An Inference-Based Approach to Treating Obsessive-Compulsive Disorders

Kieron O’Connor, Natalia Koszegi, Frederick Aardema, Fernand-Seguin Research Centre
Jan van Niekerk, Fulbourn Hospital
Annie Taillon, Fernand-Seguin Research Centre

This article outlines the conceptual and empirical basis for an inference-based approach (IBA) to treating obsessive-compulsive disorder (OCD). The IBA considers that in most cases the obsessional process begins with an initial doubt (e.g., “Maybe my hands are not clean”; “Perhaps the door was not locked”; “There’s a chance I made an error”; “I could have harmed someone”) and that this doubt is a product of invalid reasoning. The IBA focuses on initial doubt adds an extra upstream dimension to the current cognitive behavior therapy (CBT), which targets downstream appraisals, following on from the initial intrusion. Hence the aim of inference-based therapy (IBT) is to modify the reasoning narrative producing the doubt, and to return the person to the world of commonsense perception. IBT complements existing CBT and a case study illustrates the application of the IBT protocol. The IBA may be particularly useful in cases where belief in the initial probability of an obsessional doubt is strongly held and/or where consequences or appraisals following the doubt are absent or minimally associated with distress.

The inference-based approach (IBA) to treating OCD offers a reasoning perspective on obsessional ideation. IBA focuses on reasoning narratives producing the initial doubting inference in OCD. Its claim is that no matter what the form of the OCD, the obsessional chain always begins with a doubting inference arrived at through a reasoning process termed inferential confusion (O’Connor, Aardema, & Péllissier, 2005). Inferential confusion has two components: (a) an investment in remote (often imaginary) possibilities in preference to reality and (b) a distrust of the senses and common sense. Together these two components confuse the person with OCD into inferring doubt in the absence of a valid basis for such doubt. The aim of inference-based therapy (IBT), then, is to invalidate the reasoning producing the primary (doubting) inference and return the person to the world of the senses and common sense, which they were led to disbelieve and mistrust by the invalid reasoning narrative. Promoting meta-cognitive insight into the distinctive nature and origins of the obsessional narrative helps the person to realign their thinking in the obsessional situation with their thinking before the OCD started and with their thinking in other non-OCD related areas of their lives, and recalibrate their actions accordingly.

Obsessional Doubts as Inferences

Obsessional thinking often explicitly takes the form of doubts about past thinking, acts, or events (e.g., “Maybe my hands are dirty”; “I could have had a bad thought”). In fact, in the early days of cognitive theorizing on OCD, the term intrusion was used interchangeably with doubt (Salkovskis, 1985, p. 578). Even if the intrusions may not explicitly refer to doubt, the sense of the intrusion entails a questioning, or a reevaluation of information previously received or accepted that the object/situation/self is satisfactory (e.g., “I was reading a story about how you can do strange things unconsciously and suddenly I began to wonder if I had acted strangely in the past without realizing it. I then started to review past scenes and question them.”). It is this element of doubt, even if considered improbable, which, when introduced into thinking, engenders discomfort (the 1% possibility that the object/situation/self may be compromised in a threatening way).

Once the person is absorbed into the doubt, there are many ways in which feelings and images develop, through associational networks and meta-cognitive representation, and by absorption into what could happen should the initial doubt be correct (Aardema, O’Connor, & Emmelkamp, 2006). It is often secondary inferences about the anticipated consequences following on from the initial doubt that heighten anxiety and preoccupy the person and it may be these consequences and associated images and feelings that are predominantly reported in initial
consultation. For this reason, the IBA classifies the obsessional thinking chain into the primary inference of doubt and the secondary inference about the consequences, as in: “I touched the doorknob—my hands are now most probably dirty (primary inference of doubt)—if they are, I’ll contaminate my family, etc. (anticipated consequence or secondary inference).”

The IBA views the primary doubting inference as the starting point of the obsession even though the primary-secondary distinction may not initially always be clear cut. Nonetheless, the primary doubt is identifiable as the first inference at which the person leaves the world of the senses and goes into the obsessional narrative. In the following example: “I see the doorknob (trigger) → maybe the doorknob has germs on it → maybe I will get germs on my hands → maybe I will be infected → maybe I will infect someone else,” the doubt about the doorknob precedes the doubt about one’s hands, so “maybe the doorknob has germs on it” counts as the primary inference, since it was at this point the person left the world of the senses (seeing a doorknob), and this is the point in the inferential chain that IBA calls the first base.

In a related series of studies, Grenier, O’Connor, and Bélanger (2006, 2008, in press) established that both clinical scales measuring belief in the probability that the primary doubting inference is true, and the likelihood that the nature of anticipated consequences is real, show a normal distribution and acceptable reliability and clinical validity. Furthermore, the extent to which a person believes an obsessional doubt to be a real probability is more strongly associated with belief in ability to resist rituals than degree of perceived realism of the consequences following on from the doubt (Grenier et al., in press). Comparisons of daily measures of beliefs in a series of seven treatment responders over three phases of treatment showed that significant reduction in degree of perceived realism of anticipated consequences always followed significant reduction in belief in the likelihood of the primary doubt, but the converse did not apply. This finding then supports the IBA claim that decrease in the belief in the likelihood of primary doubt being true will logically decrease strength of belief in the realism of anticipated consequences (Grenier et al., 2008).

The Reasoning Behind Obsessional Doubt

Doubts are inferences about a state of affairs and a key claim of the IBA is that obsessional doubts are inferred on the basis of an invalid reasoning process. The reasoning narrative is revealed by simply asking the person to justify the inferred doubt.

THERAPIST: You’ve been married 10 years with three children; you’ve never had a homosexual affair or been attracted to a same sex relation. What makes you doubt whether you are heterosexual?

CLIENT: Well, I had a close girlfriend when I was 14 and sometimes when I slept over we shared a bed, and soon after I saw a film where a man was married all his life and came out as gay, and then there was a live show featuring all these couples who had came out in late life and the impact on their families and children, and then since I got married young, I’m asking myself maybe I could not really know my sexuality and maybe I’m in denial and ...

The hallmark of such narratives is the weight accorded to “maybes”—that is, to hypothetical possibilities. In reasoning terms, essentially, the narratives convincingly replace confidence in the senses (and the self) with a doubting inference based on remote possibilities, and/or lead the person astray from a commonsense approach, where interacting with the situation is congruent with goals and perceived task demand, towards adopting irrelevant and unrealistic criteria. A number of reasoning devices serve to enforce this credibility in doubt, such as: overcategorization (fusing separate categories of object or people together: “This table could be dirty because the other table was dirty”), apparently comparable events (confusing two distinct independent events as comparable: “My friend’s garage door sprang open so mine could as well”), out-of-context facts (applying abstract facts without adapting them to the situation: “I could be infected because it’s a fact that microbes exist”), reasoning on the basis of purely imaginary events (chaining sequences together in an imaginary story: “I saw the red stain and I imagined it was blood, and that the blood was dripping on me and so I could be contaminated”).

A key reasoning device is inverse inference, which replaces normal inference in OCD contexts. A person without OCD may reason: “This pole has prints on it, so there may have been a lot of people touching it.” The person with OCD infers reality the opposite way, or inversely, “Because this pole could have been touched by a lot of people, it is most likely to be dirty even if I see nothing.” The inverse inference conclusion (the pole is most likely dirty) trumps the senses and precludes reality testing (the conclusion may be held despite observation suggesting that the pole is in reality clean). In fact, a typical reaction of people with contamination fears is to expressly avoid looking at their hands or whatever is infected for fear of becoming even more anxious.

We term these reasoning devices rather than errors, since they can form a reasonable basis for questioning under
some circumstances. For example, hearing about someone else’s garage door springing open may provoke thoughts about our own garage door if it’s the same make. But in the obsessional case, such information will form the basis for overinvestment in a possibility remote from the “here and now,” which will trump and often go against a more realistic view. Therefore, use of these reasoning devices seems not to be exclusive, and recent factor analysis suggests they can be grouped into the two main components of inferential confusion, namely: reliance on imagined possibility and distrust of the senses (Aardema, Wu, Careau, O’Connor, & Dennie, in press). In the case example presented later in this paper, we will see how a doubting inference can be generated in the face of contradictory sense information solely on the basis of a convincing narrative. This narrative bridges the initial sense information and the development of the obsessional doubt, as in:

**Sense information:**
“My hands look perfectly clean… but… maybe…”

**Story (bridging narrative):**
“There were invisible germs on the pole I touched and the invisible germs might have jumped onto my skin because microbes exist and I won’t be protected because the microbes might be capable of burrowing into my skin.”

**Obsessional inference:**
“So maybe my hands are really contaminated even if I see nothing.”

**Sense information:**
“The door appears locked… but maybe…”

**Story (bridging narrative):**
“When I closed the door I accidentally jarred the mechanism and maybe the key didn’t turn the lock completely. The door never seems flush with the frame. Maybe that means it’s not closed. I’ve read about doors mysteriously swinging open. A friend of mine thought he’d locked the door but found he hadn’t.”

**Obsessional inference:**
“So maybe the door is not really locked.”

The effect of the bridging narrative is that a remote or imagined possibility trumps sense information and leads the person up to an invalid doubting inference, through inferential confusion. The problem here is not the perception of reality. We know that people with OCD perceive reality as well as others and are able to distinguish unreal from real images (Brown, Kosslyn, Breiter, Baer, & Jenike, 1994). The problem is absorption in a narrative that leads the person to doubt their initial sense information. The solution then, in principle at least, may be to return the person to confidence in the initial sense information and associated cognitions through recognition of the invalidity of the doubting inference.

This solution also applies where inferential confusion has led the person to a nonadaptive inference (e.g., “Maybe the light switch didn’t click in the right way” or “Maybe my T-shirt is not OK”) through applying an arbitrary or remote standard (e.g., “The light must click in a certain way or there must not be any red bits in the white stripe on my striped T-shirt”), and which is supported by a linked narrative. In these cases the therapy target could be the element in the supporting narrative that involves invoking an arbitrary/irrelevant sensory criterion for an activity or object (i.e., the sound of the click is important, or tiny red bits in the white stripe are important), at the expense of the actual immediate function of the activity or object. These criteria entail a violation of common sense since a commonsense approach prioritizes function of the activity/item and views other criteria less dichotomously than in the examples above.

**Inference-Based Therapy (IBT)**

The IBT protocol is organized in a series of cumulative stages. The major steps are:

1. Establish the nature of the obsessional doubt and educate in distinguishing obsessional doubt from authentic doubt.
2. Unravel the subjective “story” (reasoning narrative) behind the primary inference.
3. Illustrate how the doubt goes against perception in the here and now and detracts from common sense.
4. Reveal clearly how reasoning devices lead to an arbitrary doubting inference.
5. Examine the power of the imagination.
6. Utilize techniques to return the person to the senses and common sense (such as constructing an alternative realistic narrative, grounding the person in reality sensing).
7. Return the person to the world of the senses.
8. Finally, target the vulnerable-self theme.

The vulnerable-self theme often refers to the self the person feels he or she could be or become, and this fear of self may underpin disparate obsessions (Aardema & O’Connor, 2007). A fear of being the sort of person who inadvertently causes harm could lead to extra vigilance in a range of potential harming situations. This self theme, according to IBA, is also itself the product of an obsessional inferential confusion reasoning process focusing on who the person could be.
The following case study, treated by an IBT-trained therapist (NK), illustrates the application of IBT.

Standardized measures of symptoms and cognitions that were direct targets of the intervention were used to establish treatment outcome. The Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman, Price, Rasmussen, Mazure, Delgago, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischman, et al., 1989) was administered by an independent clinician and defined as the primary outcome variable. The Beck Depression Inventory (BDI; Beck, Epstein, Brown, & Steer, 1988) is a 21-item measure of depressive symptoms. The Obsessive Beliefs Questionnaire (OBQ-87; Obsessive Compulsive Cognitions Working Group, 2003) is an 87-item measure of six cognitive appraisal domains. The Inferential Confusion Questionnaire (ICQ; Aardema, O’Connor, Emmelkamp, Marczewski, & Todorov, 2005) is a 15-item questionnaire measuring inferential confusion revolving around inverse inference and a distrust of the senses. The Padua Inventory (PI; Sanavio, 1988) is a self-report measure that consists of 60 items assessing obsessive-compulsive thoughts and actions.

Case Study

Mike, a divorced, aged 48, had experienced OCD symptoms since the age of 10. Despite chronic persistence of symptoms, he had managed so far to function, but recently, he felt his OCD had become worse and he was reaching the end of his tether. Also, one of his rituals, seeking reassurance as to the exact meaning of his friends’ words and whether he really understood their information, had recently triggered hostile reactions. Mike’s two other principal compulsions were checking the stove 5 to 10 times before leaving the house and feeling the need to trace groups of four lines when he felt he might experience intolerable emotions.

The first four sessions with the therapist were concerned with assessment of the problem and, in particular, obtaining a full list of obsessions and compulsions and completing the clinical scales evaluating primary and secondary inferences and the ability to resist compulsions. The evaluation procedure began by ranking compulsions on a scale of 100 (capable of resisting) to 0 (incapable of resisting), in order of difficulty of resistance. Mike’s capacity to resist asking his friends for reassurance was rated at 0%. Resistance to checking the stove came in at 20%. Resistance to drawing lines was rated at 30%. Obsessional doubts were assessed working back from the compulsive action and asking: (a) why this action and not another and (b) specifying which doubt needed to be completely eliminated for Mike to be able to resist the compulsive action. Mike’s primary doubt that “maybe the stove is not turned off” he considered on average 50% likely at the times he actually checked the stove. The doubt concerning “perhaps I do not have the right information” was rated 100% probable at the time of asking. The doubt, “Maybe I could experience intolerable emotions” was more difficult to elicit since Mike had always taken it for granted that he would not be able to tolerate an unusually intense emotion. He rated this doubt as 100% probable. The percentage scores here indicate the level of conviction in the doubt as a real possibility.

The therapist next assessed secondary inferences about anticipated consequences. In reasoning terms these consequences follow if the primary doubting inference is probable. Mike’s concern was that he could explode or break down if he didn’t trace lines, and this would happen if he really did experience intolerable emotions. So if the stove was not turned off then there will be a fire: if Mike didn’t have the right information then he would look foolish or inadequate. These secondary inferences were rated in degrees of perceived realism—in other words, how realistic Mike viewed these consequences to be. Finally, as a measure of insight the therapist asked Mike to rate his conviction in the need to perform his rituals both in and out of the situation triggering his OCD. Mike felt most rituals were 100% necessary when he was in the OCD trigger situation but often considered them much less necessary when outside the situation.

The first part of the treatment program (Session 5) entails identifying the characteristics of obsessive doubt.
and understanding the distinction between obsessional doubt and normal or authentic doubt. Normal doubt is usually justified by new sense-based information, whereas in the case of obsessional doubt there is no new information that signals problems in the present. There may be an external trigger but the content of the doubt is not justified by new sense-based information available in the present. The therapist elicited from Mike several instances of reality-based questioning in everyday life, such as smelling a burning odor, feeling cold in a draught from an open window, the sound of a tap dripping. The authentic doubts were justified by sense-based information in the here and now and were resolved through reality-based decisions in the here and now. For example, sensing a burning smell or excessive heat may lead us to authentically question whether a stove is on or not. Conversely, Mike’s obsessional doubts were created subjectively by him and were not resolved by seeking further information. For example, he checked his stove in the absence of any reality-based valid reason to check, and this checking elicited no new information since he was only rehearsing his doubt.

Mike, typical for this stage, agreed that the obsessional doubts were subjectively created, but he still gave them credibility. He mentioned spontaneously that his doubts could well be the “fruits of his imagination.” Mike’s exercise for the week was to pause each time a doubt arose and to question whether the doubt was justified by real information in the here and now.

Session 6 explored the doubt further by posing the question that if the doubt was not grounded in current reality, how did it come about? To answer this question, the therapist asked Mike to “let the OCD talk”; that is, expound the arguments by which the OCD convinced him to invest in the doubt and perform his rituals. How did he justify doubting when his senses said otherwise? Mike came up with following arguments:

- I’m a bit scatterbrained. I’m easily distracted. I’m prone to forget things. I’ve made mistakes in the past. I have left apparatus turned on in the past.
- You read about people causing fires by leaving stoves on.
- I heard about a fire in a fire station caused by a casserole left burning on the stove.
- If it could happen to a fireman, it could happen to me.

The arguments gave logic to the presence of the doubts. The doubts were mainly justified by appeal to generalized hearsay, conventional wisdom, and subjective logic, but were not based on realistic information in the here and now. Mike’s reaction to this insight was very positive. He reported being aware of the basis of his doubt and its logic and how the justification was constructed.

The next stage, at Session 7, reinforced the fact that not only is the justification for obsessional doubt subjective but furthermore it is irrelevant to the here and now. To do this, the therapist illustrated from Mike’s non-OCD areas what is meant by “relevant to the here and now.” The therapist considered events where Mike had reacted appropriately in the here and now. For example, seeing mud on a handle and wiping it off, or crossing the road and getting out of the way of a car. Again, Mike was encouraged to contrast the OCD source embedded in a subjective story remote from the “here and now” with the reality-based source of his non-OCD reactions.

The exercise at home was to examine the justification for doubting each time it occurred. As Mike noted at the end of the week, in reality when he checked, he knew the stove was turned off. So he began to question both the relevance of the doubt and his compulsive checking. He also reported that he found it easier to question his doubt when it applied to physical events like leaving the stove on but he felt he was less able to apply the technique to his doubts about experiencing intolerable emotions.

Sessions 8 and 9 focused particularly on the power of a story to influence beliefs. Here the aim is to show how a convincing narrative can make an imagined doubt seem real. In this case, the therapist recounted two stories, one about her office belonging to an eminent scientist now departed and how fixtures were installed precisely and carefully for his benefit. The second story related how the room was previously used to store dust bags, that it was the worst office in the building and the therapist was only installed here because she was new and there was no other office. Mike agreed that his perception of the room modified according to the story. The point of the exercise being that the room (i.e., reality) has not changed but rather his perception was influenced by the story. Mike reported understanding how the story gave his doubt an “existence” and made it seem alive. He also noted that his tendency to create images about the consequences made him believe in the doubt more—for example, a strong image of a fire made the possibility seem more real. With the power of narrative in mind, Mike went back to see what aspects of his story made him “live” in the doubt as though it was real. This time the separate OCD arguments were joined up into a more flowing narrative.

**OCD Story: “Maybe I left the stove on”**

“I have to check my stove each time I leave my apartment because I know I am an absent-minded person and that I can forget things. It even happened once that I forgot a pot on my stove; it could have set fire to my apartment. Also, I heard
that a fireman forgot a pot on a stove right at the fire station and it set fire to the station. It is reasonable to think that if a fireman forgets pots on stoves, it could happen to anybody and especially to those like me who tend to be absent-minded.”

An exercise that can bring home the power of narrative is for the person to construct an alternative story, one that goes against the OCD story. The story needs to be creative and built up organically bit by bit over the week, so that the person begins to live in the alternative story. The idea is not that the alternative story replaces or neutralizes the OCD story, simply that the ability to live in another story demonstrates the power of stories and that the OCD is just that: “another story.” The goal here, similar to loop-taped exposure, is to reduce the importance accorded to the OCD story albeit by recruiting different mechanisms.

**Alternative, Reality-Based Story: “The stove is off”**

“I don’t have to check my stove when I leave my apartment because I know that once I shut it off, it stays off. Therefore, I don’t have to go back and check it once more. Even if I am sometimes absent-minded, I know how to make the distinction between my stove being on and it being off. My eyes still see well. Once I see that it is off, I don’t have to check it until next time I use it. So, for instance, if I don’t use my stove one morning and then leave for work, there are no reasons why I should check my stove. If I use it and shut it off, I can leave without checking it again.”

In the next two sessions (10, 11), the therapist reinforced the power of the OCD story by looking at how the OCD story generated characteristic OCD feelings. The aim was to show that the feelings came at the point that Mike left reality (the senses and his common sense) and went into his story. The metaphor of a bridge is useful here. The therapist asked Mike to picture himself crossing a bridge. On one side is reality, his senses, and his normal everyday reactions. On the other side is OCD doubt. The therapist asked him to move across the bridge towards the doubt and identify the particular OCD feeling accompanying the doubt. After practice in the office, Mike was able to identify the OCD feeling. The exercise for the week was to try to identify (by himself) every time he was about to cross over to the OCD by flagging the OCD feeling. Mike was relatively successful, but found he did get caught up in the OCD when he didn’t prime himself. However, even his failures were instructive: They showed how, once over the bridge, the OCD story chained off to become much more absorbing and difficult to resist. But if he caught the OCD feeling before completely crossing over and went back to reality, he could more easily dismiss the doubt.

The therapist also introduced the psychological notion of the imagination as a complementary faculty to perception. The difference can be illustrated by drawing two overlapping circles to show how the imagination can overlap with perception but they are independent faculties with distinct uses. The imagination deals with the realm of the possible and perception registers reality. The imagination may come into play under genuinely ambiguous perceptual conditions but perception trumps the imagination in telling us what’s real. However, in OCD, imagination can trump perception and the person then lives in the imagination as if in reality (for a fuller explanation, see O’Connor & Aardema, 2003).

In Sessions 12 and 13, the therapist covered the formal reasoning devices (see earlier) in Mike’s narrative that invalidly convinced him to believe in the doubt. In Mike’s case the principal devices were inferencing, on the basis of imaginary sequences, out-of-context facts and irrelevant associations. Although Mike found these formal reasoning devices interesting, the knowledge had less impact than the earlier realization in previous sessions as to the subjective, irrelevant, remote nature of his OCD story.

Session 14 combined the knowledge of the peculiar way the OCD doubts were inferred (on the basis of a subjective story) with the way Mike reasoned and inferred elsewhere in everyday life. Again this highlighted the difference between common sense, real-life coping, and OCD coping, where he essentially rehearsed a doubt and never arrived at resolution. For example, when crossing the road, did he stop and stare, imagining cars could be there that he might not have seen? These exercises also led to questions about why he reasoned like this in some situations but not others.

Mike was able to generalize the IBT strategies to the other obsessions, such as: “Perhaps the door is not properly closed,” “Maybe the tap is not properly closed,” and “Maybe I don’t have the right information.” He had more trouble with maybe I will experience intolerable emotions” and the therapist helped to elicit the narrative justifying this doubt.

“I heard of a group of people who needed therapy because they couldn’t deal with strong emotions. Some had cracked up or became depressed. If you experience too many bad emotions the system cannot tolerate it. It sounded like me because I’m closed up and don’t show my emotions since I have painful memories of being ill at ease in the past.”

The therapy he had heard about involved talking and expressing emotions. Since Mike lived alone, he had started writing down his emotions, and after a while he just drew a series of lines. He chose to draw specifically four lines because in school, corrections had to be
repeated four times; thus, he believed four to be a complete number.

Exploring the selective nature of the obsessional doubt also helps to uncover a connecting theme linking diverse obsessions. This exercise is particularly useful where the client seemingly experiences distinct obsessions and compulsions (e.g., ordering, checking, and washing) and where there may be an underlying theme. The theme can often be considered a vulnerable-self theme (see O’Connor & Aardema, 2007) where the person lives in fear of becoming someone she or he is not in reality (see Guay, O’Connor, Gareau, & Todorov, 2005, for a case study focusing entirely on treatment of a self theme). For example, someone who fears becoming a bad mother may excessively both wash and check. The self theme can be discovered by working logically back from the content of the obsessions. For example, someone who is hypervigilant for any sign of potentially losing control clearly considers that he or she could be the sort of person who might lose control.

The doubt about the authentic self is also an obsessional doubt supported by its own story. In the case of Mike, his self theme centered on the possibility that he could be someone who could fail to function adequately at any time. The story justifying the doubt included arguments that he had always been told he wasn’t capable and that he lacked the right resources. He felt he hadn’t accomplished much in his life and each time he faced a challenge, he didn’t succeed. So therefore he needed to be extra vigilant to make sure he had the right information and was considering all angles and eventualities to ensure he functioned normally.

We place dealing with the vulnerable-self theme at the end of the IBT program (in Mike’s case, Session 15) because, to begin with, the self theme is more easily detected after all the individual doubts have been identified. Further, coping with the self story is more easily generalized from the IBT strategies used to invalidate other doubts. However, the vulnerable-self theme may be more valuably addressed earlier in the program where the theme is clearly identifiable and readily volunteered. For example, in some blasphemous obsessions the person’s doubt reflects that he or she could be the sort of person who will be damned. In Mike’s case we reoriented him towards his real self by following IBT principles and constructing and rehearsing a self narrative based on his actual characteristics in the here and now.

“I have good capacity to succeed. When I actually face challenges without doubting or avoiding I cope well. In reality I’ve attained several life objectives which I set for myself and which not everyone can achieve (e.g., education). The more I plunge myself into a task without first analysing my capacity, but rather acting instinctively, the more I feel confident in myself.”

This self-positioning was an ongoing project. At the end of therapy at the 16th Session (12th therapy session), Mike showed substantial improvement and had also succeeded in generalizing IBT well to his other obsessions, so that the therapist did not need to redo IBT for each obsession separately. At posttreatment evaluation, Y-BOCS total was 7, in the nonclinical range. Mike rated the belief “maybe the stove is not turned off” as 0, the anticipated consequences of the apartment burning down as 0, and was 100% confident in the capacity to resist checking the stove. His checking of doors and faucets was also 0 for the doubt, 0 for the consequences, and 100% for the capacity to resist checking. Mike rated the doubt that he did not have the right information at 12%, the consequences of rejection as 0, and was 90% confident in resisting reassurance seeking. Mike rated the doubt that “maybe I will experience intolerable emotions” at 4%, the consequences that he would explode at 0, and his capacity to resist drawing the lines at 99%. His degree of conviction in the need to perform his rituals had dropped from 100% to zero for all obsessions except reassurance seeking, which he rated at 9%. His ratings of global functioning increased from severe difficulties pretreatment in professional, social, family, leisure, and everyday activities to no difficulties posttreatment. Pre-post scores on other measures were as follows: PI: total, pre 72, post 59; ICQ: total, pre 67, post 30; BDI: total, pre 13, post 8; and OBQ-87: total, pre 405, post 114. At follow-up, 8 months later, Mike had maintained and even improved gains. Mike’s case represents a successful treatment response to IBT. But how typical is it? Of 68 consecutive completers, with varying subtypes of OCD, and participating in a current IBT trial in our research clinic, 21% show posttreatment total Y-BOCS below 8 (mean pretreatment total Y-BOCS score was 26).

This case illustrates two key points in successful treatment with IBT: firstly, the ease of generalization of IBT techniques to other obsessional doubts once the principles of IBT are understood; and secondly, that targeting the source doubt gets round the need to address the range of catastrophic secondary consequences, since if the initial premise is invalid, so, by definition, are all the consequences, however horrific and frightening they may be.

**Obsessional Doubt and Uncertainty**

The initial obsessional doubt is distinct from intolerance of uncertainty, which seems to be a trait characteristic of anxiety disorders and also represents one of the initial cognitive belief domains measured by the OBQ-87 and now twinned with perfectionism in the revised OBQ-44 item version (Obsessive Compulsive Cognition Working Group, 2005). Empirical studies do not show a higher
correlation between the OBQ intolerance of uncertainty scale and the principal measure of inferential confusion (the ICQ) than other OBQ domains, and the ICQ contributes independently of intolerance of uncertainty (and other cognitive domains) to explain OCD symptoms (Aardema, Radomsky, O’Connor, & Julien, 2008). Uncertainty concerns information not yet available; doubt concerns information already acquired. In order to doubt, there must already be knowledge. This conceptual distinction can be brought home to clients by asking them to bet (hypothetically) on whether the initial obsessional doubt is true or not. Example: “If you had to place all your money on whether your obsessional doubt was right or wrong (the door was really locked or unlocked/ hands are really clean or unclean/ letter was really posted or not, etc.), would you bet ‘yes’ or ‘no’? In our experience, clients will always bet against the doubt being right (perhaps with the over rider that ‘Well, maybe there might just be that 1% chance...’). But this bet demonstrates that sufficient sense information for making an informed decision existed prior to the doubt. Conversely, if clients are now asked to bet on information that they genuinely don’t know or where the answer is 100% uncertain to them—for example, what was the name of the third child of Ethelread “the unready” (King of England, 978–1016 A.D.), Ecgbert or Eadred? The contrast in sufficient knowledge to inform a decisive bet will become clear. There is then a crucial cognitive distinction between knowing one committed an error, doubting if one committed an error, and tolerating future uncertainty that one might commit an error. But admittedly, this relation is complex. The thought that one might have made an error can also lead to the need for certainty about a future event that might stem from this error. In this case, doubt and uncertainty can be contiguous in terms of the temporal unfolding of events (see Van Nierkerk, 2009).

**IBT for Treatment-Resistant Cases**

Hoarding obsessions and overvalued ideas may be treatment-resistant because such obsessions frequently present as ego-syntonic and appear to reflect the person’s value system. So, for example, despite the inconvenience or hassle that a hoarder experiences with clutter,” the person may consider himself justified in keeping items on the basis of the inference “just in case they may be of use.” The IBA would suggest that what at first sight appears as an inference aligned with the person’s values seems so only because of an inferentially confused narrative and will in fact lead to action in stark contradiction to these values.

Take the case of one person convinced that she was being ecologically responsible by hoarding, in a “throw-away world,” discarded valuables. The inference about the self, “I could become a wasteful superficial person,” was supported by a narrative about her mother saving old clothes to turn into clothes and being told how lucky she was to have toys and how she shouldn’t waste anything (apparently comparable events), plus some unrelated stories of how she had heard how people found discarded objects that turned out to be antiques, and how people in Africa and Russia were glad to receive any spare goods, and so on (out-of-context facts).

However, when grounded in the here and now and asked what her common sense told her would happen with her hoarded stock, she readily admitted she had no conceivable use for the items. Her narrative hence bridged a grounded observation (regarding, for example, one item), “This is a rusty old broken ornament that I have absolutely no use for,” with a contradictory doubt that “maybe it could be of use one day.”

A similar bridging narrative justifies a man to struggle for half an hour whenever he writes a check because the letters need to be equally spaced and the pressure on each stroke equal. His initial reality-based commonsense inference is: “A check is correctly filled out if the account details, amount and signature are written legibly... but (the bridging narrative): my uncle was a sign writer and he told me that a sign was ugly unless all the letters were equally spaced and equally bold. I also read that ink these days can fade unless you press hard... and I heard of a friend who wrote his checks sloppy and ended up losing money... so (doubting inference): maybe the check needs more effort to be correctly filled out.” The client here is applying criteria for sign writing to an inappropriate context of check writing in the here and now through linking up remote and irrelevant associations in a convincing but inferentially confused narrative.

**Empirical Support**

A small-scale randomized clinical trial showed a benefit for treatment, based on an IBA model compared to a cognitive appraisal model, in those people who showed a strong belief in the probability of the primary doubt (O’Connor et al., 2005). The effect size was small for the Y-BOCS but medium to large on the PI and the Cognitive Intrusions Questionnaire (Freeston, Ladouceur, Thibodeau, & Gagnon, 1991). Further support for the IBA comes from studies showing that people scoring high on obsessionality show less direct (less reality-based) and more indirect (more subjective) links between the content of their intrusions and their immediate context (Julien, O’Connor, & Aardema, 2009).

Two experimental studies looking at formal reasoning have shown that people with OCD do accord more credibility to given possibilities and that these can influence conviction in an initial logical conclusion (Péllissier & O’Connor, 2002; Péllissier, O’Connor, & Dupuis, 2009). A more dynamic version of the reasoning paradigm...
measuring successive changes due to possibility-based and reality-based information clearly showed a link between the impact of possibility and OCD clinical symptomatology (Aardema, Péllisier, O’Connor, & Lavoie, 2009). A questionnaire that measures inferential confusion, the ICQ (Aardema, O’Connor, et al., 2005), performs remarkably well as an instrument for discriminating OCD from control and other anxiety groups. It is independently related to OCD symptoms when controlling for other belief domains as measured by the OBQ and correlates highly with the Padua Inventory, even when controlling for anxiety and OBQ belief domains (Aardema et al., 2009). Change in the ICQ correlates positively with treatment response (Aardema, Emmelkamp, & O’Connor, 2005), and inferential confusion appears consistently as a distinct factor in analyses that also include other cognitive domains (Aardema et al., 2006). Furthermore, the results from reasoning studies and the ICQ scores correlate positively, so suggesting a common inferential process at work in both measures (Aardema et al., 2008). A recent open trial (Taillon & O’Connor, 2009; Taillon, O’Connor, Aardema, & Laverdure, 2007) of 40 consecutive referrals with OCD who received IBT showed no difference in outcome between high and low scorers on the Overvalued Ideas Scale (Neziroglu, McKay, Yaryura-Tobias, Stevens, & Todaro, 1999).

**Conclusion**

A clinical trial and case studies indicate that IBT can successfully treat most types of OCD. The IBA may offer an advantage in those cases where there is a high level of conviction in the probability of the obsessional doubt and where usually an idiosyncratic narrative clearly supports the obsession, as is frequently the case where the obsessions are ego-syntonic (seem to go with the person’s values), bizarre, or overvalued. However, where these characteristics do not apply, explicit construction and examination of a supporting obsessional narrative (“the argument in favor of the doubt”) and recognition of its pitfalls and the development of an alternative commonsense perspective may exert powerful therapeutic leverage; if the premise is undermined, the corollaries lose their potency.

Even if the elicited narrative is restricted, examining the argument for and against the OCD story can provide useful scaffolding for cognitive therapy, that is, the person explicitly examines the argument and concludes there is no convincing case for believing the doubt. Considered from the vantage point of models that posit multiple levels of representation of meaning (e.g., Interacting Cognitive Subsystems; Teasdale & Barnard, 1993), a narrative focus is more likely to be instrumental in gaining access to the implicative or schematic level of representation, which offers a powerful route towards effecting cognitive/affective change.

IBT may also offer a clinical advantage in children and young adolescents with OCD, in meeting the challenge associated with age-related developmental factors. It is our impression in adult patient groups that the distinction between the obsessional doubt and the feared consequences if the doubt were true and the compulsion were not performed, may be more readily comprehended than the distinction between the intrusive thought and the meaning attached to the thought (i.e., the appraisal). This increased ecological validity may present an added advantage in younger age groups. There is currently work ongoing to adapt the IBT protocol for work with younger clients.

There is also some evidence that IBT may be of use in other disorders where beliefs are strongly held contrary to evidence, such as body dysmorphic disorder: “My friends say my nose looks normal... but” (bridging narrative) “it could be deformed and ugly”; hypochondriasis: “My medical tests say I’m healthy... but” (bridging narrative) “I could still be ill”; eating disorders: “Everybody says I’m thin... but” (bridging narrative) “really, I’m fat,” as well as delusional ideas. However the efficacy of IBT in other belief disordered groups awaits further clinical trials.

**References**


This work is in part supported by funding from the Canadian Institute of Health Research (MOP 57936) to the first author. The authors thank Robert Safion for helpful comments on an earlier version of the manuscript.

Address correspondence to Kieron O’Connor, Ph.D., Louis-H. Lafontaine Hospital, Fernand-Seguin Research Centre, 7331 Hochelaga St., Montréal, Québec H1N 3V2 CANADA; e-mail: kieron.oconnor@umontreal.ca.

Received: July 30, 2008
Accepted: May 5, 2009
Available online 5 September 2009