

# Curved sixth fingers: Flexible representation of the shape of supernumerary body parts

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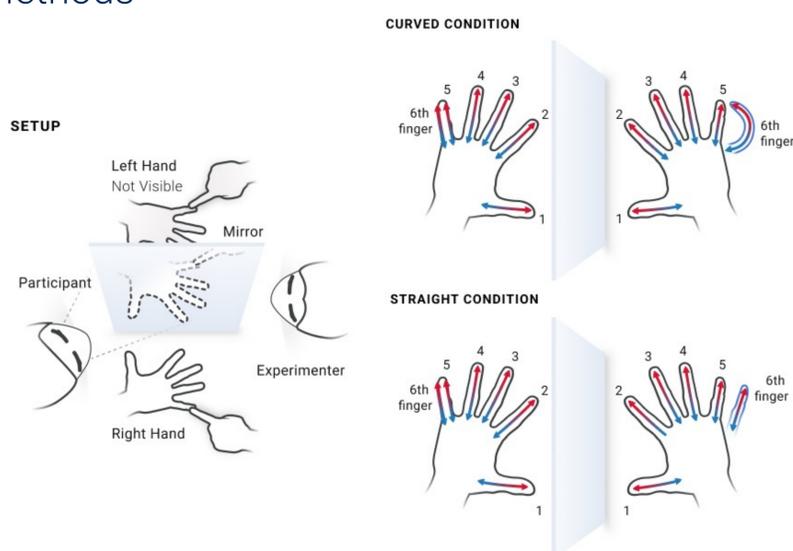
## Introduction

- A recent illusion induces the feeling of having a sixth finger on one's hand.
- Recently, we tested whether the sixth finger was represented independently, with different features from the actual fingers, and successfully induced a sixth finger with varied lengths (Cadete & Longo, 2022).
- As we develop throughout childhood, flexibility in mental representation of body part length is useful for an accurate and adaptive representation of our growing bodies.
- Body shape, however, is more stable throughout our development, and thus may be less susceptible to alteration.

## Aim

- In this study we investigated whether shape is flexible in the mental representation of our bodies
- We tested whether we can embody a sixth finger with a different shape from our own fingers, inducing a sixth finger which curved laterally though 180°.

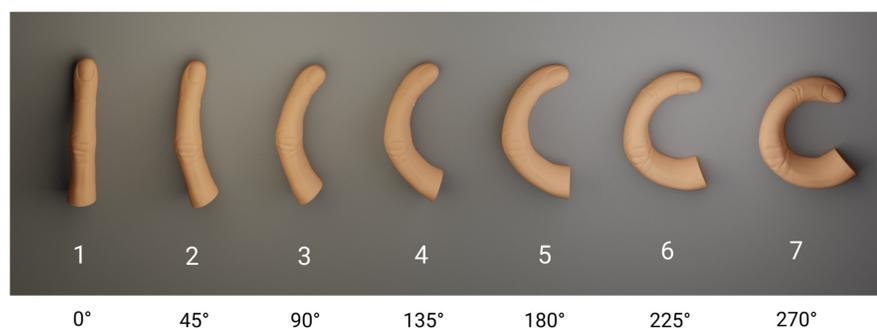
## Methods



Twenty individuals were recruited ( $M \pm SD = 32.7 \pm 2.1$  years; 14 females, all right-handed but 1)

- The participant watched the reflection of their right hand in the mirror, left hand was occluded
- Each finger was stroked twice back and forth, on the top of the finger of both hands synchronously, from the knuckle to the tip
- The occluded little finger was stroked on the inside lateral at the same time as the top of the little finger on the seen hand
- Twenty double strokes on the outer lateral of the occluded little finger synchronously to touching the empty space next to the seen little finger, in a 180° curved shape, or straight shape

## Visual judgement: felt curvature of the little finger & 6<sup>th</sup> finger



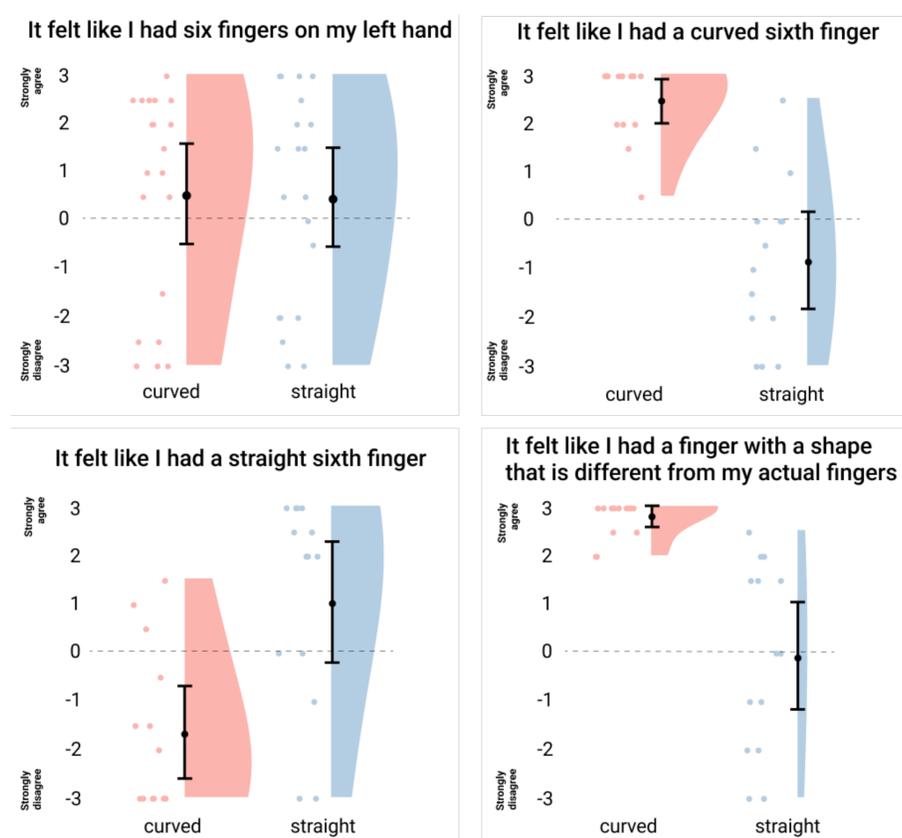
Participants used the figure to report the perceived curvature of their little finger and sixth finger

## Discussion

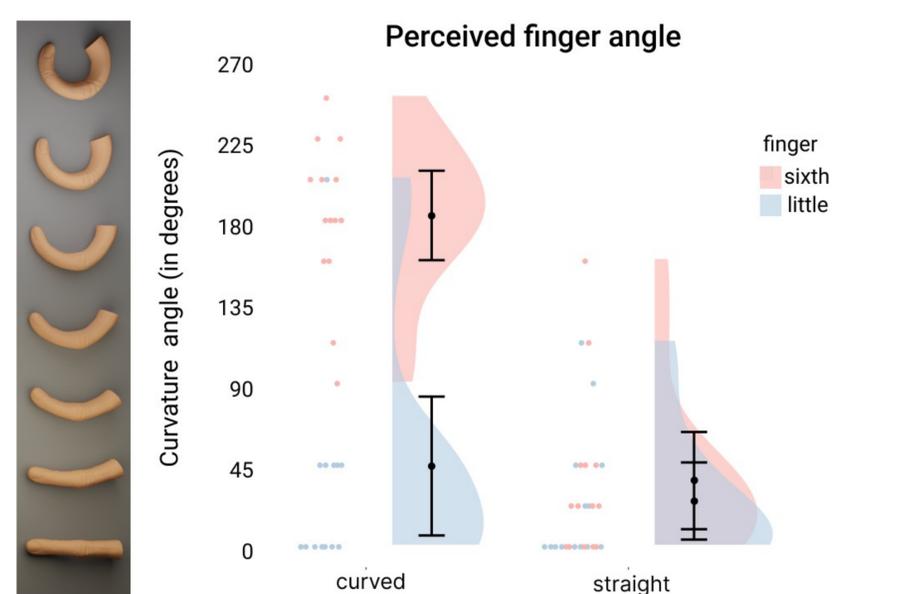
- We can feel a curved sixth finger, with a **different shape** from the little finger
- We can feel a sixth finger that **violates the biomechanical constraints** of our fingers
- The sixth finger was perceived **101% more curved** when compared to a straight finger
- The actual and the supernumerary fingers can be perceived with **different shapes simultaneously**

## Results

Embodiment of a curved and a straight sixth finger



## Felt curvature



Participants felt a sixth finger with a mean of 182° in the curved condition, opposed to 35° in the straight condition