



## **COGNITIVE BEHAVIOR THERAPY IN OBSESSIVE COMPULSIVE DISORDER FOR ADULTS**

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### *Abstract*

*Obsessive-compulsive disorder (OCD) is a chronic anxiety disorder with an estimated lifetime prevalence in adults of 2-3%. Our aim is to provide an overview of the development of effective psychological treatments for OCD, together with a systematic review of the latest research in the field. Controlled treatment trials have demonstrated that cognitive - behavioral therapy (CBT) is an effective treatment for OCD. CBT has been at least as effective as medication and shows good benefits at follow up. Nevertheless, more studies are still needed, mainly those focusing on long-term follow-up, group-treatment and the combined use of CBT with SSRIs. A prefrontal cortico-striato-thalamic brain system is implicated in the mediation of symptoms of OCD. Recent research has demonstrated that CBT for OCD can systematically modify cerebral metabolic activity in this cortico subcortical circuit in a manner that is significantly related to clinical outcome.*

Keywords: obsessive-compulsive disorder, brain system, CBT, medication

### **Introduction**

Obsessive-compulsive disorder (OCD) is one of the most frequent anxiety disorder, with a lifetime prevalence of 2-3%. OCD is an anxiety disorder characterized by intrusive ideas (obsessions) and repetitive behaviors (compulsions) which produce personal suffering, significantly affects the

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patience's quality of life, or interferes with the daily activities (Kuelz, 2006) and interpersonal relationships.

Among the most frequent obsessions are the fear of contamination, pathological doubt, somatic preoccupation, need for symmetry, aggressive or sexual thoughts. Frequent compulsions include repetitive hand washing, repeated checks, repetitive counting, collecting etc. The patient, in most cases, is aware of his unreasonable and overreacted behavior. In order to fulfill the DSM-IV criteria a patient must have either obsessions or compulsions or both categories of symptoms. The obsessions are anxiogenic, whereas compulsions are anxiolytic.

Up until the 60's, OCD faced a pessimistic perspective, being regarded as a chronic disorder and refractory to treatment, this vision was due to the failure of psychoanalytical therapy (Cottraux, Bouvard, & Millierey, 2005). However, in the 60's, two great progresses were made in the therapy of OCD, demonstrating for the first time the efficacy of behavior therapy, through exposure and response prevention by Victor Meyer in 1966, and demonstrating, also for the first time, the efficiency of clomipramine in the therapy of OCD, in Spain by Juan Jose Lopez-Ibor in 1968.

OCD is the mental disorder in which probably the most progresses in the last 20 years regarding psycho-pharmaceutical and psycho-therapeutic treatment has been made. For a long time, OCD has been regarded as the window towards the function of the unconscious, being attributed to unconscious conflicts. Nowadays, OCD is a good example of a neuro-psychiatric disorder, mediated by dysfunctions in some *specific neuronal circuits*, accessible by specific psycho-pharmaceutical and psycho-therapeutic means. As a result of a number of functional neuroimaging studies, to date, it has been concluded that OCD symptoms appear, mainly as a result of hyperactivity (hypermetabolism) in the *orbito-fronto-subcortical circuit (caudate nucleus and thalamus)* (figure 1 and figure 2). Further studies are necessary for the establishment of the nature and origin of this dysfunction, with the integration of neuroanatomical, neurochemical, neurogenetic and neuroimmunologic data.

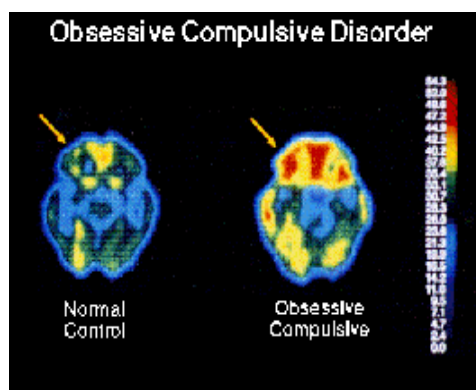


Figure 1. Increased activity in the orbito-frontal cortex in an OCD patient (right) compared to a control subject (Baxter, Schwartz, Bergman, Szuba, Guze, Mazziotta, Alazraki, Selin, Ferng, Munford et al., 1998).

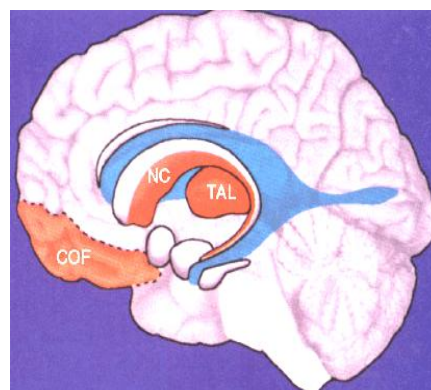


Figure 2. Brain structures involved in the physiopathology of OCD (OFC orbito-frontal cortex, CN - caudate nucleus, TAL - thalamus)

The case of OCD treatment is an example for the benefic effects that modern research can have in a relatively short time. Unlike the 80's, when OCD was considered less responsive to treatment, nowadays, OCD is known to be a frequent mental disorder, with a high response to treatment. OCD is probably the most difficult anxious disorder to treat, having at the same time a high rate of resistance to treatment.

Two forms of treatment have proven to be effective in clinical controlled studies of OCD treatment for adults: cognitive behavioral therapy and psychopharmacological treatment with selective serotonin reuptake inhibitors (SSRI) (Storch & Merlo, 2006). The purpose of the treatment (psychopharmacological or psychotherapeutic) is to diminish the symptoms and increase the functionality of the patients in the social domain, so that the patient can have a normal life. A modest percentage of patients will be free of symptoms.

Freud was first to separate the entity named "obsessive neurosis" (Zwangneurose) from other clinical conditions which were grouped together under the common term of neurasthenia (Kempke & Luyten, 2007).

Traditional psychodynamic psychotherapy used in the 70s was not effective in the treatment of obsessions and compulsions however

(Abramowitz, 2006). The psychoanalytical therapy of OCD is based on the conceptualization of OCD as being traceable to the constant conflict between the Ego and the Superego, on the one hand, and sexual and aggressive impulses that come from the Id, on the other hand (Kempke & Luyten, 2007). Even experienced psychoanalysts admitted that OCD continues to be resistant to their efforts (Munford, Hand, & Berman, 1994). In modern psychiatric literature there is no data regarding patients whose obsessionality has improved only by the use of this method. Also, there are so far no convincing data regarding an important clinical effect of hypnosis or family / couple therapy in the treatment of OCD.

Cognitive behavioral psychotherapy, by combining behavioral therapy with cognitive therapy is the most frequently used psychological treatment for OCD, nowadays. For a significant percentage of patients, this psychotherapeutic technique is the first and only therapeutic method that they need.

### **Behavioral therapy**

Descriptions of behavioral techniques useful in OCD therapy have been around for more than a century. Actually, even Janet (quoted by Marks, 1981) described with great precision, what we today call exposure therapy, using the term of “exposure”. Application on a large scale of the method described by Janet was minimal, because in the same period, Freud described the psychoanalytical theory of obsessive neurosis which for a long time diverted the attention of therapists from behavioral therapy for OCD.

In 1966, Victor Meyer described an approach in the therapy of OCD named *exposure and response prevention (ERP)* and presented for the first time the results of a clinical study of 15 inpatients. Ten out of the 15 patients responded very well to the method of treatment proposed, and the rest showed a partial improvement (Abramowitz, 2006). The treatment implies that the patients are being constantly supervised by the nurses who stop them (from washing their hands for example). Meyer conceptualized and developed the behavioral therapy of OCD starting from the research of Richard Solomon and his team, who developed an elegant animal model of OCD. The approach proposed by Meyer was adopted on a large scale by therapists and its efficiency has been confirmed in multiple controlled studies, initiated by Rachman and his

collaborators in the 70s. Subsequently, researchers described the cognitive processes of OCD which opened the way for the cognitive approach on OCD.

Controlled studies in the last years showed that behavioral therapy through the technique of ERP represents an extremely efficient therapy for OCD, even if these studies used different versions of the method (exposure supervised by the therapist vs. self controlled exposure) different formats (individual sessions vs. group therapy) or different intensities (regarding the frequency and period of the session) (Fals-Stewart, Marks, & Schafer, 1993; Lindsey, Crino, & Andrews, 1997; Greist, Marks, Baer, Kobak, Wenzel, Hirsch, Mantle, & Clary, 2002; Cordioli, Heldt, Bochi, Margis, de Sousa, Tonello, Manfro, & Kapczinski, 2003). In the traditional way of the method, patients learn, with the help of a therapist, to expose themselves to certain stimulants (toilets, doorknobs, public telephones) which intensify their obsessive thoughts and also how to resist responding to those thoughts in a compulsive manner (e.g. not washing their hands, not checking things repeatedly). Exposure can take place in real life, *in vivo*, (e.g. at home or in a public toilet) or in imagination (for example in the case of patients with obsessions regarding aggressive or religious content). The purpose of the exposure is to teach the patient to tolerate anxious experiences, rather than avoiding them.

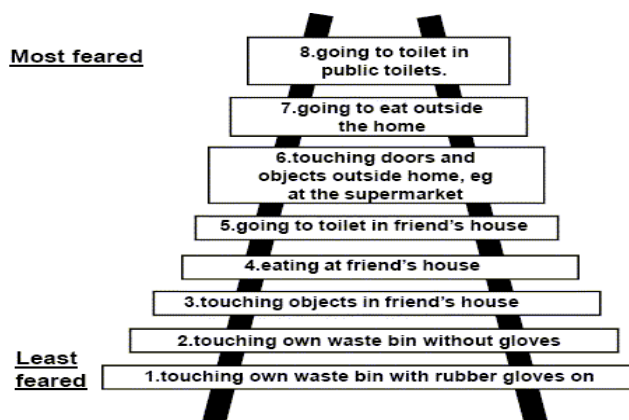


Figure 3. Example of ranking of situations that can induce anxiety in the case of a patient that presents germ contamination obsession.

It has been proven that this psychotherapeutic modality, which leads to the modification of the behavior can eventually produce cognitive modifications.

ERP is based on the premises that obsessions are conditionally harmful stimulants (anxious) which usually provoke an active answer of avoidance or a compulsion. The compulsions' role is to reduce obsessive fear and/or preventing a fearful event (for example contamination) (Clark, 2005). *Response prevention* (preventing the ritual) is an essential component of the treatment method because performing these rituals to reduce anxiety will prematurely interrupt the exposure and the patient will never have the opportunity to learn that the situation that is making him anxious is not dangerous in reality. Also, the anxiety diminishes by itself if the ritual is not performed.

Therapy sessions are held at least once a week and the time of the session can go up to 2 hours. Although, in general, 12-16 therapy sessions are necessary, the period of a therapy depends on the types of symptoms and their severity with regard to the patients' functioning (Storch & Merlo, 2006). The therapy is initiated by building a *hierarchy* of the situations that trigger the obsessionality, which takes place in 2-3 sessions dedicated to the gathering of information (see Fig. 3). Ranking is based on the subjective units of distress (SUDS). Usually, the distress is expressed on a scale of 0 to 100, 100 being the activity most feared, and 0 being a neutral situation that does not produce fear. It all starts by exposing patients, for approximately 90 minutes, in those situations that trigger an anxiety of moderate intensity, the patient being advised to abstain himself from performing the compulsion (response prevention). These exposures not only take place during the therapy session but also between sessions, as homework. *Exposures* are performed according to some general rules, and specific ones for every type of obsession, rules, that are handed in writing to the patient. The most restrictive method that patients can tolerate is the most efficient (for example it is indicated that patients must never wash their hands, and never check repeatedly, or just check once etc.). Habituation emerges, through *repeated* exposures with response prevention, thus even if the obsessive ideas persist the situations cause less anxiety (Clark, 2005).

Schwartz, Stoessel, Baxter, Martin, and Phelps (1996) developed a new technique called "The Four Step Method" having the purpose of increasing the patients' ability to perform their own therapy of exposure and response

prevention without a therapist being present. This technique, named by the authors “biobehavioral”, was presented in the book called “Brain Lock” a self-help book for patients. The efficiency of this method has been confirmed even for the phone version (Taylor, 2003). The purpose of this method is to control the response to the obsessive thoughts and not to obsessions itself. We will present the 4 steps:

*Step 1: Relabel*

- the purpose of this step is to teach the patients to recognize their obsessions and compulsions and to label them;
- patients are advised to look at their obsessions as “false messages” from the brain.

*Step 2: Reattribute*

- the key to this step is realizing that the intensity of the obsessive thoughts are due to a biochemical imbalance in the brain, that is why they don’t just disappear, patients are encouraged to visualize these parts of the brain that don’t function as they should, with the purpose to help them understand that their symptoms are due to a dysfunction of the brain and it does not represent reality;
- the purpose of this step is to teach the patients to reattribute the intensity of the thoughts to the real cause, OCD.

*Step 3: Refocus*

- the purpose of this step is to overcome the obsessive thoughts by focusing the attention on a constructive activity (alternative behavior) instead of performing compulsions;
- therefore, patients are advised to perform useful activities, constructive and pleasant, as well as physical activities, walks, listening to music or hand craft;
- the alternative is to continue the activity stopped by the obsessive thoughts, efficiency being high if the activity requires concentration and involves other persons or if it’s incompatible with the compulsive behavior.

*Step 4: Revalue*

- revaluing the importance of the obsessive thoughts, after completing the first steps;

- the purpose of this step is to value other aspects of the patients' life, and regard obsessions and compulsions as worthless distractions.

Only recently behavioral therapy of OCD through the method of ERP started being studied on large samples of patients and control groups, so that clear conclusions can be drawn regarding the efficiency of this method. The existing data suggest the fact that behavioral therapy by the method of ERP is at least as efficient as the psycho-pharmaceutics therapy, in some cases and can be superior to this therapy with regard to risks, costs and long term benefits. Also, the rate of relapse after therapy is lower in the case of ERP, compared to the treatment with selective serotonin reuptake inhibitors (SSRIs). Apparently, for these reasons, in the long-term, this psychotherapeutic technique is superior to the SSRIs with regard to the cost/efficiency report (Marks, 1997). In *controlled studies* performed in the last 15 years, in different countries concerning the result of ERP, a response rate between 63% (Stanley & Turner, 1995) and 90% was observed (Riggs & Foa, 1993). The improved clinical condition was maintained for 2 years or more, after the therapy sessions (Wilhelm, Tolin, & Steketee, 2004). However, these results have to be carefully interpreted, because ERP *is not a homogeneous concept*, which can influence the results of different studies. For example, exposure sessions, controlled by the therapist seem to be more efficient than the self controlled ones. Also, total prevention of response, seems to be more efficient than the partial prevention of response.

Recently, there have been different *meta-analyses* published (some of them criticized because they took into consideration studies with design deficiencies) regarding the relative efficiency of ERP, SSRI therapy, or their combination (Schruers, Koning, Luermans, Haack, & Griez, 2005). Therefore, van Balkom, Oppen, Vermeulen, and van Dyck, (1994) have proven that behavioral therapy is more efficient than SSRIs, and the combination between behavioral therapy and SSRIs have a superior effect compared to the SSRI therapy alone. In another meta-analysis Kobak, Greist, Jefferson, Katzelnick, and Henk (1998) haven't found any difference between ERP, SSRIs, and the combination between the two methods. Also, some therapists use cognitive techniques in the exposure and response prevention therapy, this can influence the final results.

Among the *disadvantages* of ERP is the fact that approximately 25-30% of the patients refuse to perform the exposures (Emmelkamp & Foa, 1983;



Kozak, Liebowitz, & Foa, 2000) and 28% give up therapy (Kozak et al., 2000). Another disadvantage is the weak efficiency in the case of patients suffering from mental compulsions or in the case of hoarding patients or ones with religious and sexual obsessions (Rufer, Fricke, Moritz, Kloss, & Hand, 2006).

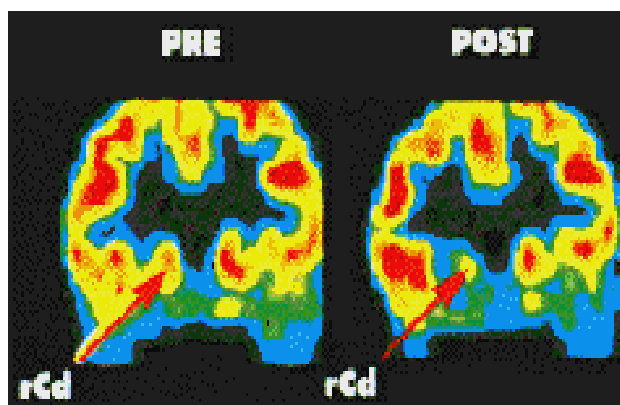


Figure 4. PET study that shows the modification of energy consumption after behavioral psychotherapy for 10 weeks in 18 patients with OCD (rCd –right caudate nucleus) (Schwartz et al., 1996.)

Recent studies have proven that behavioral psychotherapy of OCD can systematically modify the brain metabolic activity in a way that is correlated with clinical improvement (Schwartz, 1996). Schwartz et al. (1996) using the positron emission tomography (PET) to correlate the response to treatment of OCD, with the activity of certain brain structures, compared behavioral therapy with pharmacotherapy (fluoxetine). Scans performed before the treatment showed an increased activity in the caudate nucleus in all patients. Patients were split into two groups. Some followed only behavioral therapy while others only pharmacotherapy with fluoxetine. Approximately 70% of the patients in both groups responded to treatment. The PET exam, after the treatment, showed a decreased activity in the right caudate nucleus, only in the case of the patients that responded to treatment, *regardless* of the modality of treatment (see Fig. 4). This study suggested the existence of certain *biological markers* for OCD, as well as the fact that simple psychological intervention can favorably modify the functional neuroanatomy of the patients. *This is one of the most important studies in the history of psychiatry, with many implications*

*regarding the future of mental disease therapy.* Psychiatrists have always assumed that psychotherapy can modify the brain's activity. Now we have scientific confirmation that it can. The precise way in which psychotherapy realizes the activity normalization in the cortical-subcortical circuit involved in the physiopathology of OCD, is yet to be discovered.

The success of this therapy, scientifically documented, helps us realize the real power that mental control and suggestion have on the way in which the brain functions. Through medication and behavioral therapy as well a modification of the brain biochemistry takes place in the paths that control the OCD symptomatology. Through medication, a passive modification takes place, while through behavioral therapy similar modifications take place but in a more active way, by changing the response to obsessive thoughts.

### **Cognitive therapy**

Cognitive therapy, which can be added to behavioral therapy for compliance facilitation, addresses the false beliefs of OCD. This technique has great value in the case of the patients that present, mainly obsessions, without obvious compulsions.

Studies done by Cottraux, Note, Yao, Lafont, Note, Mollard, Bouvard, Sauteraud, Bourgeois, and Dartigues (2001) on moderate size groups of patients have proven that cognitive therapy and ERP generate comparable results. The studies regarding the efficiency of cognitive therapy in OCD treatment have been facilitated by the relatively high percentage of patients that refuse or give up ERP (Wilhelm et al., 2004).

The first cognitive model of OCD was proposed by Salkovskis (1989) and it is based on the idea that the element that differentiates the OCD patients from the rest of the population is not the experience of intrusive thoughts, but the manner in which these thoughts are interpreted (Wilhelm et al., 2004). Unlike the majority of the population, that ignore these thoughts, the OCD patients not only give them attention, but consider them as being important, interpreting them in a wrong way, in a catastrophic manner. Rachman (1997) continued to elaborate on this model, proposing that the negative and wrong interpretation of an intrusive thought (e.g. "I am a mean person if I have these thoughts"), that determine negative emotions, trigger efforts of neutralizing this thought through compulsions. Starting with these models an international group of researchers specialized in the cognitive therapy of OCD reunited in 1997 and

identified many significant false believes for OCD; these are presented in the following table. *The purpose of cognitive therapy is to modify these believes that supposedly have a role in the development and maintenance of OCD.*

Table 1. Significant false believes for OCD

<i>false estimation of danger and its consequences</i>	exaggerated estimation of a severity or/and probability that an event will take place (e.g. "If I touch the handle of the bathroom door I might catch a lethal disease")
<i>an exaggerated sense of personal responsibility</i>	the belief that one could be blamed for not being able to prevent a negative event from happening to themselves or those around them (e.g. "I could cause an accident if I don't remove that piece of glass from the street")
<i>overestimation of the importance of the thoughts</i>	the belief that a persistent thought is important just because it appeared (e.g. "I probably have an unconscious tendency to aggression, that is why I frequently have aggressive obsessions")
<i>TAF (thought-action-fusion) (component of the precedent)</i>	the belief that if one thinks about a certain event, that will increase the probability of that event to taking place (e.g. "If I think that my father will have an accident, the risk that my father will have a real accident, is increased"); this concept has 2 dimensions (Shafran, Thodarson, & Rachman, 1996): <i>a. TAF-likelihood</i> - is the belief that certain thoughts can increase the probability of some events to occur; <i>b. TAF-morality</i> – the belief that the simple fact of having immoral thoughts is as unacceptable as being involved in immoral acts.
<i>intolerance of uncertainty</i>	the belief that absolute sureness in thinking and action is necessary to maximize predictability and control, with the purpose of reducing danger to self and others (e.g. "I can not tolerate any doubt that I really closed the gas")
<i>intolerance of anxiety</i>	the belief that not even small intensity anxiety can be tolerated because of the possible dangerous consequences (e.g. "I have to give in to the temptation of performing a compulsion otherwise the anxiety will increase")
<i>perfectionism</i>	the belief that there is one single perfect solution to a problem, and small mistakes cannot be tolerated as they can have dangerous consequences (e.g. "I really need to find the perfect present for my friend's birthday party")

*Cognitive interventions are important especially in the case of the patients that do not present compulsions that are freely observable in behavior, situations where ERP is difficult.*

The empiric data existing in the literature *doesn't support* the present tendency of focusing specifically on cognitive processes in the cognitive behavioral therapy for OCD (Clark, 2005).

### **Cognitive Behavioral Therapy (CBT)**

Individual or group CBT consists of a coherent combination of behavioral therapy with cognitive therapy. To date, it is not certain which of the two psychotherapeutic methods is superior in efficiency or whether the

combining of the two methods can bring an extra true benefit (Abramowitz, 2006).

The ideal candidate for CBT is an OCD patient that doesn't present a severe comorbid depression and is motivated in reducing his rituals. It is the best suggestion of treatment in the case of patients that psychopharmacological treatment might involve high risks (pregnant patients, patients with cardiac problems or patients that can't tolerate the side effects of medication). The presence of a personality disorder doesn't significantly affect the results of CBT. The results in the case of patients with mental compulsions and those under benzodiazepine treatment were weak (Himle, Van Etten, Janek, & Fischer, 2006). Even these patients can show a clinical improvement by the use of CBT.

Kueltz (2006) showed that there was an improvement in the neuropsychological test results after 12 weeks of CBT in the case of 30 patients that didn't follow a psychopharmacological treatment, the conclusion being that this type of therapy allows patients to think and act in a more flexible manner that help them develop more efficient cognitive strategies.

Although most patients respond well to CBT, in a large number of cases the symptoms persist; complete remission has not been possible to date (Storch & Merlo, 2006; Marian & Filimon, 2010). CBT is considered *first line therapy* for mild severity forms that cause distress but do not affect the functionality in society. In the more severe cases it is recommended only in association with pharmacotherapy. One barrier in the CBT therapy of OCD is the low number of mental health practitioners that have been instructed in intervention techniques specially adapted for OCD patients, as well as the fact that many practitioners are not up to date with the existence of such a therapy.

In contrast with the opinion of many clinicians, recent studies have proven that, in the case of adults (but not in the case of children), combining ERP or cognitive therapy with selective serotonin reuptake inhibitors (SSRIs) does not bring extra benefits compared to psychotherapeutic techniques alone (Prazeres, Souza, & Fontenelle, 2007).

However, it seems that adding CBT to psychopharmacological treatment lowers the rate of relapse after the medication is discontinued. Unlike benzodiazepines, that lowers the efficiency of CBT, SSRIs does not interfere or reduces the efficiency of this method (Geffken, Storch, Gelfand, Adkins, & Goodman, 2004; Marian, 2011). Antiobsessive medications keep

their efficiency even in severe cases, while CBT seems to have the best results in mild or moderate forms. A large number of clinicians start the treatment with a SSRI so that when the effects start showing they can begin psychotherapy. Therefore the rehabilitating advantages of psychotherapy help maintain and improve the response to treatment.

### **Conclusions**

Cognitive behavioral techniques have proven to be very effective in the treatment of anxiety disorders. From these techniques the exposure and response prevention therapy (ERP) is the first psychotherapeutic method to be empirically validated for OCD therapy. Many studies have proven the efficiency of ERP, and on a small scale, of cognitive techniques, single or combined, for OCD therapy. Still, the treatment rarely leads to the complete disappearance of the symptoms. The efficiency is similar to that of SSRI psychopharmacotherapy, but unlike the SSRIs, the benefits are maintained for a longer period of time.

Although the clinical use of predominantly cognitive approach in OCD therapy hasn't yet been clearly proven to be effective, and we consider that it is premature to abandon the cognitive theories of OCD and the therapeutic techniques that stem from them.

Recent research has proven that CBT for OCD can systematically modify the metabolic activity of the brain in the cortico subcortical circuit responsible for the OCD physiopathology in a close related manner to the clinical response similar to the SSRI therapy.

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