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Psihoterapija kot z dokazi podprt proces upravljanja – prispevek profesionalizmu onkraj standardnega modela

Ključne besede: standardni model, intervencije, spremljanje v dejanskem času, proces spremembe, z dokazi podprta praksa

Povzetek: Ta članek ponuja razlago terapevtskih intervencij, ki temelji na principih kompleksnih samoorganiziranih sistemov. Običajno se raziskave o učinkih psihoterapije v okviru standardnega modela osredotočajo na specifične faktorje znotraj specifičnih intervencij. Po desetletjih raziskovanja psihoterapije pa se je nabralo vse več dokazov o empiričnih pomanjkljivostih standardnega modela. Alternativa standardnemu modelu temelji na ideji, da intervencije učinkujejo zaradi resonančnih učinkov med dinamiko sistema, ki je v obravnavi (to je klienta) in dinamiko psihoterapevtske obravnave ali drugih pomembnih okoljskih dejavnikov sistema (zunaj ali celo znotraj klienta). To pomeni, da je terapija stalno uresničevanje robnih pogojev za samoorganizirane procese klientovih mentalnih in nevronskih sistemov. Tako razumevanje ni metaforično, ampak ima zelo konkreten pomen, ker razpolagamo z na spletu temelječimi sistemi povratne zveze, s pomočjo katerih lahko merimo in analiziramo dejansko stanje samoorganiziranih procesov (ti. Sinergetski navigacijski sistem). Ta tehnologija ima specifične prednosti tako za klienta kot za terapevta. Kajti psihoterapija s pomočjo te tehnologije postane proces upravljanja klientove sistemske dinamike, ki je podprt z dokazi in teoretično utemeljen. Temelj za empirično dokazovanje namreč niso le rezultati kontroliranih raziskav o izidu terapije, temveč podatki o dejanskem procesu spremembe. V zaključku prikažem posledice za vlogo intervencij in za psihoterapevtsko profesijo.

Psychotherapy as Evidence-Based Process Management: A Contribution to Professionalism Beyond the Standard Model

Key words: standard model, interventions, real-time monitoring, change process, evidence-based practice

Abstract: This contribution gives an interpretation of therapeutic interventions which is based on the principles of complex self-organizing systems. Usually, the standard model of how psychotherapy creates its effects is focusing on specific factors contained within specific interventions. Decades of psychotherapy research, however, have produced an amount of empirical anomalies to this model. An alternative understanding consists in the idea that interventions produce their potential outcome by resonance effects between the dynamics of the intervened system (i.e. the client) and the dynamics of the treatment or other meaningful system environments (outside or even within the client). By this, therapy is the continuous realization of the boundary conditions for self-organizing processes of the client's mental and neural systems. Actually, this understanding is not metaphorical but has a very concrete meaning since Internet-based feedback systems are available to measure and analyze the present states of self-organizing processes (Synergetic Navigation System). This technology will have specific benefits to the client as well as to the therapist. Psychotherapy becomes an evidence-based and theoretically founded management process of the client's systems dynamics. The base of the data driven evidence is the actual change process, not only the results of controlled outcome studies. Finally, the consequences for the role of interventions as well as for the profession of psychotherapy are discussed.

Anomalies of Standard Model

Psychotherapy works. The usual conception is that it works due to the applied methods of treatment. The specific factors of efficacy exist within the treatment techniques; everything else is used only to fill in the blanks and is therefore nonspecific. Against this background, when proving the efficiency and the scientificness of psychotherapies (which are frequently inadmissibly equated), the execution of randomized controlled trials is regarded as the gold standard. It

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concerns quasi-experimental designs where—ideally with diagnostically homogeneous groups of patients—treatment systematically varies and confusing variables are to be excluded (e.g. by randomization of patients to treatment modalities). The effect should be attributed to the employed treatment as clearly as possible. To describe this paradigm (which is dominating clinical practice as well as research), Wampold (2001) uses the term "medical model". Since it also dominates in the field of psychology and corresponds to the methodological canon of the general linear model, we will use the term "standard model" instead.

This standard model, i.e. the conception that the intervention produces the effect, is embodied in wide parts of research, in everyday understanding and in the accounting practice of health insurance funds (e.g. Medical Fee Schedule) to such an extent that it can be compared to a Kantian "a priori": An unquestionable proposition, such as the acceptance of a three-dimensional Euclidean space, a continuously flowing time, or the principle of causality. The model is highly plausible and seems to be confirmed anew with every effective therapy. But it has a blemish—it is falsified.

"Falsified" in a sense that within empirical sciences—i.e. where the truth values of 0 or 1 basically cannot occur, but only more or less confirmed hypotheses, more or less accepted arguments (both under certain conditions) and more or less empirical "corroboration" (Popper, 1982) do—things sometimes prove "falsified". Here, it should hold: After 50 years of process-outcome research the standard model anomalies are considerable:

1. *Treatment techniques* and technique-specific factors of efficacy *explain* only *a small portion of the outcome variance.* Estimations performed on the basis of meta-analyses lie between 15 % and 1 % of the explained variation for the therapy outcome (e.g. Beutler et al., 2004; Shapiro et al., 1994; Wampold, 2001; Lambert & Ogles, 2004). If the intervention, especially if it corresponds to the diagnosis, would determine the outcome, this should not be so, and it also should not be that

2. practically all therapeutic procedures, tested against each other in direct experimental comparisons, lead to nearly the same effects (*"Dodo bird" effect*) (e.g. Gaffan et al., 1995; Lambert & Ogles, 2004; Luborsky et al., 1999; Shoham & Rohrbaugh, 1999; Smith et al., 1980; Wampold et al., 1997). This is particularly true when (A) only bona fide therapies were included, i.e. treatment procedures which are well-intentioned and realized by competent therapists as probably effective treatment methods (not only as halfhearted control conditions), and when (B) the "affiliation", i.e. the identification by practitioners and examiners with their methods and the consequential methodical biases was partialed out (Luborsky et al., 1999). According to corresponding meta-analyses, comparable effects are to be presumed even when specific treatments are suitably used for specific diagnoses (e.g. IPT[1] or CBT[2] in case of depression) (Wampold, 2001).

3. *Early rapid responses.* Specific effects can occur even before the probably specific components were realized and brought into action in a treatment program (Haas et al., 2002; Ilardi & Craighead, 1994; Wilson, 1998). Example: Cognitive restructuring takes place before the beginning of irrational beliefs treatment in cognitive behavioral therapy, or reduction of compulsions to act before the flooding begins.

4. *Dismantling studies.* The components of treatment programs can be used in various ways, in different order and for the most part even omitted without essentially impairing the effects (e.g. on cognitive behavioral therapy: Jacobson et al., 1996; Reviews: Ahn & Wampold, 2001; Lambert & Ogles, 2004; Wampold, 2001).

5. *Efficacy of nonprofessionals and paraprofessionals.* Laymen, i.e. people with no specific expert knowledge and psychotherapy training, and so called paraprofessionals, i.e. people active in the field of health care, but with no psychotherapy training, are astonishingly successful. In direct comparisons, some meta-analyses credit them with the same efficacy as that of profes-

sional psychotherapists (e.g. Gunzelmann et al., 1997; Hattie et al., 1984). Similar conclusions are brought by the findings which show hardly any or only very little connection between training (i.e. extent of training) and treatment results (e.g. Anderson, 1999), though the results are not uniform (Lambert & Ogles, 2004). While considering whether this should be interpreted as an argument for the importance of natural social competencies or other conditions, it is certain that laymen do not master specific treatment techniques.

6. *Placebo effects.* It has often been discussed whether the term placebo—apart from pharmacotherapy, where one can justifiably distinguish between verum and placebo—makes sense within psychological treatments. If we understand it as a nonspecific attentiveness offered to patients in control group conditions to distinguish between treatments and nonspecific effects, it shows that bona fide psychotherapies are more effective than placebo conditions (those who equate therapy effects with placebo effect are thus simplifying), but placebo conditions also produce clearly better results than no treatment or waiting-list control groups (Grissom, 1996).

7. *Manualized therapies* do not show any convincing successes (Beutler et al., 2004; Wampold, 2001), and highly structured therapies are no more effective than those designed by therapists in naturalistic settings (Lipsey & Wilson, 1993; Shadish et al., 2000). The skills described and given in manuals can be learned, but do not necessarily make better therapists (Ogles et al., 1999; Beutler et al., 2004). Neither compliance nor adherence (treatment integrity) correlates continuously high with success. On the contrary: Sometimes manual integrity seems to undermine the natural social competencies of therapists (Henry et al., 1993a, b). Manuals mainly appear useful to beginners. Therapists obviously also wait for successes to appear, before actually employing the manual. In any case, the execution of manuals must leave space for therapeutic experience, competencies and indicators for justified deviations (e.g. when degradations appear).

8. *Nonspecific factors.* Numerous studies have pointed out the meaning of the aspects outside interventions, e.g. the therapeutic relationship quality, patient's expectations and attitudes concerning therapy, the fitting of patient's subjective disease theories and therapist's treatment theory, therapist's reliability and authenticity (genuineness), conditions in the social environment of the patient (partnership, family, occupation), setting variables, and so on (e.g. Grencavage & Norcross, 1990; Weinberger, 1995).

9. *Patient variables* seem to have a particular impact for the therapy success (e.g. Clarkin & Levy, 2004). More than about the diagnosis and problem severity it is about the premorbid adjustment (personality disorders are considered an unfavorable predictor) to personal and interpersonal competencies and resources, and particularly about the patient's motivation, self-relatedness, and receptivity to change.

10. Research findings on *self-organization* and *nonlinear dynamics*. The classical therapy research already points out that patient and therapist variables unfold in a "dynamic and ever changing context", i.e. interactively, and only then start taking effect (Clarkin & Levy, 2004, p. 215). Orlinsky and Howard's generic model (1986, 1987) as well as its advancements (Orlinsky et al., 2004) can be regarded as a synopsis of these system effects. Thompson et al. (1995) suggested that older patients who gained more from a depression therapy exhibited discontinuous change trajectories. In the meantime, various studies have explicitly examined the nonlinear and non-stationary dynamics of a complex therapy system on an individual level (psychological measurements: Haken & Schiepek, 2006; physiological measurements: Perlitz et al., 2004), on the level of micromatching between the therapist and patient (Kowalik et al., 1997; Schiepek et al., 1997), or on the level of interpersonal processes at a hospital ward (Haken & Schiepek, 2006). Many outcomes suggest that, on different time scales, therapy works in cascades of intermittent transitions between biopsychosocial patterns.

11. The brain does not function as a serial input-output system. Suitable computer metaphors

of brain functioning are obsolete. It is much more about a complex, self-organizing system, in which nonlinearities already start functioning within neurons, and even more so between neurons and neural assemblies (e.g. in numerous mixed feedback loops of the brain) (Freeman, 1999; Haken, 2002; Haken & Schiepek, 2006; Kelso, 1995). Built upon that are the nonlinear resonance effects, which are the basis for innumerable healthy (e.g. binding processes, Singer & Gray, 1995) as well as pathological processes (Popovych et al., 2006).

These findings lead to empirically founded doubts on the contribution of interventions to the therapy process. The findings also cause doubts on the importance of randomized controlled trials and practically on the entire linear standard model. Therefore, there might be no real perspective in continuing with this model even in an increasingly complex and complicated way, e.g. in so-called matching studies (also described as aptitude by treatment interaction (ATI) research). Here, patient, therapist, and treatment variables are systematically varied and tested against each other. One can easily imagine the exponential increasing factor combinations and by this the necessary amount of test patients even if only a relatively small number of factors with one or two characteristics each should find a way into such designs (see the work of the Project MATCH Research Group, 1997, 1978). Practical, economic, but also ethical borders are obvious, while the external or ecological validity and the potential practical benefits are reduced with the increase of effort.

An essential understanding arising from decades of process-outcome research could consist in not equating scientificness with linear treatment-outcome combinations. The question of scientificness cannot be decided on the basis of interventions, let alone of psychotherapy schools. Here, the path of confession into the profession ends in a dead-end street. But what is the alternative? Is this argumentation an indication of psychotherapy dismantlement? Should the therapists be deprived of their techniques? Should the basis of the accounting method used by health insurance funds or Medical Fee Schedule, which follow the actions described, be cancelled?

This is not about the destruction or deconstruction of psychotherapy, but about an open question. The perhaps violent consequences clarify, how deep-seated the standard model really is and how far its intuitive plausibility reaches. The aforementioned points thus have the value of anomalies that, inferring from other fields of science history, often remain meaningless for decades and lie in a discipline's collection of curios covered with dust. Also, the above mentioned anomalies are not altogether new or particularly spectacular, and partially even represent well-known textbook knowledge. They become virulent and important only when a paradigmatic alternative is present. Examples are Poincare's confirmation that there is no stable solution for the problem of three interacting bodies, which was taken up again seven decades later in the mathematics of nonlinear systems, or chemical oscillators, which were observed in the first decades of the 20th century, but explanation of which followed much later with the models of dissipative chemical processes.

Throughout the history of science many examples have appeared, showing that apparently irrefutable ways of thinking (a priories) must be given up in order to obtain progress. Such an example is believing that, according to the special relativity theory, the flow of time is universally equal and constant. Thus, time depends on speed. Another example is the acceptance of a unified, three-dimensional Euclidean space, independent of phenomena which take place in it. With the general theory of relativity it became clear that for the space-time curved e.g. by gravitational effects a different metrics is needed. Also and especially the field of quantum physics is full of examples of giving up a priori knowledge, separation from which required overcoming and discussion (Heisenberg, 1969, 1979; Kanitscheider, 1993). Leibniz's *"Natura non facit saltus"* is one of such, since the existence of discrete quantum states requires jumps. Another one is the identity relation, because where complementarity between the wave nature and the particle nature of phenomena (e.g. light) or small particles (e.g. electrons) is allowed, a thing is not nec-

essarily identical to itself anymore. Further examples are the "generalization" of basic everyday terms like "space" or "time", the task of direct descriptiveness by trusting the necessary mathematical operations, or abandoning the concept of classical causality, because in the quantum world the measured initial conditions can no longer be connected with the measured final states by continuous trajectories; their existence is not real, but potential—a strange kind of "physical reality just in the middle between possibility and actuality" (Heisenberg, 1979).

Alternative to an Evidence-Based Process Model

A possible renouncement of the a priori input-output interventionism brings into question what should one then hold on to? What is there to remain? What can we choose as an axiomatic starting point? It is hardly possible to avoid a definition, which, however, again has a relatively rational explanation (though an ontological final argument is hardly possible). We choose the concept according to which humans (and beings in general) are systems, whose parts interact in a nonlinear way (Haken & Schiepek, 2006; Strunk & Schiepek, 2006). The arguments confirming it fill volumes and their representation strongly exceeds the space available. For the brain the reference to neurobiological standard knowledge may be sufficient in order to clarify the existence of a highly dynamic and flexible network (= system) of particles (= neurons) with positive (activating) and negative (inhibitory) feedbacks on the cellular level, where the mutual influence of parts depends on the conditions of the parts. Psychological processes also influence each other just like social processes do (in dyads, groups, etc.). The acceptance of the non-linearity of effects is, by the way, weaker (i.e. more general) than the acceptance of linearity, because the first one contains the latter as a special case, and not the other way around.

With this starting point, phenomena like spontaneous pattern formation, self-organization, order transitions with critical instabilities, synchronization processes, nonlinear dynamics, etc. are now possible in such systems. Their possibility is the logical consequence of the choice made. Such systems can function adaptively and flexibly, they combine stability and instability, they are predictable to a limited extent only, but still researchable and possible to model by mathematical tools. Environmental events cannot define the behavior of such systems, which is why as early as in 1983 Kurt Ludewig suggested the replacement of the term "intervention" with its implication of the input-dependence of system behavior by the term "disturbance".

This way, psychotherapy would not represent an execution of interventions in the sense of environmental events, by which the system is to be forced to a particular reaction, but a concept of conditions for the possibility of self-organization. These conditions for the possibility of self-organization processes in complex systems (Table 1) can be specified on a theoretical and empirical basis (Haken & Schiepek, 2006). They can be described as *generic principles* and some of them can even be measured on the basis of a continuous process monitoring (repeated self-evaluations of the patient during the therapy process). Generic principles include various conditions for psychotherapy success, which were so far described as nonspecific factors of efficacy.

If systems function dynamically, the status diagnostics should be complemented with the process diagnostics. Factors of efficacy do not work by themselves, but unfold—as already stressed above with a quotation of Clarkin and Levy (2004)—only with their interaction, which takes place in individual cases. Evaluation and decisions on indication must be based on a single-case process diagnostics. Consistency is provided with the use of real-time monitoring procedures, used for simultaneous consideration of the patient's current state of mind, of their subjective perceptions and treatment progress, as well as of the patterns and dynamic characteristics of the "system". In this connection, the application of an Internet-based procedure, where patients are asked for a daily estimation by filling out a therapy process questionnaire particularly developed for such repeated questionings (Table 2), has proved to be sufficient. Patients' daily self-reflection has proven to supporting, stabilize, but also to motivate the patient's change process, the

more so as the item answers on Likert's and visual analogue scales are complemented with diary entries concerning important everyday experiences.

TABLE 1: GENERIC PRINCIPLES CONTAIN THE CONDITIONS FOR PSYCHOTHERAPEUTIC SELF-ORGANIZATION PROCESSES.

S	STABILITY CONDITIONS: DOES THE PATIENT EXPERIENCE STRUCTURAL AND EMOTIONAL SECURITY? IS THERE A FOUNDATION OF TRUST? IS THERE SENSE OF SELF-WORTH SUPPORTED?
I	IDENTIFICATION OF SYSTEM PATTERNS: RECOGNIZING THE SYSTEM FORM WHICH THE CHANGES ARE INTENDED. EXAMPLES: INDIVIDUAL BEHAVIOUR, THOUGHTS, FEELINGS; INTERACTION PATTERNS; PARTNERSHIPS; FAMILIES; OR GROUPS. RECOGNIZE THE CHANGES AND THE INTERVENTION OBJECTIVES. A DESCRIPTION AND AN ANALYSIS OF THESE PATTERNS OR SYSTEM PROCESSES ARE NECESSARY.
C	CONNOTATION: CLARIFYING AND PROMOTING THE SENSIBLE CLASSIFICATION AND EVALUATION OF THE CHANGE PROCESS IN REGARD TO THE PATIENT; CONSIDERATION OF PATIENT'S LIFESTYLE AND PERSONAL DEVELOPMENT. TASKS: WHAT ARE FOR CHALLENGES ARE PATIENTS FACING AT THE MOMENT? WHAT IS THEIR CURRENT LIFE SITUATION? APPRECIATION IN RELATION TO PATIENTS' LIFE PLANS.
O	CONTROL PARAMETERS: ENERGIZING ACTIVATION OR INTRINSIC MOTIVATION FOR CHANGE; ACTIVATION OF RESOURCES; CONSIDERATION OF PATIENTS APPROACH GOALS AND REQUESTS.
D	DESTABILIZATION: FLUCTUATION ENFORCEMENT: BEHAVIOR EXPERIMENTS; PATTERN INTERRUPTIONS; INCLUSION OF DISTINCTIONS AND DIFFERENTIATIONS; EXCEPTIONS; TESTING UNUSUAL, NEW BEHAVIOUR, ETC.
O	CONSIDERING KAROSEN: ABLE RESONANCE AND SYNCHRONIZATION: MANAGEMENT AND COORDINATION OF THERAPEUTIC PROCEDURES AND COMMUNICATION STYLES WITH PATIENT'S PSYCHOLOGICAL AND SOCIAL PROCESSES/RHYTHMS.
P	PLANNING: DELIBERATE SYMMETRY BREAKING: GOAL ORIENTATION: ANTICIPATION AND PLANNED REALIZATION OF STRUCTURAL ELEMENTS OF THE NEW CONDITION.
R	RESTABILIZATION: MEASURES FOR THE STABILIZATION AND INTEGRATION OF NEW COGNITIVE-EMOTIONAL BEHAVIORAL PATTERNS

TABLE 2: FACTORS (SUBSCALES) OF THE THERAPY PROCESS QUESTIONNAIRE (TPQ) USED FOR DAILY ESTIMATES OF VARIOUS TREATMENT PROCESS ASPECTS WITHIN THE SYNERGETIC NAVIGATION SYSTEM.

THERAPY PROCESS QUESTIONNAIRE	FACTORS/SUBSCALES
1	THERAPEUTIC PROGRESS/CONFIDENCE/SELF-EFFICACY
2	INTENSITY OF PROBLEM TREATMENT/THERAPY MOTIVATION
3	DEVELOPMENT OF NEW PERSPECTIVES/INNOVATION
4	THERAPEUTIC RELATIONSHIP QUALITY/OPENNESS/TRUSTING THE THERAPIST
5	STATIONARY CLIMATE/STATIONARY THERAPY/INTERPERSONAL RELATIONS/QUALITY ON STATIONARY THERAPY
6	DYSPHORIC EMOTIONS/SELF-RELATEDNESS
7	SYMPTOM SEVERITY

Daily estimates (a daily time schedule has proven to be very useful) are organized and visualized in a form of time series. Further processing steps give—also optically prepared—information on the complexity and entropy of time series, existence of critical instabilities, on the type and intensity of synchronization between the items and subscales (fields of experience, on repetitive or non-repetitive patterns, and thus on the connections between the content-related events from the patient's view and the quantitative characteristics of therapy dynamics (Schiepek, 2007).

Therapist and patient can use this form of feedback as a basis for regular conversations, in which the course of treatment and patient's personal development are reflected and discussed in a form of suitable future steps. It is an "eye-level" therapy, where the patient can use and develop their self-management resources. Possible functions of such a continuous process summarization

and a feedback concerning a "tertium datur", which in this case consists of measurement results presented on the screen, are shown in Figure 1.

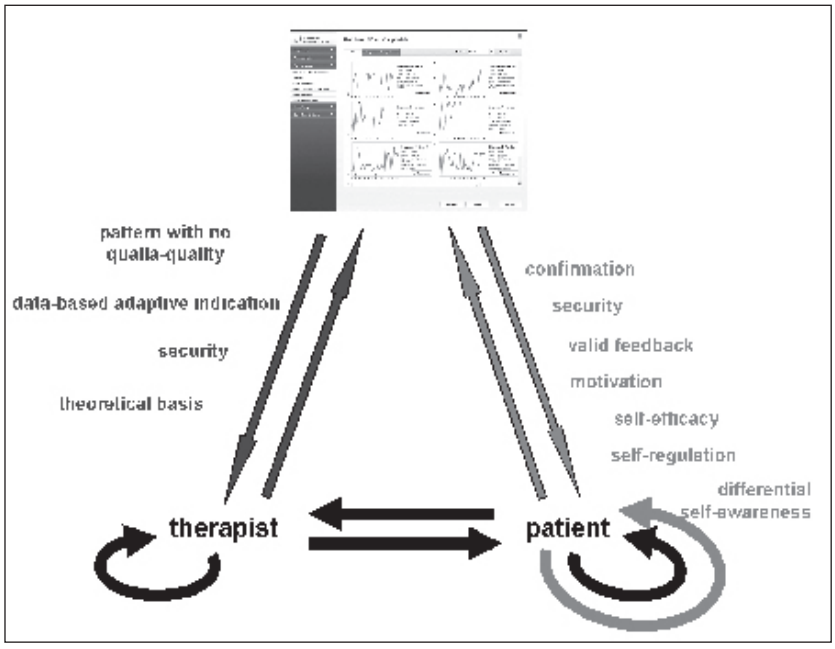

Figure 1: Functions of repeated Internet-based self-evaluations (by the use of a therapy process questionnaire or other usual instruments) and of the therewith possible feedback for patient and therapist. The existing interactions and intra-individual feedback loops are supplemented by an external source of information, which is specialized for measuring and visualizing the characteristics of nonlinear dynamics and therapeutic self-organization.

Thus, the conditions are created for considering psychotherapy as a "management" of self-organization processes (Figure 2) with an equal contribution of the therapist and the patient. The starting point is the theoretical core of synergetics as well as the mathematical formalism of the theory of complex dynamic systems, which synergetics refers to and uses. In order to produce concrete specifications of the formal theoretical core for certain applications, reinforcement by additional suggestions and phenomenon-specific relations is needed. Only such core extension leads to provable theories for intended applications, e.g. for psychotherapeutic change processes or neurodynamics (for the structuralist view of theories see Stegmueller, 1973; Westmeyer, 1992). For this, access to phenomenon-specific knowledge is necessary. After a phenomenon-referred core extension, the derivation of hypotheses is possible which are submitted for testing with suitable operationalizations and measurement processes. Equipment, necessary for the arrangement, representation and analysis of acquired data, which through the use of real-time monitoring procedures usually appear in a form of time series, is the spectrum of methods for linear and nonlinear time series analysis.

In the *Synergetic Process Management* a set of procedures is employed, which enable the presentation of functioning and network structures of the systems involved. In Figure 2 they are assigned to practitioner's propositional knowledge and competence. Examples: idiographic system modeling (ISM, Schiepek, 1991), methods of plan and schema analysis (PA, Caspar, 1996), configuration analysis (identification of "States of Mind" [SM], Horowitz, 1987) and ac-

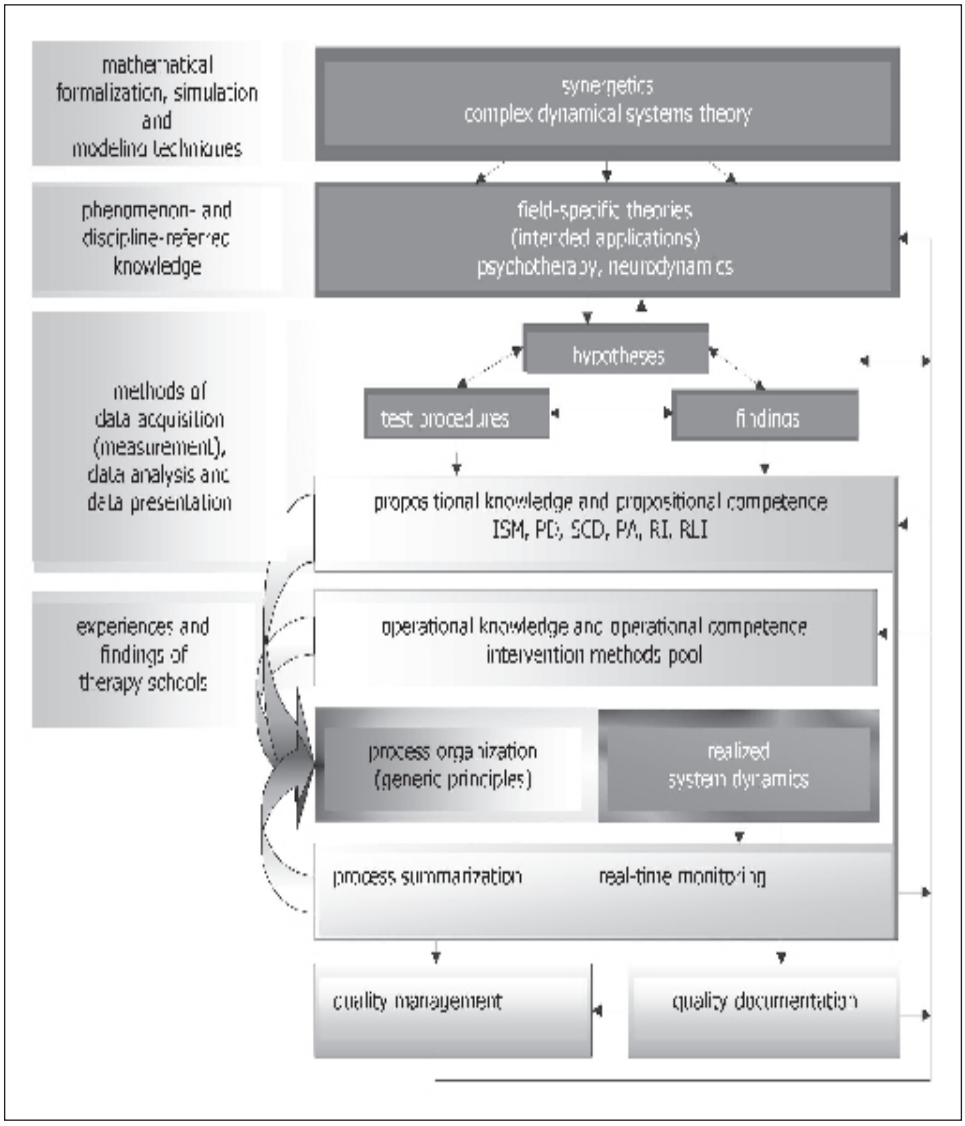

Figure 2: Structure and components of synergetic process management with reference to the field of psychotherapy.

quisition of resources (resources interview [RI], Schiepek & Cremers, 2003). These procedures are used to identify and describe patients' cognitive-emotional-behavioral patterns in their living environment or in their interaction with the therapist. The crucial factor with the case concepts is to understand the extent and the borders of the observed and changeable system, the time and space of modeling resolution and the observed system level(s) (biological, psychological, social-interactional level).

An important aspect of the propositional competence consists in acquiring information about dynamic characteristics of self-organizing processes. Process summarization with real-time monitoring (*Synergetic Navigation System*) offers various functions, e.g. representation of item dynamics (raw scores) and aggregated courses (subscales) as well as analyses of dynamic

fluctuation intensity and time series complexity. By means of confidence intervals, an estimation of statistic significance of complexity and fluctuation measures is realized. The degree of system coherency or synchronization (average item inter-correlation) is also observable during the system development, as well as the continuously changing correlation matrices, which provide information on current subsystem couplings. These analysis tools allow for a stability and coherence diagnostics of a dynamic system (SCD). The sensor within the therapy process dynamics does not need to be limited to subjective estimates, gathered with the therapy process questionnaire (Schiepek et al., 2003). Other information (e.g. from the therapist or from patient's social environment), physiological data or immune parameters are just as detectable and analyzable. Procedures of computer-based real-time monitoring are the heart of the synergetic process management, since they enable a data-based navigation through the turbulences of the system's self-organized development processes.

Naturally, therapists must possess a repertoire of intervention methods and specific therapeutic techniques, acquired with suitable training and advanced studies. As long as therapists can go back to the experiences and findings of various schools, while their own preferences, their personal competence profile and their personal style are considered, the synergetic process management on the level of intervention methods – and only on the latter! – can be described as eclectic.

Intervention techniques are used for realization of generic principles and enable practitioner's freedom of maneuver and choice within the functional equivalence of several techniques for the realization of a particular principle. However, one should consider that treatment techniques can, in their original context of employment, be found within particular belief contexts and explanatory models which are not to be taken over or are changed in actual contexts of using.

This freedom of choice concerning techniques places the synergetic process management in a position independent of therapy schools, without having to resign valuable experiences and findings concerning the effect of various treatment methods as presented within particular schools. The independence of the synergetic process management from classical therapy schools continues to be based on the fact that synergetics as a general theory of change and innovation processes operates on a substantially more general and abstract formal level than usual psychotherapy theories.

Available intervention possibilities and information are reflected and examined against the background of generic principles in order to achieve a patient-fair therapeutic offer, i.e. an offer suitable for the patient's current development and system condition. Generic principles serve as filters and criteria for continuous, adaptive indication decisions. There is a model of a "relatively rational justification" of therapy decisions in the background (Westmeyer, 1997). In Figure 2 the filter and screening function of generic principles is symbolized with arrows running from real-time monitoring, clinical diagnostic system modeling (propositional knowledge on the basis of applied assessment procedures) and from the available intervention methods pool towards the generic principles.

The patient is actively included in the process feedback and the evaluation of process analyses. Thus, partner-like cooperation develops, in which the patient becomes an independent process designer and gradually takes control over the process (Fahrenberg et al., 2002). This should also have a positive effect on their self-efficacy experience and their sense of self-esteem as well as on the therapeutic relationship (Figure 1).

The computer-based system, with the assistance of which the process documentation and the continuous process analysis come about, also includes a possibility of therapy evaluation. At various time points questionnaires can be applied, diagnoses entered, and social-demographic and therapy-referred data gathered (e.g. at the first contact before the beginning of treatment, at the beginning of treatment, at the end of treatment and at catamnestic intervals). The evaluation

results can flow into the quality management of a practice or a treatment center and become the basis for further optimizations of processes and treatment results.

The Synergetic Navigation System produces a complete record of the treatment process and results of each individual therapy, the individual case data being aggregated and summarized into group statistics. Thus, process-outcome research is possible in a more ecologically valid way within an actual practice setting. The results and experiences from the feedback system can retroact on various model components and levels and can be used for further practical intervention improvement as well as for analyses of scientific questions (feedback arrows in Figure 2).

A Changed Meaning of Interventions and Evidence-Based Practice in Psychotherapy

The model of synergetic process management provides a new context for the use of interventions in the psychotherapeutic process. As in quantum physics—at least in its "Copenhagen interpretation"—, where contact with a measuring apparatus is required in order to turn primarily potential quantum conditions to a real occurrence, i.e. an occurrence expressible and consequently manifesting in a form of classical physics (Heisenberg, 1979), the same holds for interventions. They are only potentially present—at least from the viewpoint of the "patient system"—even if applied purposely, deliberately and, from the therapist's perspective, objectively. However, deliberately performed treatments are not the only possible interventions—basically all environmental occurrences are. An intervention is an occurrence within the patient's "system environment", in which it produces a resonance effect. In addition to these environmental occurrences, dynamics inside the system can also lead to changes of cognitive-emotional-behavioral patterns even when no recognizable environmental occurrence corresponds to them. To my knowledge, a term suitable for this special self-referential dynamics does not yet exist, but there is a current neurobiological research direction dealing with brain activity without any external influences—the so-called *default mode* (Raichle et al., 2001). Here, the functional and anatomical mid-line structures of the brain play an important role.

If the intervened system defines the meaning of a manifest (in contrast to an initially potential) intervention, what role do interventions then still play within therapy? Beside the reinforcement of intrinsic and self-referentially arising fluctuations of the intervened system (see Table 1, Principle 5) their functions also exist (i) in the provision of structural help for the therapist, (ii) in the provision of plausible models and thus of cognitive and emotional security (Principle 1), and (iii) in producing confidence and trust for everybody involved.

In this model, evidence-basing represents the use of data-based evidence (process and outcome data) for the organization, optimization and quality assurance of therapies. This presupposes a routine employment of real-time monitoring procedures in practice, which should in the future be a part of treatment quality standards. Adaptive indications and relatively rational justifications of interventions thereby receive a suitable database from the current process. Real-time monitoring also offers completely new possibilities for practice research and consequently for the profession and professionalism of psychotherapy. In addition, suitably detailed process analyses can offer a valid counterpart on the psychological side for the neurobiological outcome and process research. Only a high-quality documentation of the nonlinear dynamics of processes permits a reasonable employment of complementary functional neuroimaging procedures, e.g. repeated functional MRI during the therapy process (Schiepek & Schönfelder, 2007; Schiepek et al., in press).

The value of the technology presented in this contribution lies in the field of the so far existing, predominantly verbal face-to-face psychotherapies, but also in Internet-based therapies—irrespective of neurobiological argumentations. If the future should offer possibilities for producing direct changes of neural networks in cases of psychological disorders on the basis of more invasive (e.g. deep-brain stimulation) or noninvasive (e.g. sensory stimulation) techniques (e.g. Popovych

et al., 2006; Tass et al., 2003), the status of interventions will have to be reconsidered. However, precisely the developments within the range of actual demand-dependent deep-brain stimulation demonstrate the actual importance of the (concretely: mathematical) understanding of neural resonance and synchronization processes, nonlinear dynamics and neural self-organization. □

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OPOMBE

[1] INTERPERSONAL PSYCHOTHERAPY

[2] COGNITIVE-BEHAVIORAL THERAPY