The influence of effort instruction on fake production costs in basketball novices and experts

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Previous experiments demonstrated that producing passes with head fakes in basketball generates higher initiation times (ITs) and error rates than producing passes without head fakes (Güldenpenning et al., 2023). This study investigated whether these production costs can be minimized when using effort instructions. Such performance improvements can be predicted based on the assumption that the cognitive capacity, which is available in a given task, may not fully be used for task preparation, but also partly for ongoing monitoring processes. If needed, however, more cognitive capacity can be willingly devoted to the task (Kahneman, 1973). Steinborn et al. (2017) demonstrated that presenting effort instructions (i.e., “try harder”) in 20% of trials led to performance improvements. We adopted the probe-trial approach of Steinborn et al. (2017) and presented effort instructions in 20% of all trials before participants produced passes with and without head fakes. In the remaining 80% of the trials, the standard instruction was presented. Also, basketball novices and experienced players were tested to examine the effect of expertise on the effectiveness of effort instructions. As expected, there was a main effect for the factor type of pass, as participants displayed slower ITs when performing a pass with compared to a pass without head fake [$F(1,52) = 38.03$, $p < .001$] and experts were generally faster (i.e., shorter ITs) than novices [$F(1,52) = 4.31$, $p = .043$]. There was a significant interaction between the factors type of instruction (standard vs. effort) and expertise [$F(3,69) = 5.38$, $p = .024$]. Post-hoc tests revealed that the use of effort instructions reduced novices initiation times independent of the type of pass they had to produce, while experienced players did not show significant improvements. The implications of this cognitive mobilization through external instructions are discussed against the background of applications in training and game situations.

Keywords: deception, action preparation, perception, movement planning