5.2

Integrated Psychological Therapy and Integrated Neurocognitive Therapy

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Abstract

This chapter contains 2 examples of combined group therapy approaches for schizophrenia patients: the integrated psychological therapy (IPT) and one of its further developments, the integrated neurocognitive therapy (INT), both initially designed in our laboratory in Switzerland. IPT represents one of the first comprehensive, manual-driven cognitive-behavioral treatment approaches combining cognitive remediation and the improvement of social competence. INT is a newly developed therapy program actually evaluated in an ongoing international randomized controlled trial. It combines neurocognitive and social cognitive enhancement based on the cognitive domains defined by the National Institute of Mental Health- Measurement and Treatment Research to Improve Cognition in Schizophrenia (NIMH-MATRICS) initiative. In this chapter therapists and researchers find information about empirically based theoretical framework, implementation as well as an overview of didactics and exercises of IPT and INT.
cognition [emotion and social perception, theory of mind (ToM), social schema and attribution] [14–18]. Therefore, cognitive impairments are a core feature in schizophrenia, actually discussed to become diagnosis criteria in DSM-V and ICD-11 [e.g. 19]. Cognitive impairments represent a rate-limiting factor in social functioning as well as in the general therapy process and progress with schizophrenia patients. Since psychopharmacological interventions failed to improve cognitive functioning sufficiently in the Clinical Antipsychotic Trial of Intervention Effectiveness study [19], psychological interventions to enhance neurocognition and social cognition became a central therapy target [20]. The psychological intervention best suited to reach this aim is cognitive remediation. On the background of evidence-based medicine, an intervention has to find empirical evidence for its therapy rationale (theory) as well as for its efficacy in laboratory-based, randomized controlled trials and its effectiveness in various standard care settings. Up to date, meta-analyses including randomized controlled trials generally support the efficacy of cognitive remediation in proximal, cognitive outcome [21, 22]. However, only studies that combined cognitive remediation with psychiatric rehabilitation (e.g. therapy of social competence, work rehabilitation) also obtained significant improvements in functional (distal) outcome [22].

Treatment Concept of IPT

On this background, the development of and research on IPT offers some pioneer achievement. IPT was one of the first comprehensive group treatment approaches for schizophrenia patients. The therapy concept of IPT is based on the underlying assumption that basic deficits in cognitive functioning have a pervasive effect on higher levels of behavioral organization (pervasiveness hypothesis [23]). First of all, a link is made between deficits in neurocognitive functioning and the microsocial level, which describes nonverbal and verbal communication in social interactions. This process refers to what is now called social cognition. According to the model of pervasiveness, the link is continued to the macrosocial level of social functioning, i.e. taking over a specific role in the family, job or community. In accordance with vulnerability-stress approaches [24], this model describes that basic neurocognitive deficits lead to difficulties in controlling the intensity and the processing of information (molecular level) and finally reduce the tolerance for interpersonal stress, particularly ambiguous or ambivalent forms. This can in turn lead to inappropriate social functioning. Brenner et al. [25] have described these functionally pervasive developments of deficits as vicious circles, one containing the accumulation of different cognitive deficits, the other comprising the reduction of social skills caused by the first circle. From a historical perspective, this basic work on IPT treatment conception was quite innovative for its time, since the first empirical study on IPT was carried out more than 30 years ago [26] and its first therapy manual in German was published
more than 20 years ago [27]. During the last decade, generally accepted integrated models for the explanation of schizophrenia functioning and the theoretical framework of newer integrated therapy approaches have been referred to the initial, empirically driven framework of IPT conception [9, 28]. During the last 3 decades, new research findings and models as well as practical and empirical experience with the program (feedback of patients and therapists; results of studies conducted in different countries) were permanently incorporated into the conception and technology of integrated psychological therapy (IPT). More recently, the IPT concept was supplemented with a modified empirically based integrated model [9] focusing on the relationship of neurocognition, social cognition and symptoms with functional outcome. This model has been expanded by the inclusion of patients’ treatment orientation, i.e. insight, intrinsic motivation and treatment compliance relevant to successfully coping with independent life [29, 30].

This theoretical framework of IPT based on empirical findings is consequently operationalized into a comprehensive integrated therapy program consisting of 5 subprograms, each with incremental steps. The IPT procedure starts with neurocognitive remediation, followed by interventions to enhance social cognition. IPT integrated social cognition as one of the key intervention topics in schizophrenia long before its initial definition. The first publication in the Medline database mentioning the term social cognition related to schizophrenia dates from 1993 [31]. In a third stage, IPT transforms the work on cognitive functioning into an interpersonal and social context using verbal communication tools bridging the gap between cognitive and social functioning. Finally, social competence is targeted by exercises to improve social skills and to increase patients’ mastery in coping with social problems for a more independent living. In all these steps, IPT considers patients’ treatment orientation including therapy motivation.

**The Implementation of IPT**

IPT has been widely adopted, especially in Europe. Recently, the 6th, revised edition of the German IPT manual was published [29]. The manual has been translated into 12 languages. Actually, Hogrefe Publishers prepare the 2nd, totally revised edition in English [30]. IPT is designed as a cognitive-behavioral group therapy approach. A team of a primary therapist and a co-therapist lead a group of 5–8 patients. The main role of the primary therapist is to structure the group sessions and support and encourage the group members using positive reinforcement and strongly focusing on patients’ resources. The function of the co-therapist(s) is formally equal to the patients’ role. Additionally, the co-therapist serves as a model for the patients and observes group processes to support and encourage weaker patients. Therapists should focus on behavior and be familiar with processes in groups with schizophrenia patients. In general, therapy sessions should be held twice a week. Groups with elderly patients are often of lower frequency. The sessions stretch from 30 to 90 min. It is difficult to
define the duration of each subprogram or the whole therapy program in a general manner. The duration mainly depends on the severity and chronicity of the disorder as well as on the patients’ motivation. Accordingly, the number of sessions required to complete a particular subprogram varies relative to the group members’ abilities to master the therapy activities. To foster the group members’ motivation by bringing more variety into the sessions, in the course of the first 3 subprograms activities from 2 separate subprograms may be conducted during the same session.

The original therapy materials have been modified, extended and differentiated, based on experiences made in different therapy groups. The degree of standardization differs according to the demands of the subprograms. It is usually necessary to modify and complete the materials according to the needs of a specific institution and group. The materials available from the authors [30] are intended to be a pool from which the adequate exercises need to be selected specifically and carefully. The conception of the materials is based on the contents of the therapy, whereby the relevant areas of treatment as well as the different categories of emotion played a decisive role. All therapy exercises should begin with materials considered to be emotionally neutral and easy to carry out (‘learning principles’). Only once the group members have achieved some mastery of the exercise with emotionally neutral materials, emotionally loaded task stimuli with increased degree of task difficulty can be introduced.

**The Five Subprograms of IPT**

IPT consists of 5 subprograms (see fig. 1). The program generally starts with the subprogram ‘cognitive differentiation’ and ends with ‘interpersonal problem solving.’ The successful and effective implementation of single subprograms depends on the assessment of differential indication and the respective homogeneity of the patient group to treat. Generally, subprograms take place sequentially. Considering the patients’ needs, contents of earlier program stages (e.g. cognitive differentiation) are frequently repeated in later stages (e.g. interpersonal problem solving) as booster sessions within further IPT treatment.

Over the course of the program, each subprogram follows some rules, based on learning principles: (1) start with easy tasks and proceed to more complex and difficult ones later on; (2) start with a high level of structure and reduce it in the course of therapy, and (3) avoid emotional, stress-provoking material and interventions at the beginning of each exercise.

**First IPT Subprogram: Cognitive Differentiation**

The purpose of this subprogram is to improve the basic neurocognitive processes (e.g. attention, verbal memory, cognitive flexibility, concept formation), which are
prerequisites for learning, serving as the cognitive substrates for social interaction and social problem solving. The group format and the consequent support of group interaction throughout all exercises in the subprogram ‘cognitive differentiation’ distinguishes the IPT procedure from some other neurocognitive remediation approaches: (1) IPT exercises directly address neurocognitive enhancement additionally include a gradually improved training of social cognitions (e.g. emotional processes, ToM, social schema, social attribution) and social skills using group and interpersonal tool; (2) besides the general learning by repeated training of specific neurocognitive skills according to errorless learning principles, IPT focuses strongly on a strategy learning approach to compensate for neurocognitive deficits.

It seems to be optimal to begin with 2-weekly sessions of 30–45 min and to increase the duration to 60 min after a few sessions. The cognitive differentiation subprogram uses a wide variety of exercises. They all comprise 3 steps. Various therapy materials (i.e. cards, worksheets) are available for each step. The group normally progresses from step 1 to step 3 in the sequence described as follows.

*Card Sorting Exercises*
Each group member obtains a certain number of cards, which are printed with designs that differ in 4 criteria: dimensions of shape, number, days of the week and color (fig. 2). Each participant is asked to sort the cards following the criteria defined by the therapists. Each participant’s neighbor then checks to see if the exercise has
been done correctly. The level of difficulty is gradually improved by the following repetitions.

**Verbal Concept Exercises**
There are different exercises for conceptual hierarchies, synonyms, antonyms, word definitions and context-dependent words, which can be carried out with word cards according to the context and exercise.

**Conceptual Hierarchy Exercise.** Participants are shown a word or phrase (e.g. cooking) and asked to name related words as they come to mind. Afterwards all the words mentioned are organized into hypernyms and hyponyms.

**Synonym Exercise.** Group members name words with the same meaning as a particular word (e.g. work). They then make up sentences using these words and decide whether there are any differences in meaning.

**Antonym Exercise.** The procedure is analogous to the synonym exercise.

**Word Definition Exercise.** The group members are asked to explain a word (e.g. door) to the co-therapist. They try to determine important aspects that enable them to describe the word.

**Word Clue Exercise.** Group member A is handed a card with 2 words printed on it, of which one is underlined (example: ballpoint pen – fountain pen), and group member A is requested to read both words aloud without revealing which one is underlined. Then he/she is asked to think of a word that enables the other group members to identify the underlined term.

**Context-Dependent Word Exercise.** The group members explain and discuss the different meanings of a word (e.g. bulb: tulip bulb – light bulb).

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**Fig. 2.** IPT subprogram cognitive differentiation, step 1: card-sorting exercises.
Object Guessing Exercises
One group member chooses an object in the room. The name of the object is written down for future checking, but this information is not shared with the other group members. The group’s task is to determine which object they were thinking of through a series of questions, which can be answered by ‘yes’ or ‘no’. The group members practice asking questions, gradually proceeding from very concrete to conceptual ones. Their use of conceptual questions is encouraged.

Second IPT Subprogram: Social Perception
The social perception subprogram of IPT takes into consideration the contextual and social components of cognitive functioning. The use of therapy materials operationalizes the 2 social cognitive domains, i.e. social perception and affect recognition. The objective of this subprogram is to improve the participant’s visual perception of social situations and the emotion involved. Along with cognitive differentiation, the social perception subprogram supports the cognitive enhancement, which represents a precondition for successful acquisition of interpersonal, social and community skills.

The social perception subprogram uses a series of slides depicting social situations. Some of the slides additionally involve facial expression of affect or gestures. The slides, which have been rated for their level of difficulty, vary in visual complexity (number of presented stimuli) and emotional loading. For the 6th German and the 2nd English edition of the IPT manual [30], a completely new set of 40 slides was evaluated (fig. 3). At the beginning of therapy, slides rated with a low degree of complexity and emotional loading are presented. The level of difficulty gradually increases as the group members make progress. The subprogram aims to improve the apprehension
and interpretation of social situations and perceived emotions. For this purpose, an important objective is that patients learn to separate between facts and assumptions.

The therapist uses 3 therapeutic steps to work with each slide.

**Gathering Information**
The group members are asked to describe a slide as accurately and as detailed as possible. At this step the slide should not be interpreted. Gathering information step by step and learning how to describe situations is a fundamental and important objective in this subprogram, building the base of the further proceeding.

**Interpretation and Discussion**
Group members are asked to state their views on possible interpretations of the situation and the expressed emotions depicted on the slide. Every opinion needs justification by reference to the actual visual information gathered in the first step. All the group members subsequently discuss the different possible interpretations. They learn how to judge the correctness and the likeliness of each interpretation. By comparing and substantiating various interpretations, the participants learn to resolve cognitive dissonance rather than just adopting group consensus. In addition, they learn to decode facial affects and emotional gestures and to understand how and why a social situation can be interpreted in various ways.

**Assigning a Title**
After gathering information and interpreting the pictures, the therapist asks the group members to choose a title for the picture. It should be short and meaningful, reflecting the most important aspects of the social situation on the slide (summarizing the contents of the slide). The appropriateness of the suggested title will enable the therapists to verify whether the key aspects of a situation have been perceived and understood.

**Third IPT Subprogram: Verbal Communication**

On the background of the incremental steps within the IPT procedure, the subprogram verbal communication is designed to serve as a bridge between the 2 first subprograms focusing on cognition and the 2 last ones addressing social functioning. The verbal communication subprogram requires patients to use and transfer the learned cognitive skills into interpersonal communication. It focuses on 3 basic communication skills.

**Listening**
Respecting and attending to other people’s contributions to a conversation.

**Understanding**
Correctly perceiving and interpreting the content of the transmitted information.
**Responding**
Formulating and sending an appropriate response.

The group members practice these basic skills in 5 consecutive steps. The tasks assigned gradually become more difficult; the demands increase during therapy. Work sheets are available for each step. For the initial phases, the therapy material is highly structured and task oriented, becoming less structured as the therapy progresses. The purpose of this incremental procedure is to help participants acquire more differentiated communication skills, which can eventually be applied to real-life interaction.

Failure to successfully cope with problems at higher levels of therapy indicates that the therapist should go back to the previous level(s). Once the fifth step is reached, the therapist needs to pay additional attention to the way each participant verbally interacts outside the confines of the therapy program. The therapy procedure will subsequently be described step by step.

**Literal Repetition Exercise**
A group member gets a card with a sentence printed on it and is asked to read it to the group aloud. Another member of the group literally repeats this sentence. All group members check if the exercise is being done correctly.

**Paraphrasing Exercise**
This exercise resembles step 1, the difference being that on each card only 1 or 2 words are presented. One group member is handed a card and asked to make up his or her own sentence with the words. The other group members then have to reproduce this sentence in their own words, yet retaining its meaning.

**W-Question Exercise**
The group or the therapist introduces a topic of discussion (e.g. ward, hobby) and writes it down on the blackboard. The group compiles a list of words related to that topic. These words are written down on cards, analogous to step 2. Each group member is asked to choose one of the word cards as well as a question word starting with ‘W’ (where, when, who, why, etc.), to combine them in a question and to ask it to another group member. The group then monitors if the question is related to the discussion topic and whether the answer refers to the question asked.

**Asking Questions about a Topic**
The group asks 1 or 2 members questions about a certain topic (e.g. newspaper article). The group members again monitor the process of communication.

**Focused Communication Exercise**
Once more, the group is provided with a topic of discussion. It can be adopted from newspaper articles, short stories, proverbs or figures of speech, slides or topics of interest
for the group members. The most important aspect of this activity is the evaluation of communication skills. Group members (acting as observers) or the therapists can serve as evaluators. The evaluation should take place on 2 levels. In order to evaluate the quality of the contents, the following questions should be asked: ‘How well were the contributions understood?’ ‘How well did the participants respond to what had been said?’ ‘How high was the quality of what was expressed?’ ‘Did the participants wander off to unrelated or irrelevant matters?’ However, an evaluation of the nonverbal aspects of communication should be conducted as well (e.g. eye contact, fluency, loudness, tone of voice, etc.).

**Fourth IPT Subprogram: Social Skills**

The subprogram social skills follows the enhancement of cognitive functioning as well as the re-establishment of basic conversational skills during the IPT procedure. The acquisition and improvement of social skills represents a precondition for reaching an adequate level of social competence reflecting self-efficacy and real-world success in patients’ daily lives. Today it is discussed that deficits in social competence refer to an impaired premorbid social adjustment, which interacts with factors that are adverse to individualization and socialization processes, largely inhibiting social learning. Furthermore, social competence refers to social incompetence, which tends to increase the longer the illness and hospital confinement last. Therapeutic techniques have to help the patient acquire or reactivate an adequate repertoire of social skills. Therefore, working on concrete behavioral aspects on the level of molecular skills such as posture, eye contact, facial expression, gestures, volume of speech and verbal fluency is as important as improving molar, i.e. more complex as well as more highly integrated and sequentially patterned modes of behavior during therapy.

On this background, the social skills subprogram uses certain techniques of behavior therapy such as instruction, modeling, shaping, coaching, role play, feedback and reinforcement. The focus of therapy is put on various social problems participants are confronted with in their daily lives. These include problem areas such as everyday life on the ward or at home, looking for work and accommodation, dealing with authorities, home care, as well as job and leisure skills. The therapy materials include examples of concrete situations addressed to these areas. The social skills training has 2 main purposes. On the one hand, it aims at helping participants generalize therapy gains to a number of real-life situations, and on the other hand, it sets out to meet the patients’ needs and to address their particular deficits and impairments. The latter aspect mainly involves cognitive processes and setting up the role play. The therapy procedure implemented in this subprogram comprises 2 steps.

**Setting Up the Role Play**

The therapist begins the session by explaining the (new) role play to be practiced and the interactional goals. The practice situation should be presented as simply,
clearly and concretely as possible. The group members are encouraged to identify the demands they are confronted with in a particular situation and to elaborate a dialogue. Then they have to assign an appropriate title to the role play. Asking the group to reach a consensus on an appropriate title enables the therapists to verify if the group members have understood and retained the basic points and the interaction goals to be achieved. The next step involves a discussion of anticipated difficulties, which serves to decrease fears and related anxieties. Finally, the group members are asked to rate the perceived level of difficulty of the role play using a scale from 1 (very easy) to 5 (very difficult).

*Enacting the Role Play*
First of all a small stage area with realistic props is prepared. Then the therapists enact the role play to provide a model for the group members. The participants benefit more if their models are not perfect. A feedback phase follows. First, the ‘active therapist’ comments on the role play. Then, the group members act as observers making a comment on specific aspects of the role play. The primary therapist should make sure that all their feedback is positive. In the next step, the group members start participating actively in the plays. The participant who originally found the exercise to be particularly easy (i.e. had rated it low in difficulty) begins. The cotherapist keeps his or her role. Feedback is given each time a group member enacts a role. The therapists have various techniques to assist group members (e.g. prompting, coaching). Positive reinforcement is, however, one of the most effective methods. Once the group has become adept at role plays, they may benefit from examining a videotape of their performance. To assist group members in generalizing the social skills they are learning, each therapy session ends with the assignment of a homework exercise (in vivo transfer).

**Fifth IPT Subprogram: Interpersonal Problem Solving**

Interpersonal problem solving is the final step of the IPT therapy program. It follows the preceding neurocognitive and social cognitive remediation and the increase in social skills. This subprogram sets high demands on the participants: schizophrenia patients sometimes have difficulties in appropriately identifying problems. Especially interpersonal problems in daily life are strongly associated with emotional distress leading to difficulties for the patients in coping adequately. It is important for the participants to acquire factual and problem-oriented attitudes and reasonable ways to solve problems to reduce the risk of failing in everyday life. They should also learn to anticipate the consequences of a solution objectively and unemotionally.

Problem-solving strategies must be applied to real-life situations whenever possible (in vivo transfer). Again, worksheets that address problems in everyday life such as budget, looking for work and accommodation, or home care are available.
The interpersonal problem solving subprogram is comprised of 7 steps following a problem solving model, which need to be conducted in sequence.

**Problem Identification and Analysis**
In the initial step of interpersonal problem solving, the therapist chooses a problem area to be addressed with the group after having carefully assessed and defined it by interviewing the group members. The problem area to start working with is usually chosen according to its urgency as well as to its probability of finding a solution. It is low in complexity and emotional loading. The principle of gradually increasing the level of emotional distress is acted upon analogously to the other IPT subprograms.

**Problem Description**
The cognitive description of a problem involves several goals, such as correcting idiosyncratic attitudes, learning to distinguish fact from fiction and how to break down complex problems into integral, well-defined parts of the overall difficulty, identifying the behavioral aspects of a problem and fostering pragmatic attitudes in order to enable a modification of the behavior.

**Generating Alternative Solutions**
Once the group has successfully described the problem, they can proceed with working out possible alternative solutions. In this phase of the treatment, the therapist encourages the group to come up with as many solutions as possible (brainstorming technique). The therapist reinforces all the suggestions made and notes them. At this point, it is important for the therapist not to assess or judge the suggestions.

**Evaluating the Alternatives**
Once various alternatives have been found, their advantages and disadvantages are weighed by assigning plus or minus points to each suggestion. The total number of points for each alternative can be calculated. This rating scale enables the group to develop an objective and neutral method of assessment. The therapist should accept emotionally biased judgments or assessments but not reinforce them.

**Deciding on a Solution**
The group selects an appropriate solution together, according to the previous procedure. However, each patient needs to say which solution best fulfills his/her own needs. The therapist’s job is to decide to what extent he/she should influence the decision-making process.

**Translating the Solution into Action**
Once a solution has been selected, the most difficult step of therapy follows, namely the translation of the chosen solution into action. Numerous therapeutic measures ranging from in vivo exercises to residential training programs can help the participants attain the goals.
of this subprogram. However, a solution can only be considered valid if it proves of value in real-life situations. Whenever possible a role play for a solution should be performed.

**Feedback Sessions**

The participants report the experiences they have made with the designated solution. Each attempt at constructive problem solving should be encouraged. Failing to solve a problem should not be interpreted as a reason for resignation. It should much rather motivate the patient to correct the designated problem-solving behavior. Such feedback sessions can substantially contribute to a lasting therapy success. Working on a ‘problem’ can require a period of several therapy sessions. Meticulously preparing the sessions and keeping strict record of them can, however, save a considerable amount of time.

**Evaluation of IPT**

Besides the broad implementation of the IPT technology in Europe, America and Asia, a large body of evaluation studies was conducted by independent research groups in 12 countries. Research was carried out with in- and outpatients in randomized controlled trial and field studies taking place in academic and nonacademic sites. Thirty-four investigations were quantitatively reviewed in a meta-analysis including 1,515 patients [3]. To our knowledge, IPT represents the first and only therapy approach for schizophrenia patients which was exclusively the object of a meta-analysis. The results suggest significant effects of IPT in various proximal and distal outcomes independently of the setting, site condition and quality of the trial. These favorable IPT effects compared to controls are the result of the specific interventions rather than of group treatments alone: in the control conditions, unspecific group activities to control the group effect showed stronger influences compared with treatment as usual in social cognition, social functioning and negative symptoms but not in neurocognition. However, IPT groups showed superior effects compared to both control conditions. Furthermore, the detailed analysis of IPT subprograms indicated an additional benefit for the combined interventions using the neuro- and social cognitive IPT subprograms in cognitive and functional outcome compared to the use of the neurocognitive subprogram alone [32]. A variety of studies on IPT used only single subprograms or a combination of subprograms. In accordance with the theoretical framework of IPT, only studies based on the complete IPT program generated sufficient generalization effects and were maintained from the end of treatment to follow-up [3, 32]. In summary, there is strong evidence for the efficacy and effectiveness of IPT. The American Psychological Association Task Force on Serious Mental Illness and Severe Emotional Disturbance classifies IPT as a state-of-the-art intervention and includes it in the Catalog of Clinical Training Opportunities: Best Practice for Recovery and Improved Outcomes for People with Serious Mental Illness (available at: http://www.apa.org/practice/smi_grid-v2.pdf; accessed June, 2009).
Further Developments of IPT

In order to capitalize on advances made in intervention technology and therapy topics associated with an improved understanding of schizophrenia functioning, the IPT concept was expanded and modified in our laboratory in Bern. In 2 research projects supported by the Swiss National Foundation our research group developed and evaluated 2 new therapy approaches: the 3 cognitive social skill programs for residential, vocational and recreational topics (W AF; grant No.: 32–45577.95) and the integrated neurocognitive therapy (INT; grant No. 3200 3B–108133) for schizophrenia patients (see fig. 4).

First of all, the scope of the IPT subprograms social skills and interpersonal problem solving was extended by developing 3 cognitive social skill programs for residential, vocational and recreational topics (we use the German abbreviation for ‘Wohnen, Arbeit, Freizeit’, W AF, [33]). The 3 WAF programs introduce rehabilitation topics that are particularly relevant to schizophrenia patients. Therefore, WAF represents cognitive and behavioral interventions to improve social competence in specific functional areas of patients’ daily lives instead of a general, rather unspecific support of social functioning used in IPT. Patients are treated with only 1 WAF therapy program depending on indication. The groups usually comprise 6–8 participants guided by a therapist and a cotherapist. Each of the 3 WAF programs focuses on (a) sensitizing the patients to their needs, options and skills (cognitive and emotional skill training); (b) helping them make a decision in any of these 3 areas; (c) providing support in putting the decision taken into action (practical implementation of skills), and (d) teaching them how to anticipate difficulties and to solve concrete problems. All 3 programs

Fig. 4. Further development of IPT subprograms.
have the same structure, which on the whole allows for flexible behavior and problem analysis. WAF was evaluated in an international multicenter study including 143 schizophrenia patients. The results suggested additional effects of WAF compared to traditional social skill therapy in proximal outcome (find a competitive job, leisure time activities, change in less structured housing offers) and a symptom reduction. Additionally, a relapse reduction was evident in a 5-year follow-up [33–36].

**Integrated Neurocognitive Therapy**

In a second step, our research group revised the basic IPT subprograms cognitive differentiation and social perception and designed the INT. An empirically based starting point for the development of INT came from IPT and WAF evaluation: a combination of the neurocognitive and social cognitive IPT subprogram yielded superior effects in proximal and distal outcome compared to neurocognitive remediation alone [32, 37]. Intrinsic motivation represented a strong mediator of improved functional outcome in the WAF procedure [35–37], which is in line with data derived from other research studies [38–40]. Following the IPT technology, the primary aim of the development of INT was to integrate neurocognitive and social cognitive exercises using group processes as therapeutic tools. Therefore, INT as well as IPT decisively differ from laboratory-based traditional cognitive remediation approaches. Another aim is the orientation to patients’ individual resources rather than their deficits.

**Treatment Concept of INT**

Based upon the theoretical and empirical state of neurocognitive and social cognitive research described earlier in this book, we developed a cognitive-behavioral group therapy approach. For this purpose, the original IPT model was modified. Conceptually, INT is built upon the definitions of the National Institute of Mental Health MATRICS initiative (Measurement and Treatment Research to Improve Cognition in Schizophrenia) [41–43]. Following the recommendations of this task force, 6 neurocognitive domains (speed of processing, attention/vigilance, verbal and visual learning and memory, working memory, as well as reasoning and problem solving) and 5 social cognitive domains (emotional processing, social perception, ToM, social schema and attribution style) were operationalized for therapeutic intervention.

**The Implementation of INT**

INT is designed as cognitive-behavioral group therapy in outpatient settings. A team of a primary therapist and a cotherapist lead a group of 6–8 patients. The roles and
functions of the therapy team are the same as described in the IPT section. A total of 30 sessions are administered. They take place biweekly and each last 90 min including a short break. Due to the outpatient setting, the exercises and therapy content are designed to have higher demands on patients' capacity and competence in a group setting compared to IPT. A not yet published manual for the use in a multicenter research project is available [37]. It includes a broad scope of interventions in neurocognitive and social cognitive domains offering the therapists to compose exercises according the participants' needs.

Since INT also includes computer-based exercises, the therapy procedure requires a computer room in addition to the standard group intervention room (fig. 5). During a therapy session of 90 min, the PC-based exercises are limited to 45 min. Therefore, patients and therapists have to switch from the specially equipped PC room to the group intervention room during each session. In the group as well as in the PC-based exercises group processes are used as basic therapeutic tools. In an ongoing international randomized-controlled evaluation study, the Cogpack computer program distributed by Marker Software is used.

The Four Subparts (Modules) of INT

INT consists of 4 therapy subparts (modules), each including different functional domains of neurocognition and social cognition. A schematic presentation of INT is given in figure 6.
Based on an integrated model [9, 30] confirmed by recent empirical data [14–17, 44–47], social cognition mediates the relationship between neurocognitive capacities and the acquisition of social skills as well as a generalization to the broad level of social functioning. Consequently, the inclusion of social cognitive therapy tools and the reference to patients’ experience of their cognitive functioning during daily living increase the emotional relevance and additionally support the generalization of proximal treatment effects to the level of social functioning. Furthermore teaching patients cognitive functions and their relevance in real-life situations within a vulnerability-stress-coping framework of schizophrenia enhances their insight into individual cognitive capacity. Individualized coping strategies (compensatory approach) are derived to compensate difficulties in daily life. Therefore, INT places a strong emphasis on fostering patients’ intrinsic therapy motivation. The reinforcement of the cognitive resources in repeated practice exercises using errorless learning principles as well as new experiences of successful coping in daily life enhances self-efficacy expectancy in terms of creating a sense of self-empowerment. Following the IPT tradition, the sequence of the INT subparts follows explanatory models describing mechanisms of interaction between basic and more complex cognitive skills with higher emotional strain [25, 48]. In accordance with the IPT program, the level of structuring group processes decreases during therapy.

This ‘bottom up’ and ‘top down’ approach puts a strong focus on the patients’ daily life context to promote transfer and generalization. Enhancing insight into (illness-specific) cognitive resources and deficits, as well as possibilities of coping represents
a further aim of treatment. All 4 modules include the same didactic therapy components (table 1).

In each module, INT starts with introduction sessions using educational tools to support patients’ understanding of the focused cognitive domain and its relevance in daily life. A precondition to bridge the gap between the experiences made in the laboratory during therapy and the daily living context outside the laboratory is to establish the patients’ awareness of their own resources and to enhance their insight into deficits in cognitive functions and their corresponding limitations in coping with daily problems. For this purpose, prototypical case vignettes (short stories) were designed for each cognitive domain. In these stories, the same imaginary actors always have successful or unsuccessful experiences based on specific cognitive resources or deficits. As a first step, the introduction of a theme through the use of these short stories gives patients as a first step the opportunity to discuss cognitive functioning without a relation to their own often stressful, emotionally loaded experiences. In a second step, the patients are asked whether they have had experience in daily life similar to the content of the stories.

In the consecutive sessions in each INT module, individual coping strategies are elaborated in the group setting. They compensate for cognitive deficits and optimize the individual resources for managing the demands of daily life associated with cognitive functioning. In parallel with this strategy learning approach, the INT procedure includes repeated training sessions, which are partially PC based. In this rehearsal approach, a large body of exercises is group based, using group processes and interactions to activate patients and to simulate real-life situations. Also during a computer session, therapists largely support group processes. For example, they ask patients to argue and discuss their solution as well as to articulate possible strategies in team competition. Finally, in vivo exercises and homework assignments are used to promote transfer of the learned cognitive skills into practice, to support

**Table 1.** Therapy components of each of the 4 INT modules (subparts)

<table>
<thead>
<tr>
<th>Each treatment area (A–D) of INT comprises:</th>
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<tbody>
<tr>
<td>• Introduction sessions</td>
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<tr>
<td>Perception of personal resources and possibilities of optimizing them in daily life</td>
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<tr>
<td>Education in the focused therapy area (→ ‘insight’ into problems/deficits)</td>
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<tr>
<td>→ Use of case vignettes</td>
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<tr>
<td>• Consecutive sessions</td>
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<tr>
<td>Compensation: looking for coping strategies</td>
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<tr>
<td>Restitution: practicing exercises (rehearsal)</td>
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<tr>
<td>→ Partly computer-based</td>
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For all therapy components: in vivo exercises and homework assignments to promote transfer and generalization.
generalization of the effects to other functions and to maintain the effects after therapy.

**Module A of INT**

After a short overview of the contents of the INT procedure, information-processing models are used to elucidate the impact of cognitive functioning on daily living. In this context, patients are asked about their own perceived resources and deficits in general cognitive functioning for the first time. Then, INT starts with the introduction of the basic neurocognitive domains of speed of processing and attention, followed by the social cognitive domain of emotion perception. In the beginning, the INT procedure is very structured and the cotherapist is working as a model in each new exercise.

*Speed of Processing*

Very simple PC-based exercises are introduced to give patients confidence in handling the computer. The level of difficulty is augmented following errorless learning principles. Additionally, behavioral therapy techniques such as positive reinforcement and positive connotation are implemented to support patients’ motivation and self-efficacy expectancy. Afterwards, patients’ experiences during the PC exercises are discussed in the group context. A strong focus is given to the identification of patients’ individual resources and deficits in this functional area. The relevance of speed of processing in daily living situations is summarized for each participant. Furthermore, patients learn coping strategies to compensate for deficits and to optimize resources by the didactic use of information and work sheets. Information sheets summarize the knowledge about the function of speed of processing in information processes and behavior. The work sheets individualize the information by asking patients whether they have any experience in dealing with such problems at work, in leisure time activities or at home. Finally, the learned compensation strategies are habituated in repeating the PC exercises of the introduction session.

*Attention*

Alertness and vigilance are addressed separately. Both are introduced by reading prototypical short stories in the group. Again, PC-based exercises addressing attention functioning in understimulating tasks are repeatedly practiced. In a following educational part, patients learn that speed and attention functioning is strongly affected by the state of mood and the level of interest. Here, newly developed card-sorting exercises are introduced to combine possibilities of emotional expression and the level of attention using verbal stimuli.

*Emotion Perception*

This topic was already introduced in the neurocognitive part of module A using the card-sorting exercise described above referring to the intention of INT to always intervene in neurocognition and social cognition in parallel. A filter model addressing the relationship
of perception and memory and individual experience introduces perceptual processes. Therein, emotional distress and mood are declared as a possible filter. Patients are asked about their own or others’ experience with each of these basic emotions. For a better understanding of the emotional impact, the relationship of emotional feeling to neurocognitive functioning, somatic reaction and behavior is explored in patients’ daily living experience.

A large body of pictures from the IPT, from other sources or from new sets standardized in our laboratory is available in the manual to train affect decoding. Here, the INT procedure starts with unambiguous pictures including simple stimuli of facial affect, followed by pictures addressing facial affect and gestures, and ends with complex pictures showing emotionally loaded interpersonal situations.

In complementing affect recognition tasks, a second card sorting exercise was designed to address emotional concept formation: patients receive dark and light grey cards. One basic emotion is written on each of the dark grey cards. The light grey cards contain different commonly used terms, most concerning 1 basic emotion. Others are ambiguously referring to more than 1 emotion. The patients have to sort the cards according to the basic emotions (fig. 7). Each decision has to be argued to find a group consensus. If this is not possible due to the ambiguous meaning of a word, 2 solutions are accepted. Finally, the impact of the emotional state on cognitive functioning in daily life in terms of the use of speech is discussed in the group.

**Module B of INT**

Didactically, the second module of INT is strongly related to the content of module A. The already introduced filter model explains the relationship between perception and
memory, wherein the quality of selective attention of the environment is postulated as strongly dependent on individuals’ earlier experience and mood. The 2 MATRICS dimensions verbal learning and memory, and visual learning and memory are dealt with separately, beginning with the former. The social cognitive part of this module represents a straight continuation of the perceptual process introduced in module A. The patients learn to recognize the key information in social situations. On this background, INT works on patients’ assumption of other’s intention and thinking in a social situation, which is defined in the literature as Theory of Mind (ToM).

Verbal Learning and Memory
This neurocognitive domain is introduced by reading 2 prototypical short stories in the group. One short story addresses the short-term memory, the other one the prospective memory. Again, the relevance of the personal level of functioning in this area to cope with life successfully and patients’ assumptions are focused. Patients first train memory skills in repeated PC-based exercises using errorless learning strategies. Thereafter, patients’ experience of their performance in the PC exercises is compared with their estimation made before to identify their resources and deficits in verbal memory. Following a normalizing approach, deficits and resources are positively connotated: everybody has an individual profile of cognitive functioning comprising parts of strength and weakness; it is hardly possible to have strength in every domain of cognitive functioning. Individual strategies of the patients used in daily living to compensate for these deficits are summarized and completed through handouts. Information sheets are available for the short-term as well as for the prospective memories. The compensation strategies are exercised in the repetition of the PC tasks. Additionally, we developed group exercises to simulate real-life situations and to force group processes. For example, in a role play in which all patients participate, every patient gets a card including the name, the hobby and the favorite color of a fictive person, e.g. a politician, or a popular movie or sports star. In a highly structured exercise, each patient reads the warrant of the respective person on his/her card, which has to be memorized by the other group members. Such exercises, which probably take participants’ interests of private life into account, strongly support the motivation for active participation in the program.

Visual Learning and Memory
The intervention on visual learning follows the same steps as described for verbal learning and memory. Working on visual learning is less time-consuming than working on verbal learning; too much repetition should be avoided. The contents of PC-based exercises include traffic signs and other figurative cues instead of verbal tasks.

Social Perception
The intervention in this cognitive domain is strongly based on the one used in the IPT procedure. For example the same series of pictures of the IPT is used. Additionally, a
set of more complex pictures was designed to augment the level of difficulty. Some of the contents of the pictures are taken into action using role plays. This helps to activate the patients and gives them an experience of the key aspects of the situation.

Theory of Mind
As mentioned above, ToM functioning is stimulated in a group setting per se. In the social perception task before, ToM skills were already trained implicitly by the interpretation of depicted interpersonal situations. On this background, we developed the following exercise: the group is split into 2 parts. While 1 half leaves the room together with the cotherapist doing some alternative exercises, the other half chooses a picture out of a set of landscapes and describes the chosen one in detail analogous to the social perception task (sending group). The members of the sending group memorize the detailed description. The other half of the group returns to the room without knowing the targeted picture. Then the sending group verbalizes the description and the members of the other group (receiving group) have to take over the verbalized perspective to form an internal picture. This should help the receiving group recognize the targeted picture from the set. In further exercises, the participants have to take over the perspective of actors in fictive written stories, movies or comics. Some of the contents of these ToM exercises are also transferred into role plays. Thereby, the emotional impact of the actors and the comparison with individual daily life experience are of special interest.

Module C of INT

Module C focuses on the MATRICS domains of reasoning and problem solving representing the highest level on neurocognitive demands. The 2 targeted domains are dealt with separately, beginning with reasoning. The social cognitive part of this module addresses social schemas including exercises on social norms and social scripts.

Reasoning
The module starts with reading a short story concerning the targeted cognitive function in a social context. In the educational part, the term ‘reasoning’ is replaced by ‘thinking’ in the context of daily living situations. A strong focus is given to patients’ own thoughts in dependence on concrete social situations and its emotional impact. Moreover, the verbal communication skills in interpersonal behavior represent an intervention topic by the use of verbal concept tasks: PC-based exercises are followed by group exercises concerning conceptual hierarchies like in the IPT procedure. On an advanced level patients improve their capacity to find the right words during a communication and to summarize in their own words what they have experienced when watching a movie or reading a book. Additionally, the competence in planning a certain behavior is taken into consideration. Again, this is operationalized in
a group exercise: the course of concrete actions well known in daily living, such as cooking spaghetti or going to a birthday party, is split apart into sequences. The therapist writes these sequences on different cards. Each patient gets 1 card. The group members have to put the different cards (sequences) in the right order.

**Problem Solving**
A standard problem-solving model commonly used in cognitive-behavioral therapy is taught. The patients then repeat abstract laboratory-based computer exercises for problem solving. These exercises are partly done in small groups of 2 or 3 patients to emphasize group interaction and the social context of problem solving. The patients have to argue and convince the other group members of their own solution and have to find a consensus. Riddles are used as well. In another group session, each patient mentions a problem he/she actually could not solve. The problems should be rather simple with a high possibility of finding a solution during therapy (e.g. to clean the apartment, to find a friend). The standard problem-solving techniques are applied (compare IPT).

**Social Schemas**
Many techniques described in ‘reasoning and problem solving’ are used, but social relations stay in the foreground. Social schemas are modified in 2 ways: first by the use of social action sequences (scripts) and second by the reflection of the impact given through social norms and roles. For instance, in a social script exercise 4 cards with pictures referring to a common daily action (e.g. buying a bus ticket; ordering a meal) are presented to the group. The patients then describe the pictures on the cards and afterwards they try to get the cards (sequences) into the right order. Finally the patients find a title best describing the content of the sequence. Again, they are instructed to use facts and not assumptions to argue.

**Module D of INT**

Finally, the last module addresses working memory. While the topic of the first module was understimulation derived by sensory poverty, this part completes the INT concept with topics referring to overstimulation associated with sensory overload. The working memory comprises therapy sessions concerning cognitive flexibility and selective attention processing. Emotional strain associated with stressfully experienced overstimulation and possibilities of coping are a main focus during the sessions. Additionally, social cognitive interventions include the impact of the individual attribution style to emotionally loaded stress features – often associated with psychotic positive symptoms. Consequently, patients’ emotional strain is highest in this final part of the INT procedure. On this background, it seems necessary that emotional as well as behavioral coping strategies are implemented.
Working Memory

In the first educational part, the patients read a short story wherein the protagonist has to shift between several actions during a competitive work. The cognitive flexibility skills needed are related to personal experiences of the participants. Compensation strategies are introduced using information sheets. The following intervention uses work sheets to individualize and transfer the coping compensation strategies into concrete daily living situations. With the help of PC-based exercises the patients first train the learned strategies on a high abstraction level. Role plays then stimulate the use of cognitive flexibility skills in a social context before each patient tries to implement the learned skills in his personal area. In a second short story, the patients learn that coping with a stress-inducing sensory overloaded situation demands selective attention skills. All exercises analyze cognitive, emotional, behavioral and somatic consequences of internal and external overstimulation. Introducing a vulnerability-stress-coping model, patients learn to understand how individual stress is preconditioned and how to manage stressful situations. Thereby, the impact of the environment, interpersonal and social circumstances, as well as individual resources are considered. In a final stress inoculation training the patients learn to cope with stress.

Attribution

Many schizophrenia (out-)patients suffer from persistent positive symptoms associated with negative life experiences. The social cognitive domain of attribution is often strongly related to positive symptoms. In appraising a situation, schizophrenia patients often jump to conclusions without gathering all the information or show an overgeneralized attribution. Thus, intervening in attribution can lead to a high emotional strain for the patients. This is the reason why INT addresses this theme at the end, when the group has established high cohesion (friendship and confidence). Here, INT works with standardized descriptions of concrete situations. The fictive protagonist, who is well known from the short stories read in the group, acts in situations taken out of real life. The probability is high that some patients have had comparable experiences. For example, ‘Peter (fictive protagonist) is sitting in a restaurant drinking a coffee and reading a newspaper. A man eating at another table looks at him from time to time.’ The patients are asked to describe the situation and to formulate hypotheses why the man is looking at Peter. All alternative hypotheses are summarized and evaluated. The cognitive, emotional and behavioral consequences of each hypothesis are analyzed. The patients are drilled to consequently use facts instead of assumptions and that facts have to be completed before the situation can be interpreted. The described situation is then practiced in role plays to stimulate patients’ perception of related feelings. This represents 1 goal of the INT procedure: that patients experience their feelings related to a concrete situation and that a change in thinking and behavior has emotional consequences.
Feasibility of INT

In an ongoing randomized multicenter study, supported by the Swiss National Foundation, 8 centers in Switzerland, Germany and Austria participate. Up to now, a total of 145 schizophrenia outpatients could be included. In this project, the feedback given by therapists and patients was excellent. The low dropout rate of only 11% and the relatively high rate of over 80% of optional session participation indicate a high acceptance of the INT procedure by patients. The first study results show a superior proximal outcome in the cognitive area compared to treatment as usual. Additionally, these favorable effects could be generalized to a more distal outcome of social functioning and negative symptoms. These therapy effects could be maintained during a follow-up of 1 year [49]. Consequently, INT represents a new promising cognitive remediation approach which seems to be feasible and effective.

References


