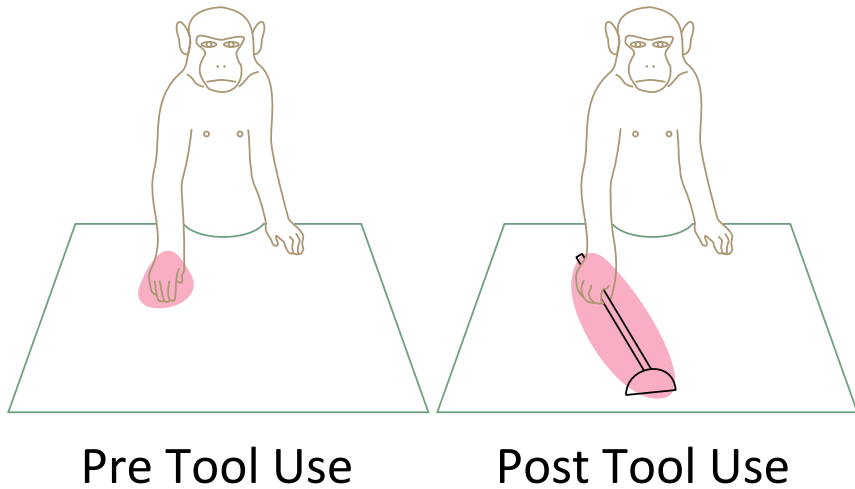


# The Role of Vision in Tool Embodiment

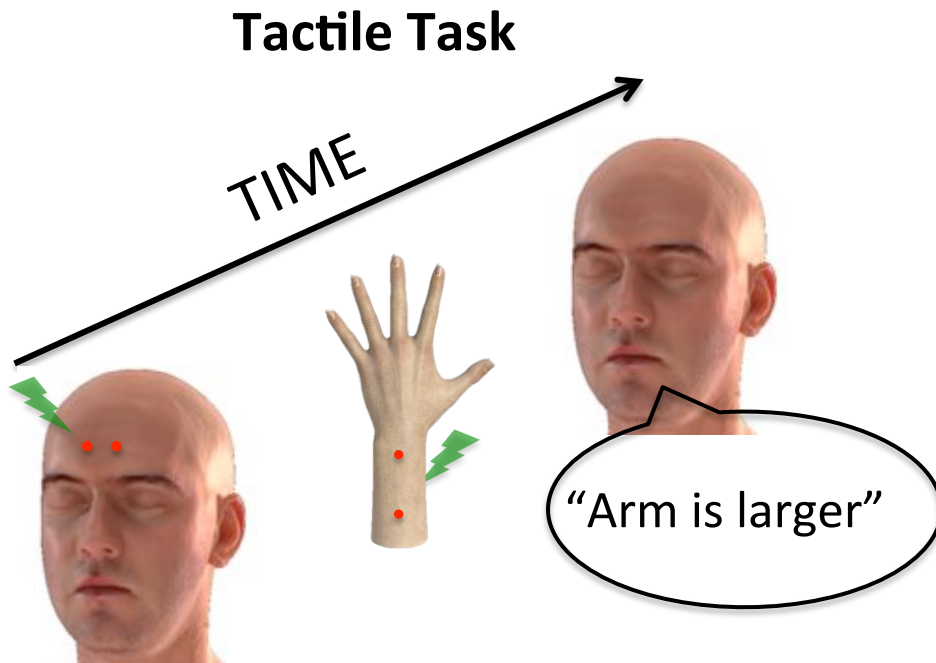
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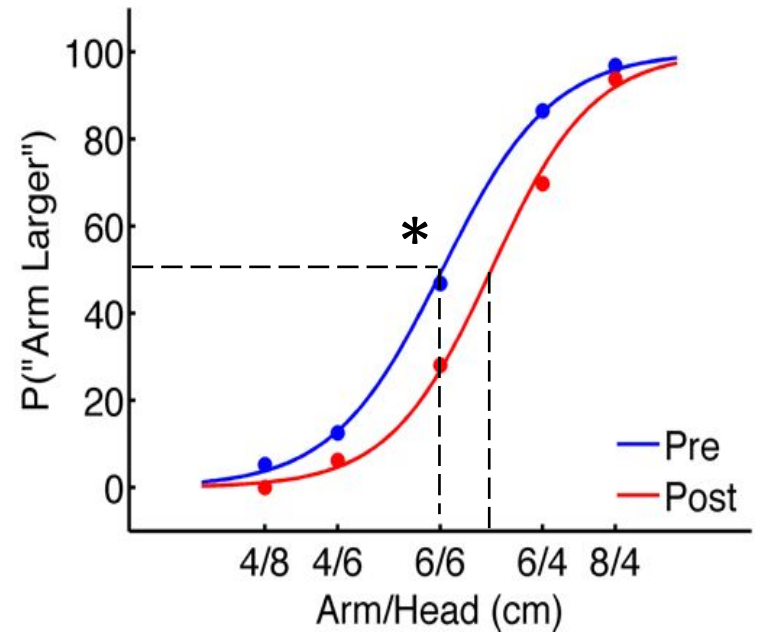




**Overall Goal:**  
Investigate how  
tool use  
modulates tactile  
perception.



### Plasticity in Tactile Perception



# Vision plays an important role in embodiment:

1. Similarity between the shape of the tool and body part constrains plasticity (Miller, Longo & Saygin, 2014).
2. Plasticity does not occur when users are blindfolded during use (Miller, Longo & Saygin, in prep).

**Experimental Question:** Is vision during tool use *sufficient* for plasticity?

## MIRROR VISUAL ILLUSION

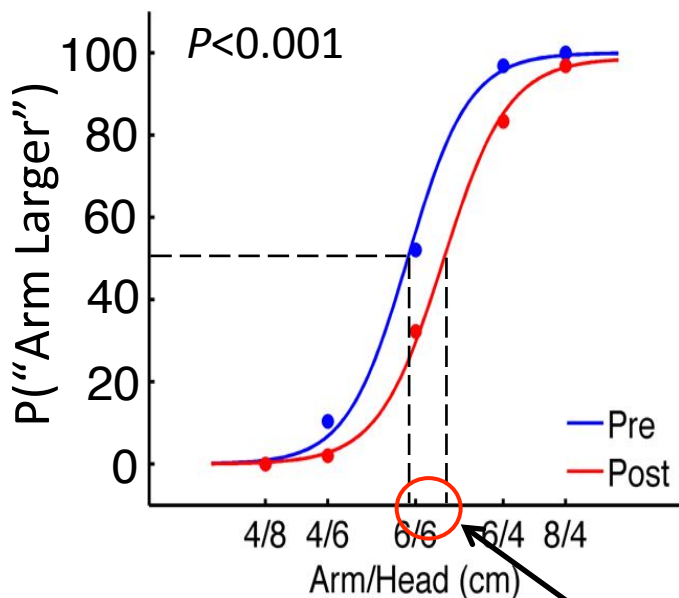


## CONTROL EXPERIMENTS:

1. No Tool: Subjects pick up objects with their own hand.
2. No Mirror: Subjects use the tool without the mirror.

## MAIN EXPERIMENT

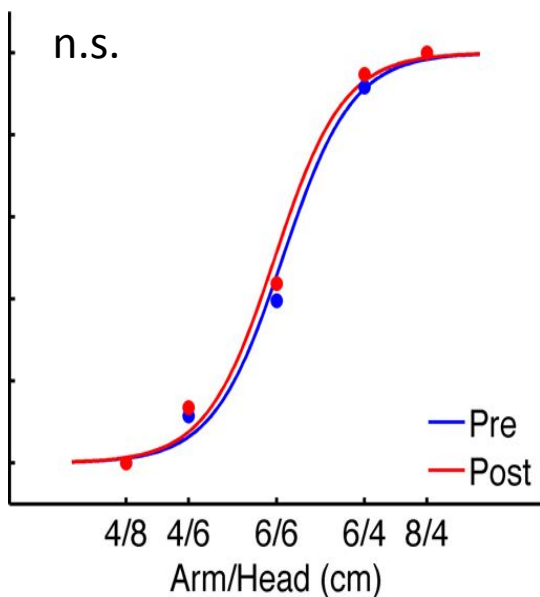
Tool Use  
N = 12



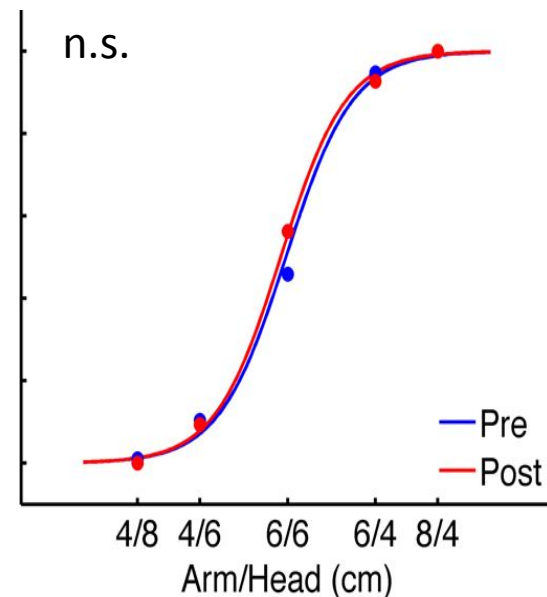
20% decrease

## CONTROLS

No Tool  
N = 12



No Mirror  
N = 11



## Conclusions:

- The visual illusion of the left arm using a tool was sufficient to modulate tactile perception.
- Plasticity to a *tactile* representation is driven by vision, not the proprioceptive or motor components of tool use.