

# Behaviour Therapy for Obsessive–Compulsive Disorder: A Decade of Progress

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**Objective:** To review the last decade of behaviour therapy research in obsessive–compulsive disorder (OCD).

**Method:** The most salient research was analyzed.

**Results:** Many studies confirmed that exposure and ritual prevention (ERP) effectively reduced compulsive rituals and obsessive thoughts in most patients in all age groups, although a minority of the patients did not complete treatment. Gains persisted to follow-up 2 to 6 years later in several countries. Improvement after ERP generalized to obsessive–compulsive beliefs, mood, work, and social adjustment, and was accompanied by reduction in cerebral blood flow in the right caudate nucleus. Teaching patients how to prevent relapse seems to reduce the risk of recurrence. ERP yields slightly more improvement than does appropriate antidepressant medication and is followed by far less relapse after treatment has stopped, so ERP may be more cost-effective in the long term. Antidepressant medication is a useful adjunct to ERP when OCD is accompanied by comorbid depression. The therapist now tends to teach patients how to carry out self-exposure and self-imposed ritual prevention, rather than to impose ERP on them. Self-help manuals help patients to do this, and computer aids to allow patients to learn how to do ERP at home have been valuable in pilot studies. Cognitive therapy without ERP was as useful as ERP.

**Conclusion:** ERP is of lasting value for OCD. Long-term cost-effectiveness comparisons are needed of self-administered ERP versus cognitive therapy and versus medication. Studies are also needed of brief psychological treatment for depression comorbid with OCD.

(Can J Psychiatry 1997;42:1021–1027)

**Key Words:** obsessive–compulsive disorder, compulsive rituals, obsessive thoughts, behaviour therapy, exposure and ritual prevention, self-help, computer-aided treatment, cognitive therapy, pharmacotherapy, follow-up posttreatment

## The Value of ERP

The first effective psychotherapy devised for OCD was exposure and ritual prevention (ERP). With ERP, sufferers are persuaded to 1) expose themselves daily to cues they

avoid because they induce discomfort and rituals, and 2) stay in contact with those cues during the ensuing discomfort and not ritualize for at least an hour or until the discomfort slowly subsides. This form of behaviour therapy was developed from 1965 to 1975 and was subsequently refined, widely used, and reviewed in detail (1). In the last decade ERP has been further developed and the subject of much fine research. Only the main trends can be distilled in this brief review.

ERP yielded more improvement than did anxiety management without ERP (62% versus 0% fall of the Yale–Brown Obsessive Compulsive Scale [Y-BOCS] at posttreatment) in a recent randomized controlled trial (RCT) of 18 OCD patients (2). In another RCT of 49 OCD patients, the addition

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of imagined to live exposure enhanced neither improvement nor the concordance of improvement across behavioural and subjective measures (3,4).

Improvement in obsessive-compulsive (OC) symptoms after ERP generalizes to improvement of commonly associated abnormal beliefs, even if those beliefs are fairly ingrained to start with as occurs in many patients (5,6). It also generalizes to lessening of work and social disability, and it is accompanied by neuroimaging (PET) evidence of lower cerebral blood flow in the right caudate nucleus (7-9). This caudate change also occurred after OCD improved with fluoxetine (8).

Though improvement in OC symptoms with ERP correlates significantly with patients' satisfaction with treatment, the correlation is small. Patients who improved the most rapidly were not always those who were the most satisfied with treatment (10). The mean therapist time per OCD patient was 10 hours for outpatients and 20 hours for more severe inpatients.

### **Gains after ERP Usually Continue to Long-Term Follow-Up**

In general, improvement after ERP tends to persist over the years. Some patients do need brief booster ERP or antidepressant medication if they had a pretreatment tendency to become depressed. Nine prospective follow-ups conducted 1 to 6 years after ERP were reviewed (11). In these 9 cohorts, 195 out of an original 223 patients (87%) were followed up. In all 9 studies, the significant improvement that had been observed posttreatment was maintained at follow-up. Overall, 79% of the patients were improved or much improved in OC symptoms. This improvement usually generalized to better social adjustment, despite some expected residual symptoms. Target rituals fell by 60% compared with pretreatment habits. Any pretreatment liability to depressive episodes continued. In a subsequent follow-up of 33 patients at one year posttreatment, improvement continued as a whole, and exposure reduced the amount of antidepressants taken during follow-up (12).

Long-term follow-up of a unique single case deserves mention (13). A man who had comorbid transsexualism remained almost cured of his OCD 6 years after ERP treatment for OCD. His transsexualism, for which he had refused behaviour therapy, disappeared unexpectedly as his OCD improved with ERP. The transsexualism reappeared 4 years later and remained to 6-year follow-up despite continuing improvement of the OCD.

### *Relapse Prevention*

Improvement seems to last longer if patients are taught how to prevent subsequent relapse toward the end of ERP treatment. Usually, this involves the patient learning to anticipate setbacks and devise and rehearse ERP tasks in order to avoid incipient relapse.

The value of teaching relapse prevention was tested in 20 patients who had improved 63% in OCD symptoms after 15 daily sessions of ERP over 3 weeks (14). The ERP excluded components that were believed to prevent relapse: discussion of relapse, posttreatment exposure, themes of guilt and personal responsibility, and cognitive restructuring. After 3 weeks of ERP, patients were randomized to have four 90-minute sessions over a week of either relapse prevention including the above components, or control associative therapy and relaxation. At 6-month follow-up, 87% of relapse prevention patients and only 50% of control patients had maintained improvement. It is unclear how much of the superiority of relapse prevention after a week of posttreatment was due to its having consisted of cognitive restructuring and having been followed by nine 15-minute-long phone contacts during weeks 5 to 14.

### **Predictors of Outcome**

In an RCT, the best predictor of good outcome after 9 weeks of treatment and 6-month subsequent follow-up was early patient compliance in doing exposure homework within a week of starting ERP (3,4,15). In that RCT, a weaker predictor of good outcome at follow-up was within-session reduction in anxiety from weeks 0 to 4. This fits a much earlier finding that gains in the first few days of treatment predicted improvement at 2-year follow-up (16). The absence of certain comorbid personality disorders also predicts increased improvement. One study found no relationship between compliance and improvement (17). Less initial severity was another predictor of good outcome after an RCT (18).

### **Obsessions and Rituals Usually Improve with ERP**

Until recently, ERP was believed to produce a better outcome with rituals than with obsessions. ERP's value for obsessions rose, however, when it was refined so that patients were asked to expose themselves only to anxiogenic thoughts and to block neutralizing anxiolytic thoughts (mental rituals).

In a pilot RCT, 12 patients listened for 2 hours daily over 8 weeks to their own audiotaped voice describing their anxiogenic thoughts (exposure), while anxiolytic thoughts (mental or cognitive rituals) were omitted (19). Patients who became anxious early in exposure to their audiotape improved slightly more than other patients. Consistent with this is a clinical audit of 57 ruminators treated over 12 years, in which outcome improved significantly once ERP practice changed to encourage exposure to anxiogenic thoughts and not to anxiolytic thoughts, which were blocked as much as possible.

An RCT found that obsessions improved with ERP plus cognitive therapy (20). When 29 patients with obsessions but no overt rituals had ERP plus cognitive restructuring and relapse prevention, they improved more than patients on a waiting list. Once the patients on the waiting list received ERP, the combined group improved. Treatment gains were maintained to 6-month follow-up.

### Family Cotherapy in ERP

It seems sensible to recruit relatives (with the patient's permission) as ERP cotherapists when they are involved in the OCD. In an Indian RCT, 30 OCD patients who had not improved with medication were randomized to have systematic desensitization plus ERP, either with or without family assistance (21). Sessions were twice weekly over 12 weeks. The fall in the Maudsley Obsessional Compulsive Inventory (MOCI) at 6-month follow-up was 61% for family-aided ERP and 29% for individual ERP. Family-aided treatment thus appeared superior.

Benefit from family involvement was not found, however, in a Dutch RCT that randomized 50 OCD patients to ERP homework with or without their partner being involved (22). Treatment included eight 45- to 60-minute sessions over 5 weeks. OCD severity fell by 33% in both groups, irrespective of partner involvement in therapy. This RCT had recruited any available partner as a cotherapist, whether or not they were involved in the OCD. Its outcome, therefore, did not negate the value of recruiting family members as cotherapists if they were clearly involved in the patient's OCD.

### Group versus Individual ERP

This comparison was made in an RCT of 93 outpatients who had nonsevere OCD without major depression (23). Over 12 weeks patients had 24 twice-weekly sessions of ERP individually, ERP in groups of 10 patients run by a single therapist, or individual relaxation. Sessions lasted one hour in individual treatment and 2 hours in group treatment, which may have confounded the results. ERP patients were also assigned daily exposure homework.

Individual and group ERP yielded similar improvement in OC and depressive symptoms at posttreatment (week 12) and 6-month follow-up. Gains began earlier with individual ERP. A fall in the Y-BOCS with ERP was 45% by week 12 and 36% at 6-month follow-up, but was merely 9% with relaxation by week 12. Far more staff time was logged in giving all the ERP patients individual treatment rather than group ERP (720 hours versus 48 hours). Group ERP may thus have been more cost-efficient, although staff time was vastly longer than the mean of 10 hours for OCD outpatients and 20 hours for OCD inpatients reported by McKenzie and others (10). Formal cost-efficiency studies of group versus individual treatment are now needed.

### ERP for Special Age Groups: Juvenile and Elderly OCD Patients

#### *Juveniles*

After the pioneering results of Bolton in London (24), further uncontrolled but promising outcomes of ERP in juvenile OCD were noted elsewhere. The largest series was in Sydney, where 82 juveniles had 10 ERP sessions over 10 consecutive working days (25). There was a brief manual for

therapists, a booklet for the children, and a workbook for children and families. The therapist coached the child to fight the OCD, insisting on progress but leaving the choice of target symptoms and rate of progress largely under the child's control. The child learned strategies such as "Who is boss today, me or the OCD?", "Is this silly or sensible? If it's silly and OCD, I should stop this and get on with normal things." Sixty-nine of the patients took serotonergic antidepressant (SRI) medication for 2 weeks before starting ERP and continued it during treatment, but half of the patients stopped taking the drug within 4 weeks.

The 57 (71%) patients in Sydney who completed ERP and an SRI drug had a 68% remission rate and 60% fall in the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) at 4 weeks. At 6 months almost half the patients were off medication and maintaining their gains. Gains persisted for a mean of 2 years in the 43 juveniles who were followed up. Outcome was better in the absence of aggression and oppositional defiant disorder. The 12 patients who only had an SRI without ERP improved less and slower, with a 45% fall in CYBOCS at 6 months. Only 3 patients had ERP without an SRI.

A comparable outcome with a similar approach was noted in 15 juveniles in North Carolina (26,27). They received 12 to 20 sessions of ERP plus relaxation, breathing, and cognitive training, and all but one also had an SRI. Fifty percent improved on the Y-BOCS at 7-month follow-up, no patient had relapsed at 18-month follow-up, and booster ERP often allowed medication to be discontinued.

A third recent uncontrolled report is from Philadelphia (28). ERP was given to 14 juveniles with nonsevere OCD; 7 patients had 18 sessions intensively over a month, and 7 patients had 16 sessions weekly. The mean Y-BOCS improvement was 62% to 9-month follow-up. Outcome was similar whether treatment sessions had been intensive over one month or spaced weekly over 4 months. The trial excluded 4 patients with severe comorbid developmental disabilities that reduced treatment compliance. Eight of the 14 patients had concurrent SRI medication and did no better than those without SRI medication. A large RCT is now in progress in North Carolina and Philadelphia to compare 1) ERP alone, 2) ERP and sertraline, 3) sertraline alone, 4) pill placebo, and 5) educational support (27).

#### *Elderly Patients*

No controlled work has been done on this topic. Only an uncontrolled audit of results in 6 patients with OCD who were aged 65 or more has been completed (29). These 6 patients improved significantly on their main problem after ERP, but less so than 86 younger patients who had ERP in the same unit.

## ERP Compared with Medication, Alone, or in Combination

Reviews of controlled studies (30,31) concluded that ERP improved OCD more than SRIs, that gains continued for many years after ERP had stopped whereas relapse was usual soon after discontinuing medication, and that SRIs were a useful addition to ERP when OCD was complicated by comorbid depression.

Three RCTs found that adding an SRI (clomipramine or fluvoxamine) to ERP yielded little or transient benefit for OC symptoms, although the SRI did reduce comorbid depression. In one RCT of 49 outpatients (32), clomipramine conferred only a small temporary advantage when added to ERP (3 to 16 hours of therapist time). A second RCT in 61 patients, summarized by Franklin and Foa (33), confirmed that little was achieved by adding clomipramine to ERP (33 hours of therapist time) and that by 3 months postentry, clomipramine alone had less effect than ERP alone; this study is being extended. The third RCT was in 60 outpatients for whom fluvoxamine added anti-OC value to ERP at 8 weeks, but subsequently improved only depression, not OC symptoms (34,12).

In a fourth RCT in 48 outpatients, imipramine, which is not an SRI, had no anti-OC effect (35). Imipramine only had an antidepressant effect in patients with initial comorbid depression, it did not enhance the effect of ERP, and it occupied 47 hours of therapist time. (This study tried to test whether imipramine reduced OC symptoms by improving mood, but it could not clarify that issue because imipramine failed to improve OC symptoms.)

In summary, the 4 RCTs previously described found that the addition to ERP of an SRI, such as clomipramine or fluvoxamine, or a non-SRI antidepressant, such as imipramine, reduced comorbid depression in OCD, but was of little help to OC symptoms. In a careful RCT, clomipramine alone was of little long-term value for OC symptoms.

### *Cost-Efficiency of Medication and ERP*

Many people think that medication for OCD costs less than ERP. In fact, the opposite may be true. The author calculated the annual 1990 cost of clomipramine treatment for an outpatient in the United States to be approximately \$1000, consisting of the cost of medication and the cost of a physician's time to monitor it. A course of therapist-guided ERP in the author's outpatient unit also cost about \$1000, consisting of the cost of a clinician's time. Because patients usually relapse when medication is stopped, however, the cumulative cost of clomipramine therapy mounted to \$2000 by the end of year 2, \$3000 by the end of year 3, and so on. In contrast, most patients who improve with ERP need little or no brief-booster ERP after treatment has stopped, so the cumulative cost of ERP by the end of year 2 and year 3 does not cost much more than the \$1000 it had cost at the end of year one. In the long term, because ERP tends to produce a lasting improvement,

it becomes cumulatively more cost-effective than medication, which usually needs to be administered indefinitely if it is to continue to have an effect.

The above analysis discounts the ongoing side effects of SRI drugs, the fact that gains tend to be greater from ERP than from medication, and that more patients tend to refuse medication than ERP in RCTs.

### *Should Comorbid Depression Have Psychological Treatment Rather Than Drug Treatment?*

Given the limited and transient effects of medication in OCD and the doubts about its long-term cost-efficiency, a major issue arises. First, in the two-thirds of OCD patients whose mood is normal, effective psychological treatment rather than drug treatment should probably be the first choice for dealing with OCD. Second, in the approximate one-third of OCD patients who have comorbid depression, perhaps brief psychological treatment rather than medication should be directed at the depression as well as the OCD. The brief psychological treatment could be any of those treatments known to relieve nonsuicidal depression without OCD, such as behavioural activation, problem-solving or its variant called interpersonal therapy, or cognitive behavioural therapy. The issue deserves controlled, long-term research.

## The Move toward Self-Administered ERP

When it was first developed, ERP was administered by therapists who told their patients which ERP cues to expose themselves to in imagination and in real life and who accompanied them during that ERP. Clinicians now tend to teach patients how to devise and perform ERP on their own. This trend began when Dutch studies that found patients can perform ERP themselves were confirmed in London (32,36,37). In a RCT, therapist-accompanied ERP conferred no significant benefit over self-administered ERP, despite therapist-accompanied ERP requiring 5 times more contact with the therapist (16 hours versus 3.5 hours). Consequently, there has been a move away from therapist-administered ERP to self-administered ERP and instruction on how to prevent subsequent relapse. Encouraging patients to take control of their ERP program works well in the routine care of both outpatients and severe inpatients (7,38).

Self-help manuals guide OCD patients on how to perform ERP. Several manuals are now available for adults and for children and their families (39-45). The advent of effective self-administered ERP has led to systems that help patients obtain ERP instruction by computer.

### *Self-Administered ERP by Computer*

A system was devised by Kirby to depict on a screen an OC figure with a hand washing problem (46). Patients were asked to do vicarious exposure by guiding that figure to do ERP. The system was used by 13 OCD patients (7 washers, 6 checkers) and 10 normal volunteers in three 45-minute

sessions at weekly intervals. The OCD subjects, especially the washers, improved significantly but slightly. Good performance of vicarious exposure during the first session predicted subsequent pre- to post-improvement. Such systems might be used as educational adjuncts to therapist-guided ERP.

To improve compliance with ERP, a woman with checking rituals was given a system called OC-Check to use on a portable hand-held and a desktop computer (47). Whenever she had an urge to check, she was asked to consult OC-Check and wait 3 minutes, while watching the time tick away on the computer and being told that nothing bad would ensue. The patient was reluctant to use the handheld computer in public, but she said it helped her reduce her checking rituals markedly for up to a year. The rituals increased when she stopped using the system outside of her home.

A different computer-aided system for OCD is called BT (behaviour therapy) STEPS. It comprises an interactive voice response system (IVR) and a manual. The IVR system links a touch-tone telephone to a computer. Before and while they phone the computer, OCD subjects have a manual at hand. They conduct the IVR interview by pressing keys on their telephone key pad to access digitized speech segments that were prerecorded in a natural voice. The key presses determine which of the 700 speech segments is heard. Patients can phone BTSTEPS from home 24 hours a day. All patients in Canada, the United Kingdom (UK), and the United States (US) call the same computer in the US to access BTSTEPS.

The BTSTEPS system for OCD was developed in a US-UK collaboration (48-51). It helps OCD patients to plan and complete their own ERP without human contact beyond a brief screening interview. After screening, patients receive a manual to read and a personal identification number (PIN) to access the IVR system. At intervals, the manual asks patients to phone the IVR system and enter their PIN in order to access further guidance and to record progress. Steps 1 to 3 detail self-assessment and steps 4 to 9 detail self-treatment by ERP.

BTSTEPS patients enter into the IVR their main types of rituals, the total cost of performing them, and each trigger for the rituals. They also rate their own progress at intervals. Patients decide whether to ask a relative to become an ERP cotherapist, read a relevant booklet, or call the IVR to hear how to withhold reassurance. The computer faxes to them feedback about their progress. The manual and IVR guide patients into performing daily ERP to deal with their triggers. The IVR faxes to patients weekly homework diaries in which to record ERP tasks they have completed, and it also faxes back outcome ratings patients have entered. Users are asked to make IVR calls before and after each ERP session, to troubleshoot difficulties encountered, and to do relapse prevention.

Two uncontrolled studies tested 63 OCD patients in Madison (WI), Boston (MA), and London (UK) who could use BTSTEPS over 12 weeks. Both studies had similar outcomes. Eighty-five percent of patients completed the 3 self-assessment steps and 45% went on to do 2 or more ERP sessions. In an intent-to-treat analysis, patients improved in rituals and disability as much as usually occurs with SRI medication. Gains correlated closely with completed ERP. Half the IVR calls were made outside usual office hours, especially from patients who were unable to work.

Improvement with BTSTEPS was similar to that in matched historic controls who had face-to-face behaviour therapy. Post-BTSTEPS outpatients needed less therapist time to guide ERP than did matched-control counterparts. Initial motivation predicted outcome. Patients who failed to complete the BTSTEPS self-assessment also failed to complete subsequent face-to-face behaviour therapy. BTSTEPS is now being tested in a larger multicentre RCT and in everyday practice in the UK.

### Comparison of ERP with Cognitive Therapy (CT)

One review of 10 uncontrolled and 5 controlled studies found little evidence of benefit from adding CT to existing forms of treatment (52). Another review suggested that CT and ERP had comparable effects (53). In keeping with the latter suggestion, 3 Dutch RCTs found that CT alone was at least as effective as ERP alone. In the first RCT, 18 patients had 10 sessions over 8 weeks of either CT as rational emotive therapy (RET) without exposure instructions, or of ERP (54). By posttreatment both groups had improved comparably.

In the second Dutch study, 21 patients had 6 weekly hour-long sessions of RET without exposure instructions or of ERP alone (55). Each treatment alone produced similar improvement and no enhancement ensued from combining CT and ERP. Thirty-three percent of the patients dropped out during treatment.

The third and largest Dutch RCT included 71 patients (56). CT alone or ERP alone was given over 16 weekly 45-minute sessions. CT concentrated on danger overestimation and inflated personal responsibility. The Y-BOCS improved after 6 sessions by 23% in ERP and 20% in CT and after 16 sessions by 32% for ERP and 45% for CT. Between-treatment differences were not significant.

The effect size of ERP in the above 3 RCTs were unusually small. The similarity of outcomes with ERP and CT accords, however, with findings from other RCTs that CT alone was as effective as exposure-based treatment in posttraumatic stress disorder in London and in agoraphobia or panic disorder in Quebec (57,58). Whether ERP and CT work by common, overlapping, or different mechanisms is a central question for future study. Their efficacy tells us little about etiology.

A fourth Dutch RCT in 22 OCD patients was said to compare individualized treatment with standardized treatment, but actually compared ERP tailored to each patient's avoidance and rituals with treatment tailored to the patient's problems as a whole (CT and ERP, plus some other methods) (59). Patients in each of the 2 conditions improved similarly up to 2-month follow-up, a result that is not surprising given the similar outcomes of ERP and CT in the first 3 Dutch studies.

In summary, the encouraging results of CT warrant RCTs in OCD of their long-term cost-efficiency compared with that of self-administered ERP.

## Conclusion

Much research over the last decade has confirmed the enduring value of ERP therapy for OC rituals and obsession in all age groups. The effects of ERP last longer than those of medication and ERP may be more cost-effective in the long term. ERP now tends to be self-guided rather than therapist-guided, and the therapist's role is one of coach and monitor. Computer aids to ERP instruction hold some promise. Cognitive therapy without ERP may also be of value. Study is needed of the efficacy of psychological as opposed to drug treatment for comorbid depression. A minority of OCD patients still fail to improve with any treatment.

### Clinical Implications

- Exposure and ritual prevention (ERP) produces enduring improvement in most patients with OCD.
- ERP can be effectively self-administered and can be instructed by computer.
- Antidepressant medication is not usually needed unless there is comorbid depression.

### Limitations

- More clinicians need to learn how to instruct OCD patients in doing ERP.
- The therapeutic mechanisms common to ERP and to cognitive therapy are still unclear.
- Long-term cost-benefit and satisfaction comparisons are required for psychological treatments versus medication.

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### Résumé

*Des recherches récentes ont confirmé que l'exposition et la prévention des rituels (EPR) permettent une réduction efficace des rituels compulsifs et des pensées obsessionnelles chez la plupart des patients de tous les groupes d'âge, bien qu'une minorité des patients n'ait pas terminé le traitement. Dans plusieurs pays, les progrès ont duré jusqu'au moment du suivi, deux à six ans plus tard. Après l'EPR, l'amélioration s'était généralisée jusqu'aux croyances obsessivocompulsives, à l'humeur, au travail et à l'adaptation sociale, et elle était accompagnée d'une réduction du débit sanguin cérébral dans le noyau caudé droit. En apprenant aux patients comment prévenir la rechute, on semble réduire le risque de récurrence. L'EPR provoque une amélioration légèrement supérieure à celle qu'on obtient grâce à des antidépresseurs appropriés, et le traitement est suivi de beaucoup moins de rechutes; à long terme, l'EPR peut donc constituer une option efficace par rapport aux coûts. Les antidépresseurs constituent un traitement d'appoint utile à l'EPR quand le trouble obsessionnel-compulsif (TOC) est accompagné d'une dépression comorbide. Les thérapeutes ont maintenant tendance à montrer aux patients comment pratiquer eux-mêmes l'EPR, au lieu de les leur imposer. Des manuels d'autothérapie aident les patients et des outils informatiques leur permettent d'apprendre comment pratiquer l'EPR à domicile et ces outils se sont révélés utiles dans le cadre d'études pilotes. La thérapie cognitive sans l'EPR était aussi utile que l'EPR. Il faudrait mener des recherches à long terme sur l'efficacité par rapport aux coûts afin de comparer l'auto-administration de l'EPR, la thérapie cognitive et le traitement médicamenteux. Des recherches s'imposent aussi en matière de traitement psychologique de la dépression comorbide simultanément au TOC.*