# Are social interactions preferentially attended in real-world scenes? **Evidence from eye-tracking** University of Sector Secto

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#### **1. Background and current study**

- $\succ$  Socially relevant features of complex visual scenes are processed with a higher priority than non-social features (e.g., people vs. trees [1, 2]).
- $\succ$  Recently, there has been a growing interest in how observers process scenes containing social interactions [3, 4]. These studies have shown that attention is preferentially drawn to those presented face-to-face, compared to back-toback [5, 6]. This has been taken as evidence that social interactions capture attention because of their importance in navigating our social world [3]. However, the stimuli often used in these experiments tend to be simplified versions of the visual scenes we see in everyday life.

#### **3. Continuation of results**

Reading

- **Dwell time (or total time spent looking at a particular AOI):** There was a significant main effect of Orientation [F(1, 26) = 58.61, p < .001,  $\eta p 2 = .69$ ], and a significant Social Condition by Orientation interaction  $[F(1, 26) = 4.83, p = .037, \eta p 2 = .16]$ . Pairwise comparisons showed that participants in both Social Conditions spent less time looking at the people in the pictures when they were presented inverted, compared to upright.
- $\succ$  Total number of fixations: There was a main effect of Social Condition [F(1, 26) = 51.79, p < .001,  $\eta p 2 = .66$ ], with people making more fixations on individuals that were presented on their own compared to when they were presented within an

- $\succ$  A small number of studies have investigated visual attention to social interactions in real world scenes [7, 8]. A recent eye-tracking study found evidence for interactions being prioritised in attention [7], whereas a recent change detection task found no difference in the time taken to detect changes to isolated individuals or social interactions [8].
- > Using eye-tracking and images of real-world scenes, we aimed to explore whether patterns of fixations on bodies differ from each other when they are presented on their own vs. within social interactions.

#### 2. Methods

 $\succ$  **Experiment:** We presented participants (N = 27) with complex visual scenes containing multiple people. In each scene, there were at least two individuals interacting and at least one other lone individual. Over all the scenes, we matched the number of people that were presented on their own vs. interacting with others [t(23) = .57, p = .575]. We also included 10 filler items, where there were no people in the images.



interaction. There was also a main effect of Orientation [F(1, 26) = 7.34, p = .012]np2 = .22], with people making more fixations on individuals that were presented upright compared to inverted.



- > Design: 2 x 2 mixed subjects design. Social Condition was the withinparticipant variable (e.g., Non-interactions vs. Interactions) and Orientation was also a within-participant variable (Upright vs. Inverted). The inverted version of each image was presented to determine whether differences were driven by low-level visual features.
- > Dependent variables: We were mainly interested in first fixation time, first fixation duration, number of total fixations and total amount of time spent looking at Non-interaction vs. Interaction AOIs.
- > Procedure: Experiments were conducted in person. Participants either saw the upright or the inverted images first. Participants had 5 seconds to scan the images and were told "take a good look at the pictures".

### **3. Results**

> First fixation time (or time to first fixation): None of the effects were

#### 4. Discussion

- We did not find any significant effects for first fixation time, or first fixation duration, although Bayesian analyses were anecdotal for the effect of social condition. Notably, in the Bayesian analyses, there was moderate support for the exclusion of the interaction terms in the model comparisons, suggesting that any effect of social condition was unlikely to differ between the upright and inverted images. This suggests that there was little to no impact of whether a person was presented alone or in an interaction on the early stages of attentional selection.
- Results from dwell time and total number of fixations show that attentional engagement to social stimuli is greatly decreased when they are presented upsidedown, confirming previous findings that inversion diminishes the attentional advantage for different types of social stimuli [8, 9].
- Results from the total number of fixations also showed that people fixated more on individuals that were presented on their own rather than within a social interaction. This is also in-line with our previous results [8], where we used change blindness to index attentional selection, and found that changes to individuals on their own were detected better and faster, compared to changes to interacting individuals.
- Taken together, our results suggest that in real-world scenes, interacting individuals are not preferentially attended when presented in competition with other social

statistically significant. Using Bayesian analyses, we found the main effect of Social Condition had only anecdotal support for the null  $[BF_{01} = .777]$ .

**First fixation duration:** None of the effects were statistically significant. Using Bayesian analyses, we found the main effect of Social Condition had only anecdotal support for the null  $[BF_{01} = 1.680]$ .



#### information.

## **5. References**

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