Self-controlled practice of decision-making skills

Introduction

For a considerable time now, psychological research has concerned itself with the effects of self-initiated and self-controlled practice conditions. Numerous studies exist in the field of sport which analyze the influence that self-controlled activities have on the acquisition of motor skills (cf. Chiviacowsky & Wulf, 2005). Findings consistently show that giving learners control over the practice situation has a beneficial effect on the learning of motor skills. However, this effect occurs with a delay. Self-controlled practice conditions have not yet been used for the study of decision-making processes and of the comparison between experts and novice performers. The main aim of this study was to investigate a self-controlled learning process with regard to the acquisition and improvement of simple, cognitive decision-making skills within the scope of the expert-novice paradigm.

Method

56 participants were allocated randomly to one of four groups. All subjects were given a three-minute period to get familiar with the game of tic-tac-toe. (4x4 fields, 3 fields per column, row/diagonal wins). The game was computer-programmed and presented on a PC. They were allowed five seconds per move, which was shown on the monitor. 28 participants (=experts) practiced the game in an acquisition phase (8 blocks of 20 games). Afterwards, 14 participants of this experts (Exp-Self) and 14 novices (Nov-Self) practiced tic-tac-toe in the treatment phase (8 blocks of 20 games) in a self-paced schedule. This means that the subjects had the opportunity to reflect on solution strategies after each game as long as they wanted. Participants in both joked groups (Exp-Jok, Nov-Jok) had no control over the practice schedule. Each was yoked to a participant in the self-control group with the identical temporal structure. The dependent variables assessed with the tic-tac-toe test was game success (win, draw, lose) and mean decision-making time in a pre- and posttest (1 block of 20 games) as well as in tests of retention and transfer (each with 2 blocks of 20 games) one week later.

Results and discussion

Both expert groups improved their performance in their acquisition phase significantly, \( F(7, 364) = 3.78; p < .001; \varepsilon = 0.46, \) and \( F(7, 364) = 3.21; p < .001; \varepsilon = 0.44. \) Therefore, significant differences were found between experts and novices at the beginning of the treatment phase, \( F(1, 54) = 4.12; p < .001; \varepsilon = 0.78, \) and \( F(1, 54) = 4.82; p < .001; \varepsilon = 0.81. \) First preliminary results revealed significant improvements for game success and mean decision-making time from the pretest to the posttest. The final results of the retention test and the transfer test could not presented untill the ECSS conference.

References