

The European Social Cognition Network Short Visit Grant

Title of the research project

Top-down modulation of attention – inhibition of return is influenced by the culture and status of the target

Visiting researcher

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Date and location of research visit

16/09 – 30/09 2013 INSEAD Social Science Research Centre, Paris, France

Host

Prof. William W. Maddux
INSEAD
Organizational Behavior Area
Boulevard de Constance
77305 Fontainebleau Cedex
France

Travel Budget

£138.20 Open Return Ticket London-Paris (see receipt below)

Scientific Report

Purpose

Supported by an ESCON short visit grant, I visited Prof. William Maddux at INSEAD, Fontainebleau, France, between September 16th and September 30th 2013. During my two weeks stay in Paris, I collected empirical data for the research project titled “Top-down modulation of attention – inhibition of return is influenced by the culture and status of the target” at the INSEAD Social Science Research Centre, Paris, France. I was able to finish data collection for one entire study, and I am currently completing data collection for a second study in London.

Background

The human capacity to process sensory information is limited. In order to survive in highly complex social environments, humans can shift their visuo-spatial attention to specific locations in their environment. This “attention spotlight” (Posner, 1980) permits the serial processing of manageable quantity of information at every one moment in time.

Internal as well as external factors can influence shifts in orientation. For example, I can reflexively shift my attention when the office door opens in anticipation that my supervisor may enter. Similarly, I can systematically vary my attention, when I enter the cafeteria in search for my supervisor. In the latter case it seems adaptive to not search the same spatial location twice. Inhibition of return (IOR) is a phenomenon that orients visuo-spatial attention permitting more efficient visual search (Posner, 1980; Posner & Cohen, 1984).

Until recently, surprisingly little attention had been paid to inhibition of return in social contexts. Few studies comparing face stimuli and non-face stimuli did not observe differences in magnitude in inhibition of return (e.g., Taylor & Therrien, 2005; Stoyanova, Pratt, & Anderson, 2007; Lange, Heuer, Reinecke, Becker, & Rinck, 2008). The fact that using social and non-social cues or targets seemed to not affect the magnitude of inhibition of return, led some researchers to describe inhibition of return as “blind mechanism”.

In contrast, a different line of research tested inhibition of return in real life interaction. Welsh, Elliot, Anson, Dhillon, Weeks, Lyons, et al. (2005) asked a pair of participants to interact in such manner that the action of person A would serve as cue for

person B. Results showed that a human being could reliably elicit inhibition of return through its action.

Additional evidence for the idea that social stimuli may influence the allocation of attention comes from the gaze cueing literature (e.g., Friesen & Kingstone, 1998; Frischen & Tipper, 2004). In these paradigms the gaze of a centrally presented face serves as cue to laterally presented target objects. Research has shown that people alter their gaze following behaviour depending on the social information available about the cue.

For example, gaze cueing is greater for dominant faces (Jones, DeBruine, Main, Little, Welling, Feinberg, et al. 2010), faces of ingroup members (Liuzza, Cazzato, Vecchione, Crostella, Caprara, & Aglioti, 2011), and higher ranked individuals (Dalmaso, Pavan, Castelli, & Giovanni 2012). These studies clearly suggest that social information may top-down influence the allocation of attention. In the present research, we tested whether the social information of a cue can also change one of the most basic visuo-spatial cueing phenomena: inhibition of return.

Study 1

Participants took part in pairs. They provided informed consent and were seated in front of a screen with remote eye tracker in opposite corners of the room with their faces oriented away from each other. We instructed participants to freely view 4 pictures shown on screen. On top of these pictures, a series of geometrical shapes would be shown. A red dot appeared first, followed by a green star and a blue square. We instructed participants to respond as quickly and accurately as possible to the blue square by pressing a mouse button. In total, participants completed 288 trials divided into four blocks.

While completing this task, we told participants that we would measure their gazing behaviour with an eye tracker. Specifically, in social trials, we informed participants that both eye trackers were linked and that the red dot (cue) would represent which picture their partner had just attended to. In contrast, in non-social trials, we informed participants that both eye trackers were disconnected. As a result, the red dot would be computer-generated at random. In reality the location of the red dot was always chosen at random by the computer, so that all perceptual input being equal, the only difference between trials was participants' beliefs in the social nature of the cue.

Study 1 demonstrated that the social nature of a cue can affect inhibition of return. Results showed a significant increase in inhibition of return in social compared to non-social trials. In other words, when participants were told that eye trackers were linked and, therefore, the cue would indicate where their partner had just looked at, participants took longer to respond to spatially congruent than spatially incongruent targets.

Study 2

Study 2 tries to examine further how social meaning affects the magnitude of inhibition of return. To this aim, we decided to render the meaning of the social cue either very important or very unimportant. We replicated the procedure of study 1, but this time the interacting partner was a confederate from our lab. We chose to manipulate the social status of the interacting participant. For example, the confederate could either be student at a very prestigious university (Oxford University) or less prestigious university (e.g., South Bank University, London). Preliminary, results indicate that high social status confederates further increase the inhibition of return, whereas low status confederates only slightly increase inhibition of return. Data collection for this study is on-going.

Theoretical Implications

Both findings seem in line with theorising that inhibition of return does not only operate as attentional bias, but prepares responses. In line with this interpretation is research demonstrating increased inhibition of return and improvement of performance on stop-go inhibition task (Ivanoff & Taylor, 2006). Thus, it might be possible that slowed responses to the cued location may lead to more sensory information being gathered and therefore a more informed or accurate decision.

Collaboration and Future Projects

I would like to thank Prof. William Maddux for hosting me at INSEAD, Fontainebleau. I am equally indebted to Liselott Pettersson, manager of the INSEAD Social Science Research Centre for supporting the data collection on a day-to-day level. Discussing research with Prof. Maddux led to new research projects related to the question how cultural differences in social hierarchy impact the allocation of social attention when looking at faces. We have started to plan a new series of eye tracking studies investigating the preferential attention to higher versus lower ranked targets' eyes.

References

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