OBSESSIVE-COMPULSIVE DISORDER: THEORY AND TREATMENT

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What follows is primarily based on a series of lectures I gave at the Massachusetts Institute of Technology and The Cambridge Health Alliance between 2003 and 2008. Working from transcripts and notes, I have mostly converted the grammar of oral communication to that of the written word, and rearranged the content so that things I said on the same topic but in different lectures are now integrated into a single section. At the same time, where interaction with my audience was crucial to the way ideas unfolded, I have tried to preserve the vitality of that process. Also, there are places in the transcripts where my groping for words conveys an unfolding process that captures my actual thinking on the subject better than a more articulate revision would, and these too I have preserved. Finally, I have continued to learn since giving these talks and occasionally I have inserted things I didn't say at the time.

The material is organized as follows:

I: Introduction:

II: The Evolutionary Psychology of OCD and its relationship to adaptive functioning

III: Treatment Techniques:
   1) Exposure and Response Prevention (ERP)
   2) The use of mental imagery
   3) Mindfulness Meditation and associated techniques

IV: Case Studies

V: Summary, Conclusions, and Speculations

Sections will be posted as I complete them.

Introduction

We know a lot about what works in the treatment of OCD. At some point in the future we will doubtless know more. But for now we are fortunate to have a growing body of options with a growing body of evidence supporting the effectiveness of those options. Exposure with Response Prevention, or ERP as it's generally known, was the first evidence-based tool to be developed, and was pretty much our only tool for quite a while. However, our understanding of exposure, and of how and why it works, is getting more nuanced all the time. For instance, we have come to understand how the forms of exposure that work best for compulsions differ from those that work best for obsessions. In addition, we have come to a greater appreciation of the potential uses of mental imagery as a medium for exposure exercises. And beyond that, we are also coming to appreciate the value of treatment techniques based on mindfulness and the
redirection of thought -- and how these practices can sometimes lead to a gentler treatment process. However, despite everything we have learned, engaging in effective treatment remains a challenge for all concerned, therapists as well as patients.

Exposure therapy of any sort can be uncomfortable. In fact, to a certain extent, it has to be uncomfortable to be effective. But to be effective the exposure has to be doable too, so that's the trick, for the exposure to be challenging enough so that its successful completion leads to some sort of feeling of mastery, but for it to be manageable. And what's meaningful yet manageable can be very different from one person to the next. To make things even more complicated, the symptoms of OCD tend to be deeply entwined with other traits a person may have that can be a vital and prized part of their identity. Legitimately prized. This can make it hard to draw the line between what's a "symptom" and what isn't. And so we end up -- not always but often -- in a situation where the treatment that's supposed to be best can seem threatening and confusing in multiple ways. There is a lot of art as well as science involved in creating a treatment process that takes all this into account, that's doable, meaningful and effective. Often the therapist and patient -- we need each other's help. Effective treatment needs to be relationally informed, a collaborative process -- often with an annoyingly large amount of trial and error -- and we need to be in it together, the patient feeling like an empowered partner, not just a passive recipient of instructions in how to do exposure therapy.

In the first part of our discussion, I'm going to talk about some of my ideas as to what's going on brainwise -- in terms of neuropsychology and evolution -- to cause OCD. Building on that, in the second part we'll get into the principles and techniques -- the nuts and bolts -- of effective treatment. From there, finally, or almost finally, we'll move to case material. It's only in the context of these stories of real people that the theories can come to life, and only in this way that the relational issues can really be seen. But at the same time the stories can't fully be understood without some theoretical background. Then at the very end we'll use the stories as a springboard to revisit and deepen our consideration of some of the theories.

II: Obsessive-Compulsive Disorder and Adaptive Functioning

I'm going to begin with a bit of evolutionary psychology. I think it's an important place to start, because placing OCD in its evolutionary context helps us to see its relationship to adaptive functioning. Our vulnerability to OCD has evolved hand in hand with the evolution of related traits -- tenacity, thoroughness, attention to detail, organization, high standards, concern with right and wrong, interpersonal commitment -- stuff like that -- traits which are of tremendous adaptive value. As we shall discuss in Part II, insight -- the ability to differentiate the thoughts and urges triggered by OCD from those that arise from the authentic self -- is essential to effective treatment. If we are going to work effectively with people struggling to make sense of how OCD is derailing their lives, I think we need to start from a model that does justice to how entangled their strengths, their identity, and their symptoms can become. Therapy always works best when we move beyond pathologizing and help people to be more aware of their positive traits as well as their symptoms -- symptoms which may have brought them to us but which are never the whole story of who they are or who they are seeking to become.
Some years ago, Jerome Groopman published an article in *The New Yorker* about the positive traits associated with OCD (April 10, 2000). He described socializing with a group of fellow scientists at a conference, and how they got to talking about OCD -- which it turned out many of them felt they had -- or at least that they had features of it. But, interestingly, they all also agreed they would be reluctant to seek treatment, because of how much they felt their obsessive-compulsive traits contributed to their high functioning as scientists. Here in Cambridge where I practice, I have had the opportunity to treat a lot of high functioning people with OCD, and can attest to its frequent association with traits that were crucial to their achievements, but I have never found the treatment to reduce the quality of their work. On the contrary. As far as I can tell, my scientists and other high functioning patients have found that treatment allowed them to shed the symptoms that got in their way, while at the same time retaining and sharpening those traits that were of actual value. Later, once we have established a shared model of the treatment process, we will return to this issue and consider what it is about the therapy that can lead to the elimination of maladaptive symptoms while leaving the related adaptive behaviors intact. For now I'll just acknowledge that I understand the concerns expressed by those guys Groopman was talking with. Theirs are concerns we need to be able to address, and I don't think we can do so unless we are able to talk about the relationship between OCD and adaptive functioning.

A former OCD patient of mine comes back to see me from time to time. When I first worked with him, more than a decade ago, his life had been hijacked by OCD. He avoided driving for fear of being accused of harming a pedestrian. Plus, to the detriment of his career, he found it difficult to submit papers for publication, because of a compulsion to keep checking them in case he had accidentally committed plagiarism. Plus many other symptoms -- I'll tell you more about him later. But for now my point is that treating his obsessions and compulsions allowed him to publish prolifically and have world-wide influence, not to mention living a happier more fulfilling life in general. His tenacity and other positive OCD associated traits remained intact. During a recent visit, when we were talking about the relationship between his tenacity and his OCD, he commented on how one of his post docs had given up on a problem after trying "only" five different ways of solving it. We both knew my guy would never have given up that easily. As a result of this persistence he has solved some very important problems, which have likely touched the lives of some among you. Those scientists Groopman was talking with, they saw the treatment of their OCD as a threat to their identity. Effective treatment requires that we help our patients to distinguish the baby from the bath water. And of course it will be hard for us to help with this unless we first acknowledge that the baby exists, can tell the difference ourselves, and are able to offer the prospective client some reassurance that the baby will survive the treatment.

So . . . moving on. Evolutionary psychology. We know that most animals have specialized tracks in their brains, inborn tracks, which provide them with automatic, procedural knowledge of how to do a lot of important things. Instinctual behavior patterns, "hardwired," most people would call them. And these patterns -- once they are initiated -- they tend to reel themselves off in a rigid way that is difficult to interrupt. Animals often have such schemas for things like nest building, courtship, defending territory, foraging, grooming, establishing dominance, and so on. Starting in the 1960s, ethologists -- specialists in animal behavior -- began talking about these schemas as "fixed action patterns," or "species-specific behaviors."
Then in the 1970s, we started, in psychology, to talk about the idea that there was a relationship between fixed-action patterns in animals and OCD in humans. For one thing, ethologists started to notice that animals would sometimes exhibit what they termed "displacement behaviors," where a fixed action pattern would occur in a way that had no relation to its usual purpose -- in the absence of an appropriate "releasing stimulus," they would say -- and was rigid and repetitive in a way that looked a lot like OCD. A caged predator might engage in repetitive stalking behavior in the absence of anything to stalk. Or you might see a dog or cat start needlessly grooming itself with single-minded persistence when it is blocked from some other action. We have three cats at our house (not my idea) and when the dominant one edges one of the others away from the food, the one that's been edged away will start grooming itself like crazy. So it's called displacement behavior, because it occurs when some instinctual behavior can't be completed and the animal responds by displacing the energy onto some other fixed action pattern. And that fixed action pattern gets enacted in a way that resembles OCD.

Like OCD, fixed action patterns can be imperious in taking over the animal once they are initiated. A spider, once it has started wrapping its prey, is unable to do anything else until it is finished. You can have fun demonstrating this. Just take a long hair and tie it around a fly -- as a source of hair of the proper length, I recommend a hair brush belonging to a human female -- then you guide the fly into a spider's web. Once the spider has started wrapping the fly, it won't let go and you can go around your dorm, dangling it in front of people on its hair leash, where it will steadfastly remain, held there only by the force of its own instincts. And, uh, well -- we don't want to get too far off topic here, but you have to admit that this is potentially a very useful life-skill -- this fly thing -- for the adolescent males among you, at any rate. Something similar but more tragic can happen with ospreys once they have sunk their claws into a fish. There are reports of ospreys drowning because, once their fixed action pattern for seizing their prey had been activated, they were unable to let go of a fish that was too heavy to lift from the water.

Theorists began to speculate that in our layered brains, left over from earlier stages of evolution, humans still have neural mechanisms similar to those for fixed action patterns. Innate brain pathways that were originally designed to activate relatively automatic, stereotyped responses, such as the urge to wash in response to feeling dirty. And that in OCD these archaic mechanisms were being activated in a maladaptive way due to a combination of genetic vulnerability and stress.

We are learning more and more information that's consistent with the idea of such a relationship. We've discovered that, in animals, fixed-action patterns are governed by a group of structures in the brain called the basal ganglia. And we've discovered that OCD involves hyperactivity in the neuronal network linking the basal ganglia with parts of the brain involved in error detection and the reward or inhibition of behavioral impulses (called "the orbitofrontal loop"). We have found that certain medications that can inhibit OCD in humans can also inhibit displacement behavior in animals. Dogs sometimes lick themselves compulsively to the point of causing open sores, and this can be successfully treated by the same medications that we use to treat OCD. And we know that OCD can be a response to an autoimmune reaction affecting the basal ganglia. When OCD is treated successfully, either by medication or behavior therapy, there is a normalization of the circuitry between the basal ganglia and error-detection center in the frontal lobes.
In the 1990s, Judith Rapoport suggested what is now called the "neuro-ethological hypothesis." She pointed out that human beings don't develop OCD about just anything. There is a finite, relatively small set of behaviors that are associated with it, all of which are related to functions that would have had what she referred to as "evolutionary status." In her original papers she focused on grooming, pointing out that eighty-five percent of people with OCD have some sort of grooming related compulsion among their symptoms. Rapoport hypothesized that a specific neural tract in the brain, that had been designed by evolution to govern grooming behavior in primates -- that this pathway had been preserved as the structural foundation for the evolution of later, more flexible behavior in humans. But that under certain conditions the underlying, rigid mechanisms could still be activated in a faulty way to create compulsive hand washing. She extrapolated from this to suggest that all OCD symptoms might be accounted for in terms of an archaic, inborn set of grooming-related mechanisms running amuck. While not all OCD symptoms have an obvious grooming connection, checking, doubt, and concerns about completion are among the most universal characteristics of obsessive-compulsive behavior, and she suggested that there might have been a co-evolution of self-grooming behaviors and brain mechanisms to make sure these behaviors were carried out effectively, and that faulty activation of these mechanisms of the grooming system might account for OCD.

If you have trouble putting grooming at the center -- accounting for all the varied forms of OCD in terms of faulty activation of grooming-related mechanisms -- apparently Rapoport had trouble too, because she went on to collaborate with an anthropologist named Fisk to take a more comprehensive approach. It turns out that anthropologists have a catalogue of all the components they have been able to identify from the religious rituals of 52 different cultures around the world. And Rapoport and Fisk did a statistical analysis comparing this list with a list of all the different ritual behaviors known to be associated with OCD. They identified a large cluster of behaviors that are "uniquely shared" by religious rituals and OCD. For instance, rituals concerned with cleansing and purifying, or with atoning and making things right, or with averting misfortune.

Based on their findings, Fisk and Rapoport proposed that humans have a set of innate brain pathways designed for the creation and regulation of socially meaningful ritual behavior. In other words, that humans have a species-specific, fixed-action pattern for creating rituals, like birds do for nest building or for song. Let's call it "ritual building," just to emphasize that similarity. The evolutionary success of our species has depended on our social functioning, not our individual functioning, and ritual building has been crucial to this. They propose that in the socially meaningful context in which it evolved, ritual building binds people together -- creating, organizing and preserving social community in the face of loss, suffering, conflict, and the mystery of mortality -- often functioning to help people process and get closure on some of life's greatest problems. Extending from this hypothesis, OCD can be seen as a sort of human displacement behavior, in which obsessive-compulsive activity results from the faulty activation of this human fixed action pattern for ritual building, in response to a thwarted need for closure.

While at first glance Rapoport's two models may seem to approach OCD from wildly different angles, subsequent developments in neuroscience suggest that they may be richly interconnected. Grooming has turned out to be far richer in its implications about the web of traits out of which human nature -- and our vulnerability to OCD -- have evolved. I'm getting ahead of the story.
here. But consider how, in some primates, social grooming -- you know, like when one chimp is picking through the other one's fur -- social grooming turns out to be a fixed action pattern that promotes not just cleanliness but also bonding and social cohesion. And this bonding effect is mediated by the release of oxytocin, a hormone which it turns out is also released in humans during breast feeding. And coincidentally, levels of oxytocin have been found to be higher in the cerebrospinal fluid of people with OCD than in normal controls, and women have a heightened vulnerability to developing OCD during the postpartum period. It's interesting to consider how washing -- cleansing -- gets extended to the moral domain in Rapoport and Fisk's catalogue of rituals, and the role of rituals in promoting social cohesion and bonding between mates. Considering the almost universal role of marriage rituals in human social functioning, it's another interesting coincidence that pair bonding in prairie voles is mediated by oxytocin, with male voles that have higher oxytocin levels being more monogamous. (So far there have been no studies investigating the hypothesis that oxytocin infusion would make human males more faithful, but it has been established that production of oxytocin is promoted by hugging -- and, ah, also by sexual intercourse.) So all roads lead to Rome, I guess, but we didn't know that then, and I'm not trying to draw a road map now, just mentioning an interesting web of facts. Mainly just marveling at what a complicated, rich set of interconnections we're dealing with, and at how far we are from understanding them all.

While Rapoport and Fisk emphasize the social function of ritual building, it is normal for children at a certain age to start creating personal rituals to organize their lives, especially during certain stressful transitions, like getting ready for bed. So this suggests that ritual building evolved to serve individual as well as social needs. Almost every parent is familiar with this, and I think it is a case of ontogeny recapitulating phylogeny. Just as the basal ganglia evolved before the cortex, so too in the brain of the developing child, the basal ganglia mature more rapidly than the cortex, and provide a resource for organizing experience, until the more flexible mechanisms of the cortex can kick in.

I would suggest that we humans have built many of our current cognitive capacities on a foundation of fixed action patterns. In his classic book, *The Origins of Intelligence in Children*, Piaget describes how the infant's inborn schema for nursing evolves into a whole host of increasingly differentiated, organized, and flexible cognitive capabilities. In the same way, brain pathways that originally evolved to govern things like foraging -- for example -- may have provided the foundation for cognitive procedures we went on to evolve for other forms of search, problem solving, and discovery.

To see the human fixed-action pattern for search stripped down to its original compulsive inflexibility, all you have to do is think about the last time you couldn't find your keys. Just think about it a minute. I know it's a painful thing to relive but you can do it. Remember how, with your increasing frustration there came an increasingly compulsive quality to the way you searched. How you felt increasingly compelled to look in places your rational mind told you the keys couldn't possibly be, either because you had already looked in that exact same spot three times already, or because it was completely irrational to think they might be in the refrigerator, where of course they turned out to be, next to the milk you put away right after you came in the door. And this last part about the refrigerator is important, because it demonstrates the adaptive function built into the original fixed-action pattern. Rigid as they are, the hard wired urges that
are activated in this kind of urgent search include a mechanism for forcing us to look outside the box. In the case of the keys in the refrigerator, they overrode our preexisting assumption about what was possible, and forced us into discovery. Some of our most important behaviors have qualities that suggest a relationship to OCD. Consider the normal obsessive and compulsive features of falling in love, or of grief.

And this brings us back to where we started, to the idea that there are adaptive brain mechanisms that can sometimes miscarry in ways which give rise to OCD, but which can simultaneously coexist, side by side with OCD, in other ways that are not just adaptive but that can actually lead to exceptionally high functioning and achievement. And predisposition to these adaptive behaviors may involve predisposition to the maladaptive ones as well. Personally, I think my greatest contribution to the world may have been the way I have helped some of my OCD patients to use their gifts more fully, when they had previously been tied up in knots by their symptoms.

I'm not going to say more about the evolutionary psychology of OCD, except to sum up by suggesting the that we have these pathways in the brain that can become excited, inflamed, or irritated in some way that causes them to be over-active and difficult to turn off. And that it's not just a matter of pathways that govern grooming. That in humans there are other species-specific pathways that govern the formation of loving attachments (remember the mating songs of birds), or like search and problem solving, or the evaluation of thoughts and behaviors to make sure things are being done the "right" way (urging us to make sure that the fire is out, that the doors are locked, that the kids are safe and that we are "true" to those we love). I would hypothesize that there is, in fact, a cluster of cells that correspond to what we call our conscience. I think there's a sub-type of OCD, sometimes referred to as "moral OCD," which I'll talk about in detail later, that can only be explained in terms of something like this.

Anyway -- I think what is going on in these parts of the brain -- it seems to me that the most common characteristic, the one to be most frequently found running through all the varied forms of OCD is a defect in the brain's capacity to realize that it's finished doing something. Whether it's washing, making sure something we did was okay, or evaluating the weird thought we just had to make sure it isn't something we need to worry about. If you think about it, once a fixed-action pattern -- or any behavior, for that matter -- has been activated, there has to be some sort of tension that motivates the animal to persist until it's done, and then some sort of signal that that the action is complete, that it is done, that releases the tension so that now the animal can move on to something else. A closure signal. I think that's where the compulsive repetitiveness comes from, a defect in the brain's closure recognition mechanisms.

So for instance you have a pathway that's designed to be activated when you go to sleep or leave your dwelling, to make sure that it's safe to do so. And, you know, this involves checking. Obviously there weren't stoves or locks when evolution was shaping this, but we needed a routine for checking to make sure it was okay to leave and that everything was safe and would stay safe. Now, when that mechanism latent in the basal ganglia gets activated by some sort of excitatory stressor, stoves and locks get assimilated to it. And once you've checked, you're supposed to get a closure signal, an all clear signal: "Okay now, it's safe to go to sleep. You've checked and the door is locked." But, uh, in OCD the brain either can't get or can't hold on to
that feeling of closure. It may get momentary closure, but the feeling of being finished doesn't stick. The person looks at the stove, sees it's off, turns around, goes to do something else, and all of a sudden that itch, that feeling of unfinished business becomes overwhelming and the person has to go back and finish. Over and over. And the insidious thing is that even this can sometimes be adaptive. Sometimes the person who double checks is the one who survives. So OCD and adaptive functioning exist on a continuum, but one which, at one extreme is crippling, where people are thwarted in their productivity, or in life as a whole, because they can't feel finished and move on to what needs to be done next. Because they can't get the closure signal and they just cycle through it, stuck in their checking, or their perfectionism, or whatever, over and over, "borne back ceaselessly into the past."

III: Approaches to Treatment

Exposure And Response Prevention, or ERP, is the best known evidence-based technique for treating OCD. It was originally described in 1966 by Victor Meyer and was subsequently promoted by Edna Foa and her colleagues, particularly Gail Steketee, whose book, *When Once is not Enough*, provides an excellent step-by-step introduction to the procedure. Early proponents of ERP approached it from a strict behaviorist perspective, viewing objectively observable behaviors as the only legitimate focus of psychotherapy, and viewing the role of the therapist as that of an expert instructing the patient in a scientifically established protocol which ought to be followed with as little personal deviation as possible. However, with the emergence of Cognitive Behavior Therapy (CBT), many practitioners have developed variants of ERP that incorporate attention to the patient's thoughts and beliefs, and which engage the patient more fully as a partner in the treatment process. The approach I will be describing here arises out of that trend.

In addition to behavioral exposure, it employs mental imagery and rehearsal to create exposure exercises that could never be carried out in actual behavior. And it incorporates mindfulness meditation, along with techniques derived from it, such as those described by Jeffery Schwartz in his book, *Brain Lock*, or in the literature on Acceptance and Commitment Therapy (ACT). Mindfulness-based techniques have been used in the treatment of OCD since the 1990's and have their own body of research supporting them, including PET scans showing normalization of the brain pathways implicated in OCD. Although some clinical researchers speak of ERP and mindfulness based treatments as if they were competing adversaries, I have found them to be synergistic. I use both in my work with most patients, sometimes emphasizing one or the other depending on how things go, and I would be no more inclined to restrict myself to either one of them than most carpenters would be to carry a tool box with only one tool in it. We will begin by looking at ERP.

1) Exposure And Response Prevention

In ERP, patients deliberately expose themselves to something that triggers one of their obsessive fears, then resist engaging in whatever compulsive behavior they would ordinarily use to feel better. Patients are encouraged to stay psychologically present with the resulting discomfort, so that the brain has the opportunity to adapt and learn new ways of coping, as the discomfort gradually subsides "on its own." In most cases the exercise needs to be repeated a fair number of times. Usually it gets easier with each repetition, but the initial exposures are often an arduous
process which can be difficult to endure. For patients who are able to do it, it's highly effective. When poor treatment outcomes occur it is most often because the patient refused the procedure, or because patient and therapist were unable to design an ERP process the patient could sustain. Beyond these most basic features, there is little consensus about how ERP should be done, particularly with regard to how authoritarian the therapist should be, and the degree of harshness and stringency necessary for effective exposure. Much of what we will be discussing in this section has to do with how to design the process in a way that enables patients to be successful. As part of this, we will give some thought to identifying the essential ingredients of ERP: what we need to retain as we adapt the process to the unique needs and abilities of our individual patients.

ERP is easiest to implement when the patient has a variety of obsessions and compulsions, including some that elicit only moderate distress. Treatment can then follow what is termed an exposure hierarchy. The patient makes a list of obsessive fears, rating each on a numerical scale in terms of the intensity of the distress associated with it and how hard it would be for them to refrain from any associated compulsive behavior. Ideally, as a place to begin, you look for an exposure that poses a meaningful but manageable challenge. Then you work your way up the list, gradually taking on more difficult challenges as the patient is prepared to do so by mastery of the earlier ones.

One of the important factors maintaining compulsive behavior is a conditioning process. The person touches the doorknob. This activates their fear of germs, which rapidly mounts, and they feel as if it will keep on mounting forever. Then, when they wash, this temporarily reduces the fear, thus rewarding and reinforcing the compulsive behavior. It also short circuits the brain's ability to discover any other more lasting way of coping with the fear. The lesson the brain takes from this is that if it doesn't wash the distress will just keep mounting and mounting intolerably. That washing is the only way out. But washing only yields temporary closure. The brain is intrinsically a problem solver. Once high arousal leads the brain to identify an issue as dangerous, the brain keeps wanting to work on the problem and will keep bringing it back up, and all the washing in the world won't give it the closure it's seeking.

But when we do ERP with our patients, we allow them to discover that the distress doesn't just keep getting worse and worse. That if they sit with it long enough, eventually it will plateau. And if they keep on sitting with it -- staying present with it -- it will not only plateau but begin to drop. It's an empirical fact that when the brain stays present with the "problem" while the associated arousal gradually declines, the brain learns to feel the problem is solved, and no longer needs to keep bringing it back up. Thus decline in arousal is the crucial factor for the exposure to be therapeutic. Not that people have to hang in there till the distress reaches zero. That's often not practical. But what they do need is to experience a clearly noticeable reduction.

So, in order to be therapeutic, what ERP needs to accomplish -- in terms of the model I'm proposing -- it needs to be a procedure that enables the person to register closure, and I think it does this by inducing the brain to stay engaged with an obsessive fear long enough to finally feel finished processing it. And interestingly, in terms of what the exposure needs to be about, the closure doesn't arise from staring at the stove longer, until you can finally register the fact that it's off, or from washing your hands longer. No, the necessary closure arises from not looking at
the stove, staying present with the discomfort of not checking, focusing on that feeling, and tolerating it without acting on it. Walking away from the stove and not looking back. OCD is not a problem with perception, with being unable to see that the stove is off or the hands are clean. It's a disorder of the ability to feel finished with a task, in this case with checking the stove, but it could be with washing, or with making sure you haven't made a mistake, or any of the host of other things people can obsess about. What the patient needs to get closure about is the feeling that there's something unfinished that needs to be completed when there actually isn't.

So probably most of the cognitive-behavioral therapists and Behavioral Medicine students among you know what to, how to do ERP with compulsions. In theory, at any rate. It's easy to conceptualize. If the person has an obsessive fear of germs combined with a hand washing compulsion, you just have them touch the dirty doorknob or the Kleenex box or the dirt around the potted plant, or whatever. Anything that can activate their obsessive fear and the compulsive urge to engage in some behavior designed to neutralize that fear. That's the exposure part. And then they just have to sit in your office -- hopefully in your office, it's always best if you can start in the office, where you can be with them -- to sit and resist their compulsion, and not wash, that's the response prevention part. In some cases, at first it may take ninety minutes or more, before the patient experiences the discernible reduction in distress we're looking for. Although in my experience it's rare for the process to take that long, sometimes it's a good idea to schedule a ninety minute session, just in case. Our patients suffer through their distress -- and in the end, if they can hang in there, -- and it's the job of the therapist to help them find a place to start and a way of doing it where they can hang in there -- in the end they get better. The more often they do the exercise, the easier it gets.

What we call massed practice can be crucial to a successful outcome. That's when you practice something repeatedly, with only short intervals between the practice sessions. If the time it takes to feel distress reduction is short enough, people can do multiple exposures in one sitting -- touching the door knob again, to bring the distress back up, mastering it again, doing the exposure again, and so on. Or if they've just done it successfully in your office, you may want to suggest that they do it again as soon as they get home. Although you want to start in the office, eventually the patient needs to experience the more independent mastery that comes with doing the ERP on their own as well. What we are shooting for is not only massed practice but a process of internalization and independent ownership which is necessary in order for patients to start living their lives differently, at large out in the real world, not just with us.

There's a phrase coined by the Canadian psychologist Donald Hebb, "Neurons that fire together wire together," called Hebb's Law. The more frequently neurons are fired together the stronger and more efficient the wiring of the resulting network becomes. And there's a corollary. The less frequently a network is activated, the more tenuous the connections become, and the harder it is to activate. That's what this is all about, helping people make mindful choices about the neurons they fire, so that they can rewire what's not working for them. It's amazing how fast ERP can work for some people -- just two or three repetitions -- and how slowly it can work for others. The process benefits from tenacity, a trait fortunately commonplace among people with OCD.

There is research indicating that "stricter" therapists get better outcomes. I once referred a patient to a famous inpatient clinic for OCD, and they prohibited her from washing at all -- even after
using the toilet -- for the first week she was there. Another patient told me how he had been treated at a local inpatient institute where he was given ERP exercises unilaterally designed by the staff. One person came to me after a previous treatment in which he had been taken on "field trips" to public restrooms where he was instructed to rub his hands over all the toilet seats, and then to return home and not wash until the next day. However, I don't think the active ingredient in effective ERP requires being controlling or bossy with our patients, or admonishing them when they don't do what they are told. In fact, I don't think they should be "told" to do anything. Like all psychotherapy, ERP should be a collaborative process over which the patient feels ownership. The patient who was prohibited from washing during her first week in the hospital relapsed as soon as she was discharged, but was successfully treated using the approach I am advocating. I think what matters is that ERP isn't effective unless you actually get the patient to do it -- and stick with it. Which can require some clarity and firmness about the necessary elements of the procedure. I don't think effectiveness is about "strictness" so much as it's about perseverance in finding a way to help the patient own the therapy and follow through. Part of the art is to find ways to design and modify the ERP collaboratively with the patient, to make it doable and to maximize patient ownership.

So as I've mentioned, we try to do exposure hierarchically. I recommend giving the patient a symptom checklist. Lee Baer has a good one in his book, Getting Control (it's a self-report version of the Yale-Brown Symptom Checklist). This will often enable you to discover compulsions the patient didn't think to mention. Remember, you are looking for something meaningful but manageable. If you can possibly avoid it, you don't want to start with their most distressing compulsion. The higher the distress associated with the exercise, the harder it will be for the patient to do it, and the longer the exposure will have to last for the distress to start coming down. In some cases of very high distress, there can even be a risk of traumatizing people, especially if the person has a trauma history already. If you can start with meaningful, low hanging fruit, the patient will be more likely to succeed, and this experience of success will strengthen the ability to do the harder work that follows.

For instance, an adolescent girl I'll call Emily came to me for help with a compulsive bedtime routine that was causing serious sleep deprivation. To the point where she was falling asleep at school, at one time even during a test. When I gave her the symptom checklist, I discovered that she had symmetry compulsions that her parents hadn't thought to mention, because they were less of a problem. On a ten point scale, she estimated the discomfort of doing ERP with her symmetry compulsion at about a four. In contrast, she rated not doing her bedtime routine a ten. So we started with her learning to tolerate leaving her window shades lowered unevenly. In fact we started with her drawing pictures of triangles whose sides weren't equal, then of windows whose shades were uneven, and then worked with the curtains in my office, and then with the shades in her room at home. By the time we were done with all that, she had built up experience with mastering compulsions -- created a wiring template or "brain map" for it -- which made it easier to do the more uncomfortable work ahead. And when we got to working on her bedtime compulsions, we didn't take on her whole routine at once. We broke down its ingredients and started with the easiest part, which was to refrain from putting her stuffed animals in order. By the time Emily started to work on her compulsion to check on her parents in the middle of the night, to make sure they weren't dead, the distress was only a six. With this final exposure, we
started with what's called "response delay," which in her case meant that at first she just delayed the checking, delaying for longer and longer, until she was ready to not check at all.

To keep track of the distress level and keep the patient focused on it, if we are doing exposure in my office, I will periodically check in, asking them to rate their current level on a 1 to 10 scale, before we start, and then every five minutes or so. In addition to helping us know where we are in the process, I think this has additional neuroplastic benefits. Brain scans indicate that people with OCD experience chronic, heightened activity in a neural network between the basal ganglia and the prefrontal cortex, one of whose functions is to detect errors and then maintain a state of alarmed excitation until those errors are corrected (Schwartz, etc.). When we ask our patients to rate their distress, this engages other cortical resources involved in evaluation and perspective taking. By bringing these additional cortical functions and neural systems into the mix, the process of self-monitoring transforms the very response network it observes. The simple act of rating the intensity of distress often changes a patient's relationship to the anxiety. Instead of being something that must be passively endured, it is now something they are engaged in examining. It's not consuming their entire experience of themselves. There's another part of them that's now present, an observing and evaluating part. And this newly engaged part is doing something, a subtle but real shift from a passive to an active stance. Furthermore, to rate anxiety, the patient must step back from the experience enough to compare it with a range of past and possible future experiences. The act of self-monitoring requires the patient to stay present with their distress, while at the same time bringing additional resources of executive functioning to bear upon it. When patients do planned exposures outside the office, I ask them to keep a written log of the distress levels they experience on their own as well.

In the ERP literature, the process by which the distress comes down is generally described in terms of "desensitization" or "habituation." From the perspective of the model of OCD I am proposing, ERP is a way for patients to stay engaged with their fears long enough for the brain to learn there is another way out, one that doesn't require its habitual compulsive solutions, and to learn, through repeated experience with the exercise, that staying present with these fears can lead to a stable sense of closure, in contrast to the endless cycle of temporary relief with which they have been living.

Recovery from OCD requires experiential learning. This learning takes place in the sub-cortical, pre-verbal parts of the brain as well as the cortex, and the engagement of the deeper parts of the brain is essential. However some degree of verbal, rational insight on the part of the cortex is a prerequisite for ERP. To buy into the exposure process, patients need to be able to say to themselves something along the lines of, "Other people touch doorknobs all the time and nothing bad happens when they don't wash." Part of the patient needs to know that the fear and compulsion are false alarms, the result of malfunctioning brain circuitry rather than signals of any real danger. And, for the kind of ERP I am talking about, the patient needs to be able to draw the line between things like appropriate washing and compulsive washing. One of the advantages of treating a washing compulsion is that it's pretty easy to construct clear-cut rules about it. "I'll only wash my hands before dinner or after using the bathroom or taking out the garbage," for example. Despite the fact that my client successfully complied with the "no washing at all" approach used by that OCD specialty clinic I mentioned earlier, this therapy
ultimately failed to help her because it lacked ingredients that would have enabled her to make discerning decisions about washing when she returned to normal life.

Insight can't be taken for granted. To create an effective foundation for ERP, we need to engage the patient in a discussion in which any fears and concerns are articulated and addressed. Feeling that the treatment is safe isn't just about believing the germs won't really harm you. Remember those scientists Groopman described, that we talked about in Part I. Safety can also be about believing that your identity will be liberated by the treatment, not harmed. Jeffery Schwartz, in his book, *Brain Lock*, urges patients to differentiate their obsessions and compulsions from their legitimate fears and urges, so that they are able to say of a symptom, "It's not me, it's OCD." But Groopman's scientist friends didn't find the distinction so clear. Obsessions and compulsions may exist on a continuum with legitimately treasured traits, the self and its symptoms deeply entangled. I think that for many people treating their OCD may be more like tending a garden than like excising a tumor. When it comes to brain networks, there may be some you would like to weed out, some you'd like to cultivate, and some with branches that need to be pruned. Ultimately it has to be our patients who set the agenda. You or I may suggest that someone's list making seems compulsive to us, but it has to be the patient who decides what to target for ERP. In setting the stage for ERP, we need to establish a shared understanding of what lies ahead, the real discomfort, the real uncertainties, and the fact that a certain amount of trial and error goes into optimizing the ERP design. In my experience, this has never been a deal breaker, as long as the patient feels treated like a partner.

As I mentioned, it is important to maintain the exposure until the distress comes down, and I will sometimes book a double session for the initial exposure, to make sure there is time for this to happen. However, keep in mind that the process isn't just about time, it's about the focus of attention too. When I first started doing ERP, I discovered that during the process patients will often start having fascinating, quite meaningful associations. All this rich web of associations between the distress they are enduring and other times when they were bereft and helpless and afraid and couldn't get closure on their suffering. And I, uh, I was so pleased with this evidence of a sort of integrative, psychodynamic value to the behavioral technique that, in the midst of the exposure, I would invite my patients to elaborate on these associations -- I'll give an example of this later, when we get to cases -- and I would listen to these associations and be thrilled with a 60 percent reduction in the frequency of their compulsive washing. But what I have learned is that pursuing these associations interrupts the patient's focus on the exposure, that the less I let them talk about their associations or do anything other than focus on the feelings that are arising in the here and now -- the fact that they have touched something dirty and haven't washed -- or whatever, the more progress we make. The more strict I am -- see, there's that word "strict" -- the more strict I am, and the more single-minded I am about keeping the patient focused on whatever is most uncomfortable about the exposure, the more the patient improves. This is crucial. Optimal therapy is achieved when the patient is able to remain mindfully focused on the ERP experience. Following that principal, instead of seeing a 60 percent improvement in symptoms, now I sometimes see 90 or more. So, don't talk about the associations during the ERP. Clinicians of the strict behaviorist school would say that you don't need to talk about them at all. But in my opinion the bottom line is that we are trying to reorganize -- rewire -- the patient's network of resources for meaning-making and self-regulation. When we help patients deepen their understanding of their associations, and of what their symptoms mean to them, this
enhances their breadth of perspective and helps recruit new cortical resources, much as the distress rating process does. So I think it can be very important to talk about the associations -- but later. Just don't try to explore them during the ERP.

2) Mental Exposure and the Use of Imagery:

In order to work, ERP needs to be designed in a way that allows the client to stay present with the resulting distress, not just physically present but psychologically present. And, for a large number of clients, a strict behaviorist approach doesn't offer a viable way to do this. (cite Schwartz). I think this is what a lot of the behaviorist emphasis on strictness arises from -- for some clients the discomfort they must endure during ERP is so intense that they are only able to do it if their therapist provides sufficient structure and admonition to "make" them. But making people do things is a highly problematic way to go about psychotherapy, undermining the client's sense of ownership of the process and potentially doing more harm than good. In any case, a great many people with OCD are unwilling or unable to do behavioral ERP. A lot of the time, for these clients "Mental Exposure" provides an alternate domain within which more doable forms of exposure may be designed and carried out. By "mental exposure" I mean exposure carried out in the mind rather than in the form of overt behavior. To the extent that the client thinks about the procedure before doing it, all ERP begins with imagined behavior, and the client's imagination begins to play a more systematic role as soon as we ask them to construct an exposure hierarchy -- the essential feature of this process being that the client is asked to imagine doing ERP with various obsessions and compulsions, then rate the discomfort they imagine they would feel, so that they can rank order them in terms of subjective units of distress.

If you treat enough clients with OCD (and by "enough" I don't necessarily mean "a lot"), you will eventually find yourself sitting with a client, trying to construct a hierarchy, and finding it difficult to come up with anything they feel they can actually do. You've gone over every symptom on their checklist, and everything has turned out to be a ten. When this happens, it's important to keep in mind that when we ask our clients to rate the distress they would feel from a potential exposure, there are two distress levels involved: the distress they imagine they would feel from really doing the ERP, and the distress they are experiencing right then and there in the room with us. When the client tells you a particular ERP exercise would be a ten, it's a good idea to ask them to rate the distress they are feeling at the moment, just from thinking about doing the ERP. Often it will turn out to be a four or a six, not a ten, and then you're good to go. You can plan a hierarchy where an imagery-based script is used as the first step leading to eventual real life exposures.

So, any exposure exercise that can be done behaviorally can also be done in the imagination. The only caveat being that the client needs to experience actual autonomic arousal during the process, not just imaginary arousal. The activity the client engages in may be imaginary, but the arousal must be real.

For me, one of the most valuable uses of imaginary exposure has been what I will refer to as "narrative construction" or "narrative completion." The theory behind this process is that the incessant recurrence of the patient's fear is due to the fact that they aren't processing it completely. The lack of closure thing again. When an obsessive worry comes up -- for instance
that someone I love might die in a traffic accident -- I start to imagine it happening, until I get to a point in the fantasy that's just too horrible to think about, and at that point one of two things happens. Either my executive functioning checks out, leaving me with just the raw fear and no way to reason with myself about it, or else I just try to push the whole thing out of my mind. Either way I short circuit the opportunity to think through and get closure on whatever it is I'm worried about. And I never get to engage in problem solving or to cope in a way that enables me to experience mastery.

So, narrative exposure starts with asking the person to describe their obsessive fear, supporting them in thinking it through and placing it in a narrative context, with a beginning, a middle and an end. Helping them think it through past the point where they usually check out. So let's say I'm the patient and I'm describing my worry and I get to the point where my wife's car is skidding off the road, or wherever it is in the story that my executive functioning habitually check out, and my therapist asks, "And then what happens?" My therapist just keeps asking me what happens next. And then? And then?

In this way the therapist supports the patient in staying engaged and present with the feared experience, putting it into words and placing it in the context of a sequence of events that is carried through, beyond the point of greatest distress to a point that offers some sort resolution. This resolution can take all sorts of forms. One woman I worked with had been haunted for years by the obsessive fear that she would microwave her small, beloved dog. But when we constructed a detailed narrative describing what she was afraid she would do, and made a recording of it -- we were still in my office, listening to this recording we had just made -- this look of joy came over her face and she exclaimed, "He doesn't fit!" And that was the end of that obsession. She still had others, but she was done with that one.

Other patients carry the story through to the point where they master and cope with even the worst situations. For another of my patients, whose obsessions had a lot of health-related themes, the thinking through process eventually ended up with her imagining saying goodbye to her children on her death bed, and realizing her husband was the kind of man who would still be able to raise them to lead happy lives. Of course, this isn't a path to closure that will work for everyone with a fear of death, but that's not the point. The point is that for her, when she stayed with the narrative and went where she was most afraid to go, what she found was that her children would be alright -- and that was what she needed to know, and it worked for her.

As I have emphasized, to get to resolutions like these -- our clients can only get there if they stay engaged. And I think it helps if the therapist stays psychologically present in the room as well. I acknowledge this isn't an evidence-based assertion. I don't have proof. But it feels to me that when I am asking my patients to stay present through this difficult process, where every fiber of their being is screaming to flinch away, it helps if they sense that I am empathically with them, not just mechanically asking what happens next.

Mental exposure can take many forms besides the therapist assisted thinking-through I just described. As with ERP carried out in real life, our goal when using mental exposures is to work hierarchically and collaboratively, and one of the advantages of working in the patient's imagination is that it gives us more options, not only in terms of creating an exposure that's
doable, but also in terms of being able to imagine doing things that could never be done in real life. A lot of pure obsessions are about things you can't have people actually do, like throwing a baby out the window. When I was working with my patient who had the fear of microwaving her dog, it was important that she could work with an imaginary scene rather than actually putting the dog in the oven. The imaginers exposure can often be collaboratively composed to have just the right level of distress. It can range from stuff like writing "I hate God" over and over, to stuff like vividly imagining graphic murder.

Once the right content has been arrived at, the patient can write it out or make a voice recording of it. This allows the exposures to be consistent across repetitions and locations, the same at home as in the therapist's office. Which is an asset, because otherwise many patients will tend to vary details of the scene each time they run through it, and it is difficult for the brain to feel finished processing a stimulus if there are novel elements each time the brain encounters it.

3) Mindfulness Meditation Based Techniques

The term "meditation" has been used to designate a variety of activities associated many different spiritual traditions, some going back thousands of years and having vast body of teachings associated with them, about which I know very little. My goal in the description that follows is not to do justice to that spiritual history -- or for that matter to review the growing body of Western scientific literature on the subject -- just to describe what I have found to be helpful in my work with OCD. Although there are many forms of meditation, when I use the word here, unless otherwise specified I will be referring to the type of mindfulness-based practice I'm about to describe.

At the core of this type of mindfulness meditation is the practice of staying present in the moment, resting attention upon the flow of experience -- or upon whatever aspect of it we have chosen to focus -- just resting our awareness upon it and gently returning to it whenever we discover that our attention has drifted away. One of the most well-known forms of this is to sit quietly, focusing our attention on the experience of breathing. Though the breath and its web of associated experiences offer surprisingly rich material to anchor our attention, sooner or later the mind tends to wander to other things. When this happens, it doesn't mean that the meditator is doing a bad job. The wandering of the mind is a natural and -- for our present purposes at least -- a valuable part of the process.

And see, about the wandering -- here's an interesting thing. When you are meditating on your breath, It's not like there's a point at which you say to yourself, "Gee, this is getting boring, I think I'll start fantasizing about dinner instead." No, somehow, over and over, while we're meditating we veer off without making a conscious choice to do so, and by the time we realize that we're thinking about dinner we're in the middle of the meal.

What's up with that? It's not like our thoughts about dinner are unconscious -- if somebody asked, we would have no trouble saying what we were thinking -- this is something different. Whatever it is, it happens all the time. We spend a huge part of our lives in that sort of thinking, conscious but not self-aware. And the more you catch yourself doing it during meditation, the more you'll start noticing yourself doing it at other times as well. And over time this may lead
you to discover that, along with random inattentive thoughts about dinner and such, there are themes and habits of mind that take up more of your time than you realized.

In any case, when you're meditating and you realize that you're thinking about something unintentionally -- what to have for dinner or the phone call you forgot to make, or whatever -- whatever it is, when you realize that you're thinking about it instead of your breath, you become aware of your thinking, not just swept up in it. At that moment when you catch yourself in the middle of your imaginary dinner, your goal is to step back, to touch your wandering thoughts with just enough awareness to note what they're about, and then to gently but firmly let go of them, returning your attention to the breath.

In a behavioral sense that's all there is to it. It's a cycle. The focus on the breath, the initially unnoticed wandering off, the eventual noting and letting go, and the returning to the breath, all repeated over and over each time we meditate. And this cycle -- it's a form of exercise -- each time we repeat it, we strengthen the neural networks for paying attention, and for stepping back from our thoughts, observing them with disengaged awareness and then letting go of them. And just like with any other exercise, it's the repetition, the practicing over and over, that matters. And all the rules that govern the effectiveness of push-ups govern the effectiveness of meditation too.

We have been talking about meditating on the breath, but as I mentioned earlier, the chosen target of attention doesn't have to be the breath. There are good reasons for the tradition of starting with the breath, but meditation is an exercise in attention and awareness, and -- as with every other aspect of treatment we have discussed -- ultimately the best place to start is with what the client is able to do.

People vary in their capacity for attention. What we are looking for is a target that is stimulating enough and well defined enough so that attending to it provides a grounding activity from which wandering thoughts can be differentiated, and understimulating enough and constricting enough so that wandering will occur.

For one person it may work best to focus exclusively on the sensations of the breath passing through the nostrils, for another it may work best to attend to all the sensory aspects of breathing, or to all the sensory aspects of the present moment. People with Attention Deficit Disorder tend to benefit from more stimulation, such as focusing on the breath while walking, or while having music playing in the background. The sensations of holding a simple yoga pose, or simple series of poses, can also be a good target. Maintaining a particular posture is often helpful.

In addition to this "basic" process, there is another common ingredient of meditation that's particularly relevant for people with OCD. If you find that a particular thought or feeling is repeatedly drawing your attention away from your target -- hunger, boredom, an aching muscle, worry that you left the door unlocked -- whatever -- then rather than fighting with it you can expand the scope of your deliberate attention to include it. The fundamental intent of the meditation remains the same, to practice paying attention and being present to our experience.

Of course expanding the scope of focused attention doesn't stop the mind from wandering. The meditator still finds herself thinking about other things, noting them and letting go, and returning
to her experience of the present moment, which now includes her feelings of hunger or worry or whatever. It is interesting to notice how the hunger or worry is transformed by the attention it now receives. It is one thing to try to avoid thinking about pink elephants, and quite another to focus on them until the mind wanders away from them. And if you bring your attention back to pink elephants each time it wanders, over time you'll find that the way you think about them changes. And if the pink elephant in question is some sort of anxiety, or craving, or pain -- just to name some common possibilities -- often it will lose some of its urgency, allowing the meditator to feel more at peace with it in one way or another. I think part of this comes from the staying present, the observing and deconstructing of the experience. There are other aspects of this process which I hope to get to later, but I'd like to linger a moment to elaborate on what I mean by "deconstructing."

What I mean is taking something that we have previously experienced as a global, undifferentiated whole and gradually becoming aware of the different ingredients that feed into it. The forest and trees thing. Noticing not just that the forest is made up of trees, but what types of trees, the different ways they contribute to our experience of the forest as a whole, and that our experience of the forest as a whole can change depending on how we look at the parts.

For instance, it can be useful to differentiate between the sensory components of whatever keeps drawing our attention -- and the mental activities that arise in response to them. Between the various sensations of hunger and the resulting fantasies about donuts or ice cream. One approach that can be useful is to try to maintain our attention to the sensory components while letting our thoughts about those sensations just come and go. [The section on Mindfulness Meditation is incomplete.]