How to Think, Say, or Do Precisely the Worst Thing For Any Occasion

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How to Think, Say, or Do Precisely the Worst Thing For Any Occasion

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One-sentence summary: Mental processes monitoring our failure to think, say, or do what we intend can ironically produce just such failure—especially when we are under stress, distraction, or time pressure.

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Abstract

In slapstick comedy, the worst thing that could happen usually does: the person with a sore toe manages to stub it, sometimes twice. Such errors also arise in daily life, and research traces the tendency to do precisely the worst thing to *ironic processes of mental control.* These monitoring processes keep us watchful for errors of thought, speech, and action, and enable us to avoid the worst thing in most situations—but they also increase the likelihood of such errors when we attempt to exert control under mental load (stress, time pressure, or distraction). Ironic errors in attention and memory occur with identifiable brain activity and prompt recurrent unwanted thoughts, attraction to forbidden desires, expression of objectionable social prejudices, production of movement errors, and rebounds of negative experiences such as anxiety, pain, and depression. Such ironies can be overcome when effective control strategies are deployed and mental load is minimized.

There are many kinds of errors. We can fall short, over-reach, or skitter off the edge, of course, but we can also miss by a mile, take our eyes off the prize, throw the baby out with the bathwater—and otherwise foul up in a disturbingly wide variety of ways. Standing out in this assortment of would-be wreckage, though, is one kind of error that's special: the *precisely counter-intentional* error. This is when we manage to do the worst possible thing, the blunder so outrageous that we think about it in advance and resolve not to let *that* happen.

And then it does. We see a rut coming up in the road ahead and proceed to steer our bike right into it. We make a mental note not to mention a sore point in conversation, and then cringe in horror as we blurt out exactly that thing. We carefully cradle the glass of red wine as we cross the room, all the while thinking "don't spill"—and then juggle it onto the carpet under the gaze of our host. Normally, our vigilance for such pitfalls helps us avoid them. We steer away from ruts, squelch improper comments, and protect carpets from spills by virtue of our sensitivity to error. Knowing the worst that could happen is essential for control. But sometimes this sensitivity backfires, becoming part of a perverse psychological process that makes the worst occur.

Observers of human psychology have suggested that the mind can indeed generate just such ironic errors. Edgar Allan Poe (*1*) called this unfortunate feature of mind the "imp of the perverse." Sigmund Freud (*2*) dubbed it the "counter will." William James (*3*) said too that "automatic activity in the nerves often runs most counter to the selective pressure of consciousness." Charles Baudouin (*4*) pronounced it the "law of reversed effort," and Charles Darwin (*5*) joined in to proclaim "How unconsciously many habitual actions are performed, indeed not rarely in direct opposition to our

conscious will!" Hieronymus Bosch (1453-1516) illustrated this human preoccupation with the worst, depicting a world in which error, sin, and ruin are the usual consequence of human endeavor (see Figure 1).

Figure 1. This detail from *The Last Judgment* by Hieronymus Bosch (1453-1516) illustrates the artist's apocalyptic vision of some of the worst that humans can think, say, or do.

Intentions and Ironies: Best and Worst

Do we do the worst thing more often than other things? Fortunately for the proprietors of china shops, we do not. However, accumulating evidence on *ironic processes of mental control* (*6*) reveals conditions under which people commit precisely counter-intentional errors. The prototypical error of this kind occurs when people are asked to keep a thought out of mind (e.g., "Don't think about a white bear"). The thought often comes back. When asked to signal any return of that thought, people may indicate that it comes back about once per minute (*7*)—often to echo for yet longer periods (*8*) and, at the extreme, to return for days (*9, 10*). Some people are better at such thought suppression than others (*11, 12*), of course, and some try more than others (*13*)—but keeping a thought out of mind remains a challenge for most of us even when we have only arbitrarily tried to suppress it.

Why would thought suppression be so hard? It does seem paradoxical: We try to put out of mind what we are thinking now, while still remembering at some level not to think of it later. The ironic process theory (*6*) suggests we achieve this trick through two mental processes: The first is a conscious, effortful process aimed at creating the desired mental state. The person engaged in suppressing white bear thoughts, for example, might peruse the room or otherwise cast about for something—anything—that is not a white bear. Filling the mind with other things, after all, achieves "not thinking of a white bear."

As these distracters enter consciousness, though, a small part of the mind remains strangely alert to the white bear, searching for indications of this thought in service of ushering it away with more distractions. Ironic process theory proposes that this second component of suppression is an ironic monitoring process, an unconscious search for the

very mental state that is unwanted. The conscious search for distractions and the unconscious search for the unwanted thought work together to achieve suppression—the conscious search doing the work and the unconscious search checking for errors.

The control system underlying conscious mental control is unique, however, in that its monitoring process can also *produce* errors. When distractions, stressors, or other mental loads interfere with conscious attempts at self-distraction, they leave unchecked the ironic monitor to sensitize us to exactly what we *don't* want. This is not a passive monitor like those often assumed in control system theories, but rather is an active unconscious search for errors that subtly and consistently increases their likelihood via processes of cognitive priming (*14*). For example, when people are asked not to think about a target word while under pressure to respond quickly in a word association task, they become inclined to offer precisely that forbidden target word (*15*). Indeed, with time pressure people more often blurt out a word while suppressing it than when they are specifically asked to concentrate on it.

Fortunately, the ironic return of suppressed thoughts is not inevitable or we would be plagued by every thought we had ever tried to put out of mind. We can stop thinking of things quite successfully when we have time to devote to the project and become absorbed in our self-distractions. The ironic rebound of suppressed thoughts *following* suppression is mainly evident when people abandon the attempt to suppress or are encouraged to revisit the suppressed thought (*16, 17*). The ironic return of suppressed thoughts *during* suppression is found only sporadically when people are simply reporting their thoughts, but is readily observed with measures of thought that are sensitive to automatic, uncontrollable indications of the thought (*18*).

For example, when people are asked to name the colors in which words are displayed and encounter a word they have been asked not to think about, they name the word's color more slowly—apparently because their attention is rapidly drawn to the word's meaning and so interferes with color-naming (*15, 19*). Such automatic attention to suppressed thoughts surfaces in color-naming when people are under mental load (such as holding a 5-digit number in mind), and can be found as an effect of load in many paradigms (*20, 21*). Color-naming research reveals, though, that ironic monitoring processes are not limited only to suppression; they also occur during intentional concentration. People intentionally concentrating on particular words under load show slowed color-naming for words that are *not* concentration targets—as these non-targets now pop more easily to mind (*19*). Perhaps this is why concentrating under pressure—such as during last-minute studying—seems to accentuate the clarity of every stray noise within earshot.

The ironic monitoring process also influences memory. Memories we try to forget can be more easily remembered because of the ironic results of our efforts—but they do this mainly when mental loads undermine conscious attempts to avoid the memories (*22, 23*). People attempting to forget many items at once can do so with some success (*24, 25*), however, perhaps because monitoring multiple control projects dilutes ironic monitoring effects (*26*). Functional magnetic resonance imaging studies show similar disparity in brain activity: People trying to forget many targets show a suite of changes in brain activity associated with forgetting (*27*), whereas those trying not to think of a single target show specific monitoring-related activity of the anterior cingulate and

dorsolateral prefrontal cortex (*28, 29*). The brain regions subserving ironic and intentional processes are differentiable when people do targeted mental control tasks.

Taboos and Faux Pas: Worst Thoughts and Utterances

Ironic lapses of mental control often appear when we attempt to be socially desirable—as when we try to keep our minds out of the gutter. People instructed to stop thinking of sex, for example, show greater arousal (as gauged by finger skin conductance) than do those asked to stop thinking about a neutral topic. Indeed, levels of arousal are inflated during the suppression of sex thoughts to the same degree that they inflate during attempts to concentrate on such thoughts (*8*). In research on sexual arousal per se, male participants instructed to inhibit erections as they watched erotic films found it harder than they had hoped, so to speak—particularly if they imbibed a mental load in the form of a couple of alcoholic drinks (*30*). Ironic effects also may underlie the tendency of homophobic males to show exaggerated sexual arousal to homoerotic pictures (*31*).

The causal role of forbidden desires in ironic effects is clear in experimental research on the effects of imposed secrecy (*32*). People randomly paired to play "footsie" under the table in a lab study reported greater subsequent attraction to their assigned partner when they had been asked to keep their contact secret from others at the table, and survey respondents revealed similar effects of tainted love: a greater desire for past romantic partners with whom relationships had first started in secret (*33*). This desire seems to arise as an ironic emotional effect of suppression: People who are asked not to think about a specific old flame show greater psychophysiological arousal than do others when later allowed to think about that relationship (*34*).

Like forbidden romance, other occasions for social deception are a fertile source of ironic effects. People admonished to keep an item private in conversation, for example, become more likely to mention it; speakers asked to keep a target hidden from an addressee more often leaked its identity by making inadvertent reference to it—for example, describing the target in Figure 2 as a "small triangle" and thereby revealing that the occluded object was a larger one (*35*). Interviewees with eating disorders who role-played not having a disorder for the interviewer also showed ironic effects. During the interview, they reported intrusive thoughts of eating, and revealed preoccupation with the topic by rating the interviewer, too, as the likely victim of an eating disorder (*36*).

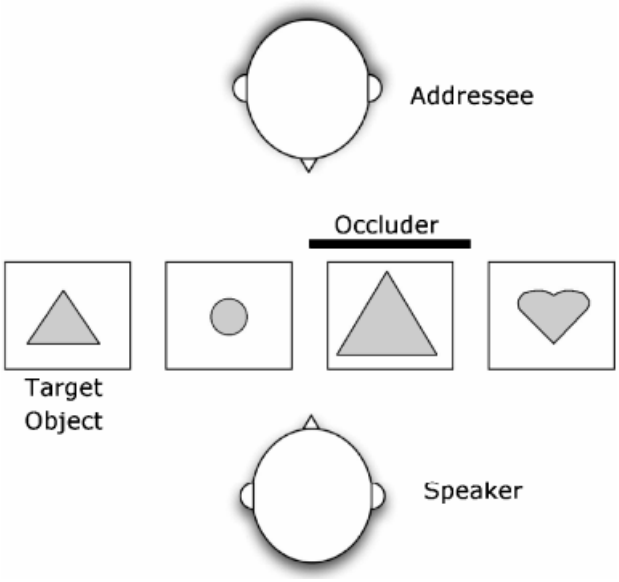

Figure 2.

Speaker who is asked to describe the mutually visible target becomes more likely to mention a clue to the hidden target that is irrelevant to the addressee (e.g., saying “small triangle” rather than “triangle”) when instructed to conceal the identity of the target from the addressee (from *35*).

Another challenge for mental control is keeping a lid on our social prejudices. There is substantial evidence that racism, sexism, homophobia, and other prejudices can be expressed automatically, after all, even when we try to control them (*37, 38*). But the ironic process theory holds that unconscious urges to express such prejudices will be *especially* insistent when we try to control them under load. This possibility was initially documented in research that asked British participants to suppress their stereotypes of skinheads (white supremacists) and found that such stereotypes then rebounded—even leading experimental participants to sit far away from a skinhead in a waiting room (*39*). Ironic effects have since surfaced showing that expressions of prejudice against racial, ethnic, national, and gender groups are often prompted by attempts to be "politically correct" under mental load (*40-42*). The desire to be fair and unprejudiced, exercised in haste or distraction, can engender surprising levels of bias and prejudice.

Yips and Worries: Worst Movements and Emotions

Pressures to avoid the worst are not always a matter of doing what is socially desirable—they can arise in attempts to achieve self-imposed goals as well. The desire to succeed at a task defines the worst thing that could happen in that situation as *failure at this task*. So, when people grasp a string with a weight attached and try to keep this pendulum from swinging in one direction, they often find that the pendulum swings in just the way they hope to avoid (*43*). And, as predicted by ironic process theory, the pendulum is even more likely to swing in the unwanted direction when its holder is distracted by counting backward from 1000 by 3s (see Figure 3).

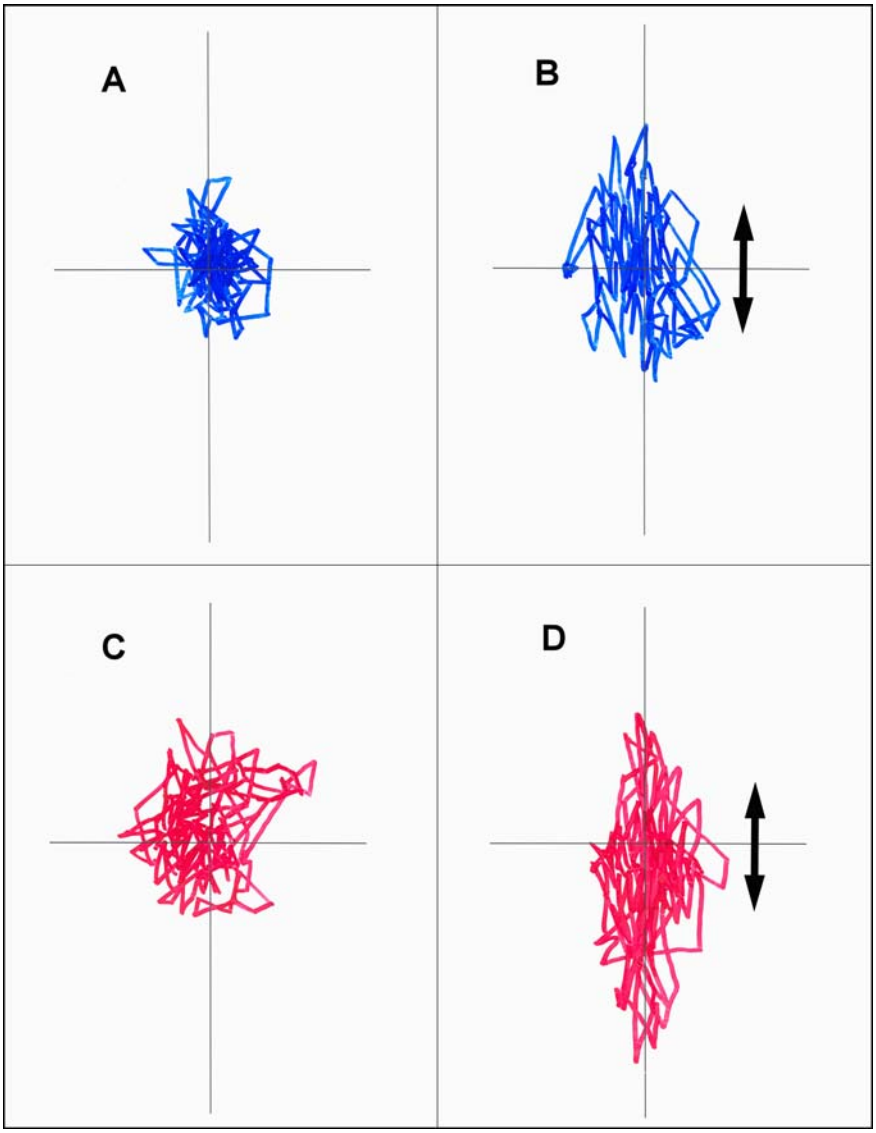

Figure 3. Sample tracings of 30-sec videos from below a handheld pendulum on a string when pendulum holder is asked to (A) hold it steady, (B) keep it from swinging parallel to the arrow, (C) hold it steady while counting backward from 1000 by 3s, or (D) keep it from swinging parallel to the arrow while counting backward from 1000 by 3s (based on data from *43*).

Sports psychologists and coaches are familiar with ironic movement errors, counterintentional movements induced by the very desire to prevent them. Former major league baseball players Chuck Knoblauch, Steve Blass, and Rick Ankiel were famed for sporadic wild throws as well as for the desire to avoid them—Ankiel even calling his chronic error "the Creature" (*44*). In golf putting, the ironic tendency has a name (the "yips"), and golfers who are instructed to avoid a particular error (e.g., "don't overshoot") indeed make it more often when under load (*43, 45*). Eye-tracking cameras reveal that soccer players who are instructed to avoid kicking a penalty shot to a particular part of the goal more often direct their gaze to the very area to be avoided (*46*). Perhaps the common sensation we get as we look over a precipice—that we are teetering toward the edge—is an accurate perception of our subtle ironic movements. (It may be best when poised at the brink, by the way, not to count backward from 1000 by 3s.)

Worries and fears are also fertile ground for ironic effects. Unwanted emotions associated with thoughts not only provide a reason to avoid those thoughts, but also prompt an unwanted emotional punch when the thoughts return. Emotions we put out of mind are experienced with unusual intensity when the emotional thoughts recur following suppression (*19, 34, 47*). Depressed mood is especially recalcitrant, recurring after suppression when reminders, negative events, or increased mental loads are encountered (*48*). And when anxious thoughts are suppressed under mental load, their return can rekindle anxiety with particular vigor (*49*).

Worry about falling asleep yields similar ironic effects: People urged to fall asleep as quickly as possible, but who are also given a mental load (in the form of Sousa march music), are particularly likely then to have trouble sleeping (*50*). The common

observation that dreams center on unpleasant and emotionally disturbing topics makes sense in this light: When people are instructed to suppress thoughts of neutral or emotional topics prior to sleep, they report more frequent dreaming about those topics (*51-53*). If we spontaneously choose to avoid unpleasant or worrisome thoughts in daytime, it makes sense that such thoughts would then populate our dreams.

Puzzling ironies arise too in response to pain. Usually, people exposed to painful stimulation report higher levels of felt pain when they direct their attention toward the pain. However, suppression of laboratory-induced pain can result in some ironic effects, including ironic increments in suppressed pain and ironic decrements in attended pain (*54-56*). Such effects are unreliable and have not been examined under variations in mental load, though, so conclusions are not yet clear (*57, 58*). Caution should also be exercised in considering ironic effects of thinking about death. People suppress thoughts of death spontaneously or use strategies other than direct suppression, so ironic effects of suppressing thoughts of one's own death are not always evident (*59*). Research on such effects is complicated when natural attempts people make to gain mental control obscure the effects of experimental manipulations of control striving.

Putting the Worst Behind Us

The ubiquity of ironic effects suggests we should consider it something of a treat when we control ourselves successfully. According to ironic process theory, however, successful control is likely to be far more prevalent than ironic error because people often use effective strategies for control and deploy them under conditions that are not mentally loading. Ironic effects are often small, and the experimental production of ironic errors often depends on the introduction of artificial loads, time pressures, or other means of

magnifying ironic effects. Even such amplifiers of ironic error may be overcome, however, in certain individuals with talents for mental control. People who are susceptible to hypnotic suggestion, for example, and who are given suggestions to control thoughts, show heightened mental control without ironic effects (*60, 61*).

The rest of us, however, who go through life without special talent for mental control, sometimes must turn to other tactics to overcome ironic error. Strategies people use to relax excessive striving for control, for example, show promise in reducing the severity of ironic effects. Potentially effective strategies include accepting symptoms rather than attempting to control them (*62*) and disclosing problems rather than keeping them secret (*63*). Therapies devised for improving mental control—or for helping people to relax it—remain largely untested, however, and there are enough ambiguities surrounding the translation of laboratory research into effective treatments that recommendations for clinical practice at this time are premature. Current research indicates only that under certain conditions, we may be better able to avoid the worst in what we think, do, or say by avoiding the avoiding. Failing that, our best option is to orchestrate our circumstances so as to minimize mental load when mental control is needed.

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