Jürgen R. Nitsch
German Sport University Cologne
Institute of Psychology

Sport and Exercise Psychology Re-evaluated!

Blind Spots & New Challenges

FEPSAC 40th Anniversary • SFPS/INSEP **Paris: July 2, 2009**

Jürgen R. Nitsch

Sport and Exercise Psychology Re-evaluated: Blind Spots and New Challenges[1]

(Keynote Lecture on the occasion of FEPSAC 40th Anniversary,
Congrès International de Psychologie du Sport, SFPS/INSEP, Paris, July 2, 2009)

Introduction

Talking to you on the occasion of the FEPSAC 40th Anniversary is both an honor and pleasure to me, particularly because of the special embedding of this event within the French sport-psychological community.

40 years ago, when FEPSAC was founded – and I myself entered the field of sport psychology as one of the youngsters – the general situation of sport psychology was like this (Figure 1a): A few enthusiastic pioneers in a small territory which was relatively undeveloped in all respects of research, application, institutionalization and professional education.

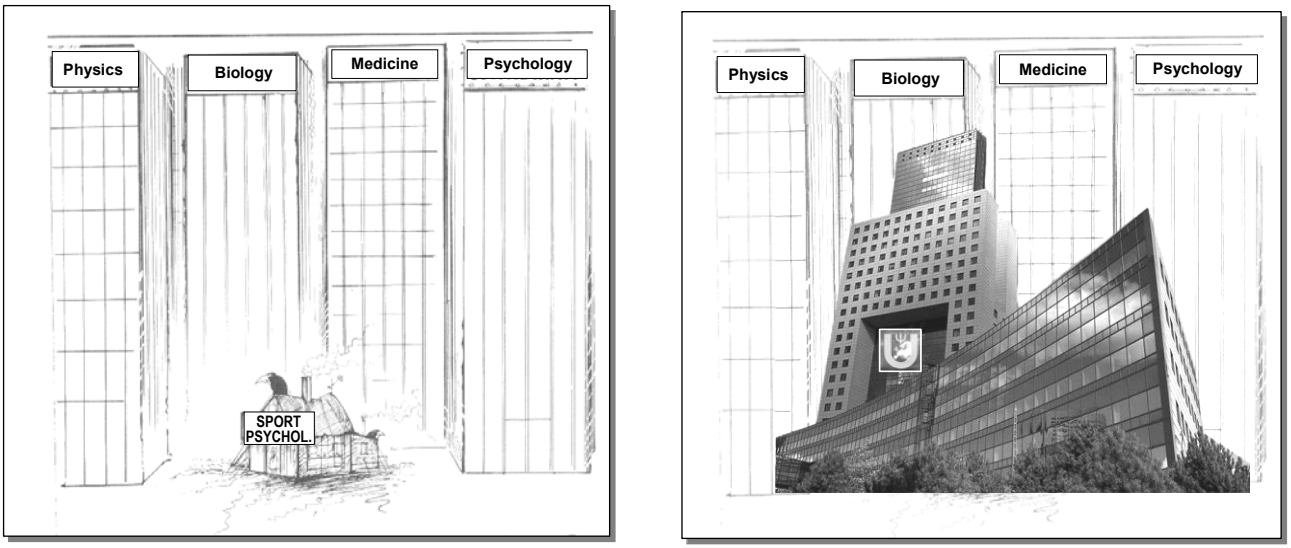


Figure 1. Sport psychology (a) in 1969 (left) and (b) in 2009 (right).[2]

Today, about 40 years later and now that I obviously belong to the grey-haired players in sport psychology, the situation has tremendously changed (Figure 1b): An impressive expansion can be noted regarding the number and qualification of experts in the field, the foundation of national societies, the organization of national and international conferences, the number of journals and publications, and the diversification of topics related to motor learning and motor control, performance enhancement and health promotion.

Thus, the business of sport psychology seems to run perfectly. Then why should we still look for blind spots and new challenges and talk about such unpleasant things on the occasion of an anniversary?

The answer is simple and demanding as well: While creating the future, we should critically reflect the present and past. This, however, requires to quit for a while the comfort of staying in the middle of the scientific main stream and to move away from the position we are used to hold. In short: *"In*

[1] Revised version of the oral presentation.
[2] Based loosely on a cartoon by Walter Hanel with major modifications.

order to see clearly, often all that is needed is a change in perspective" (Antoine de Saint Exupéry).

So what I want to do in the next half an hour is to draw your attention to the probably most important blind spot in our scientific work, the ground under our feet. That means shifting the focus from the routines of our scientific procedures to their guiding principles (Figure 2).

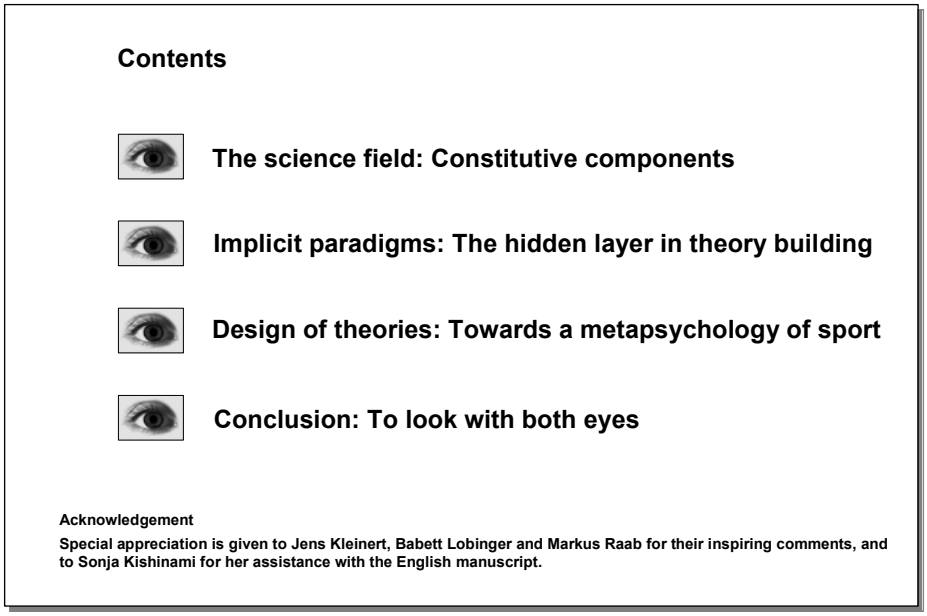


Figure 2. Contents of the presentation.

In a first step, some background problems in sport and exercise psychology will be briefly characterized referring to the constitutive components of the science field.

The focus then will shift to a particular problem which is mostly underestimated: the impact of our implicit assumptions on our explicit theoretical conceptions, methodological approaches and intervention programs.

Starting with the question "How to build good sport-psychological theories?" the third and final step preceding the conclusion is probably the most risky one: It is an attempt to suggest some cornerstones of a meta-psychology of sport which in my opinion is one of our most important challenges in the future.

As you can see, it is not one of those lovely programs like "In seven steps to peak performance". Instead, I would like to offer some ideas which may stimulate the further scientific consolidation of our discipline.

The science field: Constitutive components

The problem space

Acknowledging the impressive advances in sport and exercise psychology in the last 40 years, it does not make much sense to simply put some additional topics on the agendas of our everyday research and application projects. Instead, the leading idea is that much more profit will be gained when focusing on the meta-psychological fundamentals of our psychological activity in a systematic, critical and constructive manner. Let's start with exploring the problem space related to the structure of our scientific field.

The *constitutive components* can be summarized as follows (Figure 3). The central point of any in-

vestigation is to specify its *subject matter,* that is the *phenomenon* we refer to and the reason for being interested in that phenomenon, the *research intention*.

As you know, our scientific job is to gain and communicate valid and coherent knowledge which is useful to describe, explain, predict and control specific sections of reality. We try to achieve it by the classic triad of scientific *method*, *theory* and *application*. That is what we usually have in mind when we plan and evaluate an investigation.

However, this picture is still incomplete. We have to add two components which set up the base frame of our scientific activity. On the one hand, there is the *meta-theoretical foundation.* It refers to the paradigms, principles and criteria underlying the development and evaluation of our methods, theories and intervention procedures.

On the other hand, so to say, as the practical antagonist, the *institutional science system* comes into play. It determines both the practical functioning of science and the behavior of scientists within a specific setting of infrastructural, organizational, social and economic conditions.

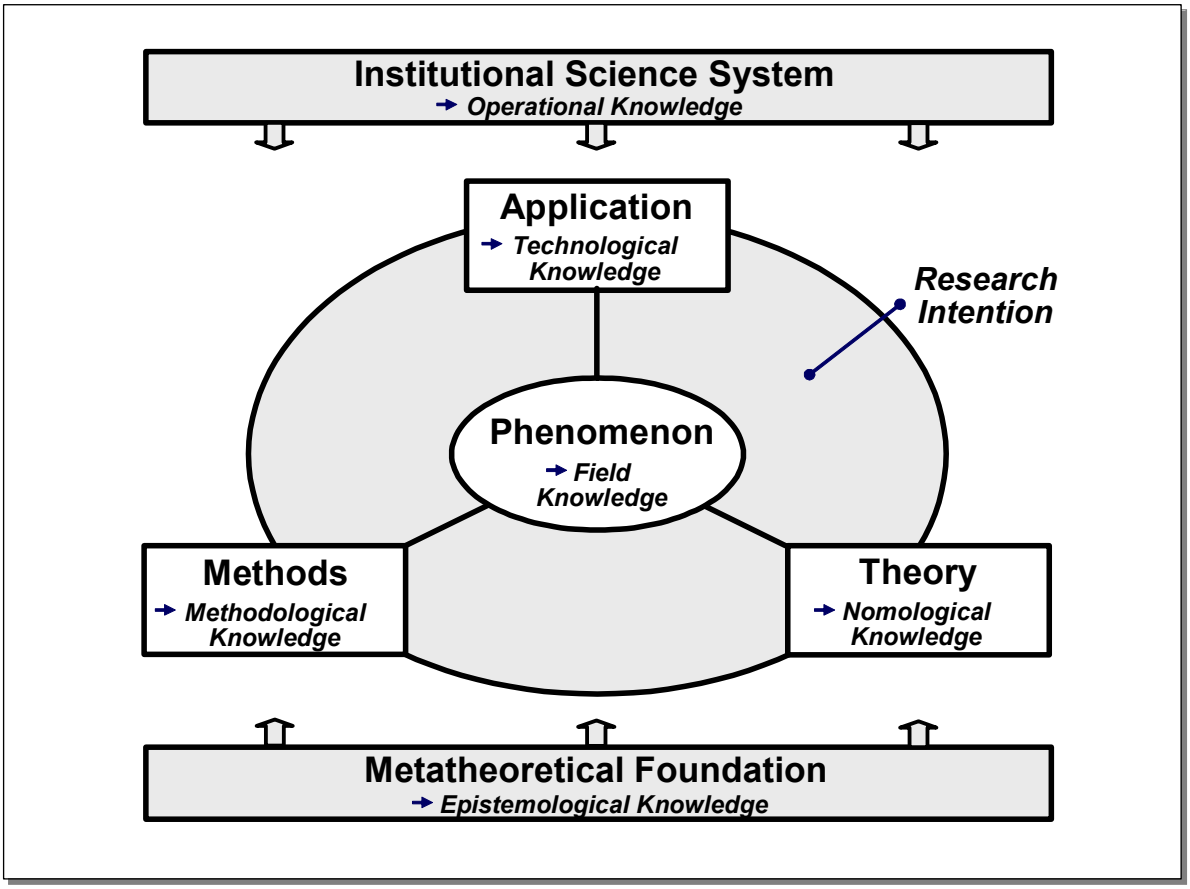


Figure 3. Constitutive components of the science field.

The point is, that the institutional science system operates as a branch of what the Austrian-American economist Fritz Machlup in 1962 called *"knowledge industry"*. That means we are more or less successful agents in the competitive production and distribution of scientific knowledge according to the basic market forces of supply and demand. There is obviously a strong tendency that the rules and pressures of the institutional science system increasingly dominate our scientific orientation and activity. It would be worth thinking more about this issue and its side-effects on both the social dynamics of the scientific community and the kind and value of the knowledge we actually produce.

For example, my impression is that according to the "publish or perish" doctrine there is an increasing discrepancy between the number of papers produced and the amount of insight gained (Figure 4). To counteract uncreative mainstream orientation it may be inspiring to keep in mind a famous saying by Albert Einstein: *„If you want to become a true scientist, spend at least half an hour a day thinking the opposite of what your colleagues are thinking."*

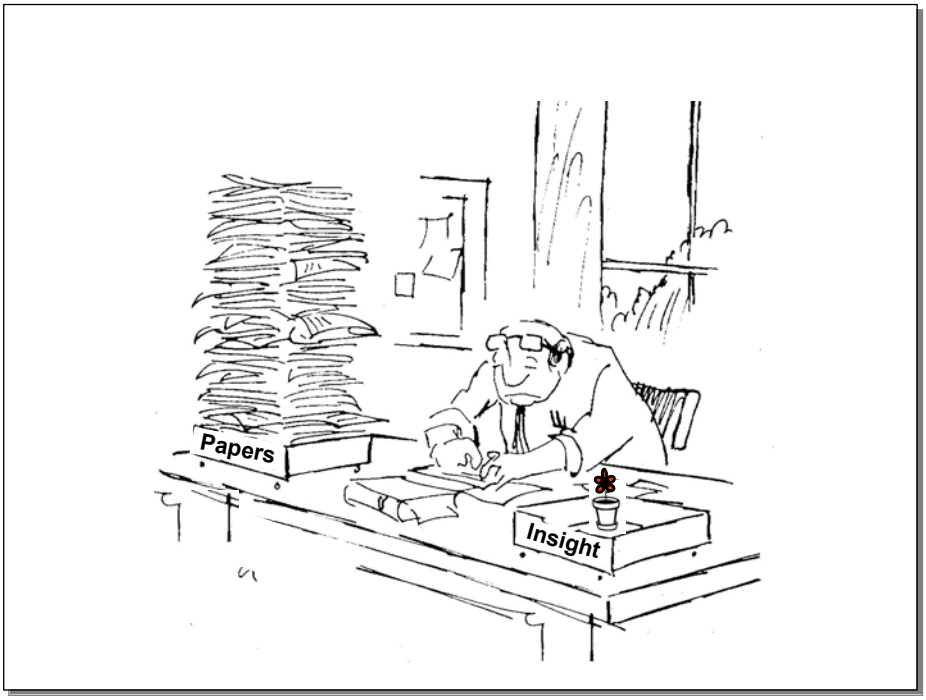


Figure 4. The busy scientist.[3]

Now, what does the diagram in Figure 3 tell us?

The success of our investigation or intervention projects as well as the progress and reputation of our scientific discipline is not a matter of some good questionnaires, sophisticated statistical procedures, nice-looking theories, a one million Euros' equipment or following strictly the instructions of the APA Publication Manual. What is fundamentally required is optimizing and balancing the whole scientific network, that is, each of the illustrated components and each of the dynamic connections between them. And that's it, what makes our scientific work so demanding and exciting.

Consequently, *problems* may be caused

(1) by weaknesses in the elaboration of some of the components,

(2) by gaps and dissonances in the connections between them, and

(3) by deficits in the dynamic interplay, coherence and balance of the network in total.

Our main problem is that all of these problems actually do occur in sport and exercise psychology. There is no time to go into the details now; except you give me some five hours more. For illustration only some brief comments:

Many of the problems indicated by the question marks in this figure result from two general shortcomings: The first one is the *insufficient field specificity* of our methodological and theoretical approaches. That means that they fail to represent precisely those properties which are actually relevant for displaying the investigated behavior under field conditions, as Hammond and Bateman

[3] Freely adapted from a cartoon by Sidney Harris with textual and graphical modifications.

(2009) recently stated again. There are a lot of studies in sport psychology, which are conducted to test some particular hypotheses, but only very few, if any, which started from a systematic, detailed and long-term analysis of the individual activity profile, the time-management and the situational circumstances of an athlete.

The second shortcoming is the *insufficient treatment of complexity* in both dimensions of differentiation and integration. Frankly speaking, our theories are too small in range, too simple in structure and too unrelated to one another. For example, they are still far below the elaboration standard of biochemical, neuronal or endocrine pathway models. According to our schema, it is not surprising that our methodological approaches and interventions replicate these theoretical weaknesses.

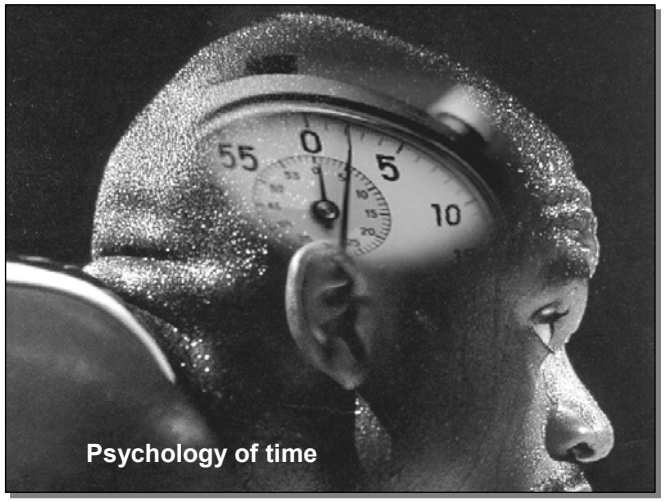
A prototypical challenge

Before coming back to the problem mentioned above and its meta-theoretical implications under separate headings, I would like to point at least to one of those topics of research and application which need our particular attention in the future, namely *psychology of time:*

(1) It can be considered as prototypically requiring the mutual adjustment of all components of the science field mentioned before.

(2) Environmental properties, individual and social behavior as well as psychological functions are basically determined by time conditions and specified by time characteristics. This is fundamentally relevant to the understanding of the psychological dynamics of sport-related behavior under field conditions.

(3) Since the French psychologist Paul Fraisse published his “Psychologie du temps” in 1957, there are a lot of time-related studies in different scientific perspectives but only very few ones in the field of sport and exercise psychology beyond reaction time analyses: So *it’s time for time.*



What are the conditions of success and failure when trying to do

- **the right thing**
- **in the right way**
- **on the right place**
- **at the right *moment***
- **at the right *speed***
- **in the right *duration*?**

Figure 5. Starting question of a sport-related psychology of time.

The problem is easy to describe but difficult to solve (Figure 5): Not only doing the right thing in the right way on the right place but also at the *right moment* at the *right speed* in the *right duration*. Why do we often succeed in doing so, why do we sometimes fail?

Some general *aspects of sport-psychological time research* may be illustrated by the following schema (Figure 6): The key concept is *subjective time representation* generally defined as the per-

ception and experience of objective time relations.

There are two behavioral consequences of time representation of particular interest. The first one refers to the perception of time as a specific task demand and a more or less limited action resource to which we have to adapt to by an appropriate time management. The second one refers to time as a condition of stress we have to cope with, in particular fear of failure in meeting relevant time schedules.

Then, further investigations should focus on sport-specific determinants and modes of time representation, time management and coping with time pressure on the one hand, and their effects on performance, health and quality of life on the other.

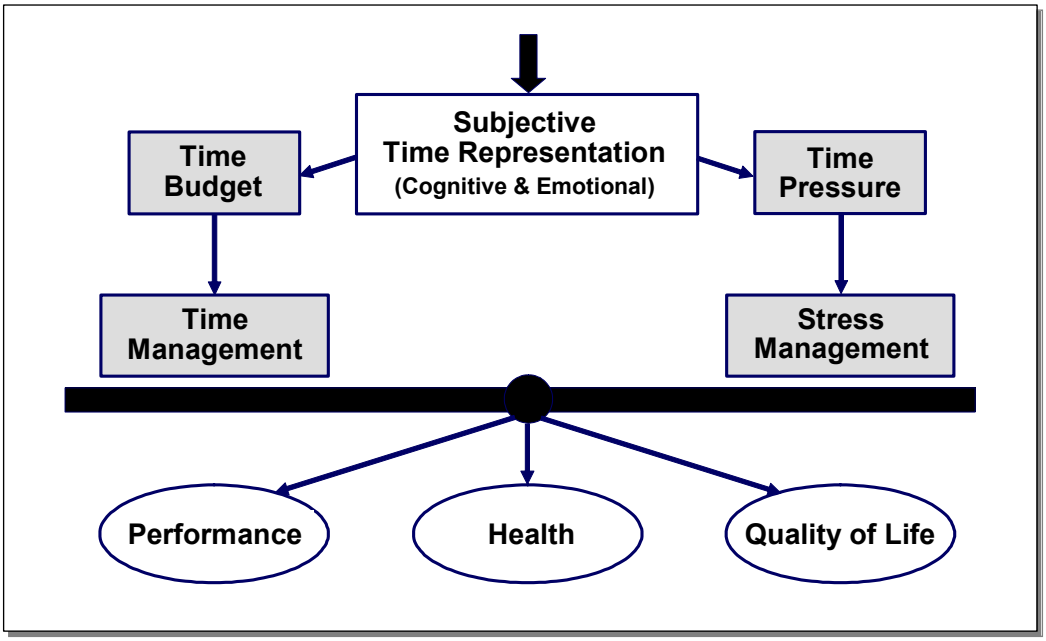


Figure 6. Aspects of sport-psychological time research.

It is worth mentioning that there is some evidence that time representation changes dependent on the motor activity rate as well as depending on psychological and psychosomatic states like mental fatigue, hyper-activation, depression or beginning Alzheimer Disease. Then, it would be promising to use time representation as a sensitive diagnostic indicator for those states.

Finally, a short video may illustrate that time pressure does not necessarily result in performance deficits. Sometimes, it can have an impressively positive effect, for example, on the economy and creativity of decision-making in sport demonstrated by so-called last second “buzzer shots” in basketball.[4]

Implicit paradigms: The hidden layer in theory building

The paradigmatic role of thought patterns

As you know, the main goal of empirical sciences is to reduce a large variety of phenomena to a few underlying principles or laws (Figure 7).

The gap between the observational input and the resulting explanation is essentially bridged by basic thought patterns or paradigms. Some of them are explicit in the sense of Thomas S. Kuhn’s

[4] The video clip showed match-winning distance shots across the whole field in the last seconds of a game.

definition of paradigms as consensual guiding principles or assumptions in research and application, for example the paradigms of behaviorism, cognitivism, psychoanalysis or modern self-organization theories. But there are also other ones which we apply without being aware of it; I call them *implicit paradigms*.

The point is that both explicit and implicit paradigms play an important and indispensable role in structuring our observations and the scope of possible explanations as well. There is, however, the risk that then the results of our investigations are more or less artifacts of our thought patterns. We should keep that in mind as the double nature of any paradigm.

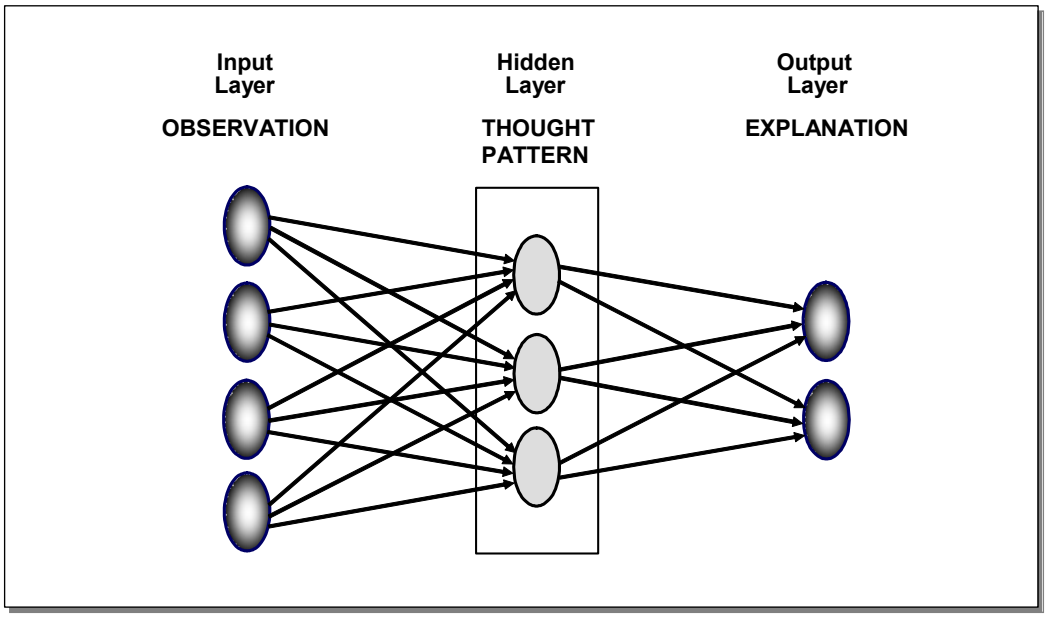


Figure 7. The functional role of thought patterns in theory building.

I would like to illustrate the impact of implicit paradigms on our explicit theoretical conceptions, methodological approaches and intervention programs by two examples, the *black-and-white stereotype* and the *billiards model*.

The black-and-white stereotype

The widespread *black-and-white stereotype* is probably both the most efficient and the most harmful implicit paradigm not only in psychological conceptions. A great deal of our terminology, our theories and our research designs is based on the implicit idea of a bivalent world, that is, categorizing phenomena by two exclusive alternatives (Figure 8).

Numerous dichotomous conceptions in psychology and sport psychology illustrate this perspective, for example, “hope for success” vs. “fear of failure”, “internal” vs. “external locus of control”, “task” vs. “ego-orientation”, “mastery” vs. “competitive goals”, “trait” vs. “state anxiety”, “state” vs. “action orientation”, “open-loop” vs. “closed-loop control” etc.

What makes “black-and-white” conceptions so attractive is that they offer a simple and clearly structured picture of the world which perfectly slots into the structures of usual experimental designs and statistical methods, for example ANOVA designs. This facilitates empirical investigations - and the production of a lot of papers.

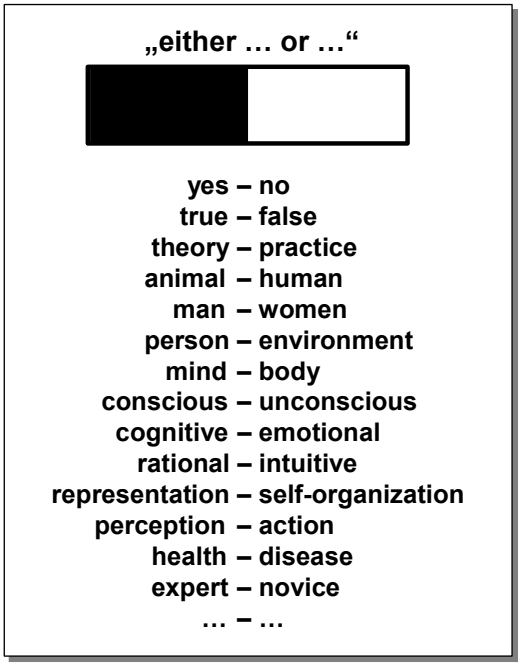


Figure 8. The black-and-white paradigm I: “either … or”.

However, bivalence is not a property of reality itself; it is nothing but a thought pattern in structuring reality. Accordingly, many of scientific debates on seemingly contradictory conceptions result from this pattern because it *forces* us to accept only one of two alternative positions.

The impact of implicit paradigms can be additionally illustrated by the strong effect of a little change (Figure 9).

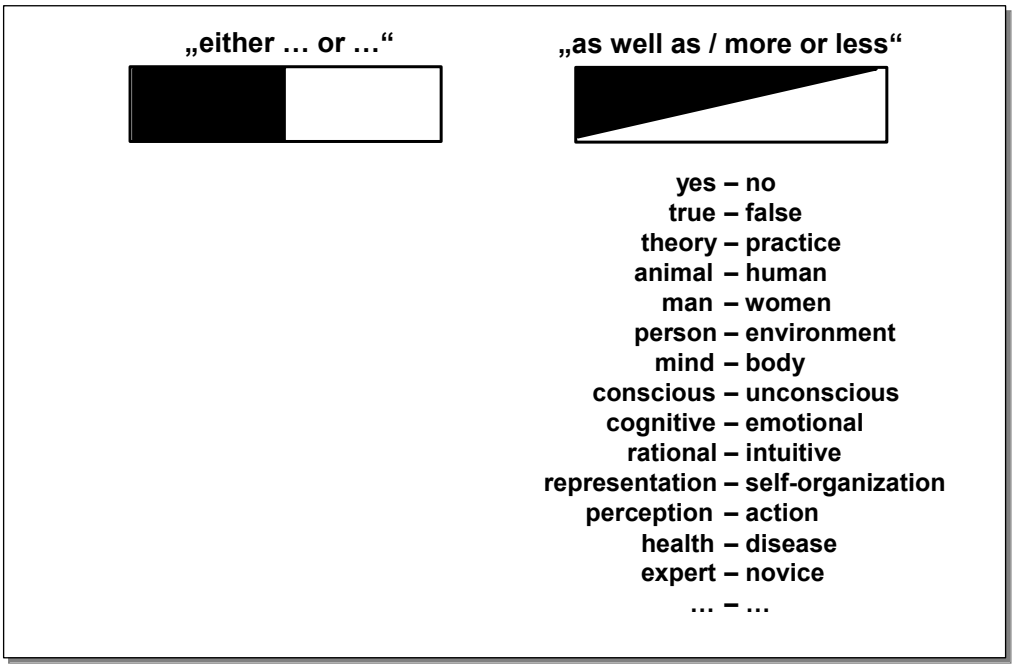


Figure 9. The black-and-white paradigm II: “as well as”.

When we shift the demarcation line between “black” and “white” a little and then reconsider the alternatives in this perspective, we will gain fascinating new insight without any previous empirical investigation. The new heading of “as well as” and “more or less”, for example, will open the door from the “yes-no” and “true-false” principle of classic bivalent logic to modern fuzzy logic, from the

strict “animal-human” distinction of Christian creationism to Darwin’s evolution theory, and reconsideration of the “perception-action” relation may have stimulated modern “common coding” concepts as presented by the German psychologist Wolfgang Prinz and his co-workers.

So, if you find dichotomous conceptions in the literature or you apply them by yourself, it would be quite enlightening to change them a little as demonstrated before – or else to rapidly abandon them in total in favor of a conception which is more appropriate to the dynamic complexity of the phenomena we have to deal with in sport and exercise psychology.

The billiards model

Considering the theoretical structure of empirical studies in our discipline, we can uncover a second quite influential thought pattern. It conceptualizes the interrelation of variables as a transmission of some forces similar to colliding billiards balls. A fictive example may illustrate this (Figure 10).

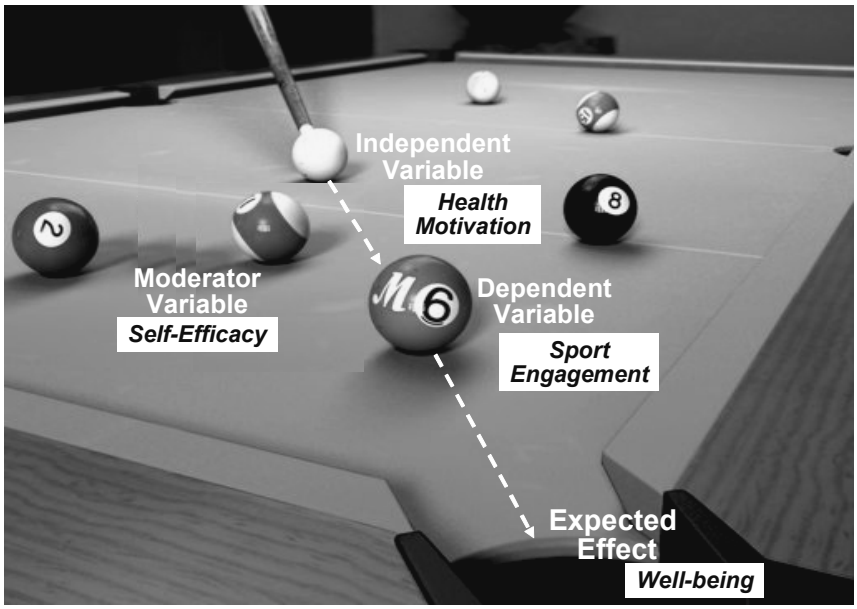


Figure 10. The billiards model as a paradigmatic thought pattern in empirical research (illustrated by a fictive example).

This *billiards model* demonstrates again the creative power of implicit paradigms in science as well as the limitations and risks of applying them uncritically.

What can we extract from this model in order to optimize our conceptions?

When we build our theories and plan our investigations and interventions then it may be quite useful to play a little with this model and then explicitly *check* at least three points:

(1) Are all relevant “billiards balls” or variables actually incorporated?

(2) Do the “balls” belong to the same game? This question refers to the fact that in many stud-

ies there is a confusing mixture of variables which belong to quite different physical, biological, psychological, social, ecological or semantic contexts.

(3) Is the actual configuration of the "balls" within the given context appropriately represented? In other words: Are the situational circumstances sufficiently conceptualized?

However, we should also be aware of the limited applicability of this model related to psychological phenomena. In particular, neither human beings nor psychological states and processes are comparable to homogenous "balls" which only need an external impulse to move in a predictable direction.

But then the question arises: How to build better theories in sport psychology? Since there is neither a position statement of FEPSAC nor an APA Manual on theory building, let me suggest some ideas on this topic.

Design of theories: Towards a meta-psychology of sport

Present shortcomings

What we can state when reviewing the sport psychological literature is:

(1) The theoretical landscape in sport and exercise psychology looks like a *patchwork carpet*: An eclectic collection of many small, unrelated and short-living theories (Figure 11).

(2) Because of the very restricted theoretical perspective, there is the *danger* of ignoring essential theoretical aspects which are needed for an adequate planning of empirical studies, a convincing interpretation of the obtained data and a solid basis of intervention.

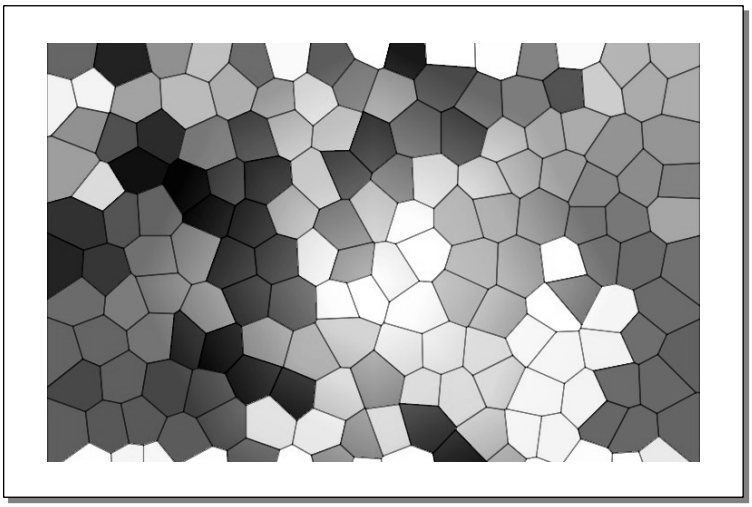


Figure 11. The patchwork carpet pattern of the theoretical landscape in sport and exercise psychology.

That is, we need a frame of reference which fundamentally guides our scientific activity and helps to systematically integrate the findings from different studies into a comprehensive and coherent picture. So let's think about what Rainer Martens already mentioned 30 years ago in his 1979 article in the Journal of Sport Psychology: a *meta-psychology of sport*. In my opinion, such an integrative concept can be appropriately derived from an *action-theoretical point of view*:

The action-theoretical perspective

The key assumption is that the basic nature of human behavior is expressed by the intentional organization of behavior within a meaningful situational context, and this kind of behavior, namely *action*, is characteristic for the field of sport. Starting with this assumption the essentials of a meta-psychology of sport can be summarized as follows (Figure 12):

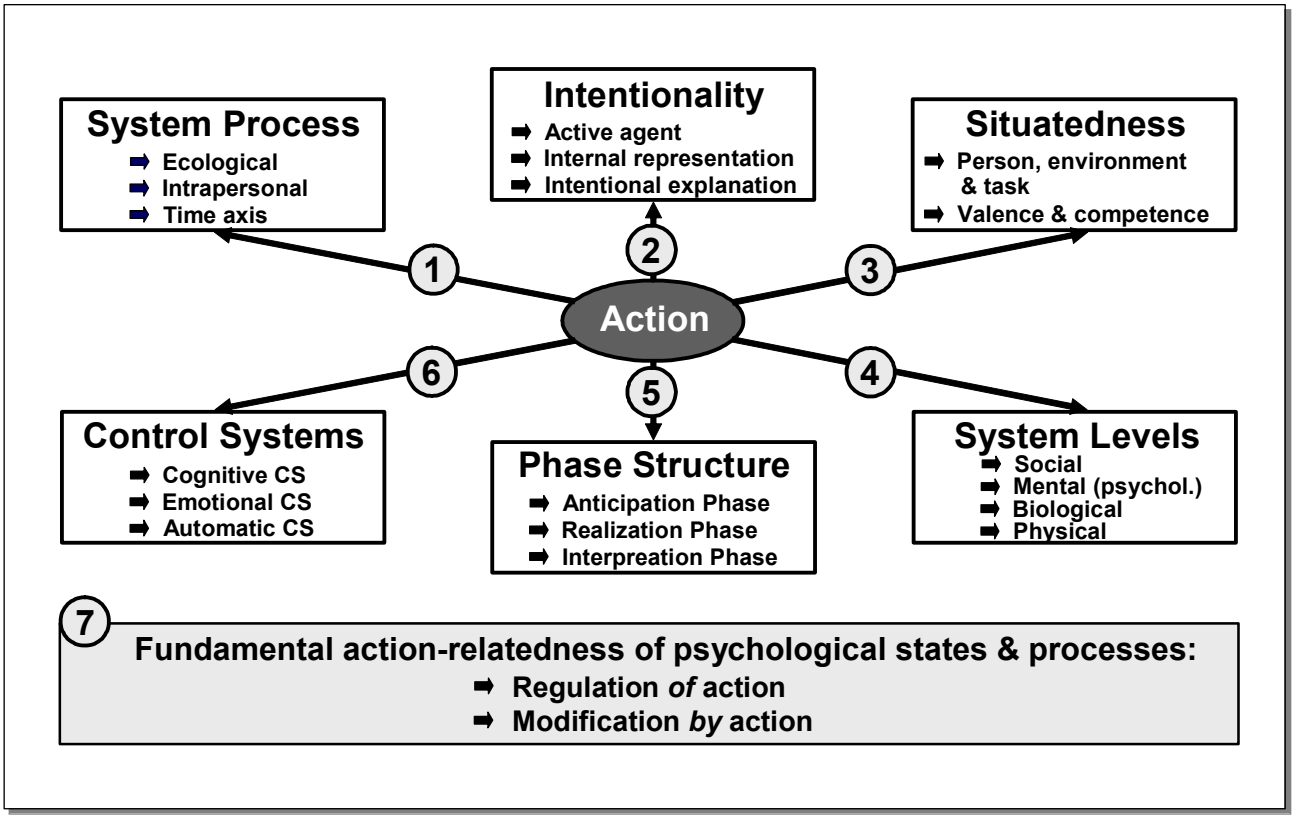


Figure 12. Essentials of a meta-psychology of sport from an action-theoretical point of view.

(1) *System Process:* Constitutive for any action is the dynamic relation to the *ecological context,* the functional integration of *intrapersonal processes* and the developmental coherence of events, states and processes along the *time axis*.

Then, investigations of sport behavior can only be sufficiently complete, when they take into account the ecological field dynamics, the functional network of internal processes and the action history and future perspective.

(2) *Intentionality:* Action is organized with respect to its *intended and anticipated consequences*. This requires processes of *internal representation* and implies that we have to refer explicitly to the fact that the subjects in our investigations are *active agents* and no “cash cows” for data collection.

Accordingly, there is a shift in focus from causal explanation to *intentional explanation* starting from the question: *For what reason 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, that is, his or her subjective argumentation pattern.

(3) *Situatedness:* Action is a function of the *situation* in which it takes place. Situation is not iden-

tical with the environmental context but considered as dynamic configuration of *person*, *environment* and *task*.

Essential for actions is the *subjective situation definition*, that is, the perceived interrelation of person, environment and task with respect to the attractiveness or subjective *valence* of the situation on the one hand and the controllability of the situation related to subjective *competence* on the other.

Then, if we want to *modify actions*, we can do this principally in different ways, namely by modifying some properties of the person, the environment or the task; by altering the objective conditions or the subjective situation definition, and by modifying the valence or competence aspect.

(4) *Multi level organization:* The organization of action involves the interplay of different system levels: *physical*, *biological*, *mental (or psychological)* and *social*. Each level is governed by *specific rules of functioning*; each level specifies *different relations to the environment*; each level establishes *specific sets of objective constraints and subjective options of action*. We behave *as* a physical, biological, psychological and social being *in* a physical, biological, psychological and social world.

Adopting this multiple perspective instead of a single one will improve our understanding of, for example, movement coordination, peak performance or health-related behavior. It will differentiate our answers by differentiating our questions, for example, what are physical, biological, mental and social determinants of concentration deficits?

(5) *Triadic phase structure:* An action passes through a sequence of three more or less elaborated phases. In the first phase, called *anticipation*, processes of situation analysis, planning and intention formation take place. In the second phase, called *realization*, the overt behavior is performed and then in the *interpretation* phase evaluated.

Accordingly, psychological analysis or modification of actions in sport requires detailed reference to all three phases. For example, *self-confidence* can have an important impact on all of them: Low self-confidence may inadequately extend the anticipation phase, decrease risk-taking, delay the onset of realization and release unfavorable causal attributions and negative self-affirmations.

(6) *Multifunctional action control:* Stimulated by evolution theory, human action control is considered to operate in three different but functionally interrelated ways: Each of these control systems – *automatic*, *emotional* and *cognitive* - is specialized with regard to particular functions in the overall control of action, and may become dominant in the case of voluntary, emotional or habitual action.

Then the question is not, whether one or the other of these systems may be involved but actually how and how far.

(7) Finally, focusing on action and its functional architecture must be relevant to our *understanding and explanation of psychological states and processes*. That means that all of those processes are considered as fundamentally related to action.

Then, for each single case we have to specify the functional role they play in the *regulation* of action on the one hand and the effect of action on the short- and long-term *modification* of psychological functions on the other.

Conclusion: To look with both eyes

I am aware of the fact that I could only draw a few lines on the cognitive map which guides our scientific activity. Hopefully, this may help to see deficits, challenges and possible solutions a little clearer.

In summary, my message is as follows:

(1) To appropriately evaluate our scientific models and results, we must critically deal with the *concepts and thoughts they are based on*.

(2) You don't need to agree with all of the suggestions I made. However, you will hopefully agree that we should intensively work on a consensual frame of reference in the future in the sense of a *meta-psychology of sport*. A promising perspective is provided by action theory.

(3) One of the greatest challenges in the future is to manage *complexity* with respect to all components and interrelations in the scientific field. In particular, this means to focus on both *differentiation* and *integration*: We have to go into *details*, if we don't want to provide nothing but trivial things. We must consider the *whole* to really understand the functionality and interplay of the details. So what ever we are doing in research and application: *We should always look with both eyes!* (Figure 13)

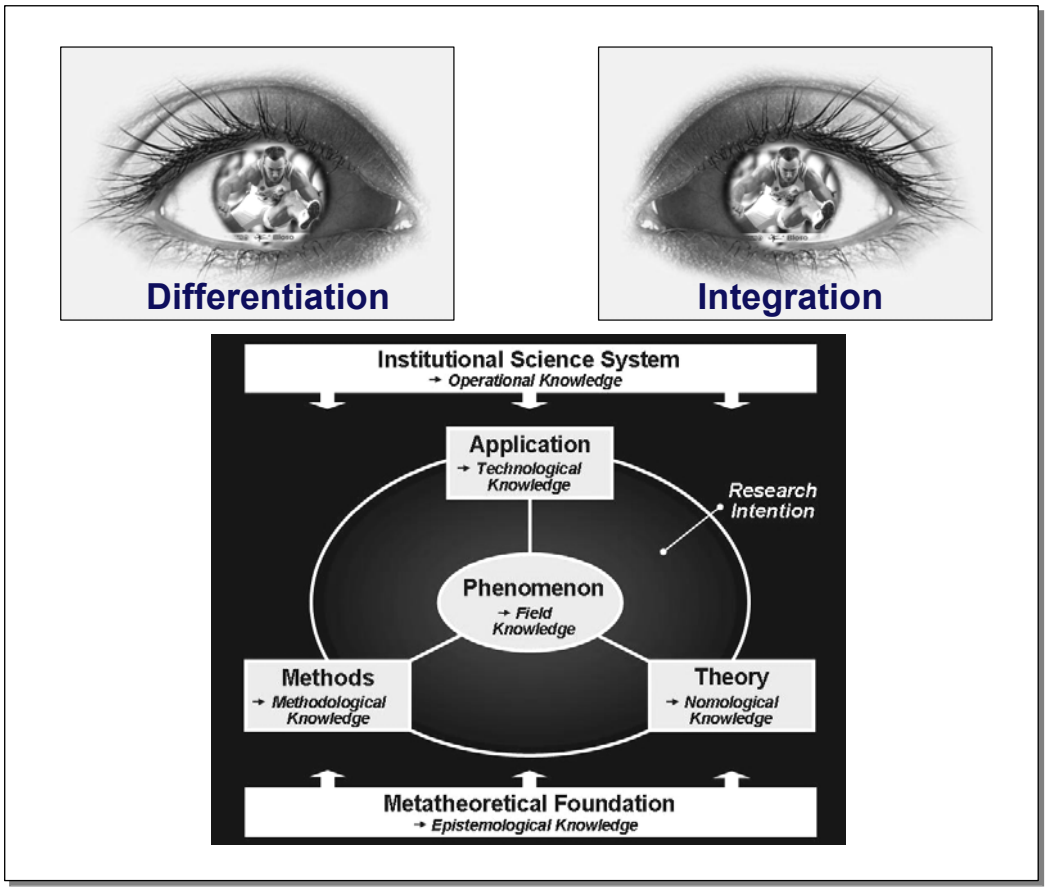


Figure 13. Balancing differentiation and integration in managing complexity related to the components of the science field.

(4) Finally, we are used to consider scientific research and practical intervention as a matter of applying well-established procedures. But more than this, research and intervention is a matter of ***mentality*** as Albert Einstein once stated.

With this in mind, I look forward to seeing many sport psychologists not only endowed with scientific and practical competence and a corresponding sense of responsibility but *courage* and *passion* as well: The ***courage*** to strive against scientific dogmas and external indoctrination, the courage to concede scientific errors and failures, and the ***passion*** which is urgently needed to strive for scientific progress beyond merely promoting one's own scientific career.

For correspondence:

Dr. Jürgen Nitsch, Univ.-Prof.
Institute of Psychology
German Sport University Cologne
Am Sportpark Müngersdorf 6
D-50933 Köln
Germany

Email: nitsch@dshs-koeln.de