

# Zonal playfield attributes

## A stochastic approach to subjective passing affordances in football

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### Introduction and aim

According to the ecological view, coordination establishes by virtue of social context. Affordances thought of as situational opportunities to interact with team members are assumed to represent affordances that guide decisions involved in interpersonal coordination. It's generally agreed that affordances cannot be reduced to objective parts of the (social) environment but that they depend on the constructive perception of involved subjects. Theory and empirical data hold that cognitive operations enabling domain-specific efficacy beliefs are involved in the perception of opportunities to act. The aim of the present study was to test the effects of these cognitive concepts on perceived local affordances in decision making in football.

### Methods

71 football players ( $M = 24.3$  years,  $SD = 3.3$ , 21 % women) from different divisions participated in the study. Participants were presented scenarios of offensive game situations. They were asked to take the perspective of the person on the ball and to indicate where they would pass the ball from within each situation. The participants stated their decisions in two conditions with different game score (1:0 vs. 0:1). The playing fields of all scenarios were then divided into ten zones (see Figure 1). Participants were asked to rate their confidence in being able to pass the ball in each zone (self-efficacy), their confidence that the group would stay in ball possession if the ball were passed into the zone (group-efficacy I), their confidence in the ball being covered safely by a team member (pass control / group-efficacy II), and whether a pass would establish a better initial position to attack the opponents' goal (offensive convenience). Answers were reported on visual analog scales ranging from 1 to 10. Data were analyzed specifying general linear models for binomially distributed data (Mplus). Maximum likelihood with non-normality robust standard errors was chosen

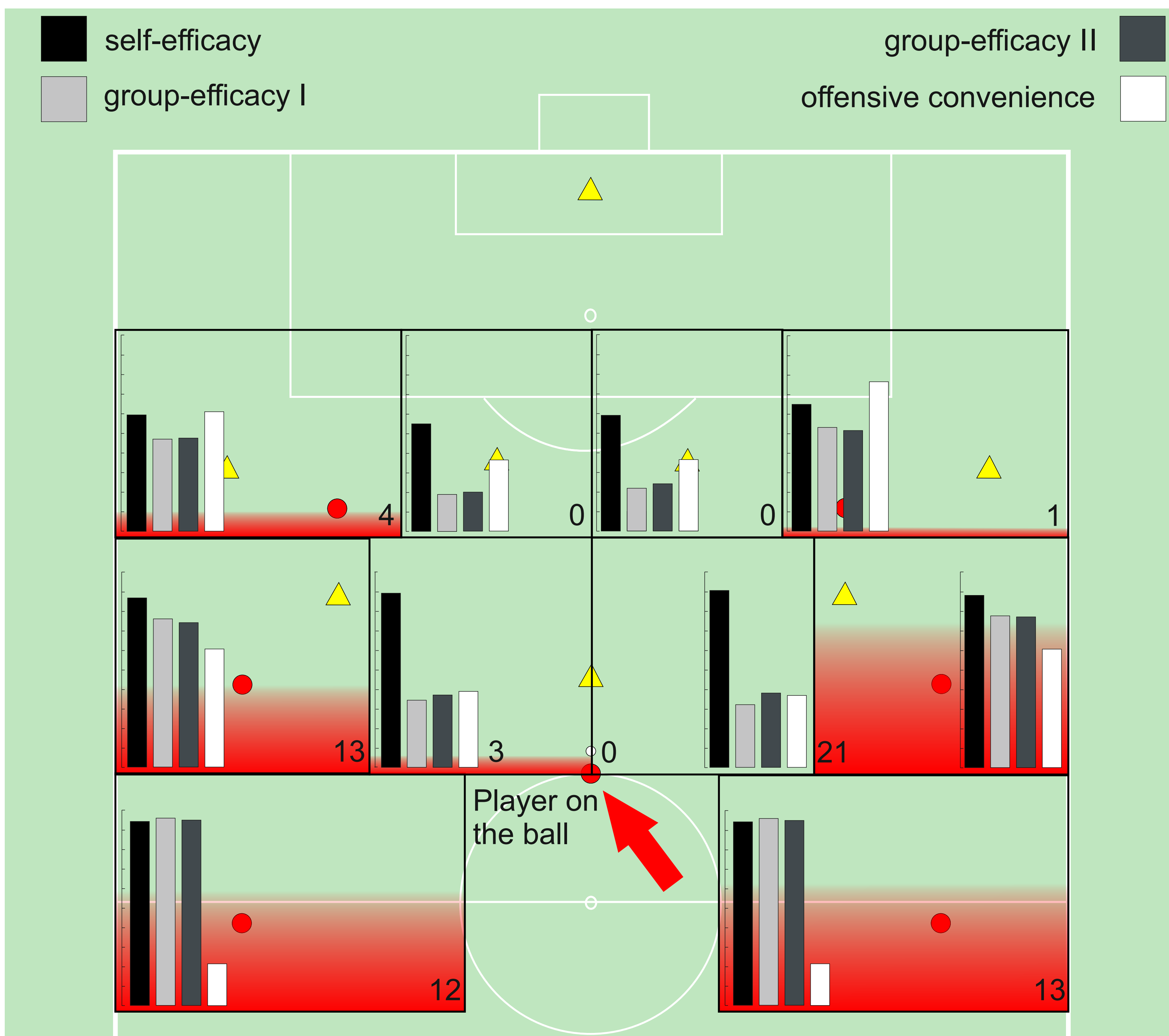


Figure 1: Zone specific ratings for passing related self-efficacy, group-efficacy I and II, and offensive convenience (histograms). Red shading indicates how often passes were played into the respective zones. The absolute number of observed passes is indicated for each zone.

### Results

Analyses showed that zone- and domain-specific efficacy beliefs significantly affected passing decisions. Because of collinearity with self-efficacy and group-efficacy I, group-efficacy II was excluded from the models to ease interpretation of the results. Generally, zones with high values in the subjective ratings had a higher probability to be chosen as passing destination ( $\beta_{\text{self-efficacy}} = 0.133$ ,  $p < .001$ , OR = 1.142;  $\beta_{\text{group-efficacy I}} = 0.128$ ,  $p < .001$ , OR = 1.137;  $\beta_{\text{offensive convenience}} = 0.057$ ,  $p < .01$ , OR = 1.059). Characteristic differences were found for the two score conditions. While group-efficacy I was the only significant predictor when teams were 1:0 ahead, ( $\beta_{\text{group-efficacy I}} = 0.379$ ,  $p < .001$ ), only self-efficacy and offensive convenience contributed to passing decisions when teams were 0:1 behind ( $\beta_{\text{self-efficacy}} = 0.135$ ,  $p < .01$ ;  $\beta_{\text{offensive convenience}} = 0.120$ ,  $p < .001$ ).

### Discussion

The results show how different domain-specific efficacy beliefs projected to distinct playfield zones contribute to the explanation of observed passing decisions. The study enables insight into how dimensions of the psychological landscape (Lewin, 1951) contribute to the perception of passing affordances. Furthermore, the decisional patterns revealed that in addition to self-regulating as individuals, athletes adopt a group-perspective and self-regulate as a member of a team.

### References

Lewin, K. (1951). In D. Cartwright (Ed.), *Field theory in social sciences: Selected theoretical papers by Kurt Lewin*. New York: Harper & Brothers.