**Introduction**

Placebos are sham interventions that induce beneficial cognitive, somatic or affective effects. Nocebos, as the opposite phenomenon, induce harmful effects. Recent findings indicate that placebos as well as nocebos are able to modulate basic visual attentional processes. In a recent eye-tracking experiment, a surprising nocebo effect was observed. A sham treatment combined with the verbal suggestion of temporary left-sided attention deficits enhanced left-sided attention performance. This unexpected finding raises the question: what would be the effect of a comparable placebo? In order to better understand placebo and nocebo mechanisms, the effects of equivalent placebo and nocebo suggestions on visual-spatial attention were directly compared with each other in the present eye-tracking study.

**Method**

**Design and Procedure**

A visual search task was performed once without (control condition) and once with the placebo or the nocebo (placebo/nocebo condition). The search task had three visual load conditions with either 50, 100, or 200 distractors. Participants were instructed to find a single target as fast as possible (max. 90 s). In each trial the target had a different position (Fig. 1).

**Sample**

Forty right-handed healthy women were analyzed (age: M = 21.06 years, SD = 2.58). The subjects either participated in the placebo group (n = 20) or in the nocebo group (n = 20). All participants reported to experience symptoms in accordance with the placebo/nocebo suggestion ('placebo/nocebo responder'; 1 (not at all) - 100% (very effective); Nocebo group = 49.50%, SE = 3.18; Placebo group = 54.35%, SE = 4.03; p > .28).

**Placebo/Nocebo**

The placebo/nocebo was a sham transcranial magnetic stimulation (sTMS), which was administered with the suggestion that the treatment would induce either temporary left-sided attention improvements (placebo) or deficits (nocebo). The sTMS system was administered for 4 min in the placebo/nocebo condition. After the stimulation, the system was removed and the visual search task started (Fig. 1).

**Results**

Contrary to the verbal suggestion, the nocebo group showed more left-sided fixations and faster responses to left-sided targets in the nocebo condition compared to the control condition (p < .002). The placebo had no effect on unilateral fixations or reaction times (p > .06). The nocebo group showed more left-sided fixations (independent of the visual load level, Fig. 2) and faster responses to left-sided targets in the high-load condition (F(2, 76) = 4.41, p = 0.015) than the placebo group.

**Discussion**

The present findings indicate a more beneficial effect of a nocebo compared to a placebo for the first time. Although, placebo responders subjectively experienced effects of the placebo, no objective effect was detected. This overestimation in the placebo group could have inhibited additional efforts. In contrast, the experience of attention deficits in the nocebo group could have promoted compensatory mechanisms and, finally, improved the actual performance. These results raise questions regarding the possibilities and limitations of placebos and nocebos.