

CATEGORICAL PERCEPTION OCCURS IN EXPERT BASKETBALL PLAYERS

Eric Laurent and Hubert Ripoll

Sport & Adaptation Laboratory, Faculty of Sport Sciences, University of the Mediterranean, France

Previous investigations of expert information processing have demonstrated that both perceptual and higher-level cognitive adaptations occur during expertise acquisition. However less is known about the interactions between the two. We develop an approach that focuses on these interactions. The aim of the present research was to investigate both the structure of the conceptual knowledge and its selective effects on perceptual discrimination in expert basketball players.

We built 48 pairs of schematic basketball configurations. Each configuration belonged to identified categories, which concern the types of players' organization. Stimuli, within a pair, could be the same (*Identical condition*), physically and categorically different (*Between-category condition*), or physically different and categorically the same (*Within-category condition*). In these two last conditions, the physical distortion was the same and controlled by a cluster encoding method (Courrieu, 2001). Nine expert basketball players (National 3 level in France), and 11 novices were involved in the test phase. The task consisted in judging whether configurations were the same or different. Stimuli were presented sequentially, each of them during 1200 ms, and the delay between the first (source) and the second (target) configuration was close to 0 ms. The source configuration was presented on the left part of a projection screen, and the target on the right part. Participants had to give an answer via a keyboard, during target exposure or within the 1000 ms following its vanishing. Response accuracy (i.e., number of correct responses) and response time were recorded.

An expertise x similarity interaction was found, $F(2,36) = 44.17$, $p < .05$, and subsequent Newman-Keuls tests ($p < .05$) showed that experts were better than novices only in the *between-category* condition (Fig. 1). No effect on response time was observed.

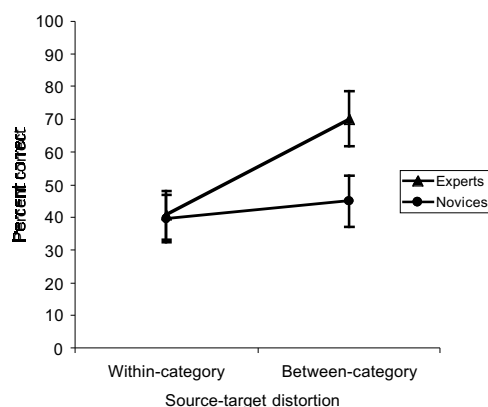


Figure 1. Percentage of correct responses for the two "different" conditions

The implications of this research are twofold. First, it has been shown that the expert conceptual background is divided into categories of players' organization. Expert discrimination is effective only when relevant (i.e., categorical) features are changed. Second, and theoretically most important, this categorical influence on perception is found in a very fast perceptual judgment. This provides evidence for strong links between cognitive and perceptual processes, and put into question other frameworks that assume separable and independent systems.

REFERENCE

Courrieu, P. (2001). *Neural Networks* 14: 175-183.