

**The Role of Social Mechanisms in Modulating Attentional Interference [abstract only]**

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## Introduction

Attention is a process that alters how cognitive resources are allocated, and it allows individuals to efficiently process information at the attended location. The presence of visual or auditory cues in the environment can direct the focus of attention towards certain stimuli; even if the cued stimuli are not the individual's primary target. Samson et al. (2010) demonstrated that when another person (cue) is present in the scene facing a direction, it caused a delay in responding to target stimuli not visible to the cue. According to the authors, this **interference** is dependent upon the fact that the **cue** resembles a person, having social characteristics. Interference would not occur with a directional indicator missing the social characteristics.

### The dot-perspective task

Samson et al. (2010) developed the "dot perspective task" paradigm. In a within-subjects design, participants are asked to confirm if the number of discs visible by a prompted **perspective** (e.g. "YOU" or "SHE") (Fig. 1) are the same of a previously shown number.

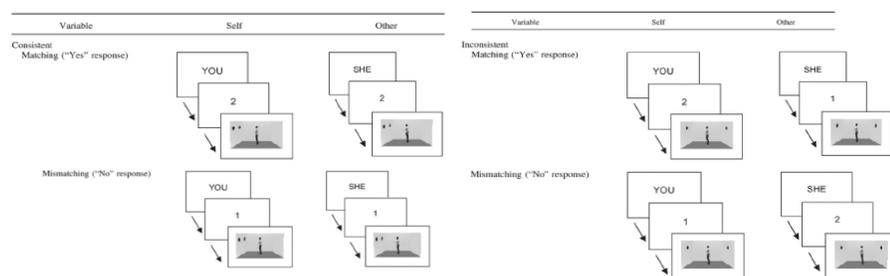


Fig. 1. The dot-perspective task. Subjects showed interference in inconsistent trials.

Since the cue (the avatar) faces either the left or the right wall, there are **consistent** and **inconsistent** trials: In consistent trials, the number of discs visible to the participant and to the avatar is the same. In inconsistent trials, the participant can see some discs that the avatar cannot. Samson et al. found **interference** (longer RTs and more errors) in inconsistent trials even when participants had to report how many disks they can see.

### Perceptual features vs Perspective taking

Two are the main interpretations of the interference:

The **Perceptual interpretation** argues that perceptual factors of the cue (i.e. orientation) are sufficient to explain the interference (Cole, Smith & Atkinson, 2015; Wilson, Soranzo & Bertamini, 2017; Langton, 2018) whilst the **Perspective taking interpretation** argues that in addition to perceptual factors, social factors are responsible of the interference. The cue itself has to be seen as a social entity (Samson et al. 2010; Furlanetto et al. 2015; Morgan et al., 2018).

### Aim

This study aimed to test whether interference persists even when the social characteristics are removed from both the **cues** and the **prompts**.

### Method

The dot perspective task was used. In addition to the "Consistency" and "Perspective" (within-subjects) variables two additional between-subjects variables were systematically manipulated:

**Type of cues:** (with a biological visual system: *Avatar*, without visual system: *Arrow*, with a non-biological visual system: *Camera*)

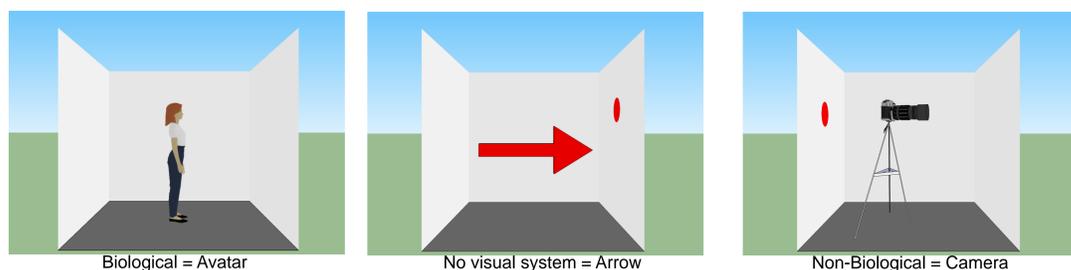


Fig. 2. The three cues employed in the experiment: Avatar, Arrow, Camera

**Type of prompt:** (social: "SHE" and "YOU" vs non-social: "AVATAR" or "ARROW" or "CAMERA" and "TOTAL") were systematically manipulated.

Dependent variables: RTs and Errors

**Participants:** 96 participants took place in the experiment, 16 in each of the 6 experiments resulting from the Cue x Prompt variables (3x2).

## Conclusions

Results showed that **interference persisted** even when **cues without a biological visual system** and **non-social prompts** (e.g. TOTAL instead of YOU and AVATAR, ARROW or CAMERA instead of SHE) were used.

These results are in line with previous studies **supporting the perceptual interpretation** of the interference, such as Wilson et al. (2017) and Cole et al. (2015). In addition, considering that interference was higher with the ARROW than with the CAMERA, it seems that the perceptual features of the cue play a crucial role in the phenomenon.

Thus, the interference found in previous perspective taking studies may be due to an **automatic shift of attention caused by directional stimuli** and not from an **implicit mentalizing of the other's perspective**, which may be instead a **voluntary process** (Gardner, 2018).

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## Results

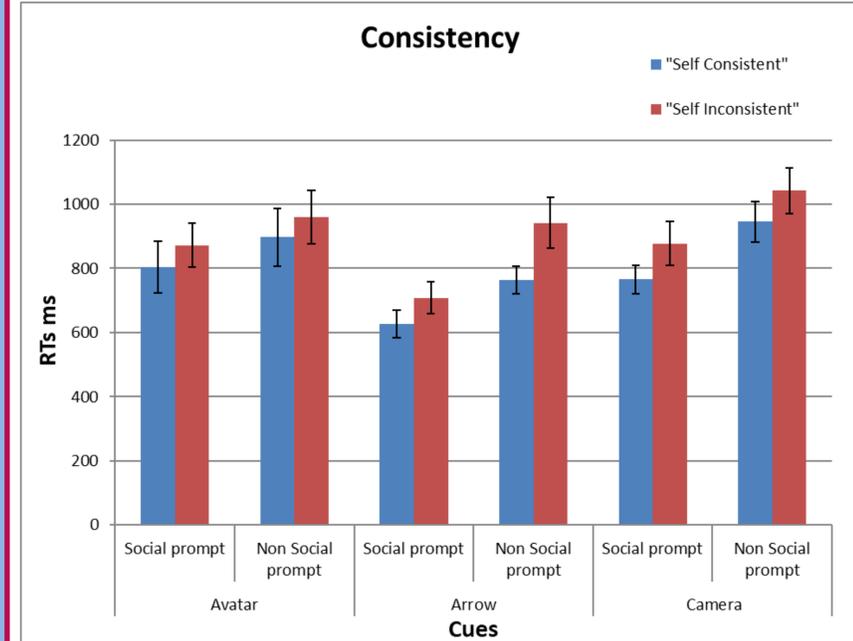


Fig. 3. Results of the "Self" level of the Perspective variable. Interference persists even with **cues without biological visual system** and **non-social prompts**.

### Reaction Time Analysis

(Errors analysis confirms these results and is not reported for brevity)

[Perspective analysis is in line with previous studies and results are not reported for brevity]

**Consistency:**  $F(1,90) = 19.33$   $p < .001$ ,  $\eta^2 p = 0.18$

**Inconsistent trials showed longer RTs**

**Cue:**  $F(2,90) = 3.30$   $p = 0.041$ ,  $\eta^2 p = 0.06$

See post hoc analysis

**Prompt:**  $F(1,90) = 8.86$   $p = 0.004$ ,  $\eta^2 p = 0.09$

**Non social prompts showed longer RTs**

### Post hoc analysis

**Avatar vs Arrow**  $p_{\text{tukey}} = \text{ns}$ . A  $BF_{01} = 0.38$  indicates that the relative odds of in favour of the hypothesis that there is no difference between the two cues is 0.38 higher relative to the alternative hypothesis that there is difference between the two.

**Avatar vs Camera**  $p_{\text{tukey}} = \text{ns}$ . A  $BF_{01} = 4.80$  indicates that the relative odds of in favour of the hypothesis that there is no difference between the two cues is 4.80 higher relative to the alternative hypothesis that there is difference between the two.

**Arrow vs Camera** ( $p_{\text{tukey}} = 0.048$ ,  $BF_{10} = 20.29$ ) indicates that the relative odds of in favour of the interference to be stronger with the Arrow are 20.29 higher relative to the null hypothesis that there is no difference between the two.