

EEG AND BEHAVIORAL CORRELATES OF FORWARD AND BACKWARD PRIMING

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Background: Affective priming is a phenomenon where perception of an emotional prime stimulus influences the reaction time of the subsequent emotional target stimulus. If the prime and the target have the same valence, the trial is considered congruent and if they do not, it is considered incongruent. Response times to congruent stimulus pairs are typically faster than for incongruent pairs. Bem showed in 2011 the same congruency effect in a backward priming paradigm, where first the target was presented and then the prime appeared only after the response. Since the prime came after the stimulus response, these results were interpreted as evidence supporting precognition.

Aims: In the present study we combine a classical forward priming paradigm with a related backward priming paradigm (behavioral study part 1) and then will measure the EEG while participants conduct the two priming tasks (study part 2).

Method: At the beginning of a trial, a prime word is shown for 500 ms. The prime word is followed by an ISI of 150 ms or 450 ms (blocked conditions) after which the target image is presented and the participant has to respond by pressing one of two buttons, whether the target is of positive or negative valence. In the (precognition) backward priming trials the positions of target and prime are switched. That is, the prime follows the button press indicating the valence of the picture. Next to emotional pictures we present photos of the participant or of a stranger (self-reference condition).

Preliminary results: In the behavioral study part 1, 74 out of 100 participants (aged between 18 and 39 years; mean age: 23.5 years, 24 males, 50 females) were so far tested. In the classical forward priming experiment, we found a significant main effect of congruency, with faster reaction times in the congruent compared to incongruent conditions; $p < 10^{-7}$. We also observed an overall effect of condition with faster reaction times in the forward than in the backward priming experiments ($p < 10^{-4}$). No significant congruency effect was found for backward priming. We also found no effect for the factor ISI nor for any interaction. For the self-reference experiment, we found significantly faster reaction times in the case of positive priming words ($p < 0.03$). The ANOVA indicated a significant effect for the factor condition ($p = 0.006$) with overall faster reaction times in the backward priming compared to the forward priming condition in the self-reference experiment. We found no effect for the factor ISI nor any interaction.

Keywords: Forward priming, Backward priming, Precognition

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