Behavioral Experiments in the Treatment of Paranoid Schizophrenia: A Single Case Study

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Since the first description of cognitive therapy of paranoid delusions appeared in the literature, the empirical support for cognitive behavioral therapy in treating psychotic symptoms has been widely established. The aim of the present case study is to show how the behavioral experiment can be used as a powerful tool to change delusional thinking in a patient with paranoid schizophrenia. In addition to highlighting the use of behavioral experiments to change the patient’s delusion, we will illustrate various cognitive techniques that can be adapted to treat patients with psychotic symptoms.
are well prepared, the patient's delusional interpretations can be tested (Close & Schuller, 2004).

The aim of the present case study is to show how the behavioral experiment can be used as a powerful tool to change delusional thinking in a patient with paranoid schizophrenia. In addition to highlighting the use of reality testing as a means to change the patient's delusional interpretations, we will also try to show how techniques of cognitive-behavioral therapy can be adapted to treat patients with psychotic symptoms.

**Case Presentation and Symptoms**

In order to protect patient anonymity, a number of essential details have been altered in this case study. The patient gave his consent in an early phase of the therapy that his case could be used as a presentation. Tony, a 25-year-old, single Caucasian male, was hospitalized at the age of 22 with a diagnosis of paranoid schizophrenia. His parents divorced when he was a child. The patient and his younger brother were taken into care due to gross neglect by their parents and placed in a foster home when he was 7 years old. During his childhood years he had regular contact with his biological mother, but did not meet his biological father again until the age of 17. Shortly after the death of his father, Tony started using drugs (cannabis, amphetamine, and ecstasy) and started to drink heavily. Despite Tony’s apparent heavy substance abuse, he completed college with satisfactory results. After graduation from college, he enrolled in some courses at the university, but did not attend any of the lectures and failed all of his exams. During these years he developed a severe substance abuse. The last year before hospitalization Tony lived on unemployment benefits, but also dealt drugs to support his drug use. He was never arrested for dealing drugs.

At the age of 22 Tony became psychotic. At the time of admission to the psychiatric hospital, he was experiencing psychotic symptoms in the form of auditory hallucinations and delusions. His voices told him that he should be killed when the right opportunity presented itself, and also that he should be kept under surveillance by the police. His appraisal of the voices was that they were policemen haunting him because of his history of selling drugs. He was certain that these policemen had put a contract out to kill him. His delusional ideas were of a paranoid form. Tony mentioned several persons by name who worked in the antinarcotic squad that he thought were involved in this conspiracy to kill him. Tony believed that these policemen were using various methods of surveillance to keep him under their control. He also believed that he was being used for an experiment. He believed receivers had been implanted in his head and that the policemen were using radio beams to overstimulate his brain, which caused him pain. He was certain that his head would explode if this "torture" continued. He had strong delusional convictions about the damage to his brain that was caused by the radio beams. Tony consistently insisted that more physical tests ought to be taken because something was physically very wrong with him. There was a link between
the auditory hallucinations Tony experienced and his delusional ideas of radio beams. He was convinced that the voices he heard were transferred by the policemen’s radio transmitter to the implants in his head, which was his proof that the voices were inflicted on him by an outside agency.

After Tony had been at the acute ward for 3 weeks he was transferred to a ward for young people suffering from psychotic disorders. Though he had not been using narcotics since hospitalization he still experienced auditory hallucinations, delusional ideas, and responded poorly to the antipsychotic drugs (olanzapine) he was administered. The therapist conducted a structured diagnostic interview (SCID I and II). Based on the SCID and information from the patient, Tony was diagnosed with a paranoid schizophrenia. The patient also met SCID I criteria for diagnoses of substance abuse and a current moderate depressive episode. The comorbid symptoms of substance abuse and depression are rather common in patients suffering from psychotic disorders (Kavanagh & Mueser, 2007; Michail & Birchwood, 2007), but differentiating schizophrenia from schizoaffective disorders and mood disorders with psychotic features can sometimes be particularly difficult (Frances & Ross, 2005). Tony’s psychotic symptoms in the form of bizarre delusions had been present for at least 6 months before he was admitted to the psychiatric hospital, and his mood symptoms were not a significant part of Tony’s symptom presentation. The depressive symptoms that the patient experienced could probably best be understood as a psychological reaction to his delusional ideas and auditory hallucinations. Based on this information, the occurrence of a mood disorder with psychotic features and a schizoaffective disorder could be ruled out. The psychotic symptoms Tony experienced persisted even though he had stopped drinking alcohol and smoking cannabis the last month before the assessment took place. This indicates that the psychotic symptoms were probably not a direct physiological result of the substances he had been using. In addition, the symptoms he experienced could not be explained merely by intoxication or withdrawal.

Case Formulation

The assessment of Tony suggested that the delusions and auditory hallucinations he experienced were mixed with his symptoms of depression and substance abuse. Morrison’s model of development and maintenance of voices was used to make a formulation of Tony’s auditory hallucinations (Morrison, 2001). In his model Morrison suggests that different internal or external triggers result in the patient hearing voices, and that the voices may be interpreted as threatening for the voice hearer. The catastrophic interpretations of the voices result in increased negative mood and physiological arousal and elicit safety-seeking behaviors and hypervigilance because the patient feels threatened by the voices. This behavior can increase the future frequency of auditory hallucinations, and also prevent the disconfirmation of the threat presented by the voices (therefore maintaining distress and anxiety).

In Tony’s case, the substance abuse and anxiety (thoughts of threat) seemed to be triggers for hearing voices. The voices said that he would be harmed and that a contract had been put on his head. Tony believed that these voices belonged to a policeman he once knew who, Tony thought, had the power to make this happen. The voices triggered feelings of depression and anxiety, and he tried to help himself by using substances and by staying home to avoid potential attacks. This form of safety behavior maintained the auditory hallucinations, and probably increased the frequency of the auditory hallucinations. The pattern of Tony’s coping behavior resulted in a vicious circle: When the intensity of negative emotions (depression and anxiety) increased, Tony craved large amounts of alcohol, amphetamine, and cannabis, which in turn increased his auditory hallucinations. This pattern also illustrates what is known as the stress-vulnerability hypothesis of schizophrenia, where stress combined with a psychological vulnerability produce the symptoms characteristic of psychosis (Neutcheline & Dawson, 1984; Zubin & Spring, 1977).

Freeman, Garety, Kuipers, Fowler, and Bebbington’s (2002) cognitive model of persecutory delusions also guided Tony’s case formulation. Freeman et al. hypothesized that anxiety and depression play a direct role in symptom development and the maintenance of persecutory delusions. They suggest that emergence of psychotic symptoms depends on an interaction between vulnerability and stress (such as drug use). People who experience symptoms, such as voices, will search for a reason for their anomalous experiences by drawing upon preexisting beliefs about the self, others, and the world. The delusions will be maintained because disconfirmatory evidence could be discarded (e.g., by the use of safety behaviors) and confirmatory evidence for the delusions is obtained (e.g., confirmation bias, attention bias, and the tendency to jump to conclusions).

The powerful, threatening nature of his voices and the somatic torment he experienced were Tony’s evidence for his delusional ideas. He experienced his life situation as hopeless, because he believed that no one could help him against his external enemies, which made him feel depressed. He started to withdraw from others because he was unable to sort out who was not a threat to him. The social isolation led to a vicious circle of depression and substance abuse which seemed to increase his delusional beliefs and auditory hallucinations (see Fig. 2 for a case formulation).

Based on the current case formulation, it was probable that many of the symptoms Tony experienced were based on his appraisal of his voices (persecutory delusions,
depression, and substance abuse), and that the main focus of treatment had to be directed toward working with these catastrophic misinterpretations. In order to work with Tony's auditory hallucinations, it would be important to directly test the content and reality of the voices (Birchwood & Chadwick, 1997; Byrne, Birchwood, Trower, & Meaden, 2006; Chadwick & Birchwood, 1994). In treating Tony's delusions of persecution, the goals were to evaluate his evidence for being under surveillance by the police through verbally challenging these ideas and then testing these beliefs by using behavioral experiments. A final goal for the therapy was to construct alternative explanations of his experiences that did not cause emotional distress.

**Treatment**

The patient was treated by one of the authors, a clinical psychologist (HMN), in an inpatient ward at the university psychiatric hospital. The therapist is a well-trained CBT therapist with over 15 years of experience in conducting CBT. The patient received a combination of therapy, two sessions a week of CBT over a period of 6 months and medication (Olanzapine, 15 mg). In the first stage of treatment, the emphasis was to engage the client and form a therapeutic alliance that would allow for a collaborative approach (Kingdon & Turkington, 2005). The process of normalization can be used as a therapeutic tool in forming this alliance, and can also pave the way for a collaborative formulation, the client playing an active part in his treatment (Dudley et al., 2007). Based on the cognitive model, the experience of distress due to psychotic symptoms becomes understandable. Studies show that this process is one of the most important components of successful CBT for psychosis (Dudley et al., 2007). In this process the therapist discussed in an empathic and genuine manner Tony's psychotic expression, and together they worked on finding an explanation of how these symptoms had been shaped and maintained, based on the cognitive models of auditory hallucinations and persecutory delusions. In this phase, by discussing the patient's symptoms from a normalizing stance, a strong therapeutic alliance was formed between Tony and the therapist.

Based on the cognitive case formulation, the treatment was to have three focal points. The first focal point was to treat the patient's substance abuse due to the negative impact it would have on the patient's psychiatric symptoms, the second was to challenge the patient's appraisal of the voices, and the third was to find disconfirmatory evidence for Tony's persecutory delusions.

In the treatment of the patient's substance abuse, techniques from motivational interviewing were implemented. Motivational interviewing is a set of therapeutic strategies designed to help the patient understand the impact of substance abuse on their lives in their own terms (Miller & Rollnick, 2002). Studies using extended CBT, which addresses both substance use disorders and serious mental illness, tend to have a good outcome on both of the disorders (Barrowclough et al., 2001; Haddock et al., 2003), though gains of an integrated treatment have shown decay over time (Barrowclough et al.). Interventions in this phase of Tony's therapy were focused on showing the discrepancy between Tony's personal goals and his current substance abuse in an effort to motivate him to reduce his substance abuse behavior. In a

![Figure 2. A cognitive formulation of Tony's auditory hallucinations.](image-url)
nonconfrontational manner and using a collaborative approach, Tony's personal goals were identified and explored. His main goal in life was to either get a job or to continue his disrupted education. The therapist explained to the patient how the vicious circle of the substance abuse behavior maintained the patient's psychiatric symptoms; gradually Tony started to see that there was a contradiction between his life goals and his substance use. He understood that if he continued his pattern of drinking and taking drugs to solve his problems, his symptoms would get worse.

The therapist explained to him the cognitive model of relapse in substance abuse. To counter further relapses, the patient's automatic thoughts and permissive beliefs in these high-risk situations for using substances were examined (Beck, Wright, Newman, & Liese, 1993). To avoid relapses Tony received psychoeducation about urges and cravings and learned how to make use of cognitive-behavioral techniques to fight urges and cravings (Graham et al., 2004). After this phase of motivational interventions, his substance abuse decreased. Although there was a considerable reduction in his consumption of alcohol and drugs, Tony experienced two minor relapses in his substance abuse later in therapy. These occurred when the patient was on leave from his psychiatric ward. On these leaves he chose to smoke cannabis with some old friends, which increased his psychotic symptoms, though they were not as dramatic as his initial symptoms. To prevent new relapses, antecedents and triggers for his substance behavior in these relapse situations were examined, and coping strategies discussed.

After working through problems related to his substance abuse, the focus of therapy shifted to modifying Tony's safety behaviors. These safety behaviors maintained his appraisal of his auditory hallucinations and prevented disconfirmatory evidence of the persecutory delusions. Due to his paranoid ideation, he felt that both the other patients and the nurses who were working at the ward were a threat to him. Treatment was directed toward making Tony feel safer in his surroundings and overcoming his social isolation, which had become a safety behavior (and reinforced his depressive and anxious symptoms). Because Tony spent most of his time in bed, he felt useless and inactive. To fight these negative cycles of inactivity and social isolation, the therapist and Tony scheduled activities. Activity scheduling is a standard cognitive behavioral therapy technique proven to be effective in treating depressive symptoms (Persons, Davidson, & Tompkins, 2000) as well as in treating psychotic symptoms (Kingdon & Turkington, 2005). Tony and the therapist planned activities he could do during the week: He took part in activities with other people in the ward (for instance making food) and participated in a workout group in a gym near the hospital with some of the other patients. He was also motivated by the therapist to leave the ward on occasion to go to the shops and to the nearby town to meet other people. Slowly these interventions made him feel less depressed, although the delusions and the auditory hallucinations he experienced still made him anxious.

Behavioral Experiment: Using a Match-Mismatch Technique

In addition to his depressive and anxious symptoms, his auditory hallucinations, and his paranoid delusions, the patient also experienced somatic delusions. Tony was especially concerned that his pituitary gland was destroyed because of his exposure to the radio beams. His homework assignment was to evaluate his own beliefs about his pituitary gland versus anatomic information about the pituitary gland. He searched for information in medical textbooks and on the Internet about the pituitary gland and how it functioned. The therapist engaged Tony in a Socratic dialogue regarding the symptoms of a damaged pituitary gland in comparison to his own symptoms. Although this new knowledge weakened Tony's delusion of being physically harmed, he still continued to believe that he was being exposed to radiation because he still heard voices and continued to suffer from bodily pain.

Behavioral Experiment: Increase-Decrease Maneuver

In order to protect himself against the radiation, Tony had put several bottles of water under his bed together with some aluminium foil. These were seen as safety behaviors, because Tony believed the water and the aluminium foil could deflect the radio beams. This delusion was tested out in a behavioral experiment by using an increase-decrease technique. An increase-decrease procedure is based on a simple behavioral experiment, where the first part is based on what will happen if you increase the use of safety behaviors (less beams—weaker voices) and the second is based on what will happen if the safety behaviors are removed (more beams—stronger voices). The behavioral experiment was done over the course of two nights. The first night the patient was instructed to put more bottles of water under his bed to see if this caused him to hear fewer voices. On the second night this procedure was reversed; some of the bottles were removed to see if this resulted in hearing more voices. The patient found out there was no connection between the amount of bottles of water he had put under his bed and the intensity of his auditory hallucinations. Tony then stopped these safety behaviors because the evidence from the reality test suggested that the water and aluminium foil did not have any effect on the intensity of his auditory hallucinations.
Behavioral Experiment: Challenging the Voices

Tony’s auditory hallucinations, however, still caused him a lot of distress. Challenging his appraisals of the voices was the next step. First, the therapist used Socratic questioning to find out more about the content of Tony’s voices, thus establishing a foundation for devising a behavioral experiment that could challenge the omnipotence and truthfulness of these voices. Second, as a behavioral experiment, Tony started to register how often the voices were correct in their predictions about him (e.g., Why haven’t I been harmed or killed yet? Do the voices lie to me? How often have the voices been correct in their threats to me?). Based on these registrations, Tony began to have doubts regarding the veracity of the voices. He started to view the voices as phoney because they made statements that had not come true. Confronting the omnipotence Tony had attributed to his voices using this technique made him feel more empowered, and he started thinking that he had more control than he originally believed. In line with Morrison’s model of auditory hallucinations, Tony experienced the voices as less distressing. Now that he perceived them as lies trying to disturb him, their frequency and intensity decreased. Tony managed by detaching more and more from the voices to handle the presence of the voices, and discovered that the voices disappeared for a short period over some days, which he found very strange.

Behavioral Experiment: Emotional Reasoning

After challenging the patient’s interpretation of the power and control of the voices, the treatment shifted to reality testing some of Tony’s delusional beliefs (see Table 1 for behavioral experiments used in CBT with Tony). In a collaborative manner, Tony and the therapist set up behavioral experiments to evaluate the validity of his beliefs of being persecuted and under surveillance. Together with the therapist, Tony formulated his beliefs about someone observing him and his level of convictions related to these beliefs. To examine these beliefs further, the therapist and Tony checked the parking lot where Tony insisted he had seen suspicious persons sitting in a car. Tony and the therapist conducted this behavioral experiment every time Tony saw cars that he found suspicious. When reviewing the behavioral experiments, the role of anxiety in maintaining delusions was discussed, and Tony was able to understand how high levels of anxiety could serve as strong confirmatory evidence even in the absence of external evidence (i.e., emotional reasoning).

Behavioral Experiments: Radio Waves

Because Tony’s delusions were closely connected to his appraisal of the voices, a new behavioral experiment was carried out. Tony was still certain that the voices came from outside his head and were inflicted upon him by radio beams, though he had begun to understand that the voices did not tell him the truth. To help him understand that the voices were not caused by radio beams, the therapist and Tony agreed to test the hypothesis, “The voices are externally inflicted.” Tony and the therapist agreed that if the voices were caused by radio beams, then he would not hear them if he was in a room that blocked out all radio beams and mobile phone signals. If Tony still heard the voices in such a room, it would be evidence suggesting that the voices did not come from outside by radio beams, but rather took place inside his head. In trying to test the hypothesis, the therapist and Tony used a cellular phone and a radio and went in search of a room that could not receive signals. After visiting several places in the city, the therapist located a bomb shelter from World War II where they made sure that no signals from the mobile phone or radio programs could be received. It is noteworthy that Tony seemed to be comforted by being in a shelter where the resistance had hid during the war. After staying in this facility for 1 hour Tony discovered that he still heard the voices. His response, for several minutes, was confusion and silence. After this behavioral experiment, he reported feeling less threatened by the police. The delusions of being persecuted were still there, but the levels of anxiety and depression were clearly diminishing. The results of the behavioral experiments seemed to motivate Tony to continue critically investigating his thoughts and the nature of the voices.

Behavioral Experiment: Setting Up a Confrontation

Next, the therapist approached Tony’s belief of persecution by a particular policeman. This policeman had worked in the drug-squad. Tony believed that this policeman was hunting him because he had once sold drugs. Tony’s delusion was based on an actual person, so the policeman (now living in another city) was contacted to see if he would meet with Tony. The therapist explained the background for this rather peculiar request to the policeman, and he agreed to meet them to answer specific questions Tony had prepared for him. The meeting was set up as a behavioral experiment, and Tony was given two tasks: to prepare concrete questions for the meeting, and to hypothesize how the policeman would look, behave, speak, and answer his questions. The questions and hypotheses with the expected outcome were formulated as a questionnaire prior to the meeting. A tape recorder was used during the meeting to ensure accuracy in later discussions between the therapist and Tony. As anticipated from the therapist’s phone call with the police officer, the officer proved to be competent and understanding, and had no problems handling Tony’s questions and accusations. The meeting resulted in Tony becoming more
certain that this policeman could not be a part of the plot against him. He seemed to be relieved by this. Tony’s response to this behavioral experiment was monitored by a questionnaire developed for the experiment by both the therapist and the patient. The patient’s symptoms of stress, voice-hearing, and delusions were recorded once a month, once a week, and one hour prior to the behavioral experiment. Furthermore, the same registrations took place one hour after and one week after the behavioral experiment. The results can be seen in Table 2, and show a rather unexpected shift in some of the delusional content. He experienced a shift from thinking that the voices were telling him the truth and were threatening to thinking that the voices were mendacious and the threats empty. However, he still reported in this questionnaire that he believed that the voices were beyond his control and that the voices came from outside his head. Tony still felt that the voices had the same intensity; he was still convinced that the voices were inflicted on him from outside, and that they were beyond his control. However, he felt safer and doubted that the police were actually after him. Clinical observations suggested that Tony was less anxious and depressed than before the therapy started. The questionnaire, made especially for this behavioral experiment, only measured change in cognitions for a time period of 1 week after the confrontation with the policeman had taken place. There are therefore no measures related to changes in Tony’s appraisal of localization and control of the voices after this time period. We do know from clinical practice and research that cognitive restructuring needs time to take effect: Tony’s history after the termination of therapy shows that his cognitions about the control of the voices and localization have been altered as a result of the CBT.

Table 1
Behavioral experiments used in Tony’s CBT

<table>
<thead>
<tr>
<th>Target cognitions</th>
<th>Alternative cognitions</th>
<th>Experiment</th>
<th>Results</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paranoid ideation: Police wants to attack me.</td>
<td>There is no one who is trying to hurt me.</td>
<td>Go out to shops and the nearby gym to see what happens.</td>
<td>No one tried to hurt me.</td>
<td>Even if I feel threatened by other people, this does not mean that they are dangerous. Some people are also really nice to me. Going shopping and working out at the gym also has a positive effect on my depression.</td>
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<tr>
<td>External forces: The voices I hear come from an external force.</td>
<td>The voices I hear are coming from inside of me. These voices can be my thoughts.</td>
<td>Find a room where no radio beams can enter to see if I still can hear the voices.</td>
<td>I can still hear the voices, which means that the voices are probably coming from inside of me.</td>
<td>These voices I hear could be my thoughts. Maybe these thoughts make me anxious and I hear them as externally generated? If these thoughts make me anxious, I should find out more about them, and try to find out if what they say is true. If there is nothing wrong with my pituitary gland, there must be an alternative explanation. The bottles of water and the aluminium foil I put under my bed to protect me from the radio beams may be unnecessary. Maybe I could put them away and see what happens? I don't think the police are trying to kill me, and there is not a conspiracy to kill me. What is the explanation of the voices I hear, and the symptoms I feel in my body? Could there be an alternative explanation to this? Maybe I could explore this.</td>
</tr>
<tr>
<td>Somatic concerns: There is something wrong with my pituitary gland.</td>
<td>There is nothing wrong with my pituitary gland. My symptoms do not fit with gland disease.</td>
<td>Read about how the pituitary gland is functioning. Search the Internet for information.</td>
<td>Even if I feel something is wrong, it does not mean that this is a fact.</td>
<td></td>
</tr>
<tr>
<td>Ideas of persecution: The police are watching me, and they have put a price on my head.</td>
<td>The police are not watching me. They are really not interested in me. I am just afraid.</td>
<td>Meet the policeman who I think is responsible for the persecution of me, and ask him questions about this.</td>
<td>The policeman I thought was trying to kill me was a rather nice person. His answers were reassuring.</td>
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Table 2

<table>
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In retrospect, we see that the meeting between the policeman and the patient was very important and useful for the patient. Tony was pleased to take an active part in testing his assumptions and fears. The CBT used with this patient emphasized active reality testing in a simple and straightforward way. This made Tony receptive to a reevaluation of his strongly held delusional beliefs and reappraisal of the voices. In therapy, Tony's delusional thinking was challenged, which stimulated him to explore alternative beliefs. The anxiety, depression, and distress caused by his delusions and his appraisal of his auditory hallucinations were reduced through these cognitive behavioral techniques.

**Discussion**

This case study has illustrated how behavioral experiments can be used to treat delusions and auditory hallucinations in a patient diagnosed with paranoid schizophrenia. The models of Morrison (2001) and Freeman et al. (2002) provide a good foundation for formulation to guide the treatment. The principles of CBT using Socratic questioning and designing specific targeted behavioral experiments resulted in disconfirmatory evidence for Tony's appraisal of the voices and, as a result, his delusions were weakened. These cognitive changes considerably reduced Tony's distress and symptoms. The behavioral experiments set up by Tony and the therapist used this rationale by presenting new, corrective information to be processed. Threat-related cognition that maintained the auditory hallucinations and persecutory delusions were changed. The good outcome in this case study could be related to different factors. Firstly, the patient and the therapist had an especially good therapeutic alliance, which is of crucial importance in doing CBT for psychosis. Secondly, Tony's high level of suffering could also be seen as an important motivating factor in therapy. Finally, the patient's high degree of psychological mindedness made him very suitable for the rationale of CBT. Even if his conviction in his delusional beliefs faded as a result of the therapy, he still experienced some level of paranoid readiness to other people after termination of therapy. These negative core beliefs could probably be seen as a result of an insecure attachment to other people (Gumley, 2007). Some months after the termination of therapy, the patient was discharged from the psychiatric ward. Together with his case manager Tony and the therapist planned how Tony could build a new network that would not reinforce substance use. He has now returned to university to study and has not relapsed.

**Limitations and Alternative Explanations**

The case study has some limitations. First, caution is recommended when generalizing from small sample
trials, in particular one single case such as this. Second, the use of antipsychotic drugs may influence the course and the intensity of the psychotic symptoms, although his medication was kept at a stable dosage throughout the whole treatment. Third, it may be difficult to assign all the changes Tony experienced during therapy to the behavioral techniques and psychosocial interventions alone. Most probably the treatment gains could be assigned to both medication and therapy, but the gains from the treatment were so swift and closely related to the interventions that we find it highly likely that the behavioral experiments’ influence on the changes was substantial. However, this needs to be investigated in a larger trial. Finally, we cannot establish the long-term effect of the present approach to the treatment of paranoid schizophrenia based on the current case study. This must be considered in future studies.

Implications

Though the empirical support for CBT to treat psychosis has been established, to date there has not been a well-controlled trial that has attempted to dismantle the components of CBT for psychosis, or to identify the specific mechanisms responsible for treatment effectiveness (Gaudiano, 2005). Even if no dismantling studies have been attempted, results suggest that if interventions in CBT of psychosis are coded as being more cognitive or behavioral in nature, behavioral interventions seem to be more effective (Tarrier & Wykes, 2004). There have been some attempts to develop theories to explain particular elements of change in CBT for psychosis (Beck, 2004; Beck & Rector, 2002, 2003; Rector, Beck, & Stolar, 2005), but we still lack a detailed theoretical and psychological understanding of the psychopathological processes in psychosis that could specify these changes observed in therapy (Tarrier, 2005). Although behavioral experiments are considered a valuable part of cognitive therapy for psychosis, there has been little attention to research on how to best utilize it in cognitive behavioral therapy of psychotic symptoms. An interesting unanswered question is whether the process of change is best described through change in thought content or if it is more a function of metacognitive awareness (Gaudiano, 2005). Evidence from different studies has failed to show the specific efficacy of cognitive interventions compared to behavioral interventions (Borkovec, Newman, Picus, & Lytle, 2003; Jacobson et al., 1996; McLean et al., 2001). The evidence suggests that the use of behavioral techniques is a powerful therapeutic strategy, and that behavioral experiments promote great cognitive, affective, and behavioral change (Rouf et al., 2005). This should also be explored more carefully in psychotic disorders. Future research in CBT for psychosis should therefore examine empirically supported principles of change; studies using dismantling designs could prove useful for this end. It ought to be noted, though, that there are some negative expectations that such a research program could be productive for these purposes (Tarrier, 2005; Tarrier & Wykes, 2004). A dismantling study, comparing behavioral interventions against more cognitive interventions, could indicate whether it is the behavioral interventions or the cognitive interventions that make CBT of psychosis effective. With this kind of research as the foundation, we might be able to create more specific models of the mechanisms involved in the etiology and maintenance of psychotic symptoms and tailor CBT to the different types of patients who suffer from psychosis.

References


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