

Performance Psychology

Perception, Action, Cognition, and Emotion

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Chapter 2

Theoretical Framework of Performance Psychology: An Action Theory Perspective

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Performance is a constituent element of human life and a particular objective of manifold everyday activities. Consequently, it is addressed from the perspective of different scientific disciplines ranging from philosophy to biochemistry. In psychology, performance became a traditional topic in various fields of fundamental and applied psychology, e.g., in educational psychology, occupational psychology, clinical psychology, and sport psychology. Aside from the test diagnostic assessment of “classic” performance variables (e.g., reaction time, concentration, intelligence), numerous empirical studies are focused on the *efficiency and vulnerability of mental functioning* on the one hand and on *social interaction in performance settings* on the other. Typical issues are learning and memory; problem solving; decision-making; movement control; time management; learning and achievement motivation; coping with stress, anxiety, and failure; error prevention; performance-related mental, emotional, and behavioral disorders; burnout and dropout; as well as team building; division of tasks; allocation of responsibilities; teamwork skills; conflict management; mobbing prevention; and leadership style. In applied sport psychology, “performance psychology” commonly covers a toolbox of intervention techniques related to “mental power,” “mental strength,” “mental toughness,” “mental fitness,” or more specifically to self-confidence and self-efficacy, for example, self-motivation, self-programming, goal-setting, self-talk, imagery, visualization and mental training, stress-inoculation, cognitive reframing, attention control, relaxation, and biofeedback (see, e.g., Dosil, 2006; Hackfort & Tenenbaum, 2006; Hardy, Jones, & Gould, 1996).

In spite of those multifarious aspects, there has been, however, neither a comprehensive and consensual definition of performance psychology until now nor an integrative theory that provides the potential to systematically guide research and application, thus making the dynamic complexity of human

performance sufficiently understandable, controllable, and communicable. So, it is worth paying particular attention to these issues. This will happen in three theory-oriented steps: First, the psychological perspective on performance is characterized, providing a preliminary understanding of performance psychology and its subject area. The second and main step addresses the needed (meta-) theoretical foundation of performance psychology. Accordingly, the focus is not on listing various performance-related theoretical concepts (e.g., for team sports thoroughly carried out by [Lebed & Bar-Eli, 2013](#)) but on embedding and considering the performance issue within the overall context of human action organization. Therefore, essentials of the action theory perspective as developed by the authors are outlined and specified with regard to the issue at hand. Third, particular attention is given to the functional role of emotions in action organization. This will contribute to further illustrating action theoretical postulates and to a more proper theory-based understanding of emotional states and processes with special regard to both performance and in general.

DEFINITION AND SCOPE OF PERFORMANCE PSYCHOLOGY

Performance and Psychology

The general task of performance psychology is related to the description, explanation, prediction, and optimization of performance-oriented activities in accordance with general and domain-specific ethical standards. The psychological perspective on performance comprises three issues: (1) the *psychological fundamentals* of performance-oriented activities in various action domains such as labor, politics, arts, music, or sports; (2) *psychological transfer effects* of performance-oriented activities in particular with regard to personality development, self-esteem, time management, stress control, communication skills, etc.; and (3) optimization of the capability to achieve demanding *mental tasks*.

This understanding refers to *different agents*, for example, individuals, groups, and organizations, young and elderly, as well as people with or without disabilities. It covers *different motives, domains, and kinds of activity*, for example, school/academic education, the whole range of professional activities, health-oriented sport and exercise, and elite sports, housekeeping, and playing music, as well as strange and/or extraordinary performances documented in the *Guinness World Records*. Even health, well-being, youthfulness, beautifulness or life expectancy are increasingly considered to be products of more or less successfully self-managed activity for which the person is self-responsible. In addition, the preceding definition includes *different proficiency levels* (e.g., novices and experts, amateurs and professionals) as well as *different criteria of performance*, for example, primary criteria related to the action itself and its direct results (frequency, duration, speed, accuracy, novelty, required effort, and their combinations), and secondary criteria in the sense of external/extrinsic social evaluation and feedback. According to [Bem's \(1972\)](#) "self-perception theory," the latter follows a simple logic: If I (or someone else) receive recognition such

as praise, awards, applause, or many scientific citations, then the corresponding performance must have been outstanding! (As we all know, that is often a misleading conclusion!)

For a better understanding of the psychological perspective on performance, it is necessary to distinguish two functional aspects of performance: (1) *performance as a means to an end* with regard to the motives and interests that are intended to satisfy by the consequences of a performance action; (2) *performance as an end in itself*, that is, the accent is on the self-reinforcing performance activity itself and its progressive perfection. In this sense, striving for excellence more or less turns into functional autonomy.

Furthermore, we must be aware of the formally twofold usage of the term “performance” (1) as related to a *class of specific actions and outcomes* or (2) as a more or less marked *dimension of any kind of human action* (that is the position preferred here).

Structure of Performance Orientation

The key features of any *performance orientation* can be summarized as follows (see Figure 1):

1. **Reference Standards:** Feeling challenged to set/raise and to meet/exceed demanding reference standards, which are considered as binding for the evaluation of the course and outcome of an action and specified by the habitual and/or actual aspiration level. According to well-known conceptions of achievement motivation, typical references are individual’s prior performance (*Individual Reference Standard*; e.g., actual “handicap” of a golf player), the performance of relevant others (*Interindividual Reference*

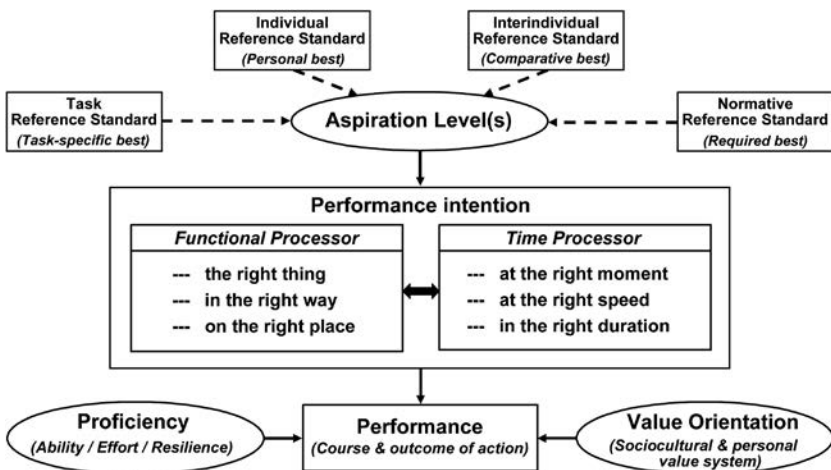


FIGURE 1 Structure of performance orientation (broken lines = optional relations).

Standard; e.g., handicap or actual results of other golf players on a tour), the demands of a given task (*Task Reference Standard*; e.g., the “par” as the strokes calculated for one “hole” in golf), and/or a specific standard value that must be met (*Normative Reference Standard*; e.g., maximum handicap needed to be allowed to play on a golf course).

2. *Performance Intention*: Specification of both the *functional* and the *temporal* components of an action (see Thomas & Weaver, 1975; cit. Zakay, 1993, p. 64). Accordingly, performance orientations may differ with regard to the range and precision of the components concerned.
3. *Agent Causality*: Attributing the course and outcome of an action to the proficiency and responsibility of the agent (see Heckhausen, 1980, p. 112). Accordingly, the focus of performance attribution can be on ability and/or effort and/or resilience and/or outcome.
4. *Value Orientation*: Striving for excellence means intending/providing a valuable contribution related to the sociocultural and/or personal value system. That is, the course and outcome of an action is evaluated from the perspective of meeting, adding, or creating relevant values.

These four aspects provide essential performance markers and the target points for the analysis and the compensation of performance deficits as well. “Performance” is a *relational* concept that depends on the applied reference standard and aspiration level in relation to the individual’s proficiency and the personal and sociocultural value systems: Objectively different courses and results of an action may indicate similar *relative* performance values. Attaining a goal is not identical with success, success is not identical with high performance, and high performance is psychologically not identical with objectively best performance ever. Thus, the psychological meaning of performance can be neither reduced to absolute excellence nor assessed without regarding the kind, regularity, and comparability of performance preconditions and task demands.

Characteristics of Peak Performance

As mentioned previously, the objective of applied performance psychology is optimization of performance-related activity. The term *optimization* refers to a *maximin principle* of intervention with respect to a single action as well as to the individual’s long-term performance orientation. Specifically, that means *maximizing* the efficiency of performance behavior and *minimizing* unfavorable side effects and undesired long-term consequences.

The *maximizing intention* refers to developing, enhancing, maintaining, and reestablishing the habitual and actual *motivation*, *competence*, and *resilience* for efficiently dealing with high-demanding tasks. Usually addressed is a broad range of target qualifications such as setting a conclusive series of clear, realistic, and challenging goals; willingness to invest time, resources, and effort needed to achieve the goals; overcoming obstacles and injuries, resistance against temptations and distractions; bearing deprivations, discomfort, and setbacks; coping with stress, failure, fatigue, monotony, and satiation; and acquiring and

realizing efficient action strategies and skills. *The minimizing intention* includes, for instance, strategies and measures for efficient recovery, injury prevention, and health care, psychological crisis management, career counseling, and career transition.

Striving for peak performance implies much more than attaining qualitatively and/or quantitatively absolutely outstanding action results achieved under regular conditions. In particular, three aspects are worth being added:

1. *Performing on top implies acting at one's limits.* This results in a very vulnerable balance of high-performance goals, increased risk-taking, and low tolerance for errors. Even minimal fluctuations in concentration can result in errors followed by fatal consequences with regard to a broad range of potential personal, social, and economic disadvantages or damages.
2. *Performing on top requires more or less neglecting other orientations and domains of human life and activity.* It includes allocation of all temporal, personal, social, and economic resources needed for the achievement of one superior goal: enhancing and maintaining performance. Thus, striving for excellence means focusing attention on performing a given task and focusing life on improving performance.
3. *Peak performance is principally public performance.* It is an event that attracts the attention of spectators, media, public figures, organizations, and institutions. Thus, success is publicly known success, and failure is publicly known failure.

In this threefold sense, the preconditions of peak performance are also potential causes of performance crises.

The Action Paradigm—A Meta-Theoretical Perspective on Performance

The Primacy of Action

As it has been illustrated, human performance is (1) a highly complex phenomenon that is (2) attributed to an active agent who (3) processes a task within (4) the given environmental setting. This dynamic complexity cannot be sufficiently analyzed by specialized investigations of isolated if-then relations nor from the perspective of a single scientific discipline. What is needed is a guiding conception providing a high potential for intra- and interdisciplinary integration focused on the key element of the performance issue, that is, *human action*.

Action theoretical conceptions have been developed since the 1940s at the latest in different countries and in different scientific disciplines, that is, philosophy, linguistics, sociology, economy, pedagogy, and especially in various subdisciplines of psychology (see Nitsch, 2004 for an overview and references). Since the 1970s, the action perspective increasingly became a leading idea for the theoretical foundation of sport psychology (see, for an overview of various approaches, e.g., Hackfort, Munzert, & Seiler, 2000a; Kaminski, 2009; Kunath & Schellenberger, 1991; Nitsch, 2004; Volpert, 1974). Specific

theoretical aspects were additionally conceptualized, for instance, by Allmer (1997), Munzert (1997), Quinten (1994), Samulski (1986), Schack (2010), Seiler (1995), and Wiskow (1992).

In summary, the action approach is based on a long-time and widespread tradition of integrative thinking that is in continuous progress. From our point of view, the action theoretical perspective can be characterized by three fundamental assumptions:

1. *The basic nature of humans is substantiated by the necessity and capability of organizing life by actions.* Thus, action is considered as the key reference for theory building, research, and intervention in the human sciences (see, e.g., Cranach, Kalbermatten, Indermühle, & Gugler, 1980, p. 279; Gehlen, 1971, p. 23; Groeben, 1986, p. 59ff.; Hauser, 1948; Nitsch, 1975; Rubinstein, 1984, p. 229). Action is understood as intentionally organized behavior within a meaningfully structured situational context (see also Hackfort, Munzert, & Seiler, 2000b). This includes both doing and omitting something deliberately. In particular, with respect to the performance issue, it is important to have in mind that any action implies a quadruple function in varying accentuation: (1) *exploration function* in the sense of gathering new information and experiences; (2) *construction function* in the sense of actively solving present problems and tasks; (3) *protection function* in the sense of guarding against threats and disturbances; (4) *presentation function* in the sense of demonstrating personal characteristics as a means of impression management.
2. *Action is a system process, that is, the integrated response of an agent to his or her present situation in the world.* Constitutive for any action is (1) the dynamic interrelation of person and environment; (2) the coordinated interaction of principally all intrapersonal functions (see, e.g., Lersch, 1962, p. 461); and (3) the temporal and functional embedding within the action continuum with regard to the individual's action biography and future perspective. The present action is at the same time the endpoint of the previous and the starting point of the future development. The system perspective has a very challenging methodological consequence, as illustrated in Figure 2, for psychological interrelations in traditional terminology. The active attributes of the functional components of a dynamic self-optimizing system are *mutually interdependent*: Variations in the state of one component more or less results in adaptive alterations in the state of the others. Thus, the usual empirical investigation of unidirectional if-then relations, e.g., the impact of a certain emotion on cognitive performance, is inevitably insufficient.
3. *Psychological processes, states, and traits are considered as fundamentally related to action.* On the one hand, the analysis and optimization of an action must specify the role played by the different psychological functions in the regulation of the action under study. This implies that the particular psychological orientation, activation, and control function will be specified. On the other hand, the impact of the course and outcome of an action on the short- and long-term modification of psychological functions is to be taken

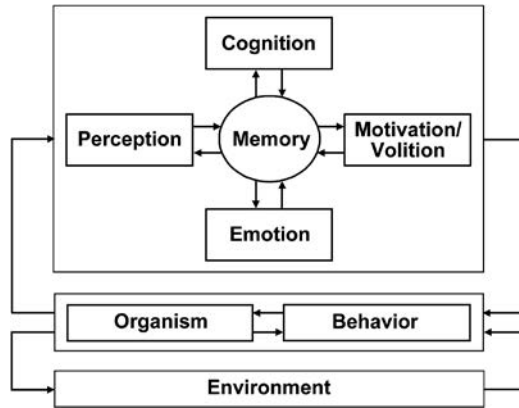


FIGURE 2 Illustration of the functional network of an action system by using traditional terminology (based on the first author's former lectures on introduction to sport psychology at the German Sport University Cologne, 1993ff.).

into account as, for instance, illustrated by the potential interrelation of sport activity and mental fitness.

The implications of this perspective cannot be outlined here at full length. On the basis of a series of the authors' previous publications on action theory, the focus will be on summarizing some selected aspects that may contribute to a more differentiated and comprehensive understanding of the performance issue.

Intention—The Organizing Principle of Action

Actions are actively organized (1) with regard to their anticipated and intended consequences and (2) based on internal representations. The meaning of intention is often reduced to setting a particular goal to be achieved. From an action theoretical point of view, intention is to be considered more adequately as a set of operational definitions with respect to satisfying personal needs within a framework of individual values. This understanding implies the differentiation of four *intention components* that may be differently accentuated and elaborated on a case-by-case basis (see Nitsch, 1996, 2005):

1. *Value Intention*: Intention formation happens within a framework of superior values. Values—like fair play in sport—may be understood as landmarks in the action space that define the limits for acceptable action options. Positively defined, the values we refer to constitute the particular *moral significance* of an action.
2. *Outcome Intention*: It refers to the needs to be satisfied, on the one hand, and the anticipated, desired consequences of action, that is, its *purpose*, on the other (e.g., performance enhancement, self-affirmation, social recognition, health improvement, welfare, and professional career).

3. *Goal Intention*: An action goal is defined as an intended and operationally defined action result (e.g., performance score in sports) that should be instrumental and thus required for fulfilling the purpose of an action by attaining the desired action consequences. Achieving the goal of an action, however, does not necessarily imply achieving the action purpose.
4. *Implementation Intention*: To actually achieve the goal, appropriate *means* as well as situational *cues* for the initiation of an action are to be defined. This is where implementation intention comes in (e.g., “On next Tuesday, 18:00h, I will start with training X”). Cues are considered as if conditions in an if–then relationship. They are very important for the more or less automatic activation of intended behavior, as was demonstrated by the studies of Bargh and colleagues in the early 1990s (see, e.g., [Bargh & Gollwitzer, 1994](#)).

Beyond defining values, purposes, goals, means, and cues for initiating a certain action, intention formation also involves the definition of *interrupting* and *goal-terminating mechanisms* related to specific cues (see [Simon, 1967](#)): If, and only if, particular cues occur, then the ongoing activity will be interrupted for a certain period of time to respond to unexpected urgent events, or the activity will be terminated if the goal is achieved or perceived as not attainable. Accordingly, we have to complete the intention structure with two additional aspects that are of high importance for an efficient organizing of one’s actions: *interruption intention* and *goal-terminating intention*.

Emphasizing the intentional organization of actions implies a fundamental methodological consequence, that is, shifting the focus from causal explanation to *intentional explanation* related to a pragmatic syllogism. The key question now changes from “Caused by what?” to “*For what reasons does somebody do or omit something?*” That is, we explain an action by identifying the subjective premises from which the action is deduced as a subjective-logical conclusion. The practical consequence is that a central approach to action modification refers to modifying the individual’s *action logic*. In this sense, intentions can be understood as complex, more or less complete, and conclusive *argumentation patterns* that subjectively constitute the execution of an action. The strength of a performance intention then depends on how far the reasons for an action are subjectively perceived as (1) acceptable, (2) convincing, and (3) sufficiently operationally defined.

The Action Space and Its Situational Configuration

Actions are multifaceted events within a multidimensional *action space*. The action space is defined by the principal options and limitations of an agents’ activity; the present constellation specifies the *action situation* ([Nitsch & Hackfort, 1981](#); see also [Hackfort, 1986](#); [Nitsch, 1997, 2004, 2009](#)). The structural characteristics can be summarized as follows (see [Figure 3](#)):

1. *What we are actually doing or omitting as well as the kind and degree of our well-being depend on the attributes and interrelations of three components:*

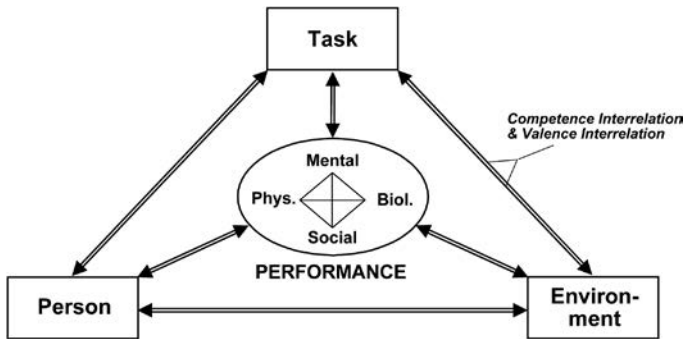


FIGURE 3 The situational context of performance-oriented action.

person, environment, and task. It is important to be aware of the transactional nature of the person–environment–task interrelation: An objective or subjective change of one component triggers a change of the others. For example, the perception of one’s capabilities will change depending on the given task; changing personal properties, for example, due to increasing fatigue, will result in a change in the perception of task difficulty and environmental conditions. In this sense, for example, an injury or other performance restrictions are more than changes in a person’s abilities and reduced resilience but imply at the same time changes of the objective and subjective personal world.

2. *We act as physical, biological, mental, and social beings in a physically, biologically, mentally, and socially structured world while performing more or less equally structured tasks.* Changes of one of these aspects will potentially change the precondition of an action directly and/or indirectly by modifying the functioning of the others. We will return to that point later.
3. The subjective definition of one’s own situation, that is, the perceived attributes and configuration of the situation components, establishes the psychological basis of intentional behavior. The entire situation and the specific relevance of its components is individually appraised in terms of two aspects: (1) the *action competence*, that is, the perceived degree of controllability of the situation by the subject dependent on the expected effort and the probability of success; and (2) the *action valence*, that is, the perceived urgency and importance of optimizing a situation by one’s own action. Then, deciding on acting or not acting depends on the perceived degree of valence and competence, and the valence–competence relation. Consensual situation definitions are essential prerequisites of efficient social interaction and communication. Dissonant definitions are one important cause of social conflicts and performance decrements in and of a group or team (Nitsch & Hackfort, 1984). Optimizing these situational features is the general objective of both the individual’s action as well as the interindividual coordination of actions and the general intention of practical interventions as it is characteristic for performance management.

The Functional Architecture of Actions

Actions are characterized by a multimodal functional architecture that is important to be taken into account in analyzing and optimizing performance activities: Integrated by the intentionality principle mentioned previously, the entire organization of an action is particularly based on (1) different organization levels, (2) a triadic phase structure, and (3) three functional systems of action control. Some of the essential features are summarized next (for more details see, e.g., [Nitsch, 2004, 2009](#); see also [Hackfort, 2006](#)).

System Levels of Action Organization

The organization of action involves the interplay of four personal system levels: the *physical*, the *biological*, the *mental*, and the *social organization level*, which are characterized as follows (see also [Figure 3](#)):

1. *Each level of action organization is governed by specific rules of functioning and establishes specific sets of objective constraints and subjective options of actions*, that is, *physical* ones (in the sense of anthropometric properties, e.g., body height, leg length, weight, volume etc.; cinematic and dynamic preconditions), *biological* ones (especially referred to the neurological, neuromuscular, endocrine, and metabolic functioning of the organism; motor skills), *mental* ones (e.g., intentions, cognitions, feelings; mental skills), and *social* ones (especially internalized social role expectations; social skills). We do or omit something at the same time under the influence of physical laws, biological preconditions, mental processes and representations, and social values, norms, attitudes, and rules.
2. *The organization levels are considered to be functionally interrelated*. Each level can trigger the functioning of the other ones. In particular, anthropometric properties (physical level) have potential impact on energy expenditure during action (biological level) or may even prime or shape mental processes (see, e.g., the embodiment issue); internalized social values and expectations (social level) potentially constrain the individual's decision-making and intention formation (mental level).
3. *Different personal disposition levels specify different relations to a given task and the environmental context* (see the situation concept mentioned earlier).

Keeping these aspects in mind, the main intention of performance management is optimizing the functioning of a *system* based on empirical findings related to the *system's dynamics*.

The Phase Structure of Actions

Actions cannot be reduced to their overt behavioral part of execution. From a psychological point of view an action principally passes through a sequence of three phases performing anticipation, realization, and interpretation functions

in the course of an action (Nitsch, 1975, 2004; see Figure 4). The highlighted processes represent key factors for the mental foundation of performance on the one hand and essential links for mental performance enhancement on the other.

1. *Anticipation Phase*: In the first phase, an action is psychologically conceptualized. Accordingly, the functional focus is on situation analysis and subjective situation definition, action planning, and intention formation associated, for instance, with processes of decision-making.
2. *Realization Phase*: In confrontation with the reality and depending on the actual circumstances is the execution of the intended behavior initiated or cancelled. The functional focus is on the automatic, emotional, and cognitive processing of an action (see below).
3. *Interpretation Phase*: Finally, the course and outcome of an action is retrospectively analyzed and evaluated with regard to the predeterminations made in the Anticipation Phase. Particularly, the functional focus is on outcome assessment, attribution of causes to success or failure, and the reevaluation of the situation as a starting point for subsequent actions.

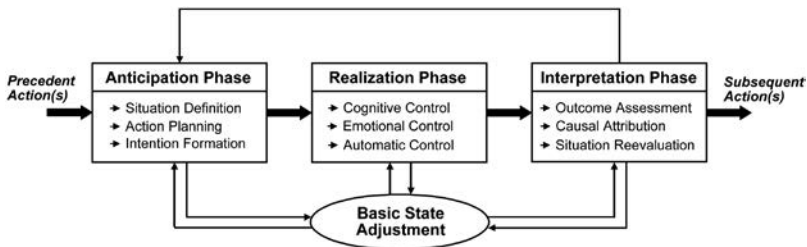


FIGURE 4 Triadic phase structure of performance-oriented action.

In each of these phases, special deficits or disturbances that impair the entire course of an action and threaten its intended outcome may occur. This may happen, for instance, in the case of reducing the available time for anticipation processes under time pressure, distracting spectator reactions in the Realization Phase, or time-consuming overattention to action evaluation in the Interpretation Phase. Furthermore, each of the phases mentioned above (as well as the included functions) can become a separate three-phased action on its own in the sense of *functional autonomy*.

In addition to that time sequence of action organizing functions, a second general aspect has to be taken into account: the specific *adjustment of the agent's basic state* as a necessary precondition of the optimal processing of the action phases (see Figure 4). Accordingly, psychological performance enhancement includes both the optimization of the phase-specific functions (e.g., goal setting, mental training) and the optimization of the agent's state (e.g., relaxation training, self-motivation).

In summary, to understand sufficiently what happens in the course of an action, we have to take into account what happens in each of the three phases:

anticipation, realization, and interpretation. In practical consequence, psychological improvement of performance includes the optimization of both the various processes and the entire phase structure of an action at hand.

Functional Systems of Action Control

According to empirical action analyses and stimulated by evolution theory, particularly with regard to the gradual differentiation of functional systems of behavior control throughout the development of humankind, human intentional action organization is considered to include three interrelated and specifically operating functional control systems: *the automatic, emotional, and cognitive systems of action control* (Nitsch, 1985, 2004; see also Hackfort, 2006). Each of them contributes specifically to the overall organization of an action with respect to orientation, activation and regulation functions, and may become dominant in the case of habitual, emotional, or voluntary action.

1. *Automatic Action Control System*: It provides immediate and quick adaptation to relatively simple and stereotypic conditions of the present situation. The basic principle is the automatic reaction to specific stimuli or cues by preestablished modes of behavior. The underlying learning processes include, in particular, respondent and operant conditioning as well as the automatization of behavioral or mental processes.
2. *Emotional Action Control System*: In dissent from some other emotion concepts, emotion is understood as a basic function in the orientation, activation, and regulation of actions. The functional focus (and advantage) is on the holistic orientation and quick synchronization of complex cognitive and psychomotor processes. Reactions are not triggered directly by specific stimuli but indirectly triggered and shaped by the individual's emotional labeling of the present situation, for example, as threatening or joyful.
3. *Cognitive Action Control System*: Its functional focus is the long-term adaptation to complex, variable, novel, and above all future conditions. With this system, the relation of situational conditions and action is differently established, that is, by cognitive processes. Thus, new types of action organization come into play: conscious situation analysis, anticipation, and evaluation of action situations as well as learning, goal setting, planning, and action monitoring based on symbolic, especially verbally encoded mental representations, and the insight in structural and functional relations.

These three functional systems of action control are principally designed for an integrated contribution to the overall organization of an action. Beyond their specific functions, they can not only mutually influence and support, but also disturb or impair the optimal functioning of each other. Thus, the situation-specific tuning and synchronization of the three systems' activity becomes an essential task of performance management.

The central message to performance management with general respect to the functional action architecture can be summarized as follows: The guiding

question in research and intervention is not asking *whether* physical, biological, mental, or social aspects, anticipation or interpretation processes, automatic, emotional, or certain cognitive conditions play a role at all. The question is *how* they come into play and *what* is their special—favorable or unfavorable—contribution to the phenomenon under study. This will be exemplarily portrayed next with special respect to emotions.

Functionality of Emotional Processes with Special Reference to Performance

While analyzing the emotion–performance relationship, the functional link to the biological and social (sub-)systems is essential and especially the interrelationship with cognitive processes in action regulation as it is stipulated above. Emotions are not action-decoupled units or detached entities interacting with actions as described by Hanin and Ekkekakis (2014). Emotions are generated in the course and by the result of an action, and in turn, they are influencing the action process (see also, e.g., Rubinstein, 1984, p. 582). In this spirit already, Piaget (1954; see also Piaget & Inhelder, 1972) pointed out that affective and cognitive processes are complementary, irreducible to each other, functionally linked, and not in a cause–effect relationship. Speaking about a differential or basic emotion (see e.g., Ekman, 1992; Izard, 1972; Plutchik, 1970; Zajonc, 1980), a reduction to a single symptom like arousal is an inappropriate simplification, and it is necessary to consider that emotions are organized like syndromes “consisting of cognitive appraisals, action impulses, and patterned somatic reactions” (Lazarus, Kanner, & Folkman, 1980, p. 198f.). The outlined action theory approach assimilates these insights and provides a functional reference system for a sufficient understanding of emotions, affective processes, and the emotion–performance relationship and enables for a differentiated view of the functionality of emotions.

Multifacetedness and Functional Complexity

While it is the unique combination of cognitive and physiological processes and a certain action tendency that is characteristic for the experience and expression of a single emotion, the different components refer to various regulation processes in special action-regulation systems realizing specific functional purposes in the process of acting. Research on emotions in addition to this complex interplay is facing the difficulty that most of the time we are involved in various actions and these actions are in different phases of the action process. Thus, usually an affective state in which partially various emotions are included is experienced in daily life as well as in competitive or performance situations. Considering this functional approach and understanding, it is less surprising to find only low or moderate correlations in studies to examine, for example, the relation between a single emotion like anxiety and performance. Hence, the functionality of emotions is twofold: (1) emotions are generated and modified by acting, and (2) emotions are influencing action regulation (Hackfort, 1991; Nitsch, 1985).

In the process of action regulation, various functions and experiences of emotions can be differentiated (Hackfort & Birkner, 2006), as is summarized in Figure 5.

The functionality of emotions in action regulation can be summarized by experiencing an emotion to be pleasant or unpleasant and to be functional or dysfunctional. What is felt to be pleasant not always is beneficial, and what is experienced to be unpleasant not always is dysfunctional. To clarify the emotion–performance relationship, the temporary extension, the intensity, and the emotional pattern at that period of time have to be considered. Furthermore, in the analysis of the emotional impact for performance, it is important to recognize that the components of an emotion are functioning on different levels with various time courses and with respect to the action phase(s) and its regulation processes. Neurophysiological and cognitive processes are not running parallel in time, for example, in the actual genesis of emotions, hormone secretion needs more time than cognitions like worries to come up. When a composite of emotions is experienced when acting in a given situation, several emotions, each of them with a certain pattern of activation, and cognitions are varying in the time course. At the same point in time all of them are differently influential in action regulation, which has to be considered in the emotion–performance analysis. For such an approach, it is essential to refer to the complex dynamics, and consequently, assumptions like the inverted U-shaped relationship or an optimal zone are obviously insufficient conceptions to cover corresponding dynamics with respect to the performance execution.

Functional Disturbances

In addition, when discussing phenomena like what is described by choking, a system approach in the action analysis may be beneficial to uncover the functional role and develop a better understanding. First, choking has been shown to correlate with anxiety, fear of negative evaluation, and ineffective coping

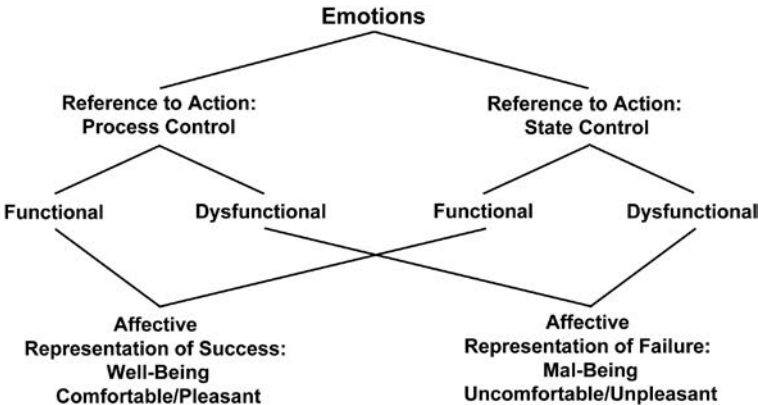


FIGURE 5 Functional relevance of emotions in action regulation.

(Marchant, Maher, & Wang, 2014). The authors also point out (p. 449) that it is a tautology to add “under pressure” as pressure is explained consistently to be a necessary condition for the phenomenon. All this appears logical following the first/original definition of choking as “performance decrements under pressure circumstances” by Baumeister (1984, p. 610). In the course of 25 years of research, a more sophisticated understanding turned out, and Hill, Hanton, Fleming, and Matthews (2009, p. 206) emphasized choking to be a “process whereby the individual perceives that their resources are insufficient to meet the demands of the situation, and concludes with a significant drop in performance.” The approach to analyze the process embedded in the perception of the demands of the situation, obviously the action situation is addressed, is a significant step forward toward the functional role with regard to the action at hand.

On the basis of the indicated calculation of demands and resources, it absolutely makes sense to “conclude” a drop in performance or to reduce or stop further investment. Following this understanding, choking serves the preservation of the functionality of the system in order to protect the system against serious injury or damage. Furthermore, when looking from a system perspective and with reference to the subsystems of action regulation, it would be possible to hypothesize that choking is developed by and indicates a conflict between processes in the subsystems and, thus, disturbing a proper action regulation and performance decrement is the effect. From this point of view, the performance decrement is not astonishing, surprising, inexplicable, or surmountable. The appropriate and relevant approach to enable, ensure, and enhance performance is to uncover the conflict and to manage the improvement of the tuning in the action regulation processes. This strategy would also be in line with studies providing proofs for performance improvement with experts in dual task designs.

Options in Emotional Processing

Furthermore, it has been well known for a long time from research on stress, resilience, and coping (for an overview see Nitsch, 1981) that the definition of the situation and the appraisal of resources and competencies in proportion to demands and the significance of the situation are essential for the development of (emotional) stress and its consequences. Quite similar to the threat or challenge definition of the situation, choking is not the only option, but concentration of attention, increase of effort, and so on, are the alternatives to reacting to pressure. If choking is coming up, it is associated with one of two tendencies and an increase of the probability to result in one of two completely different programs of the behavior system, which we know very well from the analysis of psychological crises: (1) playing dead reflex and (2) a storm of movement. The functional sense of such programs, as has been proved to be suitable in the process of evolution, with respect to performance is realized either by a search for orientation, in case it is assumed that there (still) are possibilities to achieve

performance (enhancement), or by a reduction of (any) activity as a protective response in case no (further) effort makes any sense. Sometimes, it is difficult to detect the intention of a separate action, but in a broader perspective, the meaningfulness for the system and suitability in the situation turns out, especially considering long-term achievement potential.

CONCLUSION

Human performance, in particular peak performance, would be insufficiently understood as being generated by single internal or external conditions. It is the end product of the dynamics of a complex system with regard to the intentional organization of task-related behavior within a meaningful environmental context. In this sense, the outlined action theory perspective provides a meta-theoretical frame of reference for efficiently dealing with the complexity of the performance issue:

1. It enables the continuous and constructive integration of concepts and findings from various fields of research to an overarching picture.
2. It provides general theoretical coordinates with respect to theory-building, the development of investigation strategies and methods, and theory-based intervention. In this sense, the action theoretical frame of reference may be considered as a *cognitive map* that helps to systematically structure research and intervention.
3. As a holistic conception of human action, it offers the theoretical links urgently needed for intra- and interdisciplinary collaboration in the performance domain.

REFERENCES

- Allmer, H. (1997). Intention und Volition [Intention and volition]. In R. Schwarzer (Ed.), *Gesundheitspsychologie: Ein Lehrbuch* [Health psychology: A textbook] (pp. 67–89). Göttingen, Germany: Hogrefe.
- Bargh, J. A., & Gollwitzer, P. M. (1994). Environmental control of goal-directed action: Automatic and strategic contingencies between situations and behavior. *Nebraska Symposium on Motivation*, 41, 71–124.
- Baumeister, R. F. (1984). Choking under pressure: Self-consciousness and paradoxical effects of incentives on skilful performance. *Journal of Personality and Social Psychology*, 46, 610–620.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6) (pp. 1–62). New York: Academic Press.
- Cranach, M. von, Kalbermatten, U., Indermühle, K., & Gugler, B. (1980). *Zielgerichtetes Handeln* [Goal-directed action]. Bern, Switzerland: Huber.
- Dosil, J. (Ed.). (2006). *The sport psychologist's handbook: A guide for sport specific performance enhancement*. Wiley: Chichester, WS.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6, 169–200.
- Gehlen, A. (1971). *Der Mensch. Seine Natur und seine Stellung in der Welt* [Man: His nature and place in the world] (9th ed.). Frankfurt am Main, Germany: Athenäum.

- Groebe, N. (1986). *Handeln, Tun, Verhalten als Einheiten einer verstehend-erklärenden Psychologie*. Wissenschaftstheoretischer Überblick und Programmwurf zur Integration von Hermeneutik und Empirismus [Action, doing, and behavior as units of a descriptive-explanatory psychology: Epistemological overview and program design for the integration of hermeneutics and empiricism]. Tübingen, Germany: Francke.
- Hackfort, D. (1986). *Theorie und Analyse sportbezogener Ängstlichkeit* [Theory and analysis of sport-related trait anxiety]. Schorndorf, Germany: Hofmann.
- Hackfort, D. (1991). Emotion in sports: An action theoretical analysis. In C. D. Spielberger & I. G. Sarason (Eds.), *Stress and emotion* (pp. 65–73). New York, NY: Hemisphere.
- Hackfort, D. (2006). A conceptual framework and fundamental issues for investigating the development of peak performance in sports. In D. Hackfort & G. Tenenbaum (Eds.), *Essential processes for attaining peak performance* (pp. 10–23). Aachen, Germany: Meyer & Meyer.
- Hackfort, D., & Birkner, H.-A. (2006). Funktionen von Emotionen [Functions of emotions]. In M. Tietjens & B. Strauß (Eds.), *Handbuch Sportpsychologie* [Handbook of sport psychology] (pp. 165–177). Schorndorf, Germany: Hofmann.
- Hackfort, D., Munzert, J., & Seiler, R. (Eds.). (2000a). *Handeln im Sport als handlungspsychologisches Modell* [Action in sport as an action-psychological model]. Heidelberg: Germany: Asanger.
- Hackfort, D., Munzert, J., & Seiler, R. (2000b). Handlungstheoretische Perspektiven für die Ausarbeitung eines handlungspsychologischen Ansatzes [Action-theory perspectives for the elaboration of an action-psychology approach]. In D. Hackfort, J. Munzert, & R. Seiler (Eds.), *Handeln im Sport als handlungspsychologisches Modell* [Action in sport as an action-psychological model] (pp. 31–46). Heidelberg: Germany: Asanger (2000).
- Hackfort, D., & Tenenbaum, G. (Eds.). (2006). *Essential processes for attaining peak performance*. Aachen: Germany: Meyer & Meyer Sport (UK).
- Hanin, Y. L., & Ekkekakis, P. (2014). Emotions in sport and exercise settings. In A. Papaioannou & D. Hackfort (Eds.), *Routledge companion to sport and exercise psychology* (pp. 83–104). London: Routledge.
- Hardy, L., Jones, G., & Gould, D. (1996). *Understanding psychological preparation for sport. Theory and practice of elite performers*. Chichester, WS: Wiley.
- Hauser, R. (1948). *Psychologie als Lehre vom menschlichen Handeln* [Psychology as science of human action]. Wien, Austria: Herder.
- Heckhausen, H. (1980). *Motivation und Handeln* [Motivation and action]. Berlin, Germany: Springer.
- Hill, D. M., Hanton, S., Fleming, S., & Matthews, N. (2009). A re-examination of choking in sport. *European Journal of Sport Science*, 9(4), 203–212.
- Izard, C. E. (1972). *Patterns of emotion: A new analysis of anxiety and behavior*. New York, NY: Academic Press.
- Kaminski, G. (2009). Sport in the perspective of Barkerian psychological ecology. *International Journal of Sport Psychology*, 40, 50–78.
- Kunath, P., & Schellenberger, H. (Eds.). (1991). *Tätigkeitsorientierte Sportpsychologie* [Activity-oriented sport psychology]. Frankfurt am Main: Germany: Harri Deutsch.
- Lazarus, R. S., Kanner, A. D., & Folkman, S. (1980). Emotions: A cognitive phenomenological analysis. In R. Plutchik & H. Kellermann (Eds.), *Theories of emotions* (pp. 189–217). New York, NY: Academic Press.
- Lebed, F., & Bar-Eli, M. (2013). *Complexity and control in team sports: Dialectics in contesting human systems*. Abingdon, OX: Routledge.
- Lersch, P. (1962). *Aufbau der Person* [The structure of personality] (8th ed.). München, Germany: Barth.

- Marchant, D., Maher, R., & Wang, J. (2014). Perspectives on choking in sport. In A. G. Papaioannou & D. Hackfort (Eds.), *Routledge companion to sport and exercise psychology* (pp. 446–459). London: Routledge.
- Munzert, J. (1997). *Sprache und Bewegungsorganisation. Untersuchungen zur Selbstinstruktion beim Bewegungslernen* [Language and movement organization. Investigations on self-instruction in motor learning]. Schorndorf, Germany: Hofmann.
- Nitsch, J. R. (1975). Sportliches Handeln als Handlungsmodell [Action in sport as action model]. *Sportwissenschaft*, 5(1), 39–55.
- Nitsch, J. R. (Ed.). (1981). *Stress: Theorien, Untersuchungen, Maßnahmen* [Stress: Theories, investigations, interventions]. Bern, Switzerland: Huber.
- Nitsch, J. R. (1985). Emotionen und Handlungsregulationen [Emotions and action regulation]. In G. Schilling & K. Herren (Eds.), *Angst, Freude und Leistung im Sport* [Anxiety, joy, and performance in sport] *Proceedings of the VIth FEPSAC Congress in Magglingen, 1983* (Vol. 1) (pp. 37–60). Magglingen, Switzerland: FEPSAC and Eidgenössische Turn- und Sportschule.
- Nitsch, J. R. (1996). Intention und Handlungsregulation [Intention and action regulation]. In R. Daugs, K. Blischke, F. Marschall, & H. Müller (Eds.), *Kognition und Motorik* [Cognition and motor function] (pp. 69–86). Hamburg, Germany: Czwilina.
- Nitsch, J. R. (1997). Situative Handlungsorganisation [Situational action organization]. In H. Ilg (Ed.), *Gesundheitsförderung – Konzepte, Erfahrungen, Ergebnisse aus sportpsychologischer und sportpädagogischer Sicht* [Health promotion: Concepts, experiences and findings from a sportpsychological and sportpedagogical point of view] (pp. 351–363). Köln, Germany: bps.
- Nitsch, J. R. (2004). Handlungstheoretische Grundlagen der Sportpsychologie [Action-theoretical foundations of sport psychology]. In H. Gabler, J. R. Nitsch, & R. Singer (Eds.), *Einführung in die Sportpsychologie: Teil 1. Grundthemen* [Introduction to sport psychology: Part 1. Basic issues] (4th ed.) (pp. 43–164). Schorndorf, Germany: Hofmann.
- Nitsch, J. R. (2005). Motivation reconsidered – an action-logical approach. In R. Stelter & K. K. Roessler (Eds.), *New approaches to sport and exercise psychology* (pp. 55–82). Oxford: Meyer & Meyer Sport (UK).
- Nitsch, J. R. (2009). Ecological approaches to sport activity: A commentary from an action-theoretical point of view. *International Journal of Sport Psychology*, 40, 152–176.
- Nitsch, J. R., & Hackfort, D. (1981). Stress in Schule und Hochschule: Eine handlungspsychologische Funktionsanalyse [Stress at school and university: A functional analysis based on action theory]. In J. R. Nitsch (Ed.), *Stress: Theorien, Untersuchungen, Maßnahmen* [Stress: Theories, investigations, interventions] (pp. 263–311). Bern, Switzerland: Huber.
- Nitsch, J. R., & Hackfort, D. (1984). Basisregulation interpersonalen Handelns im Sport [Basic state regulation of interpersonal action in sport]. In E. Hahn & H. Rieder (Eds.), *Sensumotorisches Lernen und Sportspielforschung* [Sensorimotor learning and research on sports games] (pp. 148–166). Köln, Germany: bps.
- Piaget, J. (1954). *Les relations entre l'affectivité et l'intelligence dans le développement mental de l'enfant* [The relation between affectivity and intelligence in the mental development of the child]. Paris, France: Centre de documentation universitaire.
- Piaget, J., & Inhelder, B. (1972). *Die Psychologie des Kindes* [The psychology of the child]. Freiburg, Germany: Walter.
- Plutchik, R. (1970). Emotions, evolution, and adaptive processes. In M. B. Arnold (Ed.), *Feelings and emotions. The Loyola Symposium* (pp. 3–23). New York, NY: Academic Press.

- Quinten, S. (1994). *Das Bewegungsselbstkonzept und seine handlungsregulierenden Funktionen. Eine theoretische und empirische Studie am Beispiel Bewegungslernen im Tanz* [The movement-related self-concept and its action-regulative functions. A theoretical and empirical study on motor learning in dancing]. Köln, Germany: bps.
- Rubinstein, S. L. (1984). *Grundlagen der Allgemeinen Psychologie* [Fundamentals of general psychology] (10th ed.). Berlin, Germany: Volk und Wissen.
- Samulski, D. (1986). *Selbstmotivierung im Sportunterricht* [Self-motivation in physical education]. Köln, Germany: bps.
- Schack, T. (2010). *Die Kognitive Architektur menschlicher Bewegungen* [The cognitive architecture of human movement]. Aachen, Germany: Meyer & Meyer.
- Seiler, R. (1995). *Kognitive Organisation von Bewegungshandlungen. Empirische Untersuchungen mit dem Inversionsprinzip* [Cognitive organization of movement actions. Empirical investigations using the inversion principle]. Sankt Augustin, Germany: Academia.
- Simon, H. A. (1967). Motivational and emotional controls of cognition. *Psychological Review*, 74(1), 29–39.
- Thomas, E. A., & Weaver, W. B. (1975). Cognitive processing and time perception. *Perception and Psychophysics*, 17, 363–367.
- Volpert, W. (1974). *Handlungsstrukturanalyse als Beitrag zur Qualifikationsforschung* [Structural analysis of action as a contribution to qualification research]. Köln, Germany: Pahl-Rugenstein.
- Wiskow, M. (1992). *Konkreatives Handeln. Theoretische und empirische Ansätze zur Umorientierung in der Kreativitätsforschung* [Con-creative action. Theoretical and empirical approaches to a reorientation of creativity research]. Köln, Germany: bps.
- Zajonc, R. B. (1980). Feeling and thinking. Preferences need no inferences. *American Psychologist*, 35, 151–175.
- Zakay, D. (1993). The impact of time perception processes on decision making under time stress. In O. Svenson, & A. J. Maule (Eds.), *Time pressure and stress in human judgment and decision making* (pp. 59–72). New York, NY: Plenum Press.