The Use of Behavioral Experiments to Modify Delusions and Paranoia: Clinical Guidelines and Recommendations

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Abstract

Recently, there has been a renewed interested in the treatment of psychosis and it is now appears possible to modify specific symptoms of psychosis such as paranoia and delusions using methods derived from Cognitive-Behavioral Therapy. One specific technique that has received less attention is the use of behavioral experiments. In this paper, we will focus on the treatment of delusions and paranoia using behavioral experiments. To put behavioral experiments in the context of treatment, we will first provide a brief review of cognitive-behavioral treatment of psychosis. This will be followed by a discussion of the different types and goals of behavioral experiments as well as specific recommendations and guidelines for the use of experiments for delusions and paranoia. We will conclude with a case study to illustrate the use of behavioral experiments in treatment.
Keywords: Paranoia, Delusions, Behavioral Experiments, Cognitive-Behavioral Therapy, Treatment

Introduction

Schizophrenia affects about 1% of the population and is considered the most costly and debilitating of all the psychiatric disorders (Mueser & McGurk, 2004). The treatment of psychosis remains a top priority among mental health professionals due to the severity of its symptoms and chronic impairment in social and community functioning. Persons with psychosis exhibit poor social skills, lower social competence, poor community functioning, and impaired social problem-solving (Green, 1996; Mueser, Bellack, Morrison, & Wixted, 1990; Penn & Corrigan, 2001). One way to improve functional outcome is to target psychotic symptoms such as delusions and hallucinations. The most common method of treatment is antipsychotic medication, but clinical research has shown that delusions and hallucinations may not attenuate following antipsychotic medication treatment and may require specialized psychological therapies such as cognitive-behavior therapy (CBT) to improve (Guardiano, 2005; Cather, Penn, Otto, & Goff, 2004; Cather, Penn, Otto, Yovel, Mueser, & Goff, 2005).

According to the DSM-IV-TR, a delusion is defined as a "false belief based on incorrect inference about external reality that is firmly sustained despite what almost everyone else believes and despite what constitutes incontrovertible and obvious proof or evidence to the contrary" (American Psychiatric Association [APA], 2000, pg. 821). One specific type of delusion is persecutory ones, which are defined as the belief that some entity, group or person has current/on-going or future intentions to harm the person without reason (Freeman & Garety, 1999). Persecutory delusions are by far the most common type of delusion found in schizophrenia (Appelbaum, Robbins & Roth, 1999; Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001). Other types of delusions found in schizophrenia include somatic, grandiose, reference or more bizarre delusions involving thought control, insertion, or withdrawal.

In this paper, we will focus on the treatment of delusions and paranoia using behavioral experiments. To put behavioral experiments in the context of treatment, we will first provide a brief review of cognitive-behavioral treatment of psychosis. This will be followed by a discussion of the different types and goals of behavioral experiments as well as specific recommendations and guidelines for the use of experiments for delusions and paranoia. We will conclude with a case study to illustrate the use of behavioral experiments in treatment.

Treatment of Delusions and Paranoia

Psychotic symptoms such as delusions and paranoia can be modified with a variety of approaches, but for the most part many professionals still consider these symptoms to be treatment resistant and not amenable to change. Early psychological treatments included the use of operant conditioning methods such as differential reinforcement, extinction, and punishment to reduce delusional speech (Allyon & Haughton, 1964; Jimenez, Todman, Perez, Godoy, & Landon-Jimenez, 1996; Schock, Clay, & Cipani, 1998). The use of a token economy system, which is a program level intervention, is also considered an efficacious behavioral treatment (see Dickerson, Tenhula, Green-Paden, 2004 for a review). Some case studies have applied these operant methods to paranoid beliefs (Weidner, 1970) and hostile verbalizations (Carstensen & Fremouw, 1981; Dupree, 1993) with success. A useful behavioral conceptualization of paranoia can be found in the seminal article by Haynes (1986). More recently, the use of cognitive-behavioral therapy for psychosis has increased in popularity (Rector & Beck, 2001) and is considered an emerging empirically supported treatment (see reviews by Guardiano, 2005; Rector & Beck, 2001; Zimmerman, 2004). According to the CBT approach, delusions and paranoia are the result of information processing biases that result in faulty beliefs about the self and others. Jumping to conclusions, theory of mind deficits, a strong need for closure, increased sensitivity to threat, and the tendency to generate personalizing attributions (blaming others for negative events) are some examples of the cognitive biases present in delusions (see Rector, 2004 for a review).

The majority of research on CBT for psychosis uses a package treatment approach with a number of interventions combined, which often leads to little knowledge about the specific components that are effective. However, CBT can also be applied to specific psychotic symptoms such as delusions (Haddock, Tarrier, Spaulding, Yusupoff, Kinney, & McCarthy, 1998). The main goal of cognitive behavioral therapy for delusion is two fold: 1) to reduce the level of belief conviction (defined as how strongly a person believes their belief is true) associated with the delusion, and 2) to replace the delusions with a more adaptive belief (Chadwick, Birchwood, & Trower, 1996). In addition, a secondary goal of CBT is to reduce the emotional distress associated with the delusion (Freeman & Garety, 2003). This is in contrast to operant methods, which focus on reducing the overt expression of delusional speech. The modification of belief conviction is usually accomplished with a combination of verbal challenge and behavioral experiments specifically developed for the individual based on the case conceptualization (Beck, 1952; Hole, Rush, & Beck, 1979; Beck, Rush, Shawk, & Emery, 1979; Lowe & Chadwick, 1990; Chadwick & Lowe, 1990; Chadwick & Lowe, 1994; Chadwick, Birchwood, & Trower, 1996). Verbal or cognitive restructuring methods address the evidence supporting the belief and later may involve directly challenging the validity of the belief itself (Chadwick, Birchwood, & Trower, 1996). Since a direct confrontation of the belief may lead to considerable resistance (Watts, Powell, & Austin, 1973), it is recommended that the weakest evidence be challenged first followed by more important or strongly held evidence. Also, there is some evidence that paranoia serves as a defense to prevent negative events from affecting self-esteem, which makes the modification of paranoia more difficult (Bentall et al., 2001). During the verbal challenge phase, use of the thought record (linking thought, beliefs and behaviors), Socratic questioning, and hypothetical contradictory situations are common.

Behavioral Experiments

Behavioral experiments, which are also known as reality testing, or empirical testing, have always been considered an important part of modifying delusions. According to Bennett-Levy, Westbrook, Fennell, Cooper, Rouf and Hackman (2004), behavioral experiments can be defined as "planned experiential activities, based on experimentation or observation, which are undertaken by patients in or between sessions" (pg. 8). Goals of behavioral experiments are to test the evidence for the belief and subsequently lead to the formation of a new, more adaptive and realistic belief. Thus, behavioral

experiments are used to evoke cognitive change in the delusional belief (Chadwick et al., 1996). In many cases, it is quite difficult to talk a person out of his or her belief, and a better way is to have him or her test it out.

It appears that behavioral experiments works best when they are preceded by verbal challenge methods, and they are generally less effective as a stand alone intervention or if used before verbal methods (Chadwick & Lowe, 1994; Trower, Casey, Dryden, 1988; Chadwick, Lowe, Horne, & Higson, 1994). Since there is a considerable level of resistance to alternative explanations associated with delusions, it is believed that the verbal challenges weaken the delusions and render it amenable to behavioral testing (Chadwick et al., 1996). Behavioral experiments often lead to a reduction in conviction levels if even verbal challenge techniques are unsuccessful, and clients may respond to one, both, or neither intervention (Chadwick & Lowe, 1990).

Clinical Guidelines and Recommendations:

Our recommendations for the development and use of behavioral experiments have come from our extensive clinical experience in the treatment of delusions, especially persecutory delusions. In addition, we have gathered additional insights and information from several outstanding references on behavioral experiments (Bennett-Levy et al. 2004; Chadwick et al. 1996; Rouf, Fennell, Westbrook, Cooper, & Bennett-Levy, 2004).

When attempting to modify delusions, there are several types of behavioral experiments to consider. First, observational-type experiments allow the person to record the behaviors of others or ask trusted others their opinions about their beliefs, which are similar to a survey (as discussed in Bennett-Levy et al., 2004). Second, experimental or hypothesis testing methods ask the person to do something different and then record the effects of that new behavior on the evidence for their beliefs.

Since individuals with paranoia and delusions have a strong confirmation bias (they report evidence that supports their belief; see Freeman, Garety, Fowler, Kuipers, Bebbington, & Dunn, 2004), as well as other information processing impairments, we always try to involve a third party whom the client trusts to serve as an additional observer for the experiment. This prevents the client from simply reporting that the belief is true and leads to a wealth of contradictory evidence to consider. An example of an observational experiment would be if a client feels that his or her neighbors are attempting to harm him or her, it would be wise to ask him or her to record what behaviors he/she feels are the evidence for this belief. The client may report that after work his neighbor went inside quickly and did not look at him, which reflects his intention to harm. Obviously, several other alternative interpretations are possible to consider. Since persecutory delusions are associated with fear, anxiety, avoidance, and perceived threat, we tend to start with observational experiments and gradually move to more active, experimental ones.

The use of active experimental methods deserves caution especially when persecutory delusions are involved due to the potential for harm. It may not be wise to ask the paranoid person to confront his psychiatrist about his plots to kill him. To address this issue, we tend to use simulated role-plays first with the therapist acting as the other party. We have also found that forcing the client to engage in different imaginal interactions with different outcomes is helpful. Other areas to consider at this point are the medication status of the person, as well as his or her mental status and emotional distress levels. Any plan or intention towards aggression is a contraindication for active experiments involving confrontation.

Steps in Designing Behavioral Experiments for Delusions and Paranoia

1) *Establish rapport and readiness to engage in experiments* – Usually after the verbal challenge phase of treatment, rapport will be sufficient to initiate the subject of using behavioral experiments. We commonly ask if the client is ready to put his or her belief to the test, or we suggest that there are other ways to examine his or her beliefs if he or she is interested. Professionals should assess the client's level of fear, anxiety, potential for aggression, and previous compliance with assigned activities when deciding if the time is right for behavioral experiments.

2) *Involve the client in designing the experiment* - Behavioral experiments work better if the client has a role and collaborates in deciding how to test his or her belief. The clinician needs to attend to two issues at this stage. First, the purpose of the experiment is not to prove that the belief is true, but to examine the evidence. Second, the client may come up with a flawed, incomplete, or irrelevant experiment, and the clinician is encouraged to help shape or revise the experiment if necessary. Generally, we do not tell clients what to do, but we make suggestions on how to make it better. By allowing the client to participate in this process they take a sense of ownership, which makes the data gathered in the experiment harder to discount. Describing the conduction of experiments as similar to doing detective work puts the client in the correct frame of mind in terms of gathering evidence.

3) *Test specific predictions* - Predictions as to what will happen are made in advance. Generally two predictions are all that are needed: one prediction if the client's belief is true and an alternative prediction (provided by client or therapist). Since delusions are often pervasive and wide-ranging, it is necessary to focus on specific parts instead of the delusion as a whole.

4) *Discuss problems* - After the plan is derived and predictions are made, the client and therapist need to discuss any potential problems that may interfere with the experiment. In particular, an assessment of social skills and/or practice/role-playing in the session may be needed. The expression of negative emotion, hostility, or anger to others during the experiment may actually lead to increased paranoia (reciprocal interaction; Haynes, 1986). For persons with paranoia, professionals should realize that a significant amount of behavioral avoidance may be present, and this is why observational experiments are used first to lessen the threat and avoidance.

5) *Refine plan* - Based on potential problems, the plan is refined or altered as needed. Both the client and therapist should feel comfortable with the proposed experiment. At this stage, we find that setting a date when the experiment is to be completed is important in ensuring that the plan is actually carried out.

6) *Conduct, observe, and evaluate evidence* - The client (and any other person involved) should be instructed to take careful notes about the event and to fully attend to the interaction. This may be difficult, but as a practice exercise we have clients look at a magazine picture and report as many details as they can. We emphasize that clients should approach the experiment the same way. Following the experiment, we employ the thought record, which allows the client to document the antecedents, beliefs, and consequences. We discourage the use of verbal reports since they are incomplete and less detailed and subject to cognitive biases. The experiment is then reviewed in the therapy session in terms of the predictions. When confronted with contradictory evidence, the client may gradually modify his or her belief.

7) *Be Realistic* - The weakening of delusions is a difficult task, and professionals should avoid the mindset that a single brilliantly designed experiment will be effective. In many cases, this process takes significant time with frequent stops and starts along the way. Having small goals

helps the professional deal with the frustration over lack of change. Frequently, we have clients who have refused to change their beliefs despite our best efforts.

Clinical Case Example

LN was a 37year-old white female who was hospitalized due to becoming aggressive with her landlord after he asked for the rent. During her intake, she reported a variety of persecutory ideas, which centered on the belief that a local social services agency was stealing her possessions. The thefts occurred at night or when she was out of the house. Her evidence consisted of receiving several hang up phone calls, seeing people she did not know driving through the parking lot and being unable to locate household items. Furthermore, she believed that the agency had her hospitalized so they could steal from her. Prior to beginning treatment, we conducted an evaluation of her symptoms using the Structured Clinical Interview for DSM-IV (SCID), the Brief Psychiatric Rating Scale (BPRS) and the Brown Assessment of Beliefs. Her belief met the criteria for a delusion of the persecutory type, and her reported conviction level at admission was 100%.

While in treatment, we consistently challenged her belief that the agency would steal from her. We emphasized that since she had no relationship with the agency, it would be highly unlikely for this to happen, and also we pointed out that there are a number of reasons why household items might disappear (misplaced, lost, thrown away, etc). Despite this approach, she remained unconvinced. Thus, we approached the possibility of behavioral testing. We conducted two experiments to weaken her belief. First, we agreed that someone in her family would go to her apartment to look for 3 items that she felt were stolen. The client was unable to visit since she was currently hospitalized. We had to be careful to use items that could be easily found, and the client told us ahead of time where the items would be located. The client nominated the family member and felt she could be trusted. Also, to further enhance the effectiveness of this intervention, a digital camera was used to take pictures of the items (client inspected the camera before its use, however).

The second intervention occurred when the client was discharged. We asked her to conduct a search of her home to look for three different missing items. One of the client's continuing fears was that her possessions would be gone since she was hospitalized. Thus, the experiment moved from an observational one to a hypothesis testing one. She predicted that the items would be missing, and the alternative prediction was that the items would be found. As expected, she reported no signs of forced entry, and all of the items were accounted for in the home. Not unexpectedly, the client, when confronted with this evidence, attempted to discuss other items that were missing in the past, but we continued to focus on the results of the experiment, which discounted her belief.

Case Discussion

The effectiveness of this experiment was based on its design and use of client collaboration. We used a combination of observational and hypothesis testing experiments to challenge her belief. We were very specific in our predictions, and the purpose of using only three items was to eliminate the reporting of other stolen items and of possibly confirming the belief. In fact, the client never mentioned any other items during the session other than the ones defined in the experiment. If the delusion still remained strong, we could have involved a role-play scenario involving the client and agency director. The best evidence would have been an interaction with the agency director about the situation, but this was not pursued since the other methods were effective. Of course there are clients who, no matter what evidence is provided (e.g. digital camera photos that are doctored or manipulated), still show strong levels of conviction. It is important to continue challenging these beliefs, and eventually some degree of weakening will occur.

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