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Thinking for action: The role of obligatory and prohibitory traffic sign information in driving performance

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Abstract: Traffic users must combine the information provided by the signs with their own goals to decide on an appropriate action. In the current experiment, the participants imagine they are driving a car at an intersection, a T-junction. A destination goal (turn right or left) is then given. This goal might or might not be an allowed manoeuvre, according to the message of the traffic sign displayed in each trial (it could be either an obligatory or a prohibitory traffic sign pointing to the left or to the right). The participants were instructed to respond as to where the car should go, according to the destination cued and the traffic sign displayed in that particular traffic scene. We tested conditions in which a single sign (proposition) was presented: 2 traffic sign categories [obligatory vs. prohibitory] and 2 manoeuvres [allowed vs. not-allowed]. The participants performance could be influenced by: A) The difference between the information provided for the obligatory and the prohibitory traffic sign. (Which one is better?) Our previous findings performing only judgment tasks showed that when only one sign is displayed, only part of the information is explicitly represented: in the case of a prohibitory Sign Left is not allowed', in the case of an obligatory sign, Right is allowed'. Therefore, prohibition does not produce a slower reaction time; it depends on the kind of manoeuvre performed. B) The congruency effect between traffic sign information and destination cued, resulting in the fastest response time for the congruent conditions. According to the current results, deciding where the car should go, taking into account the destination goal cued and the traffic sign message, makes it easier to reason about what is possible or allowed. Thus, the obligation sign and the allowed manoeuvre have an advantage over the prohibitory sign and the not-allowed manoeuvre