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Title: **Optimal Action in High Speed Disciplines. An Empirical Approach to the Psychological Regulation of Action based on the Action Spaces of Speed Sports and Jet Aviation.**

Introduction / Objective: This study examines the constitutive elements of optimal action on the basis of experience reports from experts in speed disciplines. A theoretical framework, formed from action-space-specific, cognitive-psychological and action-theoretical considerations, enables an in-depth investigation of person-environment interaction. Using the action spaces of speed sports and jet aviation, which serve as controlled environments, as superformed microworlds that enable a laboratory-like investigation, strategies for optimal action regulation and decision-making under time pressure are examined. Due to the potentially life-threatening consequences for the acting experts, scientifically informative results are expected.

Methods: Twenty-four experts in speed disciplines (Formula 1 car racers, motorcycle racers, downhill skiers, bobsleigh pilots, skeleton racers, fighter jet pilots, airplane pilots) were qualitatively interviewed and their subjective theories about their strategies for regulating optimal action were reconstructed and systematized. The qualitative interview transcripts were analyzed according to the concept of grounded theory. The analysis involved an iterative coding process (open, axial, selective) to identify and sort patterns, themes and concepts. An inductive and abductive reasoning process was used to develop an in vivo category system that enabled the formulation of hypotheses to explain optimal action regulation based on the lived experience of the participants. This implied a prior in-depth reflection on the theoretical premises of the interpretative-constructivist paradigm as well as on the research process, the criteria of the expert sample and the researcher as an instrument.

Result: The empirically derived in vivo category system leads to eight hypotheses that were compared with psychological concepts such as perception, cognition, emotion, motivation, consciousness, volition, personality, decision-making and organizational structure of action. According to these hypotheses, experts regulate action along the recurring phases of preparation, realization and interpretation. In the preparation phase, experts emphasize the importance of visual anticipation and emotional evaluation of cognitively planned actions in order to create motivation and concentration. In the realization phase under time pressure, experts delegate decision-making and motor action regulation to unconscious automatisms or intuitions that they have cultivated over decades of experience. Experts seem to know and accept the fundamental limits of physiological processes. In the interpretation phase, experts evaluate and integrate what they have learned and force their organism to adapt to the next action requirements. Over time, the experiences are integrated into the expert's meta-knowledge, which represents an integrative model for optimal action.

Conclusion/Implication: The empirically derived integrative model of optimal action suggests implications for training science, action theory, cognitive psychology and developmental psychology. These conclusions may also be of interest to many fast-paced work environments outside of sport and aviation. This research aims to relate the empirical and theoretical findings to individual and collective situations in everyday sports life as well as to developments in economic or social spheres of life that lead to an increased speed of change and decision-making under time pressure. However, further in-depth studies are recommended.

Key-words: Psychological performance under pressure, Qualitative empirical research, Decision making, Action theory, Emotions, Automatisms, Speed disciplines