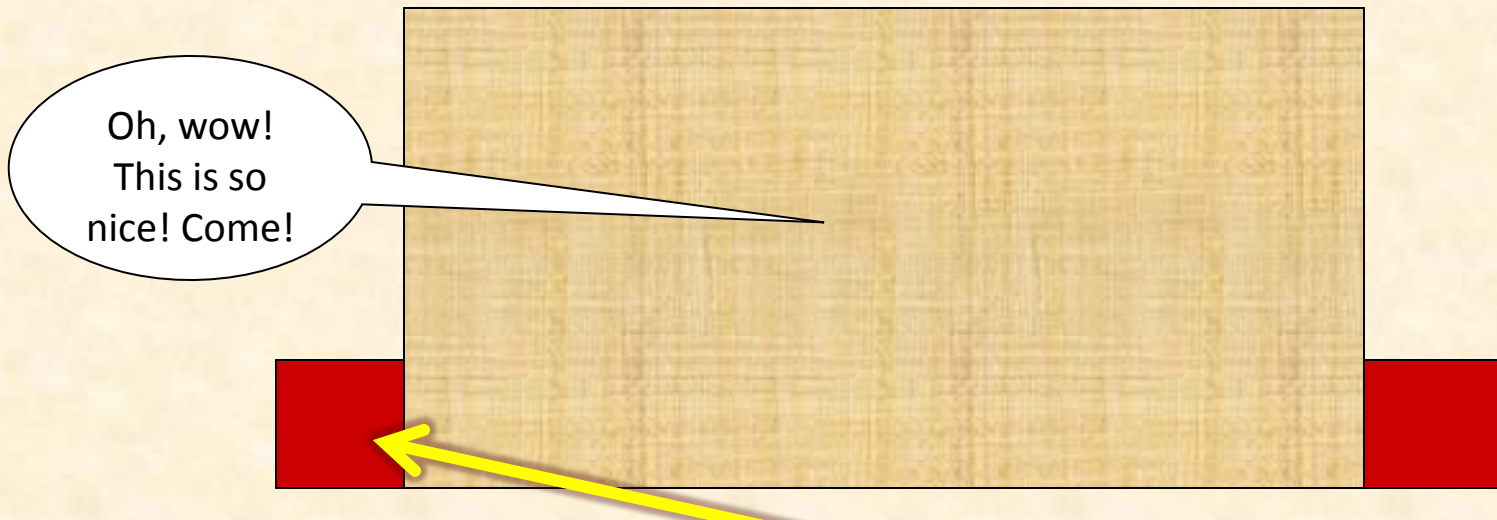
- By 2 years, children keep track not just of what they have seen with others but also what they have heard – **auditory joint attention** (Moll, Carpenter, & Tomasello, 2014).
- 1-year-old infants can **follow** others' **voice direction** to end up in joint attention (Rossano, Carpenter, & Tomasello, 2012).

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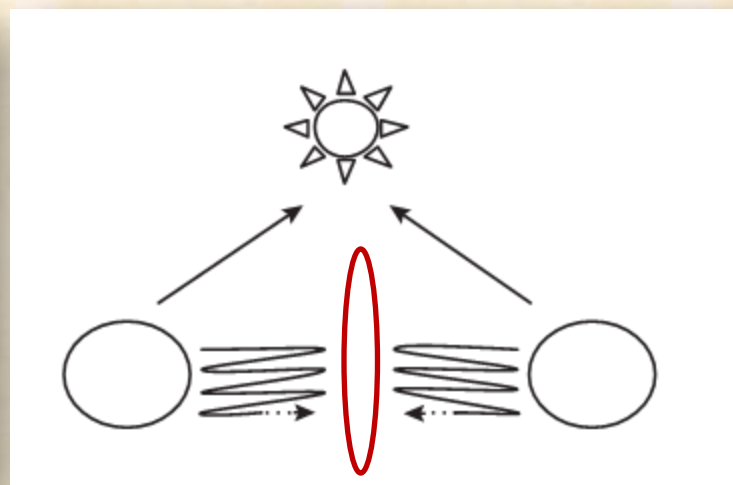
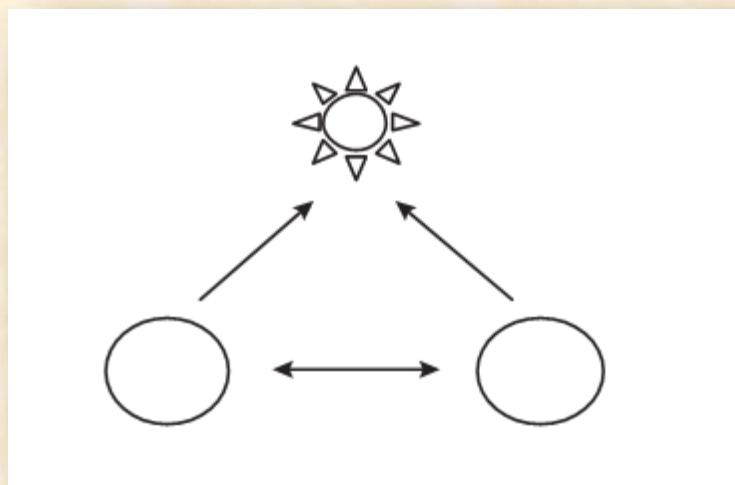


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The hard question

- We know 1-year-old infants keep track of what they have shared with whom.
- Next step: Figure out how they can do this. Classic philosophical view of mutual knowledge: recursion (I see that you see that I see you seeing me see...). But this is too complicated for 1-year-olds – and is not really joint anyway.



Simpler approach

- Joint (shared) attention is achieved via communication.
- Not just declarative pointing, showing – looks too.
- Mutual knowledge is achieved (instantaneously and effortlessly) when each partner tells the other (with just a ‘knowing look’) that attention is shared.
 - simultaneity, and at the same time the mutual reactivity; meaningfulness of the looks
- Regardless of how, it seems clear that 1-year-old infants are engaging in this high-level, truly joint, joint attention.



Joint action



What is joint action?



A good definition is needed

- **Bratman (1992):** Shared Cooperative Activity involves:
 - I intend that we J, and you intend that we J
 - I, and you, intend that we J in accordance with and because of meshing subplans
 - This is common knowledge between us.

Two other important characteristics:

- Commitment to mutual support (help)
- Commitment to the joint activity



- Some of the most basic prerequisites for joint action are thus:
 - an understanding of others' **goals and intentions (plans)**
 - recognition of **common knowledge**
 - the ability to **help** others
 - an understanding of **commitments** and obligations

- Several authors have suggested that since infants (presumably) do engage in joint action (e.g., work by Warneken & Tomasello), but don't have a 'robust theory of mind', Bratman's definition is too complex (e.g., Butterfill, 2007; Tollefsen, 2005).
- One-year-old infants **do** have at least most of these prerequisite skills, and by 3 years they have them all.
 - **goals and intentions** by 9-14 months (e.g., Behne et al., 2005; Carpenter et al., 1998)
 - unwilling vs. unable
 - accidental vs. intentional
 - unfulfilled intentions (Meltzoff, 1995)

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A 12-month-old pointing informatively to help E

Carpenter (2009)

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An 18-month-old helping instrumentally



Carpenter, Uebel, & Tomasello (2013)

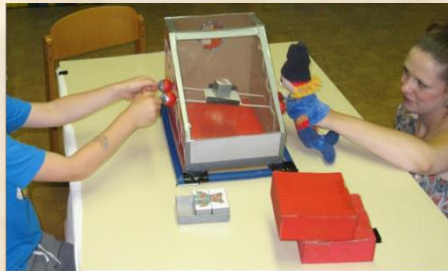
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 - understanding of **commitments** by 3 years (e.g., Gräfenhain et al., 2009, 2013)
 - expectations regarding partner's contribution by 14-18 months (Warneken et al., 2006; Warneken & Tomasello, 2007)
 - distinguish between commitment and no commitment conditions at 3 years
 - me-to-you commitments as evidenced by waiting (Gilbert) and leave-taking at 3 years
 - currently investigating whether a commitment can be made nonverbally (Siposova, Carpenter, & Tomasello, in progress)



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 - understanding of **commitments** by 3 years (e.g., Gräfenhain et al., 2009, 2013)
- Thus their joint action is truly joint in (something like) this strict sense.

Once you understand yourself as acting as a 'we', what follows?

- By 5 years, children respond preferentially to collaborators (and minimal in-group members), in a variety of ways.



Collaborative partners



Minimal group members



helping



resource allocation



trust



hug

- Other ways of acting together trigger various types of prosocial behavior as well:
 - Mimicry increases helping and trust (Carpenter, Uebel, & Tomasello, 2013; Over, Carpenter, Spears, & Gattis, 2013).



- Even just priming with affiliation increases helping (Over & Carpenter, 2009).



Summary

■ Joint attention

- Strict, high-level definition involving knowing together
- Present in 1-year-old infants: Keep track of shared experiences (present/past; visual/auditory)
- *How* do infants engage in joint attention? Sharing as communication



■ Joint action

- Strict, high-level definition (**Bratman**) involving goals/intentions, common knowledge, helping, commitments
- Mostly present in 1-year-old infants, with clearest understanding of commitments by 3 years
- ‘We’ feelings bring about preferential helping, liking, trust



- **True joint attention and joint action are indeed complex, yet simple enough for infants. It will be interesting to discuss whether they are within the capability of robots too.**