

# Metacognitive Training in Schizophrenia

## *Theoretical Rationale and Administration*

**STEFFEN MORITZ, RUTH VECKENSTEDT, FRANCESCA BOHN,  
ULF KÖTHER, AND TODD S. WOODWARD ■**

Despite their widespread usage, neuroleptic agents do not provide lasting and comprehensive treatment success in many patients with schizophrenia. One-third of all patients are neuroleptic-resistant (Elkis, 2007; Lindenmayer, 2000), and the mean effect size of neuroleptics above placebo is only in the medium range (Leucht, Arbter, Engel, Kissling, & Davis, 2009). Even for those who benefit from neuroleptic administration, treatment can often come at a considerable cost in view of side effects, particularly neurological symptoms under first-generation neuroleptic agents, and metabolic symptoms, such as weight gain and diabetes under some second-generation agents (Haddad & Sharma, 2007; Rummel-Kluge et al., 2010). In addition to side effects, poor therapeutic alliance, lack of insight (Bora, Sehatoglu, Aslier, Atabay, & Veznedaroglu, 2007; Buchy, Malla, Joobor, & Lepage, 2009), and memory problems (Moritz et al., 2009) are reasons why up to three-quarters of patients withdraw medication after hospital discharge (Byerly, Nakonezny, & Lescouffair, 2007; Lieberman et al., 2005).

The complacency that followed the introduction of atypical neuroleptics has led to a sober reassessment of the benefits and risks of neuroleptic treatment. The initial enthusiasm about the benefits of atypical drugs has markedly diminished in recent years (Davis, Chen, & Glick, 2003; Lehrer, 2010). In addition, the role of psychotherapy is being reconsidered, and psychological models and treatment approaches now face less skepticism. An extensive line of research has put forward evidence for contributions of neuropsychological deficits (Schretlen et al., 2007) and, more recently, cognitive biases (Bell, Halligan, & Ellis, 2006; Freeman, 2007) in the pathogenesis of psychosis. Results from basic research are increasingly translated into treatment programs (Roder & Medalia, 2010). So far, the most effective psychological treatment of psychosis appears to be cognitive-behavioral

therapy (CBT), which exerts a small to medium effect size as an add-on treatment to neuroleptics (Wykes, Steel, Everitt, & Tarrier, 2008), although—as in other psychological disorders—dissemination is scarce (Shafraan et al., 2009).

Psychopharmacology and psychotherapy should be seen as complementary rather than as rivals or counterexclusive interventions. For example, psychopharmacology is often a prerequisite for psychotherapy in order to mute agitation, formal thought disorder, and hostility, which may undermine or even preclude a therapeutic relationship. Psychotherapy, in turn, improves the person's understanding of his or her symptoms and thereby often ameliorates medication adherence. Tentative evidence suggests that the routes of action are very different (Birchwood & Trower, 2006; Moritz et al., 2009); neuroleptics provide some detachment and emotional numbing but do not alter belief conviction (Mizrah et al., 2006), whereas psychotherapy can enhance illness insight and decreases stress.

## METACOGNITIVE TRAINING FOR SCHIZOPHRENIA: OVERVIEW

Metacognitive training (MCT; from *metacognition*, “thinking about one's thinking”) is a novel approach founded in the tradition of psychoeducation, cognitive remediation, social cognition training and CBT. It is now in its fourth edition, and has been translated into 29 languages. MCT targets cognitive biases putatively involved in delusion formation, for which patients often lack adequate awareness (see next section). Another explicit aim of MCT is to foster improved social cognition and theory of mind (ToM; for an overview see Moritz, Vitzthum, Randjbar, Veckenstedt, & Woodward, 2010; Moritz & Woodward, 2007b). The training is highly structured, as we endeavored to keep preparation time short and thus facilitate its dissemination. Depending on the group's level of understanding, the text should be read or paraphrased. A friendly and humorous atmosphere should be created, and the exercises should be delivered in an entertaining, interactive, and playful fashion. The present program can be downloaded free of charge via the following link: [www.ukz.de/mkt](http://www.ukz.de/mkt). Table 15.1 summarizes the eight modules of the MCT along with target domains and learning aims.

The main objective of the MCT program is to raise the patient's awareness of cognitive biases (e.g., jumping to conclusions) and to prompt him or her to critically reflect on, complement, and alter his or her current repertoire of problem-solving and thinking skills. Longitudinal studies (Klosterkötter, 1992) assert that psychosis is not a sudden and inevitable event but is often preceded by a gradual change in the evaluation of one's cognitions and (social) environment over several weeks. The route into psychotic breakdown is thus not necessarily a one-way street, but is a potentially reversible process. Empowering metacognitive competency by raising awareness for cognitive biases may then act prophylactically against psychotic breakdown.

The training is delivered by a health care professional in a group of 3–10 schizophrenia spectrum patients. Although trainers should preferably be psychologists

*Table 15.1* SUMMARY OF EACH METACOGNITIVE TRAINING MODULE (GROUP SESSIONS)

Module	Target domain	Description of core exercises and learning aims
(1) Attribution: blaming and taking credit	Monocausal inferences	Different causes of positive and negative events should be contemplated. Participants are taught to consider various causes instead of converging on monocausal explanations. For example, "a friend was talking behind your back"; dominant interpretation: "friend is not trustworthy" (blaming others); alternatives: "I have done something bad" (blaming self), "she is preparing a surprise party for my birthday" (circumstances). The negative consequences of a self-serving attribution are repeatedly highlighted.
(2) Jumping to conclusions I	Jumping to conclusions/ liberal acceptance	Motifs contributing to hasty decision making are discussed and disadvantages of jumping to conclusions are highlighted. Fragmented pictures are shown that eventually display objects. Premature decisions often lead to errors, emphasizing the benefits of cautious data gathering.
		In the second part, ambiguous pictures are displayed. Here, a quick survey leads to the omission of details, demonstrating that first impressions, in many cases, only reveal half the truth.
(3) Changing beliefs	Bias against disconfirmatory evidence	Cartoon sequences are shown in reverse order, which increasingly disambiguate a complex scenario. After each (new) picture, participants are asked to (re-)rate the plausibility of four interpretations. On some pictures, participants are "led up the garden path." Thus, participants learn to withhold strong judgments until sufficient evidence has been collected, and they are encouraged to maintain an open attitude toward counterarguments and alternative views.
(4) To empathize I	Theory of mind first order	Facial expression and other cues are discussed for their relevance to social reasoning. Then, pictures of human faces are presented in the exercises. The group should guess what emotions the depicted character(s) may feel. The correct solution often violates the first intuition, demonstrating that reliance on facial expression alone can be misleading and that response confidence needs to be attenuated when the available evidence is insufficient.
		In the second part, cartoon strips are shown that either must be completed or brought into the correct order. Participants are shown that social inferences should involve multiple pieces of evidence.

(5) Memory	Over-confidence in errors	Factors that foster or impair memory acquisition are discussed first, and examples for common false memories are presented. Then, prototypical scenes (e.g., beach) are displayed with two typical elements each removed (e.g., towel, ball). Owing to logical inference, gist-based recollection, and liberal acceptance, many patients falsely recognize these lure items in a later recognition trial with high confidence. The constructive rather than passive nature of memory is thus brought to the participants' attention. Participants are taught to differentiate between false and correct memories by means of the vividness heuristic.
(6) To empathize II	Theory of mind second order/need for closure	Different aspects guiding theory of mind (e.g., language) are discussed with respect to both their heuristic value and fallibility for social decision making. Then, cartoon sequences are presented, and the perspective of one of the protagonists must be taken, which involves discounting knowledge available to the observer but not available to the protagonist. For the majority of sequences, no definitive solutions can be inferred, which is unsatisfactory for patients with an enhanced need for closure.
(7) Jumping to conclusions II	Jumping to conclusions/ liberal acceptance	As in module 2, the disadvantages of quick decision making are emphasized with multiple examples. In the exercises, paintings are displayed for which the correct title must be deduced from four response options. On superficial inspection, many pictures tempt false responses.
(8) Mood and self-esteem	Mood and self-esteem	First, depressive symptoms, causes for depression, and treatment options are discussed. Then, typical depressive cognitive patterns are presented (e.g., overgeneralization, selective abstraction), and the group is asked to come up with more constructive and positive ones. At the end, some strategies are conveyed to help patients transform negative self-schemata and elevate their mood.

or psychiatrists who have experience with schizophrenia spectrum disorder patients, psychiatric nurses, social workers, and occupational therapists may also be eligible. For example, our groups in Hamburg are run by psychology students receiving extensive training and supervision.

The MCT comprises eight modules that consist of a series of PDF-converted slide shows that should be displayed via a video projector onto a white wall or screen. For several languages, two parallel cycles are now available that allow participants to undergo two sessions for each target domain, with new examples. Each session should not last longer than 60 minutes, as many patients have a poor attention span. As each module contains more exercises than can be accomplished in this timeframe, the trainer can choose among the extensive material and should skip ahead to the learning aims when the allotted 45–60 minutes is nearing completion. Trainers may well deviate from the slides, or blend the MCT with alternative therapeutic techniques. For example, the vignettes in module 1 which deal with attributional style (e.g., you failed an exam) can be used to stage role-play, as in social competence training. An administration mode of two sessions per week is advantageous (at one module per session, a full cycle can be completed in 4 weeks) to ensure that participants undergo as many sessions as possible. The group is open; that is, participants may enter at any module (each module deals with a separate bias and the contents are independent), so that there is no fixed group. This procedure has some advantages over fixed groups, as open groups do not as easily “dry out.”

Each module follows a certain sequence: (1) an introduction demonstrating how cognitive biases and social misinterpretations/misunderstandings impact our everyday lives (the “normalizing” phase); (2) relationship of extreme forms of the respective bias/problem with mental illness in general and psychosis in particular (the slide entitled “Why are we doing this?”); (3) exercises highlighting the dysfunctionality of the respective bias/problems (corrective experiences); (4) summary of learning aims; and (5) case example(s) emphasizing the relationship between cognitive biases and psychosis. During the training, videos may be shown that can be downloaded at Google/video (search with the key term “metacognitive training”) or are available at the bottom of our webpage at [www.uke.de/mkt](http://www.uke.de/mkt). Finally, leaflets with homework are handed out.

After his or her first session, each participant should receive a yellow card and a red card (again, templates can be downloaded from the MCT website). The yellow card raises three fundamental questions that a patient should consider when feeling offended, persecuted, or insulted:

1. What is the evidence?
2. Are there alternative views?
3. Even if it's like that... am I overreacting?

These questions are intended to prompt participants to master critical situations and to avoid hasty and consequential decisions. On the red card, the patient

is encouraged to write down names and telephone numbers of persons and/or institutions that may help in case of crisis or breakdown.

The exercises demonstrate how cognitive biases—which are almost normal, benign, and sometimes even functional when presenting in a subtle degree (decisiveness as the bright side of jumping to conclusions; perseverance as the bright side of incorrigibility; self-certainty as the bright side of overconfidence in errors)—as well as problems with social cognition can escalate into troublesome situations. It is assumed that these biases may separately or in combination culminate in the formation of beliefs that may eventually become delusions (Bentall et al., 2009; Moritz, Veckenstedt, Hottenrott et al., 2010). In the next section, empirical evidence for the presence of problematic thinking styles in schizophrenia is summarized. We also subsequently explain how these are dealt with in the different modules of the MCT (for a summary, see Table 15.1). The following biases and problems are at the core of the MCT: attributional style (module 1), jumping to conclusions (JTC; modules 2 and 7), bias against disconfirmatory evidence (BADE; module 3), social cognition/ToM (modules 4 and 6), overconfidence in memory errors (module 5), and depressive cognitive patterns and low self-esteem (module 8). In the closing section, several recommendations for administration are provided.

## COGNITIVE BIASES IN SCHIZOPHRENIA

A psychological or cognitive understanding of delusion formation has long been obstructed by claims that delusions are not amenable to understanding. Beginning in the 1980s, however, cognitive research has questioned strong formulations of this account. Several meaningful cognitive mechanisms have been implicated in the pathogenesis of fixed false beliefs (i.e., delusions). These will be described in the following sections, which will first present the theory and empirical evidence and then show how they are dealt with in the MCT.

### Attributional Style: Theory

As dynamic theorists like Adler (1914/1929) had already reasoned at the beginning of the last century, patients with schizophrenia show deviances in attributional style, specifically a tendency to blame others for own failure (*scapegoating*). In contrast, healthy people are more likely to attribute blame to circumstances and are less prone to monocausal inferences than are patients (Rand, Veckenstedt, Vitzthum, Hottenrott, & Moritz, 2011). Deviances of attributional style in schizophrenia are virtually undisputed, but the exact signature is not consensually determined. Early research (Bentall, 1994) found a self-serving bias (attribution of success to oneself, attribution of failure to others or circumstances), whereas a common denominator of more recent research, which often used the Internal, Personal and Situational Attributions Questionnaire (IPSAQ; Kinderman &

Bentall, 1997) was the personalization of blame to others (Kinderman & Bentall, 1997). Our group (Moritz, Woodward, Burlon, Braus, & Andresen, 2007) and Lincoln et al. (2010) found a general externalization style indicating a form of helplessness and loss of control: Patients deem others responsible for good and bad things in their lives more than do healthy subjects.

Problems with attributional style have been linked with self-uncertainty and a deep-rooted low self-esteem (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001) that is addressed in module 8 of the MCT.

### Dealing with Attributional Style in the MCT (Modules 1 and 8)

In module 1 (Attribution: Blaming and Taking Credit), participants are first familiarized with the concept of attribution. It is made clear that three major sources may determine or influence an outcome: oneself, other persons, and/or circumstances. These influences usually act in combination rather than alone, and participants should thus resist the tendency to rely on only one explanation. The social consequences of different attributional styles are highlighted (e.g., blaming others for failure may lead to interpersonal tensions). The following exercises are inspired by the IPSAQ, which confronts the subject with complex social events for which situational as well as personal factors have to be taken into account (for an example, see Figure 15.1). Different possible explanations should be considered (e.g., “A friend says you do not look good”; possible explanations may be that you have been ill, harsh neon light, an insult, true concern). Group members are made aware that monocausal inferences are unlikely, and that it can be helpful to generate alternative explanations.

A policeman stops your car.

What caused the policeman to stop your car?

What is the main reason for this event?

**Yourself?**

**Another person or other people?**

**Circumstances or chance?**



**Figure 15.1** In module 1 (attributional style), group members must discuss possible reasons for the occurrence of complex scenarios. Here: routine control (possible), driving at too high speed (possible), policeman is in bad mood and stops people driving non-U.S. car brands (unlikely). Monocausal inferences should be avoided. (Permission to reproduce photo granted under a creative commons license.)

## Jumping to Conclusions and Need for Closure: Theory

Garety and coworkers were among the first (e.g., Garety, Hemsley, & Wessely, 1991; Huq, Garety, & Hemsley, 1988) to systematically investigate information acquisition preferences in schizophrenia. Following their seminal work, an extensive literature has asserted that patients with schizophrenia are hasty in their decision making (for a review, see Fine, Gardner, Craigie, & Gold, 2007). This line of research has been mainly conducted with the beads task, and a variant of the task is illustrated in Figure 15.2. Usually, 40%–70% of the patients show jumping to conclusions (JTC) in this task. In recent studies, we found that patients do not only collect less information but also weigh information inadequately (Glöckner & Moritz, 2009). Jumping to conclusions is intuitive and almost a literal description of schizophrenia delusions, which often rely on scarce pseudo-“evidence” (e.g., a sudden police siren and an unfriendly remark by a waitress are taken as solid evidence that the village is populated by “evil rednecks” who will hunt the patient down at night), but according to several studies, JTC, is also measurable in nondelusional scenarios.

Jumping to conclusions is thought to play an important role in the formation and maintenance of the disorder and is unlikely to represent a mere epiphenomenon of delusions. This is supported by the fact that it occurs in psychosis-prone but nonclinical participants (Freeman, Pugh, & Garety, 2008; Van Dael et al., 2006) and can be detected using delusion-neutral material, such as the beads task.

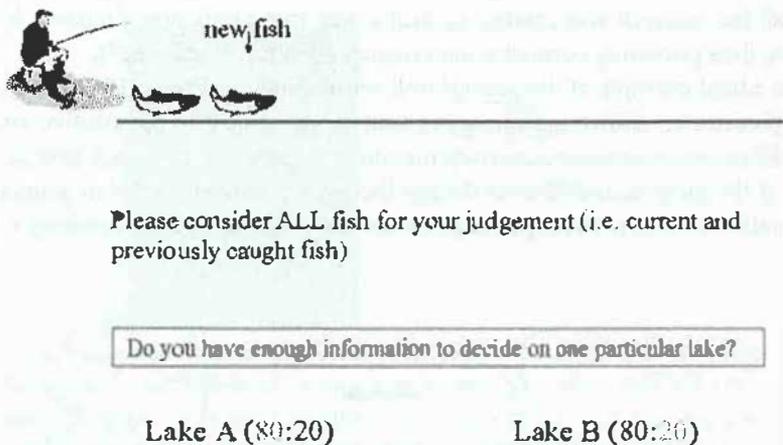


Figure 15.2 Example of the so-called Fish task, a variant of the “Beads task” (Moritz, Veckenstedt, Hottenrott et al., 2010; Speechley, Whitman, & Woodward, 2010; Woodward, Munz, Leclerc, & Lecomte, 2009). Subjects are asked to deduce from which of two lakes a fisherman is catching fish. A decision after only one (or sometimes two) fish is considered evidence for jumping to conclusions. Approximately 40%–70% of schizophrenia patients arrive at a decision after only one fish (or bead), whereas most controls wait for several fish or beads until they decide. Figure created for MCT Working Group.

Although poor motivation and memory have been ruled out as contributors to JTC, some authors implicate low intelligence as a moderator (Lincoln, Ziegler, Mehl, & Rief, 2010). Other research findings suggest that JTC is a special case of liberal acceptance (Moritz & Woodward, 2004; Moritz, Woodward, & Hausmann, 2006; Moritz, Woodward, & Lambert, 2007) or hypersalience of evidence-hypothesis matches (Speechley, Whitman, & Woodward, 2010; Balzan et al., 2012). Interestingly, recent evidence suggests that patients are largely unaware of their hastiness and often view themselves as rather hesitant and indecisive (Freeman et al., 2006; Moritz, Kuepper, Veckenstedt, Randjbar, & Hottenrott, unpublished manuscript).

### Dealing with Jumping to Conclusions in the MCT (Modules 2 and 7)

After discussing the advantages (e.g., saving time and cognitive effort) and disadvantages of JTC (e.g., risk to make false decisions) at the start of both module 2 and 7, participants are introduced to drastic historical errors induced by JTC. Then, “urban legends” are discussed (e.g., that the Ku Klux Klan owns Marlboro). Arguments for and especially against these beliefs are displayed, exchanged, and evaluated for their plausibility among group members.<sup>1</sup>

The exercises from the first task set of module 2 are picture fragments that eventually display common objects (e.g., a pig; see Figure 15.3). At each stage, the plausibility of either self-generated or prespecified response alternatives should be rated. Participants are encouraged to make a decision once they feel entirely sure, and all the material was created in such a way that premature decisions lead to errors, thus providing corrective experiences (“seeing is believing”).

An edited example of the second task set is shown in Figure 15.4. Here, complex pictures are shown, which, depending on the observer’s perspective, contain two different objects/scenes. Group members are asked to give their first impression of the picture, and then to change their perspective in order to generate an alternative solution. Thus, participants are trained to avoid succumbing to first



excluded, improbable, possible, probable, DECISION

excluded, improbable, possible, probable, DECISION

Figure 15.3 Brain, back of a man... or pig? In module 2 (jumping to conclusions I), participants are shown a fragmented object that is displayed with increasing details (for display purposes only, two out of the eight stages are shown). Hasty decisions often lead to wrong judgments, thus demonstrating the dysfunctionality of jumping to conclusions. Figure created for MCT Working Group.



**Figure 15.4** In task set 2 of module 2 (jumping to conclusions I), picture puzzles with two different objects or scenes are presented (e.g., saxophone player vs. woman's face). The learning aim is to point out that hasty decisions often reveal only half the truth.

impressions, which may turn out to be incorrect (first task set) or reveal only half truths (second task set). These perhaps abstract examples are substantiated by case stories and videos (see bottom of [www.ukc.de/mkt](http://www.ukc.de/mkt) or enter "metacognitive training" as a keyword when searching in <http://video.google.de>).

In the exercises of module 7 (jumping to conclusions II), participants have to deduce the correct title for classical paintings (see Figure 15.5). Many of them contain cues for the correct solution that may be easily missed upon superficial inspection. Here, participants should be shown that a thorough search is perhaps more time-consuming but ensures a more reliable judgment.



- a. The monk
- b. The drunkard
- c. The reading chemist
- d. The bookworm

**Figure 15.5** In module 7 (jumping to conclusions II), participants are shown paintings. The pros and cons of potential titles are discussed. Then, the correct title (here, c) is revealed. Premature decisions often prompt false decisions (in this example, especially response option b). Closer inspection often reveals several hints that speak for the correct solution (here, book, devices on the table) and at the same time speak against alternative titles. (Figure created by Johann Peter von Langer.)

## Bias Against Disconfirmatory Evidence (BADE): Theory

Incorrigibility is a hallmark criterion feature of delusions. The strong inflexibility seen during delusions (e.g., dismissing arguments proposed by relatives about

why the CIA is, in fact, not interested in the patient) extends to nondelusional contents. For this line of research, the bias against disconfirmatory evidence (BADE) paradigm has been employed (Veckenstedt et al., 2001; Woodward, Buchy, Moritz, & Liotti, 2007; Woodward, Moritz, & Chen, 2006; Woodward, Moritz, Cuttler, & Whitman, 2006; Woodward, Moritz, Menon, & Klinge, 2008). In a standard BADE item, the subject is confronted with increasing pieces of information (sequences of three sentences or pictures). The first and sometimes also the second sentence or picture lures the subject into false assumptions that are eventually disconfirmed by subsequent information. In order to obscure the rationale of the test, control trials are presented in which the first sentence correctly suggests the solution. Patients with schizophrenia typically are more easily “led up the garden path” for BADE items than are healthy and even psychiatric controls. Patients with schizophrenia are less able to disengage from initially plausible interpretations, which, over the course of three trials, become more and more implausible. This effect was demonstrated in both first-episode (Woodward, Moritz, & Chen, 2006) and predominantly chronic patients (Moritz & Woodward, 2006), as well as in healthy participants scoring high on delusional ideation (Buchy, Woodward, & Liotti, 2007). In some studies, this bias was more pronounced in currently deluded patients (Woodward, Moritz, & Chen, 2006; Woodward, Moritz, Cuttler et al., 2006), but it is as yet unclear under which conditions a BADE is a state or trait marker of the illness.

### Dealing with Bias Against Disconfirmatory Evidence in Schizophrenia in the MCT (Module 3)

At the beginning of module 3, participants are encouraged to discuss the advantages and disadvantages of inflexibility. For example, hard-headedness is a common human feature and, in a mild form, can also be functional (e.g., to overcome obstacles when pursuing one’s goals). Then, historical examples and case samples are conveyed showing how incorrigibility has led to big problems, to the point of disastrous events or delusions (case examples). Following this, an example of the so-called confirmation bias is presented: three (different) types of flowers are displayed (parallel version: fruits). Subjects are asked to deduce the corresponding higher level category by proposing items that may also fit that category (superordinate categories: living beings; parallel version: food). The presented objects mislead many persons to believe the to-be-identified superordinate category is *flowers*. Therefore, most people generate objects that *only* fit this category, instead of contemplating alternative hypotheses. The confirmation bias reflects the human tendency to ignore information that does not match a person’s attitudes or expectations.

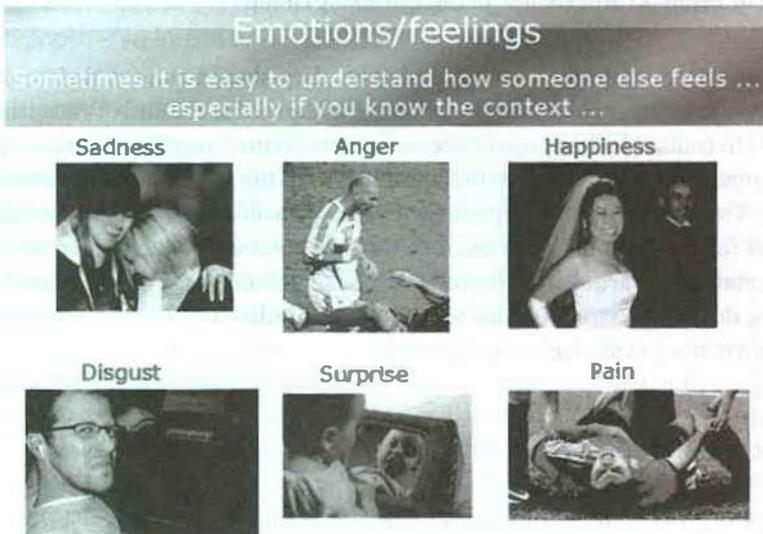
The subsequent exercises consist of a series of three pictures shown in reverse order. Some of these were employed in the studies mentioned above. The sequences of pictures gradually disambiguate a complex plot (see Figure 15.6). For each picture, participants are asked to discuss the plausibility of four



perhaps not specific to patients with schizophrenia (e.g., Kerr, Dunbar, & Bental, 2003; Uekermann et al., 2008), deficits in social cognition are frequently observed in psychosis (Brüne, 2005), and interpersonal conflicts deriving from social cognitive impairments are likely to fuel psychotic symptoms (Moritz, Veckenstedt, Hottenrott et al., 2010). In recent years, programs have been developed, for example, Social Cognition and Interaction Training (SCIT; see Combs, Torres, & Basso [2013], Chapter 16, this volume), that target this important aspect. As with other cognitive deficits and biases, patients are mostly not adequately aware that their behavior is inappropriate or maybe even appear impolite at times. Reviews and meta-analyses assert substantial deficits for ToM in schizophrenia. The symptom correlates are equivocal, however (Brüne, 2005). Although some studies found correlations with positive symptoms (Mehl et al., 2010), the preponderance of the evidence suggests that ToM deficits are tied to disorganized patients (Sprong, Schothorst, Vos, Hox, & van Engeland, 2007) or negative symptoms (Brüne, 2005; Woodward et al., 2009). The question of whether ToM is a state or trait has not yet been resolved, but there is evidence that ToM deficits are also present in remission (Bora, Yucel, & Pantelis, 2009).

### Dealing with Social Cognition in the MCT (Modules 4 and 6)

Module 4 is primarily devoted to first-order ToM and emotion recognition, whereas module 6 primarily deals with second-order ToM, need for closure,



**Figure 15.7** Example from module 4 (To empathize... I), Participants are asked to deduce emotional states. As these pictures provide rich contextual information, participants often arrive at correct conclusions. However, subsequent pictures (see Figure 15.8) in module 4 only show faces without context, which often mislead to wrong inferences. Participants are encouraged to attenuate their level of conviction in case information is incomplete. Permission to reproduce photos granted under a creative commons license.

and complex social reasoning. First-order ToM may involve **guessing a person's intentions** (e.g., based on their facial expressions), and second-order ToM may involve determining another person's guess about a third person's intentions (e.g., **based on the situation**). In module 4, participants are first familiarized with different cues for social cognition (e.g., appearance, language) and their validity. It is made clear that each social cue alone is fallible (e.g., face: happiness is **not always expressed with a smile**; anxiety and surprise often have a similar facial signature) and that social cognition is best when a range of different cues is used in **combination**. Participants are then asked to identify basic human emotions and assign them to facial expressions (see Figure 15.7). This task set is easily solved by most participants as context information is provided (e.g., a smiling woman in a wedding dress). However, subsequent items do not contain contextual information, thereby commonly prompting **misinterpretations** (see Figure 15.8). The manual advises the trainer not only to ask for the most likely response option, but also to rate the patient's **degree of confidence**. Participants are asked to **withhold strong judgments in order to prevent overconfidence** in errors. Other tasks of module 4 have been adopted from Sarfati and Hardy-Baylé (1999), depicting a sequence of black-and-white pictures that have to be logically terminated with one out of three response options (these exercises are **not recommended anymore**). Module 4 conveys the message that although facial expressions are very important for identifying the feelings of a person, they can also lead to false assumptions.

In module 6, comic sequences are presented. Participants are required to take the perspective of one of the protagonists and to deduce what the character may think about another person or a certain event (see Figure 15.9). As mentioned before, this task taps into second-order ToM constructs: The subject has to deduce what a second person is thinking about a third person. In other words, the subject has to socially think outside the box.

In the style of the BADE exercises in module 3 (see above), most slides are presented in reverse temporal order: The picture showing the final action or situation is presented first. Each novel picture reveals more about the storyline, and explanations that initially seem plausible eventually prove wrong and have to be corrected. For the majority of items, several interpretations remain possible

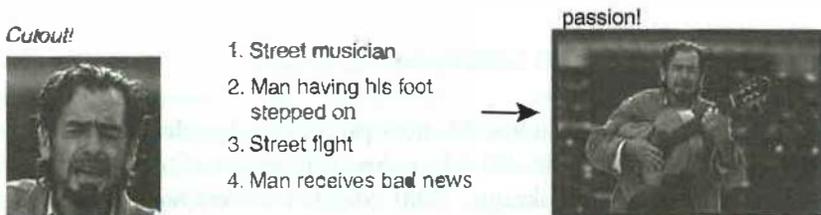
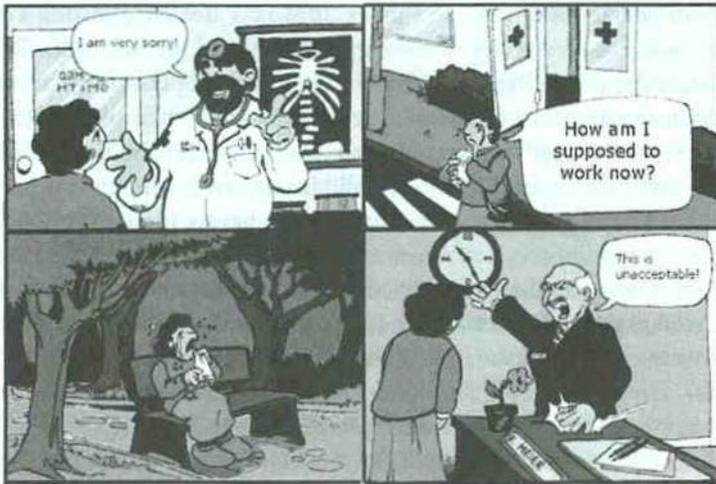


Figure 15.8 This item is taken from the second task set of module 4 and shows that facial information can mislead to false responses. Only a few people assume the correct response (*right image*) from the picture (*left*) shown first. Participants are taught to **withhold strong judgments and collect additional information** in ambiguous and unclear situations. Permission to reproduce photos granted under a creative commons license.



Is the boss cold-hearted? Do we need additional information to decide?

**Figure 15.9** Cold-hearted boss? The example is taken from module 6 (To empathize... II). The pictures are viewed one after the other (the lower right picture is presented first). In this example, participants sometimes do not understand that the viewer has more information than the boss. Whereas the boss' reaction may seem adequate initially (the woman is obviously late), the other pictures cast some doubt on this. The woman has apparently received a bad message from her doctor and is visibly devastated in the two pictures before. Likely manifestations of crying (especially red eyes, bad make-up) may be visible to the boss, who might therefore have reacted more compassionately even if he was unaware of the doctor's message. Figure created by Marina Ruiz-Villarreal for MCT Working Group.

until the end, which is unsatisfactory for patients with an enhanced need for closure (i.e., intolerance for ambiguity). For such items, participants should propose what additional information is needed to make a reliable judgment. Nevertheless, it should be discussed which interpretation is best supported by the available evidence.

### Metamemory Problems in Schizophrenia: Theory

Memory problems are ubiquitous in most psychiatric disorders, but are especially pronounced in patients with schizophrenia (Aleman, Hijman, de Haan, & Kahn, 1999; Heinrichs & Zakzanis, 1998). Memory dysfunctions impact negatively on functional (Green, Kern, & Heaton, 2004) and symptomatic outcome (Moritz et al., 2000) in the disorder. Unlike in the amnesic syndrome, memory deficits in schizophrenia reflect problems with encoding and learning information rather than rapid forgetting (Moritz, Heeren, Andresen, & Krausz, 2001). Patients are not usually aware of their memory problems. In fact, our group

found a zero-correlation between subjective and objective memory impairments (Moritz, Ferahli, & Naber, 2004).

A new line of literature has turned to *metamemory*, which is concerned with the subjective appraisal of one's memory performance, particularly response confidence (Moritz & Woodward, 2006) and memory vividness rather than memory accuracy. As shown by Danion and others (2005), the recollections in schizophrenia patients are often vague and lack detail. Further, our group has repeatedly demonstrated that patients with schizophrenia are overconfident in memory errors, while at the same time being underconfident in correct responses (for a review, see Moritz & Woodward, 2006). This response pattern has now been independently replicated (Bhatt, Laws, & McKenna, 2010; Doré, Caza, Gingras, & Rouleau, 2007; Peters et al., 2007). Some of the more recent studies have been conducted with items from the Deese-Roediger-McDermott (DRM) paradigm, which readily elicits false memories (see below for an example). Although in most investigations patients with schizophrenia did not differ from controls in accuracy on the DRM paradigm (e.g., Huron & Danion, 2002), their conviction for error responses was disproportionately increased (Moritz, Woodward, & Rodriguez-Raecke, 2006). Importantly, overconfidence in errors has been found with non-delusional material and likely represents a risk factor and not a consequence of paranoid symptoms. We have put forward that this twofold response pattern mirrors liberal acceptance for response alternatives and JTC, respectively (Moritz, Woodward, Jelinek, & Klinge, 2008; Moritz, Woodward, & Lambert, 2007): Premature termination of cognitive search processes and liberal decision criteria may result in a neglect of essential cues that might have indicated the fallibility of an incorrect response option, thereby promoting overconfidence in errors. In contrast, controls adopt more careful and deliberate strategies, expressed as a reluctance to fully endorse a response option when the available evidence is ambiguous. Along the same lines, we assume that healthy control participants exhibit greater confidence in correct responses relative to patients, as the detection of multiple supportive cues raises response confidence. A recent study identified a general pattern of overconfidence in schizophrenia patients, which, however, was more pronounced for errors (Kircher, Koch, Stottmeister, & Durst, 2007).

## Dealing with Metamemory Problems in the MCT (Module 5)

Module 5 first introduces mnemonic strategies to help the patient recall information, and it provides examples for the fallibility of human memory (e.g., in contrast to popular belief, the line "Play it again, Sam" was never uttered in the movie *Casablanca*): Healthy subjects also forget, mix up, embellish, or recall memory information falsely. In the main part of the module, complex visual scenes are displayed. Many of the stimuli have been utilized in prior basic research studies on the false memory paradigm (Miller & Gazzaniga, 1998; Roediger & McDermott, 1995). This material prompts a high frequency of false memories, even in 50%–80% of healthy subjects, as core items that you would expect in the picture are in

## Classroom

- backpack
- teacher
- map
- books
- benches
- teacher's chair
- blackboard
- teacher's bag



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■ = not presented

**Figure 15.10** Module 5 shows complex and rather prototypical scenes. These pictures elicit false memories in most subjects, as strongly suggested items are not displayed (here, blackboard or backpacks are expected from the context but, in fact, are not shown). Exercises teach participants to base their judgments on perceptual recollections rather than gist or on logical inferences. When the recollection is vague, confidence should be attenuated.

fact removed. Group members are instructed to study the pictures carefully (see Figure 15.10) and to memorize each item as vividly as possible. Each scene is followed by a recognition task asking participants to decide whether an item was displayed or not. Subjects are also asked about their response confidence, and the trainer should later ask for perceptual details and for participants to adopt “vividness heuristics” (i.e., the recollection of perceptual details is a good proxy that an object has indeed been shown, whereas “pale” recollections often indicate false memories. Here, response confidence should be attenuated). It is made clear to participants that our memory can play tricks on us, as it is constructive and does not work passively like, for example, a video recorder. Participants should learn to doubt their memories and collect additional information if a vivid recollection is not available.

### Mood and Self-Esteem in Schizophrenia

It is now well-established that approximately 50% (Buckley, Miller, Lehrer, & Castle, 2009) of the schizophrenia population (in contrast to accounts by, for example, Kraepelin) share affective disturbances. Other studies estimate that two (Moritz, Veckenstedt, Randjbar et al., 2010) to three (Freeman et al., 1998) out of four patients have low self-esteem, which may be one reason (among others)

for the high suicide rate in schizophrenia, which is in the range of 5%–15% (for overviews, see Preston & Hansen, 2005; Siris, 2001).

## Dealing with Low Mood and Self-Esteem in the MCT (Module 8)

In view of the high prevalence of depression and low self-esteem in schizophrenia, module 8 specifically targets depressive cognitive schemata (overgeneralization and selective abstraction), unhelpful coping strategies (especially rumination, thought suppression), underlying depression, and low self-esteem (see Figure 15.11). The trainer provides more realistic and helpful strategies and encourages participants to use detached mindfulness (this technique plays a prominent role in the treatment program devised by Fisher and Wells [2009]) instead of thought suppression and rumination for dealing with negative thoughts. Finally, some simple techniques derived from CBT of depression are provided that, if used regularly, help to alter low self-esteem and raise depressed mood (e.g., writing down positive events during the day, engaging in social activities).

## INTRODUCING THE PROGRAM TO PARTICIPANTS

As mentioned earlier, the MCT is designed as an open group therapy program, so participants enter at any module within a cycle. New participants are first welcomed by all members and informed about the goal of the program—preferably by participants who have already attended some sessions. Most participants will not know what metacognition signifies, which can be explained as follows: “*Meta* is Greek for about and *cognition* refers to higher mental processes, such as attention

Tips to improve depressed mood/low self-esteem	5/ Suppression of negative thoughts Does it work? No!
<ul style="list-style-type: none"> <li>➤ Try to remember situations, in which you felt really good—try to remember these with all your senses (visual, feeling, smelling...), perhaps with the help of a photo album.</li> <li>➤ Do things you really enjoy – ideally with others (e.g. movies, go to a cafe).</li> <li>➤ Workout (at least 20 minutes) – but no struggling – if possible stamina training, for example, a long walk or jogging.</li> <li>➤ Listen to your favourite music.</li> </ul>	<div style="text-align: center;">  </div> <p>Most of you had probably thought of an elephant and/or of something which has to do with an elephant (e.g. zoo, safari, Africa etc.)</p> <p>This effect grows even stronger if one tries to deliberately suppress upsetting thoughts (“I am a loser” etc.). Those thoughts can then become so strong that they seem strange or out of one’s control!</p>

Figure 15.11 In module 8 (mood and self-esteem), participants are taught how to replace negative appraisals with more positive and constructive ones. At the end of the module, some recommendations are provided on how to raise one’s mood (part 1 of this exercise is shown on the left). In addition, alternatives for dysfunctional coping strategies (e.g., thought suppression, see right side) are conveyed (e.g., detached mindfulness for worries).

and problem solving. In brief, *metacognition* is thinking about our thinking. The aim of the program is to learn more about human cognition, and how we can observe and change it to optimize our problem-solving abilities. At the heart of the program are several thinking styles that may contribute to the formation of odd ideas and psychotic symptoms.”

### Inclusion Criteria, Problematic Situations, and Individualized Treatment

Inclusion criteria for the MCT group are very liberal. As a rule of thumb, all schizophrenia spectrum patients can participate who are able to attend and follow other group programs as well (e.g., occupational therapy). In our view, important inclusion criteria are past or current delusional ideas or hallucinations. Patients with primary diagnoses other than schizophrenia, depression with psychotic features, and bipolar disorder with beliefs of grandiosity may also be included.

According to our experience and that of our collaborators, groups may comprise first-episode and chronic patients, in- and outpatients, and male and female patients at the same time. Patients with a short attention span or inappropriate/eccentric behavior, aggression/hostility, and severe formal thought disorder should not take part until symptoms have at least declined somewhat. Although we have successfully run groups with patients diagnosed with schizophrenia, here, a stronger focus on the main exercises and frequent repetition is advisable.

Good feasibility and treatment fidelity are now well-established in both in- and outpatients samples (Favrod et al., 2009; Favrod, Maire, Bardy, Pernier, & Bonsack, 2011; Gaweda, Moritz, & Kokoszka, 2009; Moritz & Woodward, 2007a). Nevertheless, problematic situations can occur. Here, general treatment guidelines apply. For example, if a group member displays severe psychotic symptoms during sessions, these should neither be supported nor openly challenged. However, if patients are already distanced a bit from their symptoms, such experiences may be picked up with MCT exercises containing delusional themes (e.g., module 1, scenario “A friend is talking behind your back”; module 6, scenario in which two men appear to talk about a third man). At the start and at the end of each module, we also raise the questions “Why are we doing this?” and “What does this have to do with psychosis?” These slides translate knowledge from basic research to patients and provide an opportunity for further reflections on personal experiences of psychosis; participants are encouraged to talk in a nonjudgmental climate about their past and present psychotic experiences. However, an in-depth analysis and exchange about individual delusional ideas is best addressed in the framework of face-to-face sessions, as in CBT. An alternative is individualized Metacognitive Therapy (MCT+), which is available in a German-language version and as a beta version in English and Dutch at [www.uke.de/mct\\_plus](http://www.uke.de/mct_plus). The MCT+ is more focused on individual symptoms and combines elements of CBT (dispute of fixed beliefs by means of Socratic dialogue, response prevention, establishment

of an illness model) with core features of the MCT. As in the group training, a “back-door approach” is adopted: Instead of challenging symptoms and delusional appraisals directly, which may undermine the therapeutic alliance, cognitive biases are addressed first before the therapy continues to challenge individual biases and delusions.

## Metacognitive Training: Feasibility, Subjective Feedback, & Efficacy

As described in further detail in Chapter 12 (Fizdon, 2013, this volume), various studies have now asserted the feasibility of the MCT in German (Moritz, Vitzthum et al., 2010; Moritz & Woodward, 2007b) and other languages (Favrod et al., 2009; Gaweda et al., 2009). Participants consider the training to be both entertaining and (subjectively) effective. Attendance rates are usually high. Moreover, studies from our group, as well as from other researchers, have shown a positive impact on symptoms (Aghotor, Pfueller, Moritz, Weisbrod, & Roesch-Ely, 2010; Kumar et al., 2010; Moritz, Veckenstedt et al., in press; Moritz, Veckenstedt, Randjbar, Vitzthum, & Woodward, in press; Ross, Freeman, Dunn, & Garety, 2011), cognitive biases (Aghotor et al., 2010; Moritz, Kerstan et al., in press; Moritz, Veckenstedt et al., in press; Ross et al., 2009), and quality of life (Briki et al., 2008; Moritz, Kerstan et al., in press). Still, follow-up analyses are needed to provide insight into the stability of the effects.

## CONCLUSION

Over the last two decades, increasing support has been gathered for both psychological theories and interventions of schizophrenia. MCT is one manifestation of this new trend. Cognitive biases and social cognitive impairments are likely involved in the formation and maintenance of the disorder and thus represent important treatment targets. The goal of the MCT is to sharpen patients’ (metacognitive) awareness of these biases and impairments and to carry over the learning aims into their daily life. Although there is increasing support for the efficacy of the MCT as a stand-alone program, we advise clinicians to complement MCT with personal therapy, for example CBT or MCT+ (Moritz, Veckenstedt, Randjbar, & Vitzthum, 2010; Moritz, Veckenstedt et al., in press). Against the background of high rates of relapse and only modest symptom decline under antipsychotic medication alone, we hope that (adjunct) cognitive interventions someday will be the norm rather than the exception in treatment.

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## NOTE

1. Clearly, all discussed urban legends are falsifiable and serve to illustrate, via a miniature model of delusions, how JTC and other biases (e.g., selective attention to certain information) promote delusional beliefs.

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