adjustment and suffer from tendencies toward negative affect, cognitive disruption, and health problems.

Polivy says impulse control can cause problems. The experimental evidence she cites backs her up. But some of the evidence cited in Polivy's article is correlational, which makes a complementary observation relevant: Some of those who tend toward the overcontrol of motivational impulse may already have problems.

Note

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Why Is It So Difficult to Inhibit Behavior?

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Polivy's model of behavioral inhibition, with its emphasis on the consequences of suppression, is a compelling integration of diverse areas of research. By asserting that the long-term costs of inhibiting internally motivated behaviors are far greater than the benefits gained by their suppression, she brings to the forefront an issue largely neglected by researchers and theorists. The similarity in outcomes for behavioral, affective, and cognitive suppression provides abundant support for her claims, but as with most excellent articles, her analysis raises as many questions as it answers. In our commentary we focus on possible mechanisms responsible for the difficulty of behavioral inhibition.

Polivy outlines a number of possible explanations for why behaviors are generally difficult to inhibit, ranging from frustration, to ironic processing, to activation of dopaminergic transmitter systems in the brain. Our contention is not that Polivy is wrong, but that her list is incomplete given the limited research on inhibition. Our goal in this article is to describe additional mechanisms that help to provide a more comprehensive understanding of why inhibition is so difficult.

The Mind of the Inhibitor

Why do people inhibit behavior? We share Polivy's general view that inhibitions are socially induced. Whereas Polivy tries to distinguish personal preferences from social sanctions, we believe that all inhibitions (even those that apparently reflect personal choice) are shaped through societal forces. Starting with toilet training, children are taught that it is necessary to completely inhibit certain impulses and to delay gratifying others. Inhibitions are important for harmonious social interactions, and evolution has undoubtedly favored those who could control undesirable impulses. For instance, those who could not refrain from committing violence on others or from consuming more than their fair share of communal resources might have faced exclusion from the group, a situation that Baumeister and Tice (1990) proposed is the functional basis of anxiety. In their model, anxiety serves as an alarm function that group exclusion is likely and therefore motivates people to behave according to group norms. Given that survival was enhanced for those who lived in groups (who could assist one another with the tasks of survival and jointly care for offspring), those who were expelled from social groups might have been less likely to survive and pass along their genes (Baumeister & Leary, 1995).

The dieter sitting in front of a tempting chocolate sundae probably does not give much thought to evolutionary forces, but he or she probably does feel anxious. The sundae is mightily tempting, but to eat it might contribute to being overweight or to preventing

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one from being thin, the latter of which is highly valued by this society. This is the essence of the motivational conflict at the center of Polivy's theory. To create the motivation to inhibit eating fattening foods, we posit that the dieter needs to construct, or reflect on, a negative view of self as undesirable in current or future form (e.g., a negative possible self; see Markus & Nurius, 1986). Personal beliefs that one is unattractive, incompetent, and unworthy might be used to motivate dieting, and the dieter expects that losing weight will transform him or her into someone who is more attractive, competent, and worthy (Heatherton & Polivy, 1992). Thus, people inhibit food intake generally because they are unhappy with how they look, and they believe that food restriction will change their appearance in a way that will make them feel better about themselves. Ironically, due to the difficulties with inhibiting eating, most diets fail and dieters may end up feeling worse about themselves than if they had not dieted in the first place (Heatherton, Mahamed, Striepe, Field, & Keel, 1997; Heatherton & Polivy, 1992).

The key point is that avoiding tempting food is problematic only for those who believe that ingesting it will make them fat and unattractive. For people who do not associate eating with being fat (or drinking with loss of control, or having sex with unwanted consequences), there is little press to inhibit consumatory behavior. People only have difficulty inhibiting behaviors that they truly wish to perform, but doing so comes at cost to their public reputations or personal self-views. Theorists and researchers need to differentiate the attempted suppression of behaviors associated with negative views of self from behaviors that are benign with respect to self. Difficulties inhibiting thoughts of white bears or television watching are probably not due to strong motivational conflict, but are evident because summoning up sufficient motivation to inhibit those behaviors is difficult (the ability to stop thoughts of white bears has little survival value). Although there might be some short-term consequences to such inhibitions (which are interesting in their own right), they pale in comparison to the pernicious costs associated with inhibiting behaviors in cases in which genuine motivational conflict exists.

Our position is that the negative view of self experienced by dieters (i.e., body dissatisfaction) is necessary to motivate them to avoid eating. Unfortunately, this negative self-view may itself contribute to dietary collapse. We have argued previously that the negativity of self-view is painful and that people are motivated to escape from this aversive state of self-awareness (Heatherton & Baumeister, 1991). Although self-awareness is important for successful self-regulation (Baumeister & Heatherton, 1996; Carver & Scheier, 1981), people often find being highly self-aware unpleasant and difficult. This is especially true when self-awareness reveals a large discrepancy between the current self and the ideal self, or when self-evaluation is otherwise threatening or worrisome because of the meaning that it implies. Under such circumstances, people are motivated to escape from self-awareness. One process by which people escape aversive self-awareness is known as cognitive narrowing (Baumeister, 1991). Cognitive narrowing is a shifting of attention away from the self, goals, or meaning and toward immediate stimuli, physical sensation, and mechanical activity; or from high levels of action identification to low levels (Vallacher & Wegner, 1987). Of particular interest are the effects this has on inhibitions. According to escape theory, inhibitions exist mainly at high levels of thinking. When people escape from aversive self-awareness or when they are otherwise operating at low levels of thought, they become vulnerable to disinhibition, primarily because their behavior is guided more by environmental cues and internal impulses than by long-term plans and restraints. Thus, escape from self-awareness is a general mechanism responsible for disinhibition across a wide variety of behavioral domains, such as sex, eating, alcohol, and suicidal impulses (see Baumeister, 1991).

Paradoxically, therefore, the same self-feelings that motivate people to undertake dieting (i.e., a negative self-view) might lead to processes that undermine the ability to control food intake. So, why not just be happy with the way that one looks? Given societal pressures to be thin and the extremity of the thin ideal, most people fall short of the perceived ideal and experience body dissatisfaction. Indeed, more than 80% of women wish to lose at least 10 pounds (Heatherton, Nichols, Mahamed, & Keel, 1995). For people who do not worry about weight, or for individuals whose primary social groups do not value thinness (see Hebl & Heatherton, 1998), there is little perceived need to control food intake and therefore no motivational conflict. For the dieter, however, the choice is really among three options: (a) feel bad about being fat, (b) suppress negative thoughts of feeling bad about being fat, and (c) suppress food intake to lose weight so as not to feel bad about being fat (see Figure 1). We believe that relatively few individuals will choose to feel fat, and therefore they typically choose either to suppress negative thoughts about the self or to suppress eating. Note that this means that they usually need to suppress something, either the negative self-view or eating. Polivy's model offers no solution to this problem, in that the costs of suppression are presumably the same for suppressing self-views or for suppressing eating behavior. Many times, choosing not to suppress one behavior necessitates suppressing something else (i.e., a negative view of self).
The Self-Regulatory Strength of the Inhibitor

Most people underestimate how difficult it is to inhibit behavior. Dieters spend some $35 billion each year with the belief that they will be successful in their efforts, and research participants gleefully agree to do things like forego television or suppress thoughts of white bears, undoubtedly believing that they can do so with little effort.

We believe that a parsimonious explanation for the difficulty with long-term inhibition is that self-control capacity is a limited resource or strength that is depleted over time, especially in tempting circumstances. The idea of self-regulatory strength was developed by Baumeister and Heatherton (1996; see also Baumeister, Heatherton, & Tice, 1994) and refers to the idea that self-regulation is difficult and requires effort on the part of the individual (somewhat akin to colloquial ideas of willpower). Self-regulatory strength uses cognitive and attentional resource to override, inhibit, or otherwise alter impulses in the service of attaining personal goals or satisfying motives. Self-regulatory strength is a limited resource that can be depleted through excessive use (fatigue) or overwhelmed by especially strong impulses. A good analogy is a muscle, which functions well until it becomes exhausted through use (e.g., running a marathon or chronic dieting) or overtaxed by the situation (trying to lift a car or trying not to eat when faced with a determinant host at a seasonal holiday party). Although the strength theory has much in common with Polivy's model, it also departs in several important ways, namely in its explanation for the various effects that flow from inhibition.

We agree with Polivy that the effects of suppression appear to be nonlinear, such that very short-term suppression and very long-term suppression are less effortful. For instance, smokers can easily go for hours without a cigarette, and people who have quit smoking for many years do not seem to have particular difficulty refraining from smoking, suggesting that inhibition is not particularly difficult in the very short term or very long term. The self-regulatory strength model provides an explanation for this pattern. Any single instance of self-regulation is easy, as people can focus all of their self-regulatory strength on a given task. However, such effort is depleting and people who exert self-regulatory effort subsequently find it more difficult to control behavior in subsequent, or alternate, self-regulatory tasks (Muraven, Tice, & Baumeister, 1998). In our own research we have shown that dieters are quite good at inhibiting food intake over the short term, but that the strength needed to resist a momentary temptation is quickly fatigued, leading to excessive eating when the dieter is presented with a subsequent temptation (Vohs & Heatherton, 1998). We have varied the difficulty for the dieter of resisting the initial temptation, and our findings demonstrate that the more difficult the initial temptation, the greater the subsequent failures of inhibition.

Chronic inhibition is more difficult than short-term inhibition, as people must balance multiple self-regulatory goals over time, and strength must be allocated among these various demands (Baumeister, Heatherton, et al., 1994). Therefore, the amount of self-regulatory strength available to any one goal is effectively reduced. Interestingly, the behavioral outcome of unequal strength applied to multiple goals is that heightened efforts to inhibit one behavior allow other inhibited behaviors to emerge. Rather than viewing such behaviors as substitutions—which Polivy argues occur as people try to replace the rewards associated with the behavior—we view them as symptoms of self-regulatory depletion. The dieter who ends up drinking alcohol or smoking cigarettes is allocating more energy toward inhibiting eating than to other unwanted behaviors. Similarly, that dieters or recovering addicts become cranky can be explained by proposing that the strength required to control the inhibited behavior consumes resources that might otherwise be used to manage one's public impression.

Many of the negative consequences of inhibition might be due to self-regulatory depletion. For instance, the effort required to stop smoking might leave the abstinent smoker with few resources to cope with other life stressors. Similarly, those who
are trying to inhibit some deep, dark secret might leave themselves prone to engaging in unhealthful behaviors they might otherwise suppress; thus, those who inhibit confessing or who inhibit emotions might end up unable to control alcohol intake or stop smoking cigarettes. As well, they may not be able to actively engage in healthy activities, such as regularly taking medications, eating a balanced diet, getting moderate exercise, and even brushing their teeth (which, in our view, all use the same pool of self-regulatory resources). To our knowledge few researchers have examined whether the putative costs of inhibiting one behavior stem from the emergence of other unhealthy behaviors.

Inhibition generally becomes easier over time, which is difficult to explain with Polivy’s model (where one might expect the consequences to become more severe over time). One of the key features of the strength model is that—like a muscle—self-regulatory capacity can be increased over time through exercise. With continued inhibition, attentional resources become automatized, such that less effort is needed to control the impulse. An example is when people take up exercise. The first few mornings are grueling, as even small efforts are painful and fatiguing. But, over time the morning walk becomes habitual and automatic. Similarly, smokers who face strong urges in the initial days of abstinence become better able to handle temptations with practice. Although some of the ease might come from neuronal receptor loss (as nicotinic receptors atrophy), the smoker also becomes more practiced at coping with urges, such that each subsequent urge becomes less difficult to handle. Indeed, evidence suggests that giving up addictive behaviors successfully often requires multiple efforts, such that quitting smoking becomes easier each time a person tries it (Schachter, 1982). At some point quitting appears sufficiently easy that people can give up their cigarettes for good. Such findings fit in well with the strength model of self-regulation, which proposes that self-regulatory resources increase with practice. So, why doesn’t dieting work over the long run? For one, it seems likely that people are especially bad at inhibiting behaviors that are necessary for survival (i.e., eating). Also, we believe that people’s initial dietary efforts are too extreme—imagine couch potatoes deciding to get more exercise by running the Boston Marathon. It is indeed possible that minor alterations in eating habits will lead to permanent weight loss or prevent unwanted weight gain. However, the extremely long time it would take dieters to achieve their goals does not satisfy their urge to lose 20 pounds in 1 week.

In short, we believe that the strength model of self-regulation provides a compelling explanation for why it is so difficult to inhibit behavior.

What Is It All About?

We think it is important to end with a reconsideration of the reasons people generally inhibit behavior. Namely, we believe that inhibitions are an evolutionary adaptation that help maintain group structure and keep individuals from being rejected by the group. This perspective allows us to make sense of some apparently complex behaviors. Consider the urge to confess some past transgression, such as the Powers case that Polivy describes. We propose that the urge to confess comes from an overly efficient guilt system that has developed over the course of human evolution and is based on a fundamental need to belong (Baumeister & Leary, 1995). Baumeister, Stillwell, and Heatherton (1994) reviewed the literature on guilt and concluded that guilt serves to strengthen social bonds. Guilt serves a number of interpersonal functions, such as motivating people to treat relationship partners well; helping people to avoid actions that would injure, harm, or hurt those around them; alleviating or redistributing power in unbalanced relationships; and redistributing emotional distress. From this perspective, guilt induces prosocial actions that strengthen community and satisfy our need to be esteemed and valued (or better, needed) by our social group (see Fiske, 1992). When people engage in behaviors that make them feel guilty, they are often overwhelmed with the desire to confess their sins and to make apologies or reparations to victims (Baumeister, Stillwell, et al., 1994), and the available evidence indicates that such efforts pay off in terms of interpersonal harmony (Estrada-Hollenback & Heatherton, 1997). Thus, guilt can be considered an evolved mechanism that helps to strengthen social bonds. When people do something that makes them feel guilty, they are strongly motivated to confess. Inhibiting such confessions might be as difficult as giving up tempting foods for the dieter or nicotine for the smoker. Inhibitions are not arbitrary whims of personal preference but important evolved mechanisms for promoting group cohesion and survival.

Given the centrality of inhibition (and failures of inhibition) to the human condition, it is surprising how little psychologists have studied when and how it works. We share Polivy’s enthusiasm for this issue and hope that her article motivates additional work on the topic; a research agenda that, for us, would require considerable strength to inhibit.

Note

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The Other End of the Continuum: The Costs of Rumination

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Rumination is a prolonged process of thinking about one’s negative emotions, often without action. It is often linked to depression, anxiety, and other mood disorders. In my own research, I have found that rumination is associated with higher levels of distress than non-ruminators. This suggests that rumination may be maladaptive.

However, rumination can also be adaptive. It can help people to make sense of their experiences and to focus on problem-solving strategies. In some cases, rumination may be a useful coping mechanism.

In conclusion, the costs of rumination are significant. It is important to balance the adaptive and maladaptive aspects of rumination in order to promote mental health and well-being.