

Object properties feel different in different hemispaces

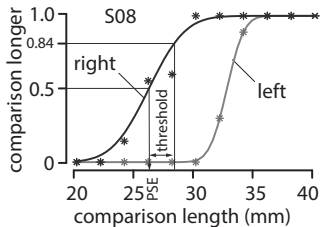
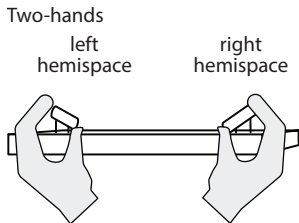
Jess Hartcher-O'Brien and Vincent Hayward



Haptic perception of everyday object properties

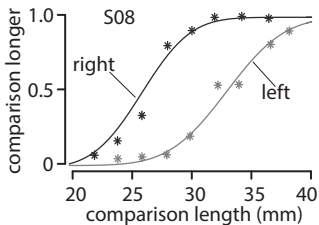
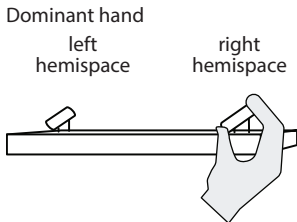


Compare the object on your left and right, which is longer?



- ▶ Objects feel different in different hemispaces, but is it hand or hemisphere?

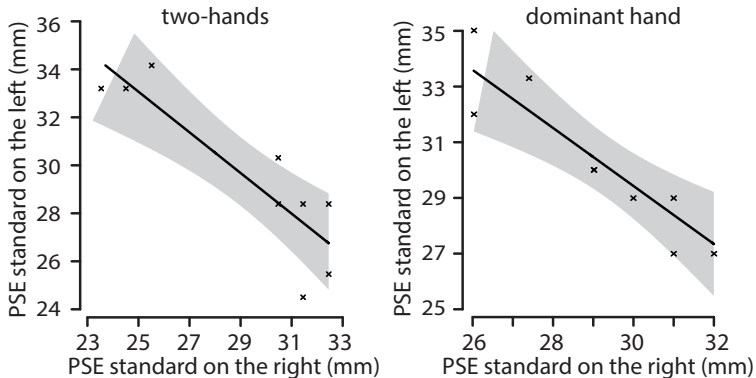
Same hand, different hemispaces, which feels longer?



Example subject

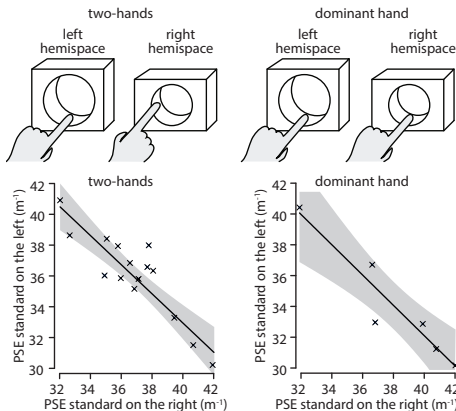
- ▶ Object length is not invariant to position in hemispace but is to the exploring hand

All observers, perceived length for two- vs. dominant-hand



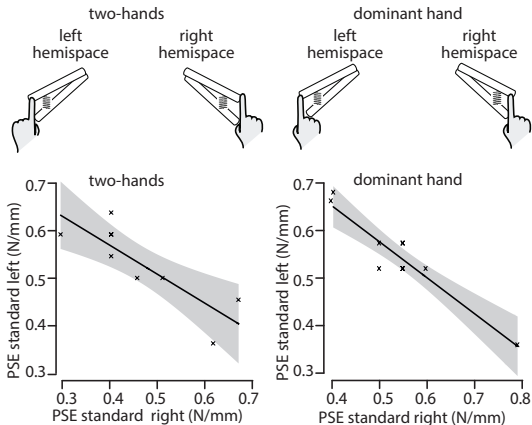
- ▶ Haptically perceived length depends on an objects position in external space

Estimating other object properties: shape



- Generalises to other spatial properties: perceived curvature is subject to the same hemisphere dependence

Estimating other object properties: compliance



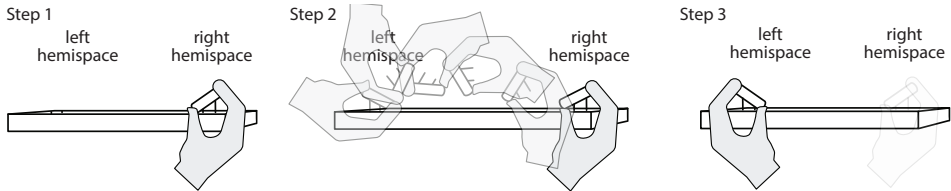
- ▶ No hemispace invariance for perceived compliance, shape or length, but invariant for hand

- ▶ Caused by unfamiliar cross-hemisphere comparison interaction type?

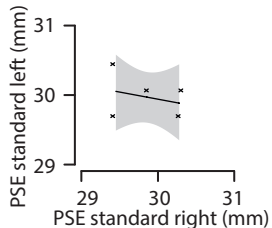
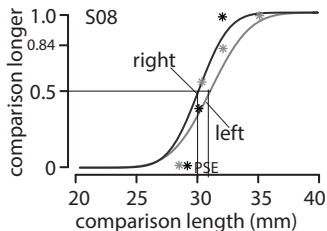
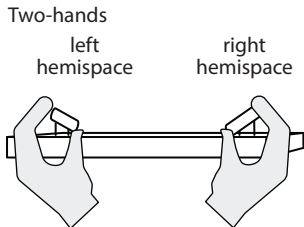


- ▶ Caused by unfamiliar cross-hemisphere comparison interaction type?





- ▶ Step 1: estimate length at initial position
- ▶ Step 2: lift and move object to opposite side of space
- ▶ Step 3: compare perceived length of the object in this region of space, same vs. different?



- ▶ prior 'same object'
- ▶ post-test bias within 1 mm
- ▶ bias in perceived length overridden by exposure to cross-hemisphere comparison interactions



- ▶ bias a competition between lateralisation and stable world
- ▶ hemispace dependent bias in perceived object properties can be recalibrated via exposure

Questions?

