**Prism adaptation modulates aspects of perceptual awareness in spatial neglect**

Margarita Sarri¹, Lalit Kalra ², Richard Greenwood ³ & Jon Driver ¹

2. Guy’s, King’s & St. Thomas’ School of Medicine, London, UK
3. Homerton University Hospital, London, UK

**Introduction**

- Prism adaptation (PA) ameliorates some symptoms of left spatial neglect ¹.
- Some controversy over whether prism adaptation directly improves awareness for the contralesional space ², ³.
- One study found no prism effect on awareness in an emotional judgement task using chimeric faces, despite increasing ocular scanning towards the left side ⁴.

**Aim**

- To test directly whether prism therapy can improve awareness for the contralesional space by using a chimeric object naming task.
- To test the effectiveness of PA in an emotional judgement task using chimeric faces ⁴.
- To test for differential effects of prism adaptation on tasks employing different categories of stimuli, namely faces and objects.
- To test for the effects of PA in lateral preference tasks with or without an ‘emotional’ nature.

**Method**

**Subjects**

- We studied a series of 10 consecutive neglect patients.

**Prism Adaptation Procedure**

- 10° right deviating prism glasses.
- Adaptation via a ~10 min active target pointing task (~80 pointing movements to 2 targets located 15° left and right of the objective body midline).
- After-effects measured by an open loop target pointing task, to ensure success of the adaptation procedure.

**Experimental Tasks**

We studied performance in five different tasks, immediately before and after prism adaptation.

1. **Naming of chimeric object figures.**
   - Presentation of 46 stimuli on paper/Unlimited time.
2. **Emotional judgements for chimeric face stimuli.**
   - Presentation of 20 pairs of faces on paper/Unlimited time/Forced choice/Which one looks happier?.
3. **Darkness judgements for greyscale gradient rectangles.**
   - Presentation of 20 pairs of rectangles on paper/Unlimited time/Forced choice/Which one looks darker?.
4. **Discrimination of chimeric vs real faces.**
   - Presentation of 20 chimeric and 20 real face stimuli/computerised fast presentation (~2.5sec)/Is this face real or chimeric?.

**Results**

**Naming of chimeric objects improved by PA in 6/8 cases**

**Chimeric vs. real discrimination improved in 2/4 cases**

**Faces**

- Percentage of correct discrimination of chimeric faces, before and after PA in 2/4 patients. All four patients were improved in this task before prism adaptation. There was no significant effect of prism adaptation for any patient or task, with all patients showing a strong preference bias for the right side of the chimeric faces both before and after prism adaptation ⁵.

**Gradients**

- Percentage of correct identification for the left side of chimeric objects before and after the adaptation procedure. All 4 patients improved after PA (t-test) for all stimuli on the left side, indicating that PA can improve perceptual awareness for the contralesional spatial neglect of space ⁶.

**Lateral preference tasks unaffected by PA in 9/9 cases**

**Summary & Conclusions**

- Prism adaptation can dramatically improve awareness for the contralesional side in some cases.
- Prism adaptation can improve awareness for both object and face stimuli.
- Prism therapy has no effect on lateral preference tasks, suggesting that prism adaptation may be ineffective in altering response or perceptual biases arising after right hemisphere damage, in tasks that have no right or wrong answer.
- Lateral preference tasks may reflect a distinct component, which can dissociate from other aspects of spatial neglect.

**References**


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Contact Margarita Sarri: m.sarri@ucl.ac.uk