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Do categories stored in memory of expert collective game players modulate visual information processing?

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Playing collective games requires the learning of general rules and knowledge about collective tactical organisations. This knowledge develops under the effect of instruction delivered by coaches, and with practice. Tactical knowledge has two different formats (Ripoll, 2004): 1) a conceptual format, expressing a general organization generally described by a numerical expression (4-3-3, 4-4-2, 3-5-2... in football or 1-3-1, 2-1-2... in basketball), 2) a perceptual format, under the form of physical sensitized structures related to the tactical organization mentioned above. Different characteristics are related to these two types of processing: 1) indirect, time consuming, attentionally costly, for the conceptual knowledge, and 2) direct, rapid, and not attentionally costly, for the perceptual processing. This means that an expert could be perceptually sensitive to a category, and could automatically activate a solution adapted to this one.

The influence of categories on information processing has been tested in a series of experiment (Laurent, 2003), in which expert and non-expert basketball players had to carry out same-different judgments between two schematic, identical or different, basketball configurations. Results suggest that in experts, visual search organization is tightly coupled to categorical information stored in memory. Therefore, the influence of categorical background on performance is embodied in a specific visual search, which is the critical interface between expert knowledge and the external world. This confirms that the processing of visual information is performed by the means of a strong coupling between perceptual sensitization and relevant, categorical collective organizations structures shared by expert players.