

# **The Psychology of Action**

Linking Cognition  
and Motivation to Behavior

Edited by

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## CHAPTER

## The Feeling of Doing

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**W**e all know what it is like to do something. It is not just that we know in advance what we will do or when we will do it. It is that when we do it, we *feel* we are doing it. Some sort of sensation, an internal “oomph,” goes with the effort of doing, and it is this feeling that certifies that we know we are acting. The feeling is not there when we simply think about an action, when we are physically forced to perform an action, or when our bodies do something (such as hiccuping) that we wouldn’t call an action. Nor is this just the feeling we get back from our bodies as a result of having done something. That sort of feedback occurs even with a hiccup, and proprioception of this kind is not the topic of this chapter. The feeling of doing occurs just when we do something voluntarily. It is this feeling, a sort of “phenomenal will,” that is special to the experience of intended behavior—the conscious sense of acting.

The question of interest in the study of this feeling is whether it is indeed always present during intentional action. There are a number of important anomalies, cases in which phenomenal will does not seem to accompany behavior that otherwise qualifies as sentient and seemingly will-relevant. This chapter is about these cases. It is an exploration of the psychological processes accompanying activity that is disavowed. Our goal is to create a starting point for understanding these instances—first by examining cases of “automatisms,” actions that occur without the feeling of doing. Next, we review the major psychological explanations that have been proffered for these cases and discuss their relative merits. This background will allow us to introduce, then, a theory that is relevant to the phenomenal will—the theory of ironic processes of mental control (Wegner, 1994). This theory has stimulated us to conduct some research that shows how the feeling of doing can be subverted under certain conditions when people are specifically trying *not* to do something. As we shall see, some proportion of the things people do unintentionally may in fact be *counterintentional*, deriving from processes that ironically oppose the phenomenal will.

## A CATALOG OF AUTOMATISMS

Automatisms are actions that are so remarkably divorced from a feeling of doing that they have become widely celebrated and studied—and often attributed to the doings of supernatural forces. The heyday for the discovery of automatisms was the spiritualist fad of the late 19th century, when automatic writing, table turning, and the like were the focus of tremendous popular attention. Many North Americans and Europeans of that time amused themselves in their homes by arranging circumstances in such a fashion that they might do things they did not intend. Several of these curious phenomena eventually found use as measures of suggestibility (e.g., Eysenck & Furneaux, 1945), and others have now been added to the list by contemporary observers. As a first step in understanding when phenomenal will may be absent, it is useful to review a range of these oddities.

## Chevreul’s Pendulum Illusion

People have long been fascinated by the ostensibly magical properties of the hand-held pendulum, and it has been ascribed many powers (Easton & Shor, 1976). There are superstitions that the swing pattern of a pendulum held over a pregnant woman’s tummy, for example, will foretell the sex of the child, and there once were very elaborate expectations of how a pendulum held over ore samples would swing to indicate their metallic content. Such occult properties of the pendulum’s swing were dispelled by Michel Chevreul (1833), a chemist whose research showed that the action of the pendulum was entirely dependent on the psychological involvement of the person holding it. For the pendulum to “work,” the holder had to be looking at it, and indeed suspending it from a hand or arm in such a manner that muscular movement could influence the swing. Still, even when people are aware of this connection, there is a sense in which the pendulum movement is unintentional. Just thinking about a circular or left-to-right swing pattern, for example, seems to be sufficient for many people to have that pattern occur (Easton & Shor, 1975, 1976, 1977). W. G. Carpenter (1884) and William James (1904/1986) both observed that when a person is thinking about the hour of the day and swings a ring by a thread inside a glass, it often strikes the hour even while the person has no conscious sense of doing this on purpose.

## Automatic Writing

There have been many claims of writing that is automatic or otherwise not intentional or voluntary (Koutstaal, 1992). Automatic writing was associated by early theorists with hypnotic states or cases of hysterical neurosis (Binet, 1905; Janet, 1889), and also with claims of spirit mediumship. William James

made notes on cases of automatic writing (1889/1986) and automatic drawing (1904/1986), and estimated that "in twenty persons taken at random an automatic writer of some degree can always be found" (1904/1986, p. 221). The production of such writing often occurs with the aid of a "planchette"—a device for frictionless writing, consisting of a three-cornered pen mount with the pen as one corner and gliding ball-bearings or the like as the other two. Solomons and Stein (1896) studied their own abilities with a planchette, and found that they came with practice to perform repetitive actions (such as figure-eights) and to write some letters or forms without the feeling of doing so. There is a colorful historical literature of apparently far more complex writings performed by individuals who report no feeling of voluntary action at all. Most radical perhaps are cases in which individuals claim to have written volumes of prose or poetry, or to have written script that appears backward, upside down, or in a foreign language they profess not to know (James, 1904/1986; Sidis, 1906).

### Ouija Board Spelling

The familiar household Ouija board has an alphabet and numbers printed on it, and one touches a three-legged pointer or a planchette with one's fingertips in the attempt to spell out messages. The modern version is registered by Parker Brothers, even though the idea is apparently traceable to antiquity (Hunt, 1985). Usually billed as a way ostensibly to communicate with the dead or the spirit world, Ouija board spelling is reported to involve little phenomenal will, especially when the pointer is operated by more than one person. Although there may be some feeling of doing associated with the production of movement per se, this phenomenal will does not always extend to the specific letters or words that are found with the pointer.

### Table Turning, Tilting, and Tapping

Another lapse in the feeling of doing can happen when a number of individuals are seated around a table on which they place their hands, with the idea impressed on their minds that the table will rotate, tilt, or rise and fall so as to tap on the floor. The party sits, often for a long time, in a state of expectation that the table will move in the specified direction, with their full attention aimed toward the first sign of the anticipated motion. Generally one or two slight changes in the desired direction foreshadow the approaching movement. As Carpenter (1884) observed, "All this is done, not merely without the least consciousness on the part of the performers that they are exercising any force of their own, but for the most part under the full conviction that they are not" (pp. 292–293). Yet in many cases, the table will eventually perform just as expected. In fact, a rotating table may eventually have the participants running rapidly to keep up, and a tapping table may be so active that it can be used to answer questions posed by members of

the group in an agreed-upon code. Chemist and physicist Michael Faraday debunked claims of supernatural sources of table turning in 1853 by observing that force measurement devices placed between subjects' hands and the table showed that the source of movement was their hands and not the table (Carpenter, 1884).

### Dowsing or Divining

The movement of a forked stick, angle rod, or other hand-held instrument purportedly in response to underground water is another case of action that may occur without phenomenal will. Typically, the dowser holds the forked ends of a stick in the hands palm upright, and walks about while waiting for the tip of the stick to move. Volumes have been written about the "correct" way to dowse (e.g., Bird, 1979; Graves, 1986), but the research literature evaluating its effectiveness shows that there really is no correct way because it does not work (e.g., Vogt & Hyman, 1959). Because the rod is held in an awkward and unstable position, often for long periods as the dowser walks the terrain, a combination of fatigue and minor jostling creates the "dip"—and water is found no more often than it would be by chance. What is intriguing about this activity is the great faith dowsers exhibit in their judgment that they do not move the divining rod. Without the feeling of doing, they maintain that the rod's affinity for water is what makes the movement occur.

### Facilitated Communication

"Facilitated communication" is a technique recently advocated for use with individuals who have impaired communication abilities (Crossley & Remington-Gurney, 1992). A trained "facilitator" typically supports the pointing finger or hand of the "communicator" during the attempt to help the communicator spell out words on a keyboard or other template. The function of the facilitator is to assist the muscular control of the communicator by holding the communicator's arm steady, and yet to be uninfluential so that the communicator will "get his or her own words out" (Biklen, 1991). Initial results were reported that verged on the miraculous, as even autistic communicators who had never shown any verbal expression or comprehension were evidently answering questions in grammatical sentences. Some such communicators even took this new opportunity to report that they had been sexually abused (Hostler, Allair, & Christoph, 1993). As it turns out, however, the communications garnered in this way are often entirely traceable to the facilitators and may be counted as another form of automatism (Mulick, Jacobson, & Kobe, 1993).

Wheeler, Jacobson, Paglieri, and Schwartz (1993), for example, ran a study for which 12 autistic participants consented (via facilitated communication!). They were shown pictures of familiar objects, and were asked to

report the names of the objects under several conditions. On those trials in which communicators and facilitators were shown different pictures, the only correct identifications were for the pictures shown to the facilitators and not those shown to the communicators. Wheeler et al. (1993) concluded from these findings that facilitated communication is really only communication by the facilitator. The facilitators in these circumstances are often caring and involved individuals who, far from being actively duplicitous, are genuinely convinced that the communicators—and not they themselves—are responsible for the communications. This, then, is a situation that can produce quite dramatic lapses in the feeling of doing on the part of facilitators.

### Hypnosis

One of the key phenomena of modern hypnosis is the hypnotic subject's experience of *involuntariness* of action. When subjects are given the suggestion "Your arm is feeling very light, so light it is rising up," for example, a proportion of subjects indeed do lift their arms, and many of those who do so report later that they felt their motion was involuntary (e.g., Spanos & Barber, 1972). There is a substantial literature on this effect—more than we can treat here—but the general finding is that the experience of involuntariness in hypnosis is associated with hypnotic susceptibility and with the tendency for behavior to occur as suggested (e.g., Gorassini & Perlini, 1988; Lynn, Rhue, & Weekes, 1990; Spanos & Katsanis, 1989; Spanos, Rivers, & Ross, 1977).

### Trance States

Various trance states experienced by individuals contain important elements of the loss of phenomenal will (Hughes, 1991; Winkelman, 1986). Spirit possession, channeling, visionary states, ecstatic states, and the like are often conscious and memorable to the performer, and so can yield actions that are later disavowed by the person in the nontrance state. These states are not necessarily pathological, in that they may not be associated with electroencephalographic patterns characteristic of epileptiform disorders (Hughes & Melville, 1990) and may also have no symptomatic similarity to multiple personality disorder (Hughes, 1992). Yet the individual will often disavow actions performed in the trance. Usually this disavowal takes the form of an attribution of responsibility for action to some nonself agent, such as a spirit or entity.

### Motor Automatism

A person's body may move involuntarily under certain conditions. When one stands at the edge of a precipice, for example, it is not uncommon to sense one's body teetering a bit. This tendency has been exploited in the

"body sway" test of hypnotic susceptibility introduced by Hull (1933), in which subjects are told to stand still with eyes closed and are given verbal suggestions that they are falling forward. Slight tilts are commonly observed, and from time to time someone falls over completely (Eysenck & Furneaux, 1945). A related effect was described by James (1904/1986) as a motor automatism that occurs in the "willing game." In this game, players lay hands on a blindfolded perceiver who is charged with finding an object hidden by the players in the room. The perceiver often successfully finds the object merely by sensing the involuntary checking and encouraging pressures of the players. The players typically disavow any feeling of doing in this guidance, and may even produce the effect when it is against their monetary self-interest (Kreskin, 1984).

### EXISTING ACCOUNTS OF THE AUTOMATISMS

This collection of automatisms, although no doubt incomplete, gives some sense of the range of activities it is popularly acknowledged that normal people may disavow, as well as of the circumstances that accompany such disavowal. The feeling of doing can obviously be disattached from actions that vary from the simple to the highly complex. The whole range of these phenomena seems not to have been explained by any one theory that is widely satisfying, but there do exist several explanations that have important merits and that offer various compelling kinds of evidence. We explore each of these briefly here.

#### The Imagination Hypothesis

One explanation of automatisms is that action can follow from imagination without intent. This notion of "ideomotor action" was proposed by Carpenter (1884) and elaborated by James (1890) and Arnold (1946). Carpenter suggested that action that occurs without willful intent is generated by "expectant attention," a state of "the whole Mind being 'possessed' with the idea that a certain action will take place, and being eagerly directed (generally with more or less of emotional excitement) towards the indications of its occurrence" (p. 282).

Remarking on the Chevreul pendulum, for example, Carpenter (1884) suggested that the imagination of movement is what creates disavowed movement:

If "a fragment of anything, of any shape," be suspended from the end of the fore-finger or thumb, and the Attention be intently fixed upon it, regular oscillations will be frequently seen to take place in it. . . . Now this will occur, notwithstanding the strong Volitional determination of the experimenter to maintain a complete immobility in the suspended finger. . . . [The] impulse to

[the movements] is entirely derived by his expectation of the given result. For if he be ignorant of the change which is made in the conditions of the experiment, and should expect or guess something different from that which really exists, the movement will be in accordance with his Idea, not with the reality. (pp. 284–286)

Carpenter went on to describe the pendulum illusion as a “satisfactory example of the general principle, that, in certain individuals, and in a certain state of mental concentration, the expectation of a result is sufficient to determine—without any voluntary effort, and even in opposition to the Will (for this may be honestly exerted in the attempt to keep the hand perfectly unmoved)—the Muscular movements by which it is produced” (1884, p. 287).

Carpenter extended this hypothesis to many of the favorite 19th-century automatisms, as he saw the influence of ideomotor action in the divining rod, table turning and tapping, and automatic writing and drawing. In the case of the divining rod, for example, he suggested that phenomenal will is not present: “For the mere act of holding the rod for some time in the required position, and of attending to its indications, is sufficient to produce a tendency to spasmodic contractions in the grasping muscles, notwithstanding a strong effort of the Will to the contrary” (1984, p. 289).

The imagination hypothesis was elaborated by Arnold (1946) to explain hypnotic suggestion more generally. She argued that the processes involved in imagining an event determine the experience of involuntary action, and she tested this hypothesis in an experiment. Subjects given a body sway test were asked to close their eyes and imagine themselves falling in a certain direction, and the extent of their excursion in this direction was recorded by a pencil fastened to a shoulder stirrup. The main finding of this research was that a combination of visual and kinesthetic imagination resulted in a more pronounced sway than did visual imagination alone. Arnold concluded that the more vivid the imaginative process, the more pronounced the overt movements. She noted:

In all these cases the supposedly “central” process of thinking or imagining seems to initiate directly certain peripheral changes. Probably because of this direct connection, movements are experienced as different from ordinary “willed” movements. Psychologically speaking, the experience of “effort” or “intent” is absent. Thus executing a movement as the result of imagining it represents a gradual intensification of the minimal motor nerve excitation accompanying the imaginative process. (Arnold, 1946, p. 115)

Modern variations on the imagination hypothesis have emphasized the idea that the mechanism whereby imagination yields action is different in important ways from the mechanism whereby intention yields action. Gordon and Rosenbaum (1984), for example, have suggested that “subconsciously controlled” movements—which are produced by imagination of movement—can be performed more slowly even than intentional movements that occur

in response to the instruction to move “as slowly as possible.” Their version of the hypothesis anticipates the possibility that imagination produces action through a different psychological pathway than does intention. The nature of this pathway is not clear from these analyses, however, as it is proposed less as a positive alternative than as a default explanation of what must be happening if the feeling of doing is absent.

There are further contemporary expressions of the imagination hypothesis that emphasize the role of imagination in the transformation of intention or motivation. Unlike the early research that focused on bypassing phenomenal will, these studies have attempted to show that imagination can yield new intentions or motives, so as to change the direction of the willed action. Although the feeling of doing has not been measured in this research, it seems unlikely that this feeling would be dispelled under conditions that simply bend intention and do not override it. Still, this research suggests some possible mechanisms for the operation of the imagination hypothesis.

Carver, Ganellen, Froming, and Chambers (1982) observed, for example, that subjects for whom the idea of aggressive action was primed were subsequently likely to behave aggressively. Along the same line, Anderson (1983) had subjects imagine either themselves, a friend, or a disliked acquaintance performing or not performing a series of behaviors (e.g., donating blood). Subjects were asked to sketch a cartoon of the target performing the imagined behavior. It was found that imagining oneself performing (or not performing) a task produced corresponding changes in intentions toward that task (i.e., imagining oneself giving blood made one more likely to intend to give blood) relative to a pretest measure of intention to perform the behavior. In addition, the more frequent the imaginings, the more intention change was produced. These changes only occurred, however, when the target person was the subject himself or herself, and not the friend or disliked acquaintance.

In the same vein (pun unintended), Wilson and Capitman (1982) found evidence that making a behavioral script increasingly available to memory can have influential effects on subsequent social behavior. In a series of studies, subjects read either a story depicting a “boy-meets-girl” scenario or a control story. Afterwards, male subjects were asked to interact with a female confederate while the experimenter left the room. Those subjects who read the boy-meets-girl story behaved in a more friendly manner toward the female confederate (i.e., talked more, smiled more, leaned forward more, gazed more) than those who read the control story. These findings suggest that making a script more available to memory can change subsequent behavior.

The most recent variation on the imagination hypothesis is the body of research and theory on “auto-motives,” the generation of actions that occurs when motives are prompted directly by the environment (Bargh, 1990; Bargh & Gollwitzer, 1994). Such activation is said to occur without the person’s conscious awareness of the presence of the information in the environ-

ment, and the activated motivation subsequently influences the interpretation of behavioral information and the outcome of social judgment processes (e.g., Bargh, Bond, Lombardi, & Tota, 1986; Bargh & Tota, 1988). This activation occurs even under conditions of information overload and even when the subject is actively attempting to prevent it from occurring (Bargh & Pratto, 1986).

In sum, the imagination hypothesis has taken many forms over its history, but its central idea remains: Information suggestive of action can lead to action. In some cases, this process appears to happen without the occurrence of conscious intention, and when this happens the feeling of doing may be sidestepped on the way to action. In other cases, imagination may transform intentions or motives, and so yield action for which the feeling of doing is retained. None of the contemporary experimental work has focused on phenomenal will *per se*. Thus, there is insufficient evidence currently available to explicate when imagination might operate through intention, when it might create action without the experience of phenomenal will, or when it might not lead to action at all.

### The Dissociation Hypothesis

If imagination can make a person act without phenomenal will, perhaps there is a whole psychological system underlying imagination-produced action that is separable from the psychological system underlying intentional action. This is the central idea of theories of dissociation. As originally proposed by Janet (1889), dissociation theory holds that the mind allows divided consciousness, in that separate components of mind may regulate mental functioning without intercommunication. According to this hypothesis, perceptions of involuntariness in hypnosis (or other states) are the result of dissociation between the mental subsystems that cause action and those that allow consciousness. Ideas and their associated actions can be dissociated or "split off" from normal consciousness, so that they no longer allow consciousness of the feeling of doing. Janet pointed out some parallels of hypnotic states and hysterical neuroses, and attempted to explain both by virtue of this theory.

The idea of dissociation was also explored by Sidis (1906), who believed that automatism could be explained by the specific bifurcation of the individual psyche into two "selves." He maintained that in addition to the normal waking self (the controlled consciousness), each of us has a subconscious self, "a presence within us of a secondary, reflex, subwaking consciousness—the highway of suggestion" (p. 179). Whereas the waking self is responsible for actions that occur with phenomenal intent, the subconscious self produces those actions that occur through suggestion and without the feeling of doing. Sidis described the two selves as expressions in personality of the same intentional and imaginal sources of action with which we are already familiar, but noted that these selves are often in opposition regarding the control of

behavior. He explained that the elaborate productions of meaningful material through automatic writing, Ouija boards, and the like are the results of the richness of the subconscious self. He believed the subconscious to be a homuncular entity of the first order, possessing its own form of memory, intelligence, and personality.

The modern version of all this is the neodissociation theory of Hilgard (1986). Like Janet and Sidis, Hilgard has argued that the operation of dissociated cognitive subsystems during hypnosis underlies subjects' diminished control over muscular movements, relative to more conscious, voluntary processes that mediate nonhypnotic, goal-directed experience. Actual conscious control is thus reduced along with the feeling of doing. This theory of divided consciousness holds that certain circumstances alter the integration of action-relevant cognitive structures and their relations to the executive ego (Kihlstrom, 1992). The theory is consistent in approach with recent theories of mind that stress its modular nature (e.g., Fodor, 1983; Gazzaniga, 1985) and the potential separability of conscious and nonconscious functions (Schacter, 1987). According to this viewpoint, then, the feeling of doing is associated specifically with an executive or controlling module of mind. Actions that occur without this feeling are processed through some other mental module, and simply do not contact the part of the mind that feels it does things.

### The Social Pressure Hypothesis

Several researchers have campaigned fervently for the idea that people who report the loss of the feeling of doing are responding to social pressures to report such a loss (e.g., Lynn et al., 1990; Spanos, 1986). This work is concentrated on the explanation of hypnosis, but it can profitably be applied to other automatism as well. In essence, the argument here is that the reported abridgement in the feeling of willful control of behavior that occurs in hypnosis arises not because of any reduction in willed action, but instead as a result of strong social influences that promote the alteration of the report.

The specific locus of this influence has differed for different commentators. Sarbin and Coe (1972) suggested that hypnotized subjects respond according to the scripted role they conceptualize for hypnotic behavior, modifying their own behaviors and reports of internal states strategically to fit the role. Barber, Spanos, and Chaves (1974) also suggest that hypnotic subjects truly do retain control of their actions during hypnosis, but add the idea that reports of involuntariness arise to reflect context-generated interpretations of these goal-directed actions. So, for example, a hypnotist's implication that an action will occur involuntarily (e.g., "Your arm is rising") rather than voluntarily (e.g., "Raise your arm") leads subjects to interpret the action as involuntary, despite its voluntary origin. Unlike the imagination hypothesis, the social pressure hypothesis does not ascribe a causal role to subjects' imaginings. Imaginings instead act to legitimize and reinforce the

interpretation that the action occurred without phenomenal will (Lynn et al., 1990).

The social pressure hypothesis is very compelling at one level. This hypothesis emphasizes the observation that hypnotic behaviors (and many other automatisms) have all the properties typically associated with voluntary action, except that they lack the feeling of doing. Hypnotic behaviors appear to occur on purpose, can be changed to suit different situations, can be varied to meet a goal, and appear to consume attentional resources in a manner comparable to that of nonhypnotic performances (Lynn et al., 1990). It makes sense that in the face of strong social pressure to report no feeling of doing in these circumstances, people would indeed succumb and bring to bear various cognitive strategies to bolster their report and try to create an authentic experience in which the feeling of doing is indeed dissipated. This observation also holds for many of the other automatisms, because it could well be that cultural transmission of expectations about them has shaped pressures unique to each.

There is a difficulty with this hypothesis, however, that suggests it must be an incomplete account of automatisms. As Kihlstrom (1986) points out, even if social influences such as compliance, persuasion, self-presentation, and causal attribution do affect the responses of hypnotized subjects, it is not clear what mental mechanisms support these effects. Saying that people will forsake reports of voluntariness under social pressure does not explain what cognitive processes arise to allow this response to social pressure in the first place. Various cognitive processes must operate to enable people to respond to social pressures of any kind (Wegner & Erber, 1993; Wegner & Wenzlaff, in press), and the study of these could offer far more satisfying intrapsychic explanations than the claim that people are only responding to social pressure.

### The Automatic-Habit Hypothesis

It has long been recognized that as actions are repeated, they become more automatic (e.g., Bryan & Harter, 1899). One of the concomitants of this effect is that the feeling of doing can abandon the action. Jastrow (1906) commented on the way in which well-learned and habitual actions drop out of conscious attention and lose their feeling of voluntariness: "When these accomplishments are of long standing and deeply ingrained, we call them automatic, and note with what suppressed consciousness and with what slightness of effort they are conducted; if new or of peculiar complexity, or if involving unusual intellectual factors, we observe how they enlarge in the field of our awareness and encroach upon our directive energies" (p. 314).

A particular turn one takes each day on the way home, for example, may begin after many such trips to shed the phenomenal will, so that it eventually has much the same lack of the feeling of doing as would one of the automatisms. It may be the case, of course, that the feeling of doing will return

when one's attention is directed to the act of turning—say, by a verbal instruction or a disruption of the act. But in the normal course of making that turn, one may not experience it as phenomenally willed.

A modern version of the habit hypothesis has not been applied to the automatisms, however, because of the absence of practice and/or learning in most instances of such action. Despite a large contemporary literature on automatic processes in cognition and behavior (Bargh, 1984, 1989; Hasher & Zacks, 1979; Logan, 1988; Norman & Shallice, 1986; Posner & Snyder, 1975; Shiffrin & Schneider, 1977; Stelmach & Hughes, 1985; Vallacher & Wegner, 1985), there is no evidence to support the notion that automatisms are automatic behaviors in this fundamental sense. In large part, the automatisms are interesting for the very reason that they have some of the same psychological amorphousness we attribute to activities that recede through habit to the background of our minds.

### AN IRONIC PROCESS ACCOUNT

A theory of ironic processes of mental control has recently been proposed to account for the intentional and counterintentional effects of individuals' attempts to control their minds (Wegner, 1994). The theory offers an explanation of the mental processes that foster people's successful control over their thoughts and actions, as well as the circumstances involved when their control efforts fail. This theory suggests a potentially useful approach to the feeling of doing that has not been captured in the prior accounts of automatism. Specifically, the theory suggests that cases of automatism as well as other involuntary actions may paradoxically be a result of willful attempts to perform or to keep from performing an action. In the case of the divining rod, for example, unintended dips of the rod may result from the holder's constant efforts not to move it purposefully in his or her attempts to find water. The theory suggests that during people's attempts at controlling their actions, counterintentional actions may result as a consequence of the nature of the mental processes responsible for promoting successful control.

#### Description of the Theory

According to the theory, an attempt to control one's mind (or emotion or action) initiates two cognitive processes, an "intentional operating process" and an "ironic monitoring process." The intentional operating process is the willful probe searching for the mental contents consistent with the desired mental state. In other words, the operating process is the conscious and strategic process involved in mental control attempts. The ironic monitoring process, in contrast, searches for thoughts that indicate a failure to reach the desired state. Both processes increase the cognitive accessibility of the mental contents for which they are searching, and thereby have separate in-



fluences on the mind. Whereas the operating process is effortful and consciously guided, however, the monitoring process is unconscious and less demanding of mental effort. Normally, these two processes work together to promote effective control of the mind. The control of anything involves changing it to a certain criterion, after all, and processes are thus needed to provide both the change and the assessment of progress in reaching the criterion. The processes suggested here thus resemble the "operate" and "test" components of any control system (Miller, Galanter, & Pribram, 1960).

Consider how these processes would function when one is trying to control one's laughter at seeing someone slip on a patch of ice. When one resolves not to laugh, the operating process will probably search for thoughts or activities inconsistent with laughter. One may try to think about how much the fall must hurt, or one may look away to find a different focus of attention. These conscious and effortful activities may very well succeed in achieving the avoidance of mirth. The monitoring process is specifically set to detect laughing, however, by searching for thoughts or sensations or activities that are inconsistent with the desired state of impassivity. On encountering the beginnings of a giggle, the monitor indicates that one's control efforts are failing and puts the intentional operating process to work. The operating processes again searches for sensations and thoughts consistent with the desired state (i.e., not laughing). In many cases, the efforts furnished by the intentional operating process are effective, and the person's attention becomes preoccupied by stimuli congruent with the desired state. One politely holds back the hilarity, and perhaps even helps the person to his or her feet.

When attentional resources are limited, however, these efforts can go awry. Because the operating process is effortful, it can be distracted or undermined by any number of other demands on mental resources. When resources are reduced (e.g., by fatigue, time pressure, difficulty, or stress), the search process guided by the intentional operator could fail to increase access to the desired mental contents. Meanwhile, though, the ironic monitoring process will continue to increase accessibility of thoughts, sensations, and activities that indicate failure of the intended operation. It is in this sense that the monitoring process is ironic. When cognitive load exhausts one's attentional capacities, efforts at mental control may liberate the monitoring process to induce just the very state that the intentional efforts have been attempting to avoid. A person who is tired, drunk, or in a hurry, for instance, may find that the attempt to stifle laughter instead produces it.

This theory depends, then, on the idea that mental search processes underlie the production of thought, action, and emotion. Both the operating process and the monitoring process increase the influence of ranges of stimulation that can prompt thoughts, acts, or affects. The processes function by enhancing the likelihood that such stimulation will be selected from preconscious sensory and memory input to influence the production of thought as well as somatic and autonomic activation. The operating process performs this task more effectively and with greater use of cognitive resources than

the monitoring process, and is accompanied by the feeling of doing. Even so, the ironic monitoring process can take charge of the inputs that produce thought, action, and emotion when the operating process is distracted. When this happens, the person may do, think, or feel precisely the opposite of what he or she intends to do, think, or feel.

Evidence supporting the theory of ironic processes of mental control has arisen in several domains (Wegner, 1994). The research has uncovered ironic effects of thought suppression and concentration (Wegner & Erber, 1992; Wegner, Erber, & Zanakos, 1993): Under cognitive load, people trying to avoid a thought find it returning to mind more often than a thought on which they are trying to concentrate. There are ironies of mood control (Wegner, Erber, & Zanakos, 1993): Under cognitive load, people trying to be happy become sad—and people trying to be sad get happy. There are also ironic effects of intentional relaxation (Wegner, Broome, & Blumberg, 1993): People trying to relax under load become more anxious than those who are not trying to relax. Intentional sleep induction is another venue for irony (Ansfield, Wegner, & Bowser, 1994): People trying hard to go to sleep under load fall asleep more slowly than those who are not trying. Also, there are ironic effects of intentional stereotype inhibition (Wegner, Erber, & Bowman, 1994): People trying not to be sexist when under cognitive load are more likely to make sexist statements than people who are not attempting to avoid sexism. The general finding in these studies, then, is that when mental control can be exercised successfully in a particular realm, the imposition of a cognitive load during a control attempt typically produces mental and behavioral expressions that represent the ironic opposite of the desired state.

As a rule, the ironic effects that accrue in these circumstances are not embraced as willful or intentional. When a person tries to suppress a thought, for example, and experiences intrusive returns of that thought as the result of the ironic monitoring process, these returns are disavowed and seen as having occurred against the person's will (Wegner, 1992). Indeed, because ironic effects always directly oppose intention, they are wholly divorced from any experience of phenomenal will. How can people have the feeling of doing for a particular behavior or mental event when they are fully devoted to the feeling of doing the opposite?

This reasoning suggests that ironic processes may underlie some of the losses of phenomenal will observed in the automatisms. This idea is bolstered by the recognition that the specific circumstances that produce ironic effects—willful control combined with mental load—are often the precise conditions that appear necessary for the production of automatisms. The attempt *not* to move in a particular way has been mentioned as a precondition for the pendulum illusion (Carpenter, 1884), for motor automatisms such as body sway (Arnold, 1946) and the willing game (Kreskin, 1984); for the rod movement in dowsing (Carpenter, 1884; Vogt & Hyman, 1959); for table turning and tapping (Sidis, 1906); and for some forms of automatic

writing and drawing (Koutstaal, 1992). People trying to perform such automatism are, after all, motivated to gain the benefits of the mystical or otherwise impersonal forces they are summoning in their efforts to create the automatic movement. Any willful initiation of an action consistent with the automatism will undermine their efforts, resulting in a failure to produce the desired automatism.

It seems, then, that some proportion of these automatisms may occur because of ironic effects occurring under conditions of mental load. Some form of mental load, after all, is also mentioned widely in this literature as an important precondition for most of the automatisms, including hypnosis and other trance states (Carpenter, 1884; Sidis, 1906; Jastrow, 1906; Hilgard, 1986). Perhaps the feeling of doing is bypassed primarily by the occurrence of ironic behavioral effects. Automatism may occur without phenomenal will because the person either is trying to do the opposite of the automatism or is specifically trying not to "do" the automatism.

### The Pendulum Studies

As a first step in exploring this possibility, we have conducted studies of the ironic effects of movement in the Chevreul pendulum illusion (Wegner & Ansfield, 1995). In our first study, subjects each held a pendulum made of a 2-g crystalline pendant on a 30-cm length of nylon fishing line. All subjects were given the task of attempting to control the movement of the pendulum, by not letting it move in the direction paralleling one axis of two drawn on a sheet of paper over which they held it. Observers recorded the movement of the pendulum, noting the maximum distance (in centimeters) that the point of the bob traveled along the forbidden axis. Also, some subjects were given a mental load during the task of counting backward from 1,000 by sevens. Consistent with the ironic process theory, the subjects who performed the task under high cognitive load exhibited significantly greater movement in the forbidden direction ( $M = 3.11$  cm) than those who were under no cognitive load ( $M = 2.56$  cm),  $t(17) = 2.40$ ,  $p = .03$ . This little experiment lacked an important comparison condition, however: A measure was not made of changes in movement in other, nonforbidden directions.

To examine whether movement in the forbidden direction exceeds movement in other directions, we (Wegner & Ansfield, 1995) performed another study. As in the first, subjects were either asked to control the movement of a pendulum under a high cognitive load (counting backward from 1,000 by sevens) or under no load. Again, some of the subjects were asked to try *not* to allow the pendulum to move in the direction paralleling the  $x$ -axis. Other subjects, however, were asked to hold the pendulum as steady as they could, with no forbidden direction stated. The pendulum was held over a glass plate on which a transparent grid with highlighted axis was centered. A videotape record of the pendulum movement was made by a video camera facing upward under the glass plate.

We predicted that subjects would be more likely to produce movement of the pendulum in the forbidden direction when told to try not to let it move in that direction than when asked simply to hold it as steady as they could. The further prediction made by the ironic process model was that this ironic effect would be magnified under a high cognitive load. As an illustration of these expectations, we show in Figure 21.1 the patterns of movement we observed for a pilot subject in this study who was asked to perform each of the tasks in turn. For these drawings, we played back a 30-second video clip in each condition frame by frame, and traced movement onto a transparency fastened to the video screen. The greatest distance of pendulum swing for this subject was 2.5 cm.

When the subject was asked to hold the pendulum as steady as possible (Figure 21.1a), only slight movements occurred in random directions. When the cognitive load was introduced (Figure 21.1b), the subject became less accurate in holding the pendulum steady, but again this movement was not concentrated in any direction. When the subject was told not to allow the pendulum to move in the direction paralleling the  $x$ -axis (Figure 21.1c), however, movement of the pendulum in just that forbidden direction resulted. And finally, when the subject attempted not to move the pendulum in the direction paralleling the  $x$ -axis while under the high load (Figure 21.1d), the movement of the pendulum in the forbidden direction was most pronounced.

These observations were mirrored in the aggregate data for the study as a whole (see Figure 21.2). Observers watched the videotapes and counted the number of movements of the pendulum parallel to each of the two axes. We then calculated the ratio of the average number of movements of the pendulum in the (sometimes forbidden) direction parallel to the  $x$ -axis to

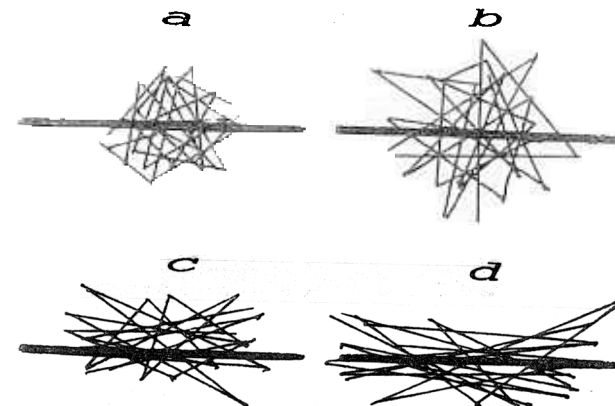
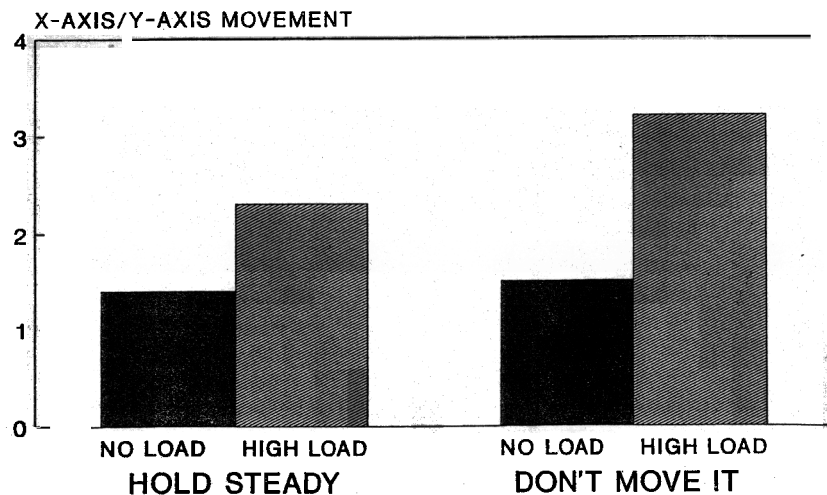


FIGURE 21.1. Pendulum movements for a subject asked (a) to hold the pendulum steady, (b) to hold it steady and to perform a mental task, (c) not to move it along the displayed axis, and (d) not to move it along the axis and to perform a mental task. Based on data from Wegner and Ansfield (1995).



**FIGURE 21.2.** Mean ratio of x-axis pendulum movements to y-axis movements under instruction to hold it steady or not to move it on the x-axis, and under cognitive load versus no load. Based on data from Wegner and Ansfield (1995).

the average number of movements in the direction paralleling the y-axis for five trials over a 5-minute period. Any number greater than 1 illustrates greater pendulum movements in the forbidden direction (paralleling the x-axis) than in the direction paralleling the y-axis. First, without considering cognitive load, we found that subjects told not to allow the pendulum to move back and forth exhibited more movement in the forbidden direction ( $M = 2.67$ ) than did subjects told to hold the pendulum steady ( $M = 1.47$ ),  $F(1, 20) = 6.50$ ,  $p = .02$ . Across both levels of load, then, there was an overall tendency for the mentioning of a forbidden direction to induce pendulum movement in that direction.

Cognitive load had the expected magnifying influence on this difference. With no cognitive load, subjects told not to allow movement in the x-axis direction ( $M = 2.21$ ) did move it in the forbidden direction more often than did those told to hold the pendulum steady ( $M = 1.36$ ), but not significantly so,  $F(1, 20) = 1.64$ , n.s. However, there was a significant difference in the measured ratio for subjects under a high cognitive load. Subjects asked not to allow the pendulum to move in the forbidden direction moved the pendulum more often in the forbidden direction ( $M = 3.12$ ) than did those told to hold the pendulum steady ( $M = 1.58$ ),  $F(1, 20) = 5.40$ ,  $p = .03$ .

We did not interview subjects systematically about the feeling of doing in these experiments, but they frequently mentioned the odd absence of this in their informal comments. Many of them spontaneously reported being aware that the pendulum was moving not only without their phenomenal

will, but in fact *against* that will. This, then, indicates one way in which the feeling of doing may be divorced from action in a relatively simple and replicable laboratory situation. It seems that when people are asked not to do something, and are given a taxing mental load at the same time, they find themselves doing that very thing without any feeling that they are doing it.

### Ironic Processes and the Automatisms

It is tempting to conclude from these findings, and from findings regarding other manifestations of ironic processes (Wegner, 1994), that the ironic monitoring process might be a key component in an overall account of the automatisms. Clearly, the motor automatisms that involve discrete, simple movements—pendulum movement; dowsing; body sway; the willing game; and table turning, tilting, and tapping—seem readily explainable by this process. It makes sense that people who come to perform these automatisms have some skepticism about their occurrence at the outset, enough to fuel a subtle desire not to have these things happen. Even a desire not to perform a willful act is enough to create this inclination. This motive thus installs an ironic monitoring process that inclines the person toward the unplanned action. Even minimal cognitive load, then, in the form of brief disattention from the operating process that is attempting to forestall the movement, may be sufficient to produce these movements.

This ironic process account goes beyond the imagination hypothesis to suggest that the actions one does not want to have happen are the ones that may be produced by a type of imagination without phenomenal will. The reason why the feeling of doing is absent in these cases, moreover, is that there is indeed no will involved. Counterintentional action is produced by the monitoring process rather than the operating process, and so does not carry the usual portents of will—the consciousness and effortfulness associated with the operating process. The ironic process account is in this sense also consistent with the dissociation hypothesis. Just as dissociation theories would hold that actions can be initiated by cognitive systems that are not conscious or effortful, the ironic process account traces simple automatisms to the ironic monitoring process. This process can increase the cognitive accessibility of a range of mental content without any experience of effort (Wegner & Erber, 1992), and so may qualify as an independent mental module that can control action without the feeling of doing. In a sense, any attempt to control mind or action thus produces a dissociation—between the operating process bent on producing that effect and the monitoring process that ironically enhances the likelihood of opposing effects.

The ironic process account is less compatible with the social pressure hypothesis, at least as it is applied to the simple automatisms. The social pressure account holds that behavioral automatisms accrue from the person's perception of pressure to interpret his or her voluntary actions as involuntary. The ironic movements we have observed in the pendulum studies,

however, cannot arise from perceptions of social pressure, because any prevailing pressure in that situation is aimed at influencing the person *not* to produce the automatism. It may be the desire not to perform the automatism, rather than the desire to perform it, that induces the ironic monitoring process to generate the movement. For this reason, any straightforward application of a social pressure account in these sorts of instances must be incorrect.

It is also difficult to assimilate the ironic process account to any standard version of the automatic-habit hypothesis. Clearly, there is no basis for claiming that the ironic movements observed in the pendulum studies are any more habitual or practiced than the intentional movements. Because it is unlikely that repetition plays a role in the production of ironic movements, but these movements still occur without the feeling of doing and without other indications of effortful, conscious activity (Wegner & Erber, 1992), there may be a basis in these findings to suggest that the ironic process model provides a path to automaticity that is very different from the path assumed in the learning or habit account. The simple automatisms may well be automatic, in other words, but not because they are well rehearsed.

Although the ironic process hypothesis thus seems to provide a compelling alternative to prior hypotheses in the case of the simple motor automatisms, it remains to be seen whether it will be equally useful in explaining the more complex automatisms. How could a lengthy bout of automatic writing, for example, be induced by an ironic process? Could the person be specifically hoping not to write what appears to come automatically from the pen? The difficulty with applying the ironic process hypothesis to this case is echoed by similar problems in using it to account for automatisms in hypnosis, Ouija board spelling, facilitated communication, or trance channeling. These protracted performances that occur without phenomenal will seem to be far less amenable to an elementary application of the ironic process theory.

Nonetheless, it may be that the theory opens a small door toward an explanation of these puzzling phenomena. We can speculate on three avenues of explanation. It might be, first, that ironic effects serve as initial pieces of evidence that convince people it is reasonable to interpret their subsequent voluntary actions as arising from involuntary sources. Just as a person who has teetered at the edge of a precipice, for example, may conclude that he or she has had a subconscious impulse to jump, the person who experiences some ironic automatisms may conclude that he or she is capable generally of performing actions without phenomenal will. This interpretive set could operate through mechanisms such as those suggested by the social pressure theorists (Spanos, 1986) to promote long performances that are not automatisms themselves, but are produced by people who have become persuaded by ironic effects that these performances may also be unwilled.

A second way in which ironic processes may be involved in the production of complex automatisms is through the chaining of separate acts that

are variously random, willful, or ironic—but that are identified after the fact as unwilled. In the case of the Ouija board, for example, there are points in each performance that might be willed or random or ironic. When one has asked the board “What will I do next summer?” and it has answered “SW\_\_\_\_\_,” for example, one may hope it will go on to say “SWIM” rather than “SWEAT.” The “SW\_\_\_\_\_” may have been produced randomly, and the continuation may occur then in the ironic direction (“E”) because the player has specifically entertained the “SWEAT” completion and hoped against it. Finally, the word may be completed willfully (“AT”) in the attempt to have it make sense. The entire performance will have a certain unwilled quality, given the contribution of randomness and ironic process, so that overall it may seem reasonable to call it “unwilled.” The generation of long or complex acts that occur without the feeling of doing does not require that willful or random subacts *never* occur along the way, but only that the completed act be identified as unwilled at the end. The emergent meaning of an act produced in this way can be far more compelling than the meanings of its components, and it may thus come to seem unwilled as a whole (cf. Wegner, Vallacher, Macomber, Wood, & Arps, 1984).

There is one other way in which ironic processes may help us to understand lengthy sequences of action that occur without phenomenal will. It may be that some form of the mental monitoring process that is enlisted in the pursuit of mental control extends beyond the error-monitoring function it fulfills in ironic process theory. The unconscious and relatively effortless monitoring system that is invoked in mental control may perhaps be recruited in some form for other psychological purposes. Most of the continuous, complex automatisms occur under conditions of attenuated cognitive capacity, and this is precisely when monitoring processes that are not just tuned to catch errors may reach a level of influence over behavior rivaling that of operating processes. There is evidence, for example, that unconscious monitoring systems initiated by conscious choice may be responsible for creative insights (e.g., Bowers, Regehr, Balthazard, & Parker, 1990), memory retrieval (Reason & Lucas, 1984), and many other cognitive processes (Bargh, 1989, 1990). Why shouldn't they create behavior as well? It may be that the more elaborate automatisms arise through a monitoring process that, like the imagination system envisioned by Carpenter (1884), can be initiated through conscious intention, but then exerts its influence on behavior without the feeling of doing. Suffice it to say that at this point, there is evidence of such monitoring-induced behavior for the simple automatisms—but there is only the suggestion that it may be possible to elude the feeling of doing through such monitoring more generally.

Finally, even if ironic monitoring processes do present a useful approach to the understanding of disavowed behavior, we must note that they offer only one facet of a complete analysis of the problem of the feeling of doing. The automatisms include some of the most enigmatic behaviors facing modern psychology, from trance channeling to hypnotic phenomena and

beyond, and it is clear that much more remains to be added on the way to a full account of such unusual, apparently unwilled behavior. Many of the automatisms occur under conditions in which the causes of one's own behavior are made murky by the contributions of others, for example, and this source of ambiguity has barely been touched on in the existing literature. For our part, we have tried to use an ironic process approach to organize this unruly set of phenomena in terms of two key variables: the desire to exert mental control, and the presence of mental load. When these are present, ironic behaviors may result that occur without the feeling of doing, and even in spite of the feeling of doing the opposite.

### CONCLUSION

In some sense, our theoretical approach to the problem of the feeling of doing is backward. Most commentators who have puzzled over the problems of phenomenal will would conclude that when people do something without feeling they are doing it, there is some difficulty or breakdown in the part of the mind that is responsible for consciousness of action. Some monitoring function appears to be asleep while some operating function is making things happen. Our approach, suggested by the ironic process theory, is the reverse. We believe that the feeling of doing is irrevocably associated with the operating processes that create mental and behavioral changes. Thus, many of the activities of mind or body that ensue without this feeling may be attributable to the monitoring processes. And, as a rule, these monitoring processes create behaviors that are the opposite of those engendered by the operating processes. By and large, then, the feeling of doing is absent when, under conditions of mental load, people find that these monitoring processes take the reins and lead them to do what they least intend.

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