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Beyond description! Why BAR-ELI failed to explain decision making in sports<sup>1</sup>

A Reply to: Risk-Taking Strategies in Sport and Physical Education: A Theoretical Model

BAR-ELI argues convincingly that the relation between possible decisions and future outcomes is fourfold. That is, outcomes can be analyzed as false negatives as well as positive hits that describe success and false positives as well as negative hits that describe failure in accepting or rejecting decisions. This is nothing more than describing the space of all possible outcomes. The crucial and theoretical challenge for me is the author's typology of risk-taking strategies, which relate to the amount of the four possible outcomes to assumed conservative (ambitious or non-ambitious) versus gambler (ambitious or non-ambitious) strategies. This typology describes quite well the observable differences between individual decisions in sports. But it does not explain how a coach, player, or manager will accept or reject the decision nor what mechanisms drive decision making in sports and physical education under limited time and limited knowledge. BAR-ELI's hypothetical team manager who is willing to buy a new player can increase his prediction of the player's future performance. To do that the team manager can use procedures by 'which information is gathered concerning the new

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<sup>1</sup> This reply is written in English because it is the language of the original paper of MICHAEL BAR-ELI in SPORTWISSENSCHAFT and to ensure that BAR-ELI has the opportunity to react to the reply.

player and/or use better procedures for rationally integrating this data' (BAR-ELI 2001, 74). At this point theoretical disagreement arises and has to be clarified.

First BAR-ELI's concept borrows ideas from a number of classical theories. One is KAHNEMAN/TVERSKY'S (1979) prospect theory, which proposes environmental effects on decision making under risk. In one extension called the cumulative prospect theory (CPT), TVERSKY/KAHNEMAN (1992) assumed that people reduce risk in winning situations, whereas they increase risk in losing situations (TVERSKY/FOX 1995). These assumptions are not easy to transfer to the domain of team sports, where we see in winning situations in Basketball that players repeatedly tend to play more riskily and show unusual and risky behavior when the team is leading by say 20 points 5 minutes before the end of the game. In addition, individual player's preference reversals (RAAB 2001) within the same decision cannot explained by CPT. BAR-ELI/TRACTINSKY (2001), on the other hand, refer to TVERSKY/KAHNEMAN to explain decisions in basketball in stressful situations by describing the errors of a team's offensive and defensive behavior (hits and errors) that are without doubt influenced by many factors besides the decision itself (e.g. conditional factors). In summary, CPT may not be a good starting point to explain decision-making in sports for at least three reasons.

*First*, CPT assumes risk behavior in relation to win and lose situations from lottery research, in which it matters to a student participant if the winnings are \$10 or \$20. But it does not mean so much if a player/team wins the game with 10 points versus 20 points.

*Second* and equally important is that BAR-ELI proposes a theoretical model for decision making in sports and physical education without proposing a falsifiable model. No predictions are made, neither about situational factors (e.g. in which situation what strategy is used) nor about the environmental factors or personal characteristics that determine a shift of criteria used in the model. This is crucial because it allows post hoc explanations such as, that participants with a higher number of positive hits used a non-ambitious gambler strategy in a merely descriptive manner. Furthermore if the relation between situational factors and

decision-making strategies is not explicitly integrated in the model intraindividual differences can be explained just as well by post hoc reference to the four possible outcomes and related conservative or gambling strategies. Again, if no predictions are made BAR-ELI's model runs into the same problem that the heuristic-and-biases program demonstrated earlier by adding heuristics to the experimental data.

*Third* and most important for a model of decision making in sports and physical education is its practical value, which BAR-ELI highlights in the summary and conclusion section. This value evaporates when the practical implications are analyzed, which he himself summarizes on a first thought 'some what blend'. Even his second thought is hardly more convincing, that others are not doing better.

In summary three points of disagreement are presented that reduce the theoretical and practical value of the risk-taking strategy model of BAR-ELI. The final quote of King Solomon that 'there may be nothing new under the sun' represents a non-ambitious conservative strategy. We should not accept this conclusion. The value of the presented model is without any doubt its descriptive power and its attempt to typologize risk-taking strategies. But this we could argue is what we knew before. A crucial challenge for the future is to explain decision-making under limited time and limited knowledge in the domain of sports and physical education. Rather than end with a simple criticism I will briefly outline in the concluding remarks what an alternative perspective can offer which I call the *bounded rationality program for decision making in sports and physical education*.

Bounded rationality, a concept introduced by SIMON (1982) expresses the idea that humans predominantly need to satisfy rather than to optimize (GIGERENZER 2000). Models of bounded rationality describe how a decision is reached by describing the heuristic processes or proximal mechanisms rather than merely the outcome of the decision, and they describe the class of environments in which these heuristics will succeed or fail (GIGERENZER/SELTEN 2001, 4). The team manager in BAR-ELI's example from the bounded rationality perspective

would decide without utilities and probabilities. If one reason would satisfy the aspiration level the team manager would not optimize the decision by gathering more and new information. BAR-ELI on the other hand, as the quote of the team manager indicates postulates a very rational decision making process integrating multiple information much as subjective expected utility theories in many colors have in the past (EISENFÜHR/WEBER 1999). In other words, bounded rationality takes into account that the decision maker knows about his limited time and knowledge resources and uses this embodied knowledge to make fast and frugal decisions with high quality (GIGERENZER/GOLDSTEIN 1996). An adaptive toolbox of very simple heuristics can outperform or do equally well as classical models of rationality. The simple heuristics consist of three building blocks for guiding search, stopping search, and making a decision (GIGERENZER/TODD/ABC RESEARCH GROUP 1999). Furthermore, these simple heuristics are domain specific. For instance, in open sports situations for example, team sports, under limited time the 'Take-The-Best heuristics' (GIGERENZER/TODD/ABC RESEARCH GROUP 1999) is theoretically plausible and it is an open empirical question in which situations it succeeds and in which situations it fail. In contrast, a basketball player embodying classical rationality would compare each option on every attribute in deciding whether to throw to the basket or pass to a teammate.

The understanding of decision making in sports and physical education from a bounded rationality perspective can be summarized as challenging and testable. Very few attempts have been made to explain decision making in sports, but I would like to convince more to move beyond description.

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