

Does Emotion Cause Behavior
(Apart from Making People Do Stupid, Destructive Things)?

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Psychology is often described as the scientific study of behavior. In practice it studies many other things, including thoughts and feelings, and indeed by some measures the direct observation of behavior has been disappearing from many laboratories and journals (Baumeister, Vohs, & Funder, 2007). Yet in principle the study of thoughts, feelings, and other phenomena is justified partly on the basis that understanding these things will help illuminate behavior.

This chapter focuses on the relationship between emotion and behavior. It will present two main theories about that relationship. They are not equals. One is widely accepted, is simple, and enjoys the benefits of tradition and parsimony. The other has none of those advantages. By rights, therefore, the one deserves to be given the benefit of the doubt, and the second theory should only be considered seriously if the first one is found to be seriously inadequate to account for the evidence. But I shall propose that it has finally been revealed by the gradual accumulation of evidence to be seriously inadequate if not downright wrong. Hence a new theory is needed — preferably one that can fit the observed facts, especially including the ones that have gradually discredited the standard theory.

In a nutshell, the two theories are as follows. The first holds that emotion directly causes behavior. Actions can be explained by citing the emotional state that gave rise to them: someone did something “because he was angry” or “because she was happy” or “because he was afraid” or “because she was sad.” The evolved purpose and function of emotions was to cause people to act in particular ways.

The second theory, in contrast, holds that conscious emotion tends to come after behavior and operates as a kind of inner feedback system that prompts the person to reflect on the act and its consequences, and possibly learn lessons that could be useful on future occasions. People may choose their actions based on the emotional outcomes they anticipate. The influence of emotion on behavior is thus indirect.

The title of this book, “then a miracle occurs,” suggests a mystery if not a miracle intervening between antecedent situational causes and behavioral response. The two theories construe this miracle quite differently. In the first theory, the emotional state is itself sufficient, or almost, to account for the miracle. Once the emotion arises, the behavior cannot be far behind, because the impetus for the behavior is contained in the emotion. The blackboard in the cartoon could be simplified. The second theory, on the other hand, may require considerably more writing and perhaps a larger blackboard. Emotion is stimulated by actions and outcomes, and emotion in turn stimulates cognitive processing, reappraisal, and simulations, all of which then may interact with the banks of programs that the person’s executive function consults in order to know how to act on nonspecific future occasions. Consideration of current behavioral options may be influenced by mental simulations of action and their anticipated emotional consequences.

The chapter will be organized as follows. Before we lay out the two theories, it is necessary to grapple with what is meant by emotion. This is more than a definitional conundrum or chore, because there are at least two major classes of phenomena that are understood as emotion, and they are quite different in feeling, function, process —

and relation to behavior. After this we shall outline the first theory, along with the arguments against it. Then the second theory and some of the relevant evidence.

This chapter presents an overview of the main ideas. Readers interested in a more detailed explication, as well as a fuller presentation of relevant evidence, should consult the article by some of us published in 2007 (Baumeister, Vohs, DeWall, & Zhang, 2007).

TWO TYPES OF EMOTION PROCESSES

Many phenomena are grouped under the rubric of emotion: vague moods, intense feeling states, twinges of liking and disliking, and more. They do not necessarily all have the same processes, nor the same effects on behavior.

For present purposes, it is useful to distinguish two broad categories. Our main focus will be on what ordinary people (i.e., not specialists in the psychology of emotion) call emotions. These are conscious feeling states. A person normally has one at a time. Often it is characterized by a bodily response, such as physiological arousal. These states are highly differentiated, and people have a wealth of terms they use to denote many different emotions: fear, anger, jealousy, joy, surprise, anger, disgust, and many more. These states tend to be slow to arise and slow to dissipate.

Such states must be distinguished from automatic affect, which are possibly far more common than full-blown emotions but are perhaps less frequently recognized. These can be subtle, possibly not even conscious. They are activated quickly and may come (and go) within a fraction of a second. Because these are linked by simple associations, and a person may have multiple associations, a person may have several

affective reactions at the same time. They may not be as differentiated as conscious emotions, and in some views affects are simply on a single dimension of positive to negative, although some recent work has begun to suggest that even nonconscious affective reactions fall into various distinct categories that are demonstrably different (Ruys & Stapel, 2008).

Because conscious emotion typically involves a bodily response, including arousal that can take some time to develop, it may not be effective for providing input into behavioral decisions in a fast-changing or newly emerging situation. In contrast, the automatic affects arise within milliseconds and thus are plenty fast enough to contribute even to quick reactions.

One more difference has to do with the amount of cognition involved. In the 1980s, psychologists debated whether emotion depended on cognition (cf. Lazarus, 1982; Zajonc, 1980). The two sides in the debate seemed to refer to different kinds of phenomena. Zajonc's (1980) title "Preferences need no inferences" argued that emotion was independent of cognition, but he was referring chiefly to the automatic, affective reactions. One often has a reaction of liking or disliking almost as soon as one recognizes what the object is. Therefore very little cognitive processing was required beyond knowing what something is and perhaps having one simple association. In contrast, full-blown emotional reactions tend to be saturated with cognitions, insofar as they depend on interpreting and appraising the eliciting events.

THE STANDARD THEORY: EMOTION DIRECTLY CAUSES BEHAVIOR

The idea that emotion directly causes behavior, and moreover that that is the proper function of emotion, is well established in psychology. It has been asserted in various forms by many theorists (see Baumeister, Vohs, DeWall, & Zhang, 2007, for partial review). It makes intuitive sense — which may be part of the problem, because the intuitive appeal has likely prevented the idea from being scrutinized critically.

The frequently used example is that fear causes one to run away. This view resonates with personal experience. It also lends itself to convincing evolutionary arguments. Thus, an ancestor who lacked a fear response might approach a dangerous snake or tiger and be killed, thereby failing to pass along his or her genes. In contrast, fearful ancestors would flee those predators and as a result would survive long enough to reproduce. Hence today's human population would be descended from ancestors who had emotions such as fear.

Other examples can be suggested (though many theorists seem not to bother). Anger might cause animals and ancestors to fight, thereby protecting or gaining resources and status. Frustration might stimulate aggressive goal pursuit. Love might cause people to engage in sex, thereby increasing reproduction.

Direct causation implies that the behavior, or at least the beginnings of it, is somehow contained in the emotional state. For example, anger might inherently contain incipient motor movements associated with struggling and fighting. Alternatively, the emotional reaction in the brain might directly activate other brain regions to initiate activity.

Given the widespread popularity of the direct causation theory, as well as its plausibility and parsimony, there would not seem to be much justification for developing

a rival theory unless the direct causation theory were shown to fail in some way. Therefore we turn next to delineate some of the problems with that theory.

CRITIQUE OF DIRECT CAUSATION THEORY

The direct causation theory suffers from multiple problems, both in terms of its internal plausibility and in terms of its fit to the available evidence. We ourselves embraced that theory for some time uncritically, and so we share the understanding of that theory's appeal.

The example that fear causes fleeing and thereby promotes survival has both theoretical and intuitive appeal, and so we think many researchers have considered the matter settled. However, that example has gradually come to seem a poor one, for multiple reasons. First, fear makes a poor prototype of emotion, and there is some evidence that it is not a typical emotion (Robinson, 1998). Second, many anecdotal reports of intensely frightening experiences contain the curious theme that the person remained calm and clear-headed during the crisis but then was overcome with intense emotion when it was over (e.g., Gollwitzer, personal communication, 2003). Meanwhile, many animals do not flee when afraid but instead freeze. Humans, remarkably, sometimes do the opposite, such as when soldiers walk toward people who are shooting at them (e.g., Holmes, 1995).

Third, the delayed response reported anecdotally is, on reflection, possibly inevitable, and the delay reduces the plausibility of the standard evolutionary argument. When an animal encounters a predator, immediate flight is often vital for survival. Immediate flight does not allow time for the body to develop an arousal reaction that

then serves as input into the behavioral decision process. Anyone who jogs in the woods has likely noticed that wildlife take flight as soon as the jogger's approach is perceived, rather than after the perception of the jogger has stimulated a slowly building bodily reaction of arousal that is then perceived by the brain and taken as impetus to skedaddle.

Another theoretical objection to the direct causation view is that, in human life at least, there are many, many behaviors but not nearly as many emotions. Emotions are thus not specific enough to give rise to specific behaviors, as the direct causation theory requires. This point has been articulated eloquently by Schwarz and Clore (2007): based on knowing that people are afraid, it is impossible to predict their precise behaviors, which might well include starting to run but might instead involve things as different as listening to weather reports or selling their stocks.

Schwarz and Clore did not elaborate on this point, but it is a devastating objection to the direct causation theory. Specific behaviors depend on the situation and its structure of opportunities, constraints, and affordances (see chapters by Reis, by Holmes & Cavallo, and by Baron in this volume). Behavior cannot be driven by the emotion alone, because behavioral choices can only be negotiated between the person and the situation. At most, emotions might activate broad tendencies toward approach and avoidance, but what specific form the behaviors take would depend on the situation.

Perhaps some readers may find these theoretical objections unconvincing. Let us turn, then, to consider actual evidence. Surely, one thinks (as we did), there must be plenty of evidence that emotional states cause behavior? An excellent and highly

influential review by Loewenstein, Weber, Hsee, and Welch (2001) claimed that “the idea that emotions exert a direct and powerful influence on behavior receives ample support in the psychological literature” (1999, p. 272) Yet it is revealing that when Loewenstein et al. (2001) made that statement, they did not provide a long list of references, or indeed any. They simply assumed it was true. Such an assumption seems reasonable (and indeed the editors and reviewers of that paper, which was published in a highly rigorous journal, seemed to find the statement so uncontroversial that they did not challenge the authors to provide specific findings.)

What happens when one looks for findings? Let us return to Schwarz and Clore, who were tasked with providing a review of the effects of emotion. Their 1996 review was 27 pages long, but it devoted barely half a page to the effects of emotion on behavior. The rest was spent on how emotion affects cognition. They were aware of how scant this seemed and said, with a slightly apologetic tone, that the imbalance in their coverage reflected the state of the empirical literature. A decade later, they revisited the same literature, and this time they were more confident than apologetic: “The effects of emotion...are more mental than behavioral” (2007, p. 402). Our search led to similar conclusions. Emotion seems to have its impact on cognition, not often directly on behavior.

To be sure, we did find some studies in which emotion as independent variable (or mediating variable) produced significant effects on behavior as dependent variable. But a close look at these raised further problems for the direct causation view.

One problem is that even when emotion does affect behavior, the results are often less than optimal and sometimes downright counterproductive. Among the general

population, emotion has the stereotype of causing people to do irrational, sometimes destructive and even self-destructive things. This stereotype is not undeserved. A review of psychology's research on self-defeating behavior found that emotional distress was often implicated (Baumeister & Scher, 1988). That is, when people are in intense emotional states, they sometimes do things that bring suffering, harm, or failure to themselves. There are various processes by which this occurs. For example, when people are upset, they take foolish risks, often selecting a course of action that offers a small chance of a very good payoff but carries a substantial probability of producing a bad outcome, as opposed to playing it safe as people in neutral emotional states tend to do (Leith & Baumeister, 1996).

The links between emotion and self-defeating behavior explain the second part of the title of this chapter. Emotion apparently does make people do stupid, destructive things, at least sometimes.

Why are the irrational, destructive effects of emotion a problem for the direct causation theory? At first blush, one might look upon such findings as supporting the direct causation theory: It seems that emotion does cause behavior, after all. But evolution would not likely build the psyche with mechanisms that cause it to harm itself. Self-harm is maladaptive. If emotion directly caused such behavior, then natural selection would have favored ancestors who had fewer and weaker emotions, and so emotion might gradually have been phased out of the human psyche.

To put this argument more precisely: the observations about self-defeating behavior could support the idea that emotion does sometimes behavior, but they contradict the idea that that is its main function. Self-defeating behaviors are almost by

definition an unwanted side effect of processes that serve other, adaptive functions. If emotions do cause behavior in the form of self-defeating behavior, that indicates that their main function lies elsewhere.

A recent meta-analytic investigation by DeWall, Baumeister, and Bushman (2008) involved a systematic and detailed search for direct causation of behavior by emotion. The search was narrowly focused on articles in the *Journal of Personality and Social Psychology*, which is generally acknowledged to be the most prestigious and influential journal devoted to those two fields (i.e., personality and social psychology). It compiled tests for mediation by emotion. That is, it surveyed studies examining the effects of various situational factors (as independent variables) on behaviors and/or judgments (the dependent variables) and that included measures of emotion as possible mediators. To illustrate, Twenge et al. (2001) showed that randomly assigned experiences of social rejection and exclusion caused increases in subsequent aggressive behavior, and they reported mediation analyses to test the theory that rejection would cause emotional distress, which in turn would cause increases in aggression. Thus, the direct cause of aggression would be the emotional distress.

Over four thousand articles in the journal were consulted. These included nearly four hundred tests for mediation by emotion. Over half of these looked for effects on behaviors. Of them, only 17% were significant at the .05 level (which means that random variation would produce such results about 5% of the time). The remaining studies examined effects on judgments, and the results were no better: only 18% reached significance.

This result is shocking. Space in that journal is highly competitive, and by consensus only the best, most important results have a chance of being published there. Despite these high standards, the journal appears to report a great many null results — specifically, results testing hypotheses that the direct cause of behavior would be emotion. Apparently, authors, reviewers, and/or editors have believed that it is vital to test for mediation by emotion, as if that were the most likely explanation that needed to be ruled out before any other explanation could be asserted.

Thus, there were indeed some findings indicating that emotion did lead directly to behavior. But not very many, and certainly not nearly as many as somebody (again, one cannot know whether authors, editors, or reviewers thought those tests needed to be done) expected.

Let us turn now to consider those few cases in which emotion does apparently cause behavior. Do these indicate that emotion at least sometimes directly causes behavior? On close inspection, some of these turn out to be misleading as well.

The inherent ambiguity in studying the effects of emotion, or at least negative emotions, was articulated in the 1980s by Isen (1984, 1987). She pointed out that when emotional distress leads to a behavioral response, there are almost always at least two possible explanations. One is direct causation: The emotion makes the person act in a certain way. The other is mood regulation. A person who is upset may act in a particular way in the hope or expectation that the behavior will produce a change, presumably an improvement, in the emotional state. For example, if severe disappointment leads to an increase in the consumption of alcoholic beverages, it may signify that distress makes

people thirsty for intoxicants — or it could mean that disappointed people choose to drink because they think that intoxication will make them feel better.

It is quite difficult to tease those two explanations apart, which led Isen to recommend that researchers study positive emotions instead. However, one ingenious procedure for separating those two explanations was devised by Manucia, Baumann, and Cialdini (1984). They dubbed it the “mood-freezing pill,” which is to say a pill that supposedly will cause a person’s emotional state to remain the same for an hour or two regardless of what else might happen. Of course there is no such pill, but it is possible to make naïve research participants believe that one exists and to give them a placebo with that cover story.

Manucia et al. (1984) sought to explain one well documented effect of emotion on behavior, namely that sadness leads to an increase in helping. They induced sadness in many participants and by random assignment administered the mood-freezing pill manipulation to half of them. If sadness directly causes helping, then the mood-freezing pill should make no difference: Sadness would still cause helping regardless of whether one’s mood is frozen or changeable. But they found that the mood-freezing pill eliminated the effect of sadness on helping. The implication is that sad people help others because they believe that helping will cheer them up. The mood-freezing pill means that one cannot be cheered up whether one helps or not, and under those circumstances, helping disappeared.

The finding is important because it undermines some of the remaining evidence that emotion directly causes behavior. Sadness had been shown to lead to helping. But the findings of Manucia et al. (1984) indicated that sadness does not directly cause

helping. Rather, sadness makes people look for some opportunity to escape from sadness, and they strategically decide to do good deeds in order to achieve this goal. The operative relevant effect of emotion is that emotion is the goal and the outcome of the behavior, not its direct cause.

Researchers have begun to apply the mood-freezing manipulations in other settings. One of the best replicated effects of emotion on behavior in all the social sciences is that anger leads to aggression. Although the fact is not widely remarked, in practice aggression researchers have found it nearly impossible to get laboratory participants to behave aggressively unless they are provoked and angered in some way. Hence all the thousands of studies of the causes of aggression are in fact demonstrations of what variables increase or decrease the basic effect of angry provocation on aggression. To be sure, purists have pointed out that anger is neither necessary nor sufficient for aggression and that much anger does not lead to aggression (Averill, 1982). (The last observation is actually relevant here, for it suggests that anger does not directly or inevitably cause aggression; but one might retort that perhaps anger naturally causes aggression, but sometimes people manage to self-regulate and override the aggressive impulse, thereby thwarting the natural tendency for anger to cause aggression. See Baumeister, 1997.)

Yet when Bushman, Baumeister, and Phillips (2002) administered the mood-freezing pill manipulation to several samples of research participants, the time-honored effect of anger on aggression disappeared. Thus, anger does not directly cause aggression. Rather, angry people only aggress when they believe they can change their

emotional state. The implication is that angry aggression is a strategic effort to improve one's mood.

Other standard findings have likewise withered under mood-freeze manipulations. Sadness and emotional upset lead to increased eating of sweets and junk food — but only because people think the tasty and unhealthy treats will make them feel better (Tice, Bratslavsky, & Baumeister, 2001). Likewise, emotional distress undermines prudent delaying of gratification, causing people to choose immediate rewards instead of larger, delayed ones — but not if their moods are frozen. The impact of distress on delay of gratification is in fact a strategic effort to improve one's mood (Tice et al., 2001). Sadness leads to procrastination, but only if people can procrastinate with pleasant, entertaining tasks that promise to cheer them up, and (again) only if their moods are believed to be changeable (Tice et al., 2001).

Thus, of the cases in which emotion does seem to cause behavior, further study with appropriate control groups again disconfirms the direct causation theory. What looks at first glance like emotion causing behavior is in fact behavior pursuing emotional outcomes. This brings us to the second, feedback theory, which proposes precisely that: Emotion functions as the outcome of behavior.

EMOTION AS FEEDBACK

Thus far we have surveyed multiple reasons to reject the standard theory that the proper or primary function of emotion is for the direct causation of behavior. The theory had serious inadequacies on conceptual grounds and also has failed to find much empirical support. What ostensible support there was turned out on closer inspection to

suggest, instead, that emotion is the goal rather than the driver of behavior. In this section we will build on that insight to flesh out the theory of emotion as a feedback system.

The core idea is that full-fledged, conscious emotion serves mainly to provide feedback after behavior, by stimulating the person to reflect on recent actions and their consequences and possibly to learn lessons for the future. This approach deals effectively with several of the observations that plagued the direct causation theory. The lack of specificity is not a problem, because emotion serves to stimulate cognitive processing about what has already happened, and so the behavior is already existent. The slow-arising nature of emotion is not a problem, because there is no urgent rush to make decisions, only an open-ended opportunity to think about what happened and what might have happened. The fact that emotion sometimes directly leads to self-defeating behaviors is not a problem, because that involved the direct effects of emotion on current choices, and emotion is not supposed to facilitate current choices, only retroactive reflection.

We reported Schwarz and Clore's (2007) observation that the research literature has shown the effects of emotion to be much more centered on cognition than on behavior. This fits the feedback theory, which holds that emotion is for stimulating learning (thus cognition).

In all this, our emphasis has been on the full-blown, conscious emotional states rather than on automatic affect. Automatic affect may be part of the story, however. The full-blown emotional states may create affective memories and associations that can be useful in the future. Return for a moment to the suggestion that the full-blown conscious

emotion of fear may often arise only after the crisis or emergency has passed, because it is too slow to drive behavior during a fast-occurring occasion of danger. One might well wonder, what use would there be in being afraid after the danger has passed? But the strong wash of fear may leave strong associations to the circumstances that contained the danger. The next time one approaches or notices signs of similar circumstances, those associations may produce automatic affective twinges of fear that can help steer the person to take preventive action. Full-blown fear is not needed on that later occasion, just the automatic affective reminder.

Feedback may come as a surprise at first, but over time people develop rather elaborate and thorough knowledge of what kinds of actions in various situations bring what emotional outcomes. They can thus learn to anticipate how they will feel if they do this or that. Crucially, we think these anticipated emotions can help guide behavioral choices. In that sense, we have suggested, behavior comes to pursue emotion, rather than emotion directly causing behavior.

The idea that behavior pursues emotion can account for the mood-freezing findings. People come to know, for example, that helping will make them feel good, and so when they are sad and an opportunity arises to help someone, they help, and as a result they feel better. Researchers can thus show that sad moods lead to increased helping, and some may be misled into thinking that sadness somehow directly causes helping. The truth, however, as revealed by the mood-freezing studies by Manucia et al. (1984), is that the crucial factor is people's knowledge of their emotional lives and their anticipation of what actions will make them feel certain ways. They choose their actions strategically to produce the emotional outcomes they desire.

We have noted that the favorite example of theorists advocating the direct causation theory involved fear causing someone to flee. Guilt is a good example to illustrate the feedback theory. Guilt does not directly cause any behavior, although it has been shown to lead people to do various things that may reduce their guilt, such as apologizing, making amends, promising to refrain from repeating the transgression, and doing various good deeds (for review, see Baumeister, Stillwell, & Heatherton, 1994).

The ordinary sequence involving guilt goes something like this. The person performs some misdeed, possibly for selfish reasons or in many cases simply because the person fails to realize the adverse effects of the action on others. Afterward, the person feels guilty, especially insofar as the unhappy effects of the action become apparent. Guilt stimulates the person to reflect on the misdeed, including replaying the episode mentally multiple times, and in particular imagining counterfactual scenarios by which other possible actions would have produced better, less harmful outcomes (and hence no guilt). By virtue of these ruminations and reflections, the person learns some lesson about how to avoid a repeat of this unhappy scenario. At some point in the future, a similar situation arises, and a recognition of the similarity produces associations that bring automatic affect, including twinges of guilt that help the person realize that to act in the same way as before will bring guilt again. Anticipating that possible and unwelcome feeling, the person selects a course of action that will bring a better result (including no guilt).

Evidence supports this scenario. A pair of studies by Baumeister, Stillwell, and Heatherton (1995) compared accounts of transgressions that produced guilt with transgressions that did not. Although the two sets were similar in many respects

including type and apparent severity of outcome, the ones involving guilt were more likely than the others to include reference to learning lessons and changing behavior subsequently. These findings suggest that guilt does indeed function to make people reflect on what they did wrong, extract a relevant lesson or moral for the future, and change their behavior on subsequent occasions.

EVIDENCE: EMOTION AND LEARNING

This section will cover some of the evidence that makes the feedback theory plausible. In view of the fact that this chapter is intended as an introductory overview, it cannot provide a full treatment of such evidence, and interested readers are referred to the more thorough presentation by Baumeister, Vohs, DeWall, & Zhang (2007).

We have already mentioned the fact that research has been much more successful and prolific at demonstrating effects of emotion on cognition than on behavior, and this fact is quite congenial to the idea that emotion is for stimulating learning. Some of the particular facts about the effects of emotion on cognition lend further credence to the idea that emotion promotes learning. Emotion appears to strengthen the memory traces that are formed, such that information with emotional impact is remembered better than other information. There is abundant evidence for this so-called emotional modulation of memory (for reviews, see McGaugh, 2000, 2002). Also, emotional states seem to focus people's attention better, so that they zero in on the most relevant aspects of an event and thus learn the crucial lesson better (as compared to learning that occurs in the absence of emotion).

One of the most important mental processes for social learning is counterfactual thinking. This appears to be rather distinctively human, although it is difficult to know for certain what can occur in the minds of various animals. Still, humans seem especially likely to replay events mentally while altering various aspects or steps in the unfolding sequence. Counterfactual thinking has the potential power to multiply the learning benefits of an event many times over. Even just replaying an event repeatedly exactly as it happened could improve learning, insofar as each replay creates a new memory trace and thus possibly strengthens the total impact on memory. But counterfactual replays allow the person, in effect, to experience a full range of the behavioral contingencies, imagining at least every possible action and what outcome it might have produced. For the highly complex events that occur in human social life, counterfactual replaying can help the person work through all the possible aspects of a situation and the various possible courses of action, and thus can ideally produce useful learning well suited to the unique demands of human society.

Emotion contributes to counterfactual thinking in multiple, important ways. First and foremost, emotion, especially aversive emotion, appears to be a powerful stimulus to engage in counterfactual thinking. Roese's (1997) authoritative review of counterfactual thinking concluded that negative emotional states were a, if not the, "chief determinant" of such thought. Thus, one vital function and consequence of unpleasant emotional states is to make people reflect back on what they did, on what went wrong, and on how things might have gone differently.

The link between emotion and habit is also instructive here. The link is strikingly negative. Wood, Quinn, and Kashy (2002) have shown that when people perform

habitual actions, they tend to experience little or no emotion, as compared to when people perform activities that are not habitual. By definition, habits are behaviors that are very well learned (see chapter by Verplanken, this volume). The implication is that people feel emotions when they are learning patterns of behavior, but when the learning is done, the emotion is gone.

The link between emotion and learning could also have implications for how people judge and infer learning. If emotion is generally useful for stimulating learning, then people might infer from emotion that they learned something. One of us first began to suspect this when watching game shows and hearing the characters say how much they had learned. In this particular case, the possible lessons (which were never spelled out by the contestant) seemed unpromising. He said the experience had taught him a lot about himself. Perhaps he had learned that he (the eponymous bachelor in a show about choosing a romantic partner) enjoyed riding around in limousines, drinking champagne, and have a dozen beautiful women competing for his affections. Big insight! But no doubt he had had quite a set of unusual emotions during this experience, and perhaps these emotions create the illusion of learning.

To study the illusions of learning, Baumeister, Alquist, and Tice (2008, unpublished) have conducted an initial study. Participants first read a biographical article about George Bernard Shaw, ostensibly for a study of reading comprehension. Then they performed an emotion induction exercise (presented as a writing exercise) in which they vividly imagined an episode that would produce a strong emotion. After this, they were asked to rate how much they had learned from the article. Then they completed a mood measure. Participants who had been induced into highly aroused

emotional states reported feeling that they learned more than participants in other conditions. In further studies we are obtaining objective measures of learning to compare with the self-reports of learning.

Thus, a dose of emotion, in this case generated by a completely irrelevant task, increased the extent to which people believed they had learned much from reading an article. Such a pattern suggests that emotion operates as a subtle cue to the self about learning. Emotion may generate an illusion of learning, which could be highly relevant to many phenomena, including teacher ratings in undergraduate courses. Many instructors have suspected that students will give higher marks to a lecture that uses vivid stories and exciting audiovisual materials to dramatize a pedestrian point than they will to a relatively dry lecture that is packed with information. Administrative pressure on college faculty to obtain high course ratings may gradually shift the educational process away from providing information and toward stimulating emotional responses in students.

ANTICIPATED EMOTION

An important aspect of the feedback theory of emotion is that people learn to anticipate emotional outcomes and adjust their behavior accordingly. In a sense, this could render most human behavior a form of emotion regulation, insofar as people decide what to do as a strategic effort to pursue and achieve emotional outcomes. We proposed guilt as a useful prototype of how the feedback theory could operate, and guilt can guide behavior effectively even if people quite rarely actually feel guilty, insofar as they anticipate what actions would bring guilt and change their behaviors so as to avoid that unpleasant outcome. Indeed, one of the surprising findings to emerge from the

research literature on guilt is that guilt and guilt-proneness tend to produce more positive and beneficial outcomes than negative ones, despite the prevailing cultural stereotype of guilt as a useless, self-destructive emotion (for reviews, see Baumeister et al., 1994; Tangney & Dearing, 2002).

Several important sets of findings about anticipated emotion lend credence to the feedback theory. One is the evidence that anticipated regret, in particular, can influence decisions, mostly in beneficial, advantageous ways. That is, people make choices based on anticipating what will bring them regret, and the impact of this anticipation on the choices is generally to steer people to choose in ways that will benefit them (see Mellers, Schwartz, & Ritov, 1999).

More generally, anticipated emotion tends to shift decisions toward two types of choices, which sometimes will be less than the optimal one but which, by and large, seem likely to be beneficial. The first is that anticipated emotion (including anticipated regret) makes people facing uncertain circumstances to choose relatively safe options (e.g., Richard, De Vries, & van der Pligt, 1998; Simonson, 1992; Tetlock & Boettger, 1994). These can be shown to depart sometimes from what would be economically optimal and might produce the best outcome, such as pursuing a risky but promising opportunity. Still, playing it safe cannot really be characterized as a foolish, irrational, or self-defeating strategy in general, and so to the extent that anticipated emotion makes people play it safe, they are probably doing reasonably well.

Second, anticipated regret or other anticipated emotion can shift people toward favoring the status quo, as long as it is acceptable (Anderson, 2003; Kruger, Wirtz, & Miller, 2005). That is, they do not choose options that produce change but rather stick

with known options as long as those are acceptable. Again, this can sometimes mean forgoing a promising opportunity, but again staying with an acceptable status quo is a form of playing it safe and thus seems likely to avoid the worst possible outcomes.

Research on affective forecasting is also relevant. Affective forecasting refers to people's predictions of how they will feel under future or hypothetical circumstances. The standard finding from that literature, which has been replicated many times, is that people tend to predict that their emotional reactions to future events will be relatively long-lasting, whereas when such events occur the emotions tend to dissipate. In a sense, people overpredict their emotions (Wilson & Gilbert, 2003).

The overprediction of emotion indicates the importance of anticipation. If people underpredicted their emotional reactions, it would be very difficult to suggest that anticipation of emotion is important, because anticipation would tend to be small and trivial whereas the experienced reality would be relatively large and impactful. In a sense, then, the biggest emotion is the expected one, rather than the actually experienced one. Emotion looms larger and thus presumably has more impact in anticipation than in actual experience.

And sure enough, anticipated emotion does seem to have more impact on behavior than actually experienced emotion. Earlier we cited the compilation of JPSP mediation analyses indicating that experienced emotion only significantly mediated behavior about 17% of the time (DeWall, Baumeister, & Bushman, 2008). In that same investigation, in contrast, anticipated emotion significantly mediated emotion 90% of the time! The success rate of anticipated emotion was thus even greater than the shocking failure rate of experienced emotion.

To be sure, there were far fewer studies testing for mediation by anticipated emotion than by experienced emotion, and the 90% figure is thus a less reliable estimate than the other numbers. Still, the contrast between the two is so striking that it strongly recommends that future researchers pay more attention to the relevance of anticipated emotion in mediating behavior. For present purposes, at any rate, it certainly underscores the importance of anticipated emotion specifically, and the feedback theory generally, as deserving further, prospective tests.

SUMMARY AND CONCLUSION

This chapter presented two theories of emotion. We made no attempt to present them as equal rivals in a fair fight. One is well established, and indeed for a long time we subscribed to it ourselves. Yet the accumulating evidence of its inadequacy compelled us to search for an alternative, which led to the development of the second theory. We reviewed the research literature with an open-minded search for evidence that would enable us to develop a new and correct theory, but our presentation here has been organized so as to present the best research evidence and most compelling reasons that we think the second theory is better. As we said, a more nuanced and thorough presentation is available in Baumeister, Vohs, DeWall, and Zhang (2007).

The first theory was that emotion directly causes behavior and that, moreover, direct causation of behavior is a principal function of emotion. We have believed this in the past and we think many researchers continue to believe it. There are many signs of the widespread belief in this theory, including the fact that so many JPSP authors almost routinely report analyses for mediation of behavior by currently felt emotion.

We presented conceptual and empirical reasons to reject that theory. Considered carefully, it has serious gaps, including the inability of the relatively few emotions to directly cause the many different behaviors that people show. The majority of findings reported in the field's premier journal fail to show that emotion is the (mediating) direct cause of behavior. And even when emotion does seem to cause behavior, replication with appropriate control conditions often shows that the behavioral effects depend on strategic attempts to regulate emotion.

Instead, we think the available evidence suggests that emotion operates as a feedback system. After behavior has occurred, emotion drives appraisal and reflection, often including counterfactual replays, which can promote learning. Moreover, people learn to anticipate what actions will lead to what emotions, and they adjust their behaviors accordingly. Behavior pursues emotion.

The feedback theory does in a way provide a positive answer to our titular question of whether emotion causes behavior. Emotion does have a causal influence on behavior, just not in the direct and immediate manner widely assumed. Rather, emotion stimulates learning from behavior, and this learning can have beneficial effects on behavior in the undefined future. The effect of emotion on behavior is thus indirect. Nonetheless, it can be powerfully beneficial.

References

- Anderson, C. J. (2003). The psychology of doing nothing: Forms of decision avoidance result from reason and emotion. *Psychological Bulletin, 129*, 139-167.
- Averill, J. (1982). *Anger and aggression: An essay on emotion*. New York: Springer-Verlag.
- Baumeister, R. F. (1997). *Evil: Inside human violence and cruelty*. New York: W.H. Freeman.
- Baumeister, R. F., & Scher, S. J. (1988). Self-defeating behavior patterns among normal individuals: Review and analysis of common self-destructive tendencies. *Psychological Bulletin, 104*, 3-22.
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: An interpersonal approach. *Psychological Bulletin, 115*, 243-267.
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1995). Personal narratives about guilt: Role in action control and interpersonal relationships. *Basic and Applied Social Psychology, 17*, 173-198.
- Baumeister, R.F., Vohs, K.D., DeWall, C.N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review, 11*, 167-203.
- Baumeister, R.F., Vohs, K.D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science, 2*, 396-403.
- Bushman, B. J., Baumeister, R. F., & Phillips, C. M. (2001). Do people aggress to improve their mood? Catharsis beliefs, affect regulation opportunity, and

- aggressive responding. *Journal of Personality and Social Psychology*, 81, 17-32.
- DeWall, C.N., Baumeister, R.F., and Bushman, B.J. (2008). Meta-analyses of mediation by current and anticipated emotion: Is today's behavior based on today's or tomorrow's emotion? Manuscript submitted for publication, University of Kentucky.
- Holmes, R. (1985). *Acts of war: The behavior of men in battle*. New York: Free Press.
- Isen, A.M. (1984). Toward understanding the role of affect in cognition. In R.S. Wyer & T.K. Srull (Eds.) *Handbook of Social Cognition* (Vol. 3, pp. 179-236). Hillsdale, N.J.: Erlbaum.
- Isen, A.M. (1987). Positive affect, cognitive processes, and social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 20, pp. 203-253). New York: Academic Press.
- Kruger, J., Wirtz, D., & Miller, D. T. (2005). Counterfactual thinking and the first instinct fallacy. *Journal of Personality and Social Psychology*, 88, 725-735.
- Lazarus, R. S. (1982). Thoughts on the relations between emotion and cognition. *American Psychologist*, 37, 1019-1024.
- Leith, K. P., & Baumeister, R. F. (1996). Why do bad moods increase self-defeating behavior? Emotion, risk taking, and self-regulation. *Journal of Personality and Social Psychology*, 71, 1250-1267.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, 127, 267-286.
- McGaugh, J.L. (2000). Memory — a century of consolidation. *Science*, 287, 248-251.

- McGaugh, J.L. (2002). Memory consolidation and the amygdala: A systems perspective. *Trends in Neuroscience, 25*, 456-461.
- Richard, R., de Vries, N. K., & van der Pligt, J. (1998). Anticipated regret and precautionary sexual behavior. *Journal of Applied Social Psychology, 28*, 1411-1428.
- Robinson, M. D. (1998). Running from William James' bear: A review of preattentive mechanisms and their contributions to emotional experience. *Cognition & Emotion, 12*, 667-696.
- Ruys, K.I., & Stapel, D. A. (2008). The secret life of emotions. *Psychological Science, 19*, 385-391.
- Schwarz, N., & Clore, G. L. (1996). Feelings and phenomenal experiences. In E. T. Higgins & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 433-465). New York: Guilford.
- Schwarz, N., & Clore, G.L. (2007). Feelings and phenomenal experiences. In E.T. Higgins & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (2nd Edition), pp. 385-407. New York: Guilford.
- Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research, 19*, 105-118.
- Tangney, J. P., & Dearing, R. L. (2002). *Shame and guilt*. New York: Guilford.
- Tetlock, P. E., & Boettger, R. (1994). Accountability amplifies the status quo effect when change creates victims. *Journal of Behavioral Decision Making, 7*, 1-23.
- Tice, D. M., Bratslavsky, E., & Baumeister, R. F. (2001). Emotional distress regulation takes precedence over impulse control: If you feel bad, do it! *Journal of*

Personality and Social Psychology, 80, 53-67.

Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them, beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology, 81, 1058-1069.*

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. In M. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 35 (pp. 345-411). New York: Elsevier.

Wood, W., Quinn, J., & Kashy, D. (2002). Habits in everyday life: Thought, emotion, and action. *Journal of Personality and Social Psychology, 83, 1281-1297.*

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inference. *American Psychologist, 35, 151-175.*