

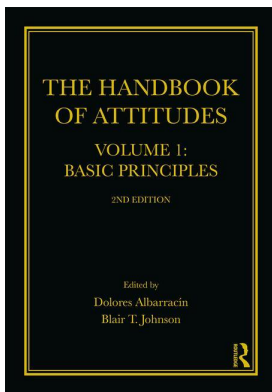
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## **The Handbook of Attitudes Volume 1: Basic Principles**

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### **The Influence of Behavior on Attitudes**

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# 10

## THE INFLUENCE OF BEHAVIOR ON ATTITUDES

*Eddie Harmon-Jones, Joel Armstrong, and James M. Olson*

In most laypersons' implicit theories of the causes of everyday events, attitudes influence behavior: People's actions are guided by their internal attitudes. Although social psychologists have certainly investigated this relation (as illustrated most directly by the work described in the preceding chapter), they have given just as much attention to the reverse relation: the influence of behavior on attitudes. This topic has stimulated some of the best known and most-tested theories in social psychology and has elicited significant public interest because it turns laypersons' implicit theories upside down and generates counterintuitive predictions (which have been confirmed). Our goal in this chapter is to review and evaluate this research literature.

There are many ways that individuals' behavior could influence their attitudes. For instance, behavior might induce a selective search of memory or a biased analysis of an issue. By bringing particular information to mind, the behavior might alter individuals' attitudes. A second way that behavior might influence attitudes derives from the fact that actions can serve to commit individuals psychologically to an attitude position. Actors usually feel responsible for the consequences of their volitional behavior and also believe that they should act in accordance with their attitudes. Hence, they may be motivated to change their attitudes to be consistent with their actions. Third, individuals might sometimes treat their behavior as a piece of information that is relevant to judgments about their own attitudes. Given that actions are assumed in the implicit theories noted earlier to reflect attitudes, perceivers might infer an attitude that is consistent with their actions.

Although there are other ways that behavior can influence attitudes, these three processes each have been elaborated in a distinct theoretical model that we review in this chapter: biased scanning, dissonance theory, and self-perception theory. Our review is organized by theoretical framework and by the evolution of the theoretical and empirical developments of each framework. After reviewing the literature, we identify dimensions that can be used to classify the various theories, as well as general principles that cut across the different approaches. Finally, we outline some directions for future research in this area.

We should note at the outset that we restrict ourselves in this chapter to *experimental* research on the impact of behavior on attitudes. In the studies we review, participants were induced to behave in a particular way, and the consequences of that action on participants' attitudes were tested. Many other researchers have examined correlations between past behavior and attitudes, sometimes using longitudinal designs that are interesting and informative. But for reasons of space and theoretical focus, we limit ourselves to the experimental approach to understanding how behavior guides attitudes.

### **Biased Scanning**

Some of the earliest social psychology experiments to explore systematically the effects of behavior on attitudes investigated the impact of role playing (for reviews, see Elms, 1967; Janis, 1968; Kelman, 1974; see also Olson & Stone, 2005). In these studies, participants were instructed to argue in favor of an attitude-discrepant position. It was hypothesized that such role playing would lead to the selective generation and consideration of arguments supporting one side of the issue (namely, the side being advocated), a process labeled *biased scanning*. As a result of biased scanning, role players were expected to convince themselves that the advocated position had merit, which would change their attitudes in the direction of their advocacy.

For example, Janis and King (1954) required students to improvise a talk advocating an attitude-discrepant position to two listeners on one of three topics. One topic, for instance, related to the number of movie theatres that would survive now that televisions had become more widely available. All participants had given estimates of this number in a preliminary survey 4 weeks earlier; the experimenter instructed participants to argue for a number that was significantly lower than the number they had provided on the pretest. The student delivering the talk was given an outline prepared by the experimenters, which stated the number to be advocated and summarized several arguments that could be presented. The student read this outline for 3 minutes and then gave an informal talk to the listeners. An important control was that the listeners spent the same 3 minutes looking over identical outlines, allegedly so they could evaluate the talk. After the talk, the speaker and listeners gave their current estimates of how many theatres would survive for 3 years. Results on two of the three topics showed that participants exhibited greater change from their pretest attitude when they actively argued for a position than when they simply listened to another person argue for it (see also Greenwald, 1969, 1970; Greenwald & Albert, 1968; Watts, 1967).

### ***Joint Effects of Biased Scanning and Incentives***

Janis and Gilmore (1965) integrated the concept of biased scanning with an incentive theory perspective that was consistent with the work being done at Yale University by Carl Hovland and his colleagues (e.g., Hovland, Janis, & Kelley, 1953). This incentive theory perspective emphasized that attitude change occurs when the incentives in a situation favor a new attitude; these incentives can derive from information related to the issue (e.g., information indicating that the position is valid) or from external factors in the persuasion setting (e.g., implied social approval or extrinsic reward for a new attitude). To test this integrative perspective, the researchers visited university students in a dormitory and asked them to write an essay arguing the attitude-discrepant idea that all students should be required to take additional courses in science and math. Half of the students were led to believe that the study was funded by a public welfare organization that was developing materials for a nationwide educational survey (the positive inducement condition). The remaining students were told that a private commercial company hoping to sell more science textbooks funded the study (the negative inducement condition). Further, half of the participants actually wrote the essay before completing the dependent measures, whereas the remaining participants completed the dependent measures after simply agreeing to write the essay. This variable was expected to influence whether participants actually engaged in biased scanning of arguments related to the topic. Results showed that participants changed their attitudes in the direction of the essay topic only when they actually wrote the essay *and* the study was sponsored by a public welfare organization. The authors concluded that both biased scanning and positive inducements are necessary for role playing to produce attitude change (see also Elms & Janis, 1965; Kelman, 1962, 1974).

### *Self-Presentation and Self-Concept Change*

Role-playing research provided a foundation for subsequent studies of the effects of self-presentation on the self-concept (e.g., Schlenker & Trudeau, 1990). These studies showed that, under certain conditions, presenting oneself in a biased way, even when self-presentation is not volitional, can alter the actor's self-concept and subsequent behavior. For example, Tice (1992) suggested that public behavior is regarded as more important than private behavior, and, therefore, public self-presentation induces more biased scanning of information in memory consistent with the presented self than does private self-presentation. In one study, Tice instructed participants to present themselves as either extroverted or introverted, irrespective of whether they actually possessed that attribute. Half of the participants completed the self-presentation in a public setting (a listener knew their identity), whereas the other half completed the self-presentation privately and anonymously. Results showed that public self-presentation significantly affected participants' subsequent ratings of their "true selves" on extraversion-introversion, but anonymous self-presentation did not. Further, in an ensuing interaction with a stranger, participants who had publicly presented themselves as extroverted sat closer and spoke more often to the stranger than did participants who had publicly described themselves as introverted. Private self-presentation did not affect participants' subsequent behavior. Similarly, Schlenker, Dlugolecki, and Doherty (1994) found that public self-presentation of the self as extroverted affected subsequent self-ratings and behavior, compared to a no-self-presentation control group. Further, Schlenker et al. found that public self-presentation as extroverted led participants to recall more of their own prior behaviors that were consistent with extraversion than control participants, a finding that supported a biased scanning interpretation.

More recently, researchers have applied these findings to self-presentations that occur in computer-mediated communication (e.g., Walther, 1996, 2007). For example, Gonzales and Hancock (2008) instructed participants to present themselves as extroverted or introverted in one of two computer-mediated settings, either a public blog or an anonymous private document. Participants' self-ratings of extraversion-introversion were significantly affected by the self-presentations on the public blog but not in the private document. Walther et al. (2011) extended this finding by showing that, when individuals received feedback from others that was consistent with a computer-mediated public self-presentation as either extroverted or introverted, the impact on self-ratings was increased. Given the current ubiquity of self-presentation on the internet, in particular the wide-scale adoption of social media, these studies of computer-mediated self-presentation are important.

### *Further Analysis of Biased Scanning*

Albarracín and Wyer (2000) examined the role of biased scanning in the behavior-attitude relation using a novel procedure. Participants were led to believe (falsely) that their responses on a task revealed positive or negative attitudes toward instituting comprehensive examinations at their university. This belief was created by telling participants that questions would be presented to them on a computer screen so quickly that they would not be able to read the questions consciously, but their subconscious would nevertheless perceive and understand the questions. They were asked to make *yes* or *no* responses to each question by following their intuition. In fact, no questions were posed at all, so participants' responses did not reveal their attitudes, but participants were told that their answers consistently supported or consistently opposed the institution of comprehensive exams. Results showed that, when participants were later asked to report their attitude toward comprehensive exams, they reported more positive attitudes when they believed they had responded positively to the subliminal questions than when they believed they had responded negatively. Based on some additional measures, Albarracín and Wyer concluded that a biased scanning interpretation of the effects of behavior on attitude was most plausible: The belief that they had acted in a particular

way led participants to generate outcome-specific cognitions that influenced their attitude toward the issue.

In a follow-up study, Albarracín and McNatt (2005) demonstrated that biased scanning can have a long-term impact on attitudes, using the same procedure to lead people to believe that they had revealed positive or negative attitudes toward instituting comprehensive exams. Participants reported attitudes that were consistent with their alleged behavior, both immediately and on delayed measures up to 2 weeks later. Further, the authors found that inducing participants to consider both positive and negative consequences of the proposed exams, thereby interfering with biased scanning, weakened the effect of alleged behavior on immediate attitudes and eliminated the effect on delayed attitudes.

The biased scanning literature has provided important insights about the impact of behavior on attitudes. In addition to its contributions described here, the early work presaged the *cognitive response approach* to understanding the effects of persuasive messages (e.g., Eagly & Chaiken, 1984; Greenwald, 1968). Despite its contributions, the early role-playing research was soon overshadowed by a motivational theory that seemed applicable to a broader range of behaviors: dissonance theory, to which we turn next.

## **Dissonance Theory**

Leon Festinger first proposed his theory of cognitive dissonance in the mid-1950s; the first book, *A Theory of Cognitive Dissonance*, appeared in 1957, but Festinger first produced an unpublished version of the theory in 1954 during a graduate seminar (Festinger, 1999). The theory emerged during the heyday of consistency theories, and as such, Festinger posited that dissonance theory was a consistency theory. However, dissonance theory differed from other consistency theories in its focus on behavior, and after several dramatic, counterintuitive empirical demonstrations of predictions derived from the theory (e.g., Aronson & Mills, 1959; Brehm, 1956; Festinger & Carlsmith, 1959), it captured the field of social psychology, producing thousands of experiments. In this section, we first summarize the original theory and the first lines of research that demonstrated the importance of dissonance theory for understanding how behavior influences attitudes. Then, we review several theoretical revisions. Finally, we review newer theoretical developments and empirical demonstrations including those involving neural mechanisms underlying the effects and cultural influences on dissonance processes.

### ***The Original Version of the Theory of Cognitive Dissonance***

Festinger's (1957) example of the smoker illustrates the theory well (and Festinger was a smoker). Smokers often continue to smoke even though they know smoking is bad for their health. How do they do this? Festinger suggested that smokers often rationalize their smoking behavior, by believing that smoking is so enjoyable that it is worth it; that the possibilities of harming their health is lower than most believe it to do; that one cannot avoid each and every possibly dangerous contingency and still survive; and that if they did successfully quit smoking, they would gain weight, which would be just as bad for their health. By rationalizing their harmful smoking behavior in one of these ways, smokers can believe that "continuing to smoke is, after all, consistent with [their] ideas about smoking" (Festinger, 1957, p. 2).

If, however, the smoker fails to explain away or rationalize the cognitive inconsistency (i.e., smoking even though it is bad for health), the inconsistency will continue to exist, and it will cause psychological discomfort or dissonance. Festinger (1957) proposed that dissonance was a drive state similar to hunger or frustration. Consequently, the psychological discomfort of dissonance motivates individuals to reduce the cognitive inconsistency and avoid information that would increase the

cognitive inconsistency. Festinger defined dissonance in the following manner: “Two elements are in a dissonant relation if, considering these two alone, the obverse of one element would follow from another. To state it a bit more formally,  $x$  and  $y$  are dissonant if not- $x$  follows from  $y$ ” (p. 13). He also proposed that motivations influence whether or not two cognitive elements are considered dissonant with each other. For instance, losing money at a game of poker would be inconsistent with knowing that another player is cheating unless one desires to lose money.

Festinger used the term “dissonance” to refer to both the cognitive inconsistency and the psychological discomfort that results from cognitive inconsistency. To avoid confusion, we prefer to refer to the psychological discomfort as dissonance and the cognitive inconsistency as cognitive discrepancy.

Festinger proposed that the amount of discomfort (dissonance) depends on the importance of all relevant cognitions and on the number of other cognitions that are consistent or inconsistent with the “generative” cognition (Beauvois & Joule, 1996). The generative cognition is typically defined as the cognition most resistant to change in the mind at the moment, and it is usually one’s recent behavior. In the example of the smoker, the generative cognition would be the knowledge that  $s/$  he smokes.

The importance of the cognitions is one factor that influences the magnitude of dissonance. The other factor that influences the magnitude of dissonance is the number of cognitions consonant (consistent) and dissonant (inconsistent) with the generative cognition. If there are many important cognitions consonant with the generative cognition (e.g., enjoyment of smoking) and only a few (less important) cognitions dissonant (e.g., smoking’s harm to health is lower than estimated) with the generative cognition, then dissonance will be lower than if there are many important dissonant cognitions as compared to consonant cognitions. Festinger suggested that the magnitude of dissonance could be determined with the following formula: the sum of dissonant cognitions divided by the sum of dissonant cognitions plus the sum of consonant cognitions with each cognition weighted by its importance (Festinger & Carlsmith, 1959).

Festinger (1957, Chapter 1) suggested that a wide variety of mental events can evoke dissonance. Among these were decision-making, exposure to new information, and the observation of an unexpected outcome. Other dissonance-evoking events included logical inconsistencies between beliefs or inconsistencies between one’s current behavior and past experience or cultural mores.

### *Dissonance Reduction*

Dissonance can be reduced in a variety of ways (Festinger, 1957, p. 19). Festinger noted three primary ways, but he also noted that the resistance to change of the cognitions needs to be considered. The resistance to change of cognitions could be determined by many factors, but he thought that “The first and foremost source of resistance to change for any cognitive element is the responsiveness of such elements to reality” (p. 24).

Festinger believed that dissonance is often reduced by behavior change. In fact, behavior change may be a frequently used method because “Our behavior and feelings are frequently modified in accordance with new information. If a person starts out on a picnic and notices that it has begun to rain, he may very well turn around and go home” (p. 20). Festinger also noted that behavior change may not occur because changing the behavior may be too difficult or because the change would create new cognitive discrepancies. For example, it appears to be quite difficult for some individuals to quit smoking, and if they did quit, they might gain weight, which would create new cognitive discrepancies.

When behavior cannot be changed, dissonance can be reduced by altering the dissonance equation ( $D/D + C$ , with each cognition weighted by its importance). In other words, one can add consonant cognitions, subtract dissonant cognitions, increase the importance of consonant cognitions,

or decrease the importance of dissonant cognitions. For example, when a cherished belief is disconfirmed, one may seek others who support the belief, which would add consonant cognitions. And this is how a “cult” that predicted that the continent would be destroyed responded when this prophecy was disconfirmed; they actively sought new members to their group (see Festinger, Riecken, & Schachter, 1956). The importance of the relevant cognitions can be altered by thinking of other information that reduces the importance of the dissonant cognitions. Festinger noted that smokers may seek knowledge about automobile accident rates to conclude that the risk from smoking is much less than the risk from driving a car (Festinger, 1957, p. 22).

Finally, Festinger noted that individuals may not always be able to reduce dissonance. Individuals may be unable to add or subtract relevant cognitions or alter the importance of the cognitions. Moreover, he noted that the dissonance reduction process may cause more dissonance if new cognitive discrepancies are created.

### *Avoidance of Dissonance*

Festinger posited that individuals are motivated to avoid of increases in dissonance and avoid the occurrence of dissonance. The former is part of the typical dissonance reduction process. For example, individuals might avoid other persons who would expose them to information that challenges their new beliefs that resulted from discrepancy reduction. Festinger further noted that when no dissonance exists, individuals will not typically selectively approach or avoid information. However, Festinger suggested one exception: Past experience may cause some individuals to fear and avoid the initial occurrence of dissonance. This fear of dissonance may then cause individuals to avoid acting or committing to certain behaviors. If the individuals cannot avoid acting and must make a commitment, they may negate the action cognitively. For example, after buying a car, they might say that they bought the wrong one. Festinger noted that this kind of response may be rare, and he noted, “The operational problem would be to independently identify situations and persons where this kind of a priori self-protective behavior occurs” (1957, p. 31).

In sum, the theory of cognitive dissonance provided much guidance on when, how, and why behavior can influence attitudes. We now review research paradigms that were developed to test the theory as well as theoretical revisions to the original theory.

## ***Empirical Tests of Dissonance Theory***

### *Decisions and the Free-Choice Paradigm*

Festinger (1957) noted that decisions have the potential to cause dissonance. A decision typically involves choosing one option over another option. Many decision options have positive and negative characteristics. After the decision is made and one option is chosen over other options, the positive characteristics of the chosen option and the negative characteristics of the rejected option are consistent with the decision. That is, they support the decision, and consideration of these characteristics should help to reduce dissonance (they are consonant cognitions). In contrast, the negative characteristics of the chosen option and the positive characteristics of the rejected option are inconsistent with the decision (they are dissonant cognitions). As such, they essentially challenge the decision, and consideration of these characteristics should increase dissonance.

Decisions that have options with a large number of important nonoverlapping positive and negative characteristics should be more difficult and should have the potential to create more dissonance. Following a decision, individuals are predicted to be motivated to reduce dissonance. They can do so by revoking the decision or creating cognitive overlap between the decision options. They can also do so by selectively attending to the consonant cognitions, or avoiding the dissonant cognitions,

and altering the importance of these cognitions. These latter processes may cause a *spreading of alternatives*, a change in attitudes toward the alternatives so that chosen alternative is evaluated more favorably and the rejected alternative is evaluated less favorably than they were before the decision.

Brehm (1956) published the first test of these predictions regarding post-decisional dissonance; these research methods have been labeled as the *free-choice* or *difficult-decision paradigm*. In his experiment, women first evaluated several household items such as a toaster and an electric coffee pot. Then, they were then given a choice between two of the items as a gift for completing the study. Participants randomly assigned to the difficult-decision condition had to choose between two alternatives that they had evaluated as very similar in attractiveness. Participants assigned to the easy decision condition had to choose between two items that they had evaluated as very different in attractiveness, as they evaluated one as much more attractive than the other. After making their decision, participants evaluated all of the household items a second time. Consistent with predictions, participants who made a difficult decision spread the alternatives more than participants who made an easy decision (see also Gerard & White, 1983; Olson & Zanna, 1982). Subsequently, this free-choice paradigm has been used in investigations of many different types of decisions. For example, researchers have investigated decisions made collectively by small groups (e.g., Zanna & Sande, 1987); between jobs in the military (Walster, 1964); and between close relationship partners (e.g., Johnson & Rusbult, 1989).

### *Forced Compliance Paradigm*

The forced or induced compliance paradigm, as it is often called, involves participants making a statement that is inconsistent with an attitude or belief they have (i.e., counterattitudinal statement). This statement is often regarded as the cognition that is most resistant to change; it is the generative cognition. Anything consistent with making this statement, such as being paid a large sum of money or being socially pressured to do it, would be considered consonant cognitions and would thus lead to less dissonance. Because external incentives or forces undermine the dissonance that could be evoked from making a counterattitudinal statement, some have proposed that this research paradigm is better termed an induced compliance paradigm.

Festinger and Carlsmith (1959) conducted the first dissonance experiment to use this paradigm. This experiment had a great impact in psychology because of its counterintuitive results: Larger rewards were associated with less positive attitudes, which seemed to contradict predictions derived from reinforcement theorists (e.g., Skinner, 1953) and attitudes researchers (e.g., Hovland et al., 1953). In the Festinger and Carlsmith experiment, participants worked for 1 hour on two boring tasks (e.g., turning spools on a board). After they finished these tasks, the experimenter informed participants that he was examining the effects of expectancies on performance, and that they were in a control condition that did not receive any information before starting the tasks. The experimenter further explained that in another condition, participants were given positive information about the tasks before starting them. These positive expectations were created by having an accomplice of the experimenter pretend to be someone who had just completed the experiment and inform the next participant that he enjoyed the tasks. The experimenter then explained that another participant, who was assigned to the positive expectancies condition, was about to begin but that the accomplice who usually delivered the positive expectation information had not arrived to do his job. The experimenter then asked if the participant be willing to tell the next participant that the tasks were enjoyable. The experimenter offered the participant \$1 or \$20 in order to tell the next participant that the tasks were enjoyable. The amount of money served as the manipulation of dissonance, with the \$1 reward being fewer consonant cognitions for the behavior of telling the next participant that the task was enjoyable.

After participants told this positive information to the next participant (who was actually a confederate), they completed a survey for a different person who ostensibly worked for the psychology



department. The survey asked participants to indicate how interesting and enjoyable the tasks had been in their experiment. Results revealed that participants paid \$1 for saying the experiment was enjoyable rated the tasks as more enjoyable than did participants paid \$20 for the same statement. This latter group of participants rated the tasks the same as control condition participants, who simply performed the tasks and then rated them.

In this experiment, a cognitive discrepancy occurred between the cognition that the tasks were boring and the cognition (or knowledge) that the participant said they were interesting. Because the counterattitudinal statement could not be undone, it was very resistant to change and thus was the generative cognition. In the \$1 condition, it could be thought that there was only one cognition consonant with this behavior, whereas in the \$20 condition, there were 20 consonant cognitions. Consequently, the dissonance should be greater in the low reward than high reward condition, and the former group of participants should be more motivated to reduce dissonance. Because dissonance reduction will target the less resistant-to-change cognition, it targeted the participants' attitudes toward the task. Thus, participants in the low-reward condition changed their attitudes toward the task to be more positive and more congruent with their behavioral statement to reduce the dissonance.

### *Counterattitudinal Essay Writing*

A closely related research paradigm involves having participants write an essay that supports a position inconsistent with their own. In the first experiments using this paradigm, the magnitude of dissonance was manipulated using the money participants were offered to write the counterattitudinal essays. For example, Cohen (1962) had students write an essay concerning an event on campus in which police had acted aggressively. The students were almost completely against the police actions, but in the experiment, they were asked to write an essay entitled "Why the New Haven police actions were justified." They were offered \$0.50, \$1, \$5, or \$10 to write the essay. After they wrote the essay, their attitudes toward the police actions were measured. Results conceptually replicated those of Festinger and Carlsmith (1959). That is, the less money students were paid for writing the essay, the less negative their attitudes toward the police actions. Again, the larger payments provided more cognitions consonant with the participants' essay writing behavior. This research paradigm became one of the most used paradigms of dissonance researchers.

### *Insufficient Punishment*

The previous forced compliance or "induced compliance" paradigm often used some promise of reward to motivate individuals to engage in behavior that was discrepant from their attitudes. The same theoretical logic can be applied to threats of punishment. That is, if individuals engage in behavior because of mild threats of punishment, there are fewer cognitions consonant with engaging in that behavior than if they engage in the same behavior because of severe threats of punishment. As such, more dissonance should be aroused when individuals engage in "attitude-discrepant" behavior for mild than severe threats of punishment.

Aronson and Carlsmith (1963) first tested this conceptual logic in what has been labeled the *forbidden toy paradigm*. In this experiment, preschool children first played with and evaluated some toys. Then, the experimenter placed one of the most attractive toys on a table, and told the child not to play with it while he was gone. The experimenter threatened the children with mild or severe punishment if they played with this toy. In the severe threat of punishment condition, the experimenter said that he would be very angry and would take away all of the toys if they played with the forbidden toy. In the mild threat of punishment condition, the experimenter said he would be a little unhappy if they played with the forbidden toy. Then, the experimenter left the room for

10 minutes, and none of the children played with the forbidden toy during this time. When the experimenter returned, he allowed the children to play with all the toys and evaluate them again. Results revealed that children with mild punishment had more negative attitudes toward the forbidden toy than did children threatened with severe punishment. These effects have been replicated in subsequent research (see also Freedman, 1965; Zanna, Lepper, & Abelson, 1973).

### *Effort Justification Paradigm*

Another research paradigm used to test predictions derived from dissonance theory is the effort justification paradigm. The cognition that an activity is unpleasant implies that one would not engage in that activity; in other words, the cognition that an activity is unpleasant or effortful is dissonant with engaging in that activity. The magnitude of dissonance should be greater, the greater the unpleasant effort required to obtain the incentive. Dissonance can be reduced by subjectively increasing the desirability of the incentive, which would add cognitions consonant with the behavior of engaging in the activity.

Aronson and Mills (1959) were the first to use this paradigm. In this experiment, university women had to endure a high- or low-effort “test” to become a member of a group, which was a sexual discussion group. They were told that they needed to go through a screening test to make sure they would be comfortable with the sexual material. In the high-effort condition, the women had to engage in an embarrassing activity to join the group; they had to read aloud a list of obscene words (e.g., erection) and descriptions of sexual activities to a male experimenter. In the low-effort condition, the women had to engage in an easier task to join the group; they had to read sexual words that were less graphic (e.g., petting). After this task, the women listened to the discussion group, which was a rather dull and boring discussion about sexual behavior in animals such as ducks. A third condition of women simply listened to the discussion. Finally, the women’s attitudes toward the group were assessed. Results revealed that women in the high-effort condition evaluated the group more favorably than did the women in the low-effort condition and the women who simply listened to discussion. This effect has been replicated in subsequent experiments (e.g., Axsom & Cooper, 1985; Beauvois & Joule, 1996; Cooper, 1980). Moreover, research has revealed that effort and not other features of the task caused the results (e.g., Gerard & Mathewson, 1966).

### *Selective Exposure*

In another experimental paradigm to emerge from dissonance theory, research on the selective exposure hypothesis tested the prediction that individuals selectively approach consonant information and selectively avoid dissonant information once dissonance is aroused. In one of the first studies testing this prediction, Mills (1965b) had participants make an easy or difficult decision between two products. Participants then rated how interested they were in reading advertisements for the products. Compared to participants who made an easy decision, participants who made a difficult decision were more interested in reading advertisements for their chosen product (which would presumably provide consonant cognitions). The two decision conditions did not differ in their interest in reading advertisements for the rejected product (which would have provided dissonant cognitions).

Early attempts to replicate the selective exposure effect produced mixed results (see Freedman & Sears, 1965). Subsequent research revealed that individuals are less likely to selectively avoid dissonant information if the information will be useful. For example, after a difficult decision over a car purchase, individuals may not avoid information that would suggest their chosen car has safety problems because this information is useful. Other research revealed other variables that influenced selective exposure, and evidence supporting the hypothesis accumulated (e.g., Frey, 1986; Lowin, 1967; Mills, 1965a, 1965b; Olson & Zanna, 1979).

### *The Hypocrisy Paradigm*

Elliot Aronson and colleagues created a hypocrisy paradigm. To induce hypocrisy, participants were instructed to make a proattitudinal statement to others about the importance of a specific behavior, such as the use of condoms to prevent AIDS (Aronson, Fried, & Stone, 1991); the conservation of water (Dickerson, Thibodeau, Aronson, & Miller, 1992); or the importance of recycling (Fried & Aronson, 1995). The proattitudinal statement itself should not evoke dissonance because it was not inconsistent with attitudes. However, dissonance should be evoked when individuals are reminded of how they do not always act in accord with their proattitudinal statement. Aronson and colleagues predicted that in this hypocrisy paradigm, individuals would be primarily motivated to attempt to “practice what they preach” by behaving more in line with their proattitudinal statement.

In some of the first studies using this hypocrisy paradigm (Aronson et al., 1991; Stone, Aronson, Crain, Winslow, & Fried, 1994), sexually active university students were first instructed to make a videotaped speech in which they argued that students should use condoms each time they have sexual intercourse. Afterwards, participants listed previous times they failed to use condoms for intercourse. Results revealed that this hypocrisy manipulation (compared to critical control conditions) caused individuals to report increased intentions to use condoms (Aronson et al., 1991) and to actually buy more condoms when given the opportunity in the lab (Stone et al., 1994). This hypocrisy condition was compared to conditions in which participants only advocated for the use of condoms, were only reminded of past failures to use condoms, or only read about the dangers of AIDS. In sum, this hypocrisy paradigm revealed that dissonance can lead to changes to behavior.

Other experiments using the hypocrisy paradigm have found some situations in which individuals will change their attitudes to be more consistent with their hypocrisy. In Fried’s (1998) experiment on recycling, when participants privately listed their past failures to recycle (as in most other hypocrisy research), they volunteered more for a recycling center. In contrast, when their past failures were made public by having the experimenter read them aloud, participants did not engage in more recycling behavior when given the opportunity. Instead, they changed their attitudes about recycling to be less positive. These results suggest that, when individuals’ hypocrisies are made public, they are more likely to justify their previous transgressions with attitude change. In the theoretical language of dissonance theory, when the hypocrisy was public, the past behavioral transgressions were more resistant to change, and thus individuals changed their attitudes to be more consistent with past behavior, because the attitudes were less resistant to change. Other research has found that privately focusing on important cognitions, such as previous attitudes or emotional responses, can motivate behavior change (e.g., Harmon-Jones, Peterson, & Vaughn, 2003).

### *Other Paradigms*

The above-mentioned paradigms are those most frequently used in tests of dissonance theory. Other paradigms do exist, and they illustrate the breadth of situations in which dissonance can cause behavior to influence attitudes. For instance, in one early test on honesty and cheating behavior (Mills, 1958), sixth-grade students first completed a measure of attitudes toward cheating. Then a day later, they were given an opportunity to be honest or cheat on a contest (e.g., counting dots within squares on a piece of paper). Then, another day later, the students completed the attitudes measure again. After removing about 15% of participants who were initially extremely opposed to cheating (and could not shift their attitudes to become more extreme), results indicated that students who behaved honestly shifted their attitudes to be more opposed to cheating than those who cheated. Subsequent experiments have revealed additional ways individuals reduce dissonance over cheating, such as motivated forgetting (Shu, Gino, & Bazerman, 2011).

Another “moral” situation that may evoke dissonance is eating meat because it violates concerns for the welfare for animals. Individuals may reduce this dissonance over eating meat by withdrawing moral concern for animals and denying their capacity to suffer. In one experiment testing these ideas (Loughnan, Haslam, & Bastian, 2010), participants were asked to eat dried beef or dried nuts. Then, they reported their moral concerns for animals and cattle. Results revealed that participants who ate meat had less moral concern for animals in general and for cattle in particular (for review of other evidence, see Loughnan, Bastian, & Haslam, 2014).

### ***Uncovering Moderator and Process Variables Related to Cognitive Dissonance Reduction***

In the early 1960s, researchers observed some variables that influenced the ability to detect dissonance-related attitude change (see Abelson et al., 1968; Brehm & Cohen, 1962). These observations led to advances that aimed to better understand when dissonance-related attitude change would occur.

#### ***Role of Commitment***

Brehm and Cohen (1962) noted, along with Festinger, that the definition of what makes a cognition “dissonant” or “consonant” could be more precise. Building on how dissonance theory had been primarily tested in experiments (e.g., difficult decisions and induced compliance), Brehm and Cohen suggested that commitment was a key construct. They wrote,

The role of commitment, then, in the theory of cognitive dissonance, is, first, to aid the specification of psychological implication and hence the determination of what is consonant and what is dissonant and, second, to aid in the specification of the ways a person may try to reduce dissonance.

(p. 9)

In other words, once a person agreed to make a counterattitudinal statement or made a decision, s/he was committed to that course of action because it was difficult to undo. Then, other relevant cognitions in the psychological situation could then be defined as consonant or dissonant with the behavioral commitment. As reviewed earlier, persons often reduce dissonance by supporting the recent behavioral commitment, which usually involves changing the attitude to be more consistent with the commitment.

#### ***Role of Choice***

In an attempt to uncover when dissonance effects may be more likely to emerge, Linder, Cooper, and Jones (1967) suggested that the “reverse incentive” effect may depend on the amount of choice participants perceive themselves to have to write the counterattitudinal essays. They suggested that, in the experiments that produced effects consistent with predictions derived from dissonance theory, participants had the opportunity to decline the request to make the counterattitudinal statement before they did it. Other experiments did not make it clear whether this opportunity to decline was present, or they did not offer this opportunity. To test these ideas, Linder and colleagues manipulated the amount of incentive and the choice to give a counterattitudinal statement. As predicted by dissonance theory, when participants were given a choice to decline to make the statement, participants changed their attitudes more when given a small as compared to large incentive. In contrast and in agreement with Rosenberg’s earlier (1965) results, when participants did not have choice, participants changed their attitude more when given a large as compared to small incentive.

By demonstrating the importance of perceived choice in making the counterattitudinal statement, the research by Linder and colleagues produced a lasting change in the research on dissonance theory and uncovered an important variable underlying the effect of behavior on attitudes.

### *Role of Arousal*

According to cognitive dissonance theory, dissonance is

included among a psychologist's inventory of drives or motivates because its arousal always elicits behavior that is (successfully or unsuccessfully) directed to returning the organism to a state in which the drive is at a lower level of arousal or is entirely quiescent.

(Brehm & Cohen, 1962, p. 224)

The first few experiments testing this idea examined whether dissonance increased arousal by examining whether dissonance manipulations improved performance on simple tasks but impaired performance on complex tasks (e.g., Pallak & Pittman, 1972; Waterman, 1969). These studies suggested that dissonance did in fact increase arousal.

Subsequent experiments tested whether arousal would influence attitude change in dissonance situations. In one of the best known of these experiments, Zanna and Cooper (1974) reasoned from Schacter and Singer's (1962) two-factor theory of emotion that, if the source of the arousal associated with dissonance was somewhat unknown, then the dissonance arousal could be misattributed to something other than the cause of the dissonance. If this misattribution of arousal occurred, then the motivation to reduce the arousal would not be attributed to dissonance-causing situation, and thus there would be no motivation to reduce dissonance via something like attitude change. However, if the arousal were correctly attributed to the dissonance-causing situation, then the motivation to reduce dissonance would lead to responses like attitude change. In Zanna and Cooper's (1974) test of these ideas, participants first ingested a pill (actually a placebo), which, according to the cover story, was to be used to investigate the effect of the drug on memory (for replications, see Higgins, Rhodewalt, & Zanna, 1979; Losch & Cacioppo, 1990; Zanna, Higgins, & Taves, 1976). Some participants were informed that the pill would cause the side effects of feelings of tension and arousal. Other participants were informed that the pill would cause the side effects of feelings of relaxation. And other participants were informed that the pill had no side effects. While participants supposedly waited for the "drug" to be absorbed, they were asked to take part in an unrelated study. The unrelated study was actually the primary study and it involved having participants being randomly assigned to a low- or high-choice condition to write a counterattitudinal essay. Results were as follows. In the condition in which the "drug" was said to have no side effects, participants in the high-choice condition had attitudes more consistent with the position taken in essay than did those in the low-choice condition. In the condition in which the "drug" was said to cause tension and arousal, participants in both choice conditions did not change their attitudes. In other words, when participants misattributed their unpleasant arousing feelings of dissonance to the "drug" rather than to their chosen counterattitudinal behavior, they were not motivated to change their attitudes. These results supported the idea that the attitude change following counterattitudinal behavior is motivated by a need to reduce a negative affective state. Finally, in the condition in which the "drug" was said to cause relaxation, participants in the high-choice condition showed the most attitude change. These participants likely believed that the "drug" must have reduced their feelings of unpleasant arousal, and thus they attributed their arousal even more to the dissonance-causing behavior and were even more motivated to reduce dissonance. In sum, these results strongly suggested that dissonance is likely experienced as aversive state of arousal.

Other experiments used the misattribution methodology in the hypocrisy paradigm. For example, in Fried and Aronson's (1995) experiment on recycling behavior, individuals exposed to a

misattribution cue prior to the hypocrisy induction volunteered to work at a recycling center less than individuals who underwent the same hypocrisy induction without the misattribution cue.

Subsequent research used other methods to test whether dissonance manipulations created negative arousal. Some experiments, for example, measured electrodermal activity, which is the result of sympathetic nervous system arousal, and found that chosen counterattitudinal behavior increased this arousal (e.g., Elkin & Leippe, 1986; Harmon-Jones, Brehm, Greenberg, Simon, & Nelson, 1996; Losch & Cacioppo, 1990). Other experiments manipulated the amount of arousal or negative affect and found that manipulated decreases in arousal or negative affect caused decreases in attitude change following counterattitudinal behavior, whereas manipulated increases in arousal or negative affect caused increases in attitude change following counterattitudinal behavior (e.g., Cooper, Zanna, & Taves, 1978; Rhodewalt & Comer, 1979; Steele, Southwick, & Critchlow, 1981).

In sum, these results suggest that chosen counterattitudinal behavior creates a state of arousal that is likely negative. If this dissonance state is misattributed to another source, the motivation to change attitudes to be in line with the recent behavior is reduced.

### *The Experience of Psychological Discomfort*

Experiments using the misattribution paradigm provided indirect evidence for Festinger's idea that the experience of cognitive dissonance was psychologically uncomfortable and that individuals were motivated to reduce this unpleasant feeling. Elliot and Devine (1994) attempted to provide more direct evidence by assessing participants' self-reported negative affect in response to an induced compliance manipulation. In their experiments, they induced dissonance using a counterattitudinal essay task. They also manipulated when participants reported negative affect (e.g., uncomfortable, uneasy, bothered); that is, participants reported how they felt either before or after reporting their attitudes toward the essay topic. When negative affect was measured prior to attitudes, high-choice participants reported more negative affect than did low-choice participants. In contrast, when attitudes were measured prior to negative affect, high-choice participants reported the same low level of negative affect as low-choice participants. These results suggested that cognitive discrepancy caused individuals to feel negative affect and that this negative affective state was reduced once individuals changed their attitudes.

Subsequent studies extended these empirical efforts. For instance, one set of experiments found that choice to engage in counterattitudinal behavior increased self-reported negative affect even when the counterattitudinal behavior could produce no aversive consequences (Harmon-Jones, 2000a). In addition, Son Hing, Li, and Zanna (2002) found that, when individuals who scored high in aversive racism were induced to experience hypocrisy about their prejudice, they felt more guilt and discomfort than a comparison condition. Moreover, after these individuals acted in a non-prejudiced manner, they felt less guilt and discomfort.

In other research, Galinsky et al. (2000) replicated the results of Elliot and Devine (1994) and also found that self-affirmations decrease attitude change because they also decrease the negative affect associated with dissonance. However, Galinsky et al. did not find evidence of attitude change in the standard dissonance condition, and they suggested that the measure of self-reported negative affect had perhaps eliminated the need to reduce dissonance through attitude change.

This result and interpretation is similar to other instances in which a measure of self-reported affect given to participants before the attitude measure seemingly prevented attitude change from occurring (e.g., Elliott & Devine, 1994, Experiment 1; Pyszczynski, Greenberg, Solomon, Sideris, & Stubing, 1993). Pyszczynski and colleagues (1993) had proposed that, if attitude change was motivated by a need to protect one from the negative affective state of dissonance, then expressing this state by completing a self-report affect measure may reduce the need to reduce the cognitive discrepancy. In support, they found that, when high-choice participants were encouraged to express

any negative feelings they were having, participants changed their attitudes less than high-choice participants who did not receive these “express” instructions. In a related manner, Stice (1992) found that participants who were encouraged to confess their feelings about a counterattitudinal behavior reported higher levels of guilt but showed less attitude change than did participants in a standard condition. All in all, these experiments suggest that, at least on some occasions, when individuals express the negative affect associated with counterattitudinal behavior, they may be less motivated to engage in attitude change.

### ***Revisions Concerning Motivation Underlying Dissonance Processes***

Beginning in the 1960s, researchers proposed revisions to cognitive dissonance theory that posited motivations other than the need to reduce cognitive inconsistency fueled dissonance processes. Many of these conceptual models suggested situations or cognitions that were “necessary” for discrepant behavior to influence attitudes. Below we review the revisions that have received the most empirical attention; see Olson and Stone (2005) for a more detailed review of earlier revisions.

#### *Self-Consistency Theory*

Elliot Aronson (1968) proposed a conceptual revision that continued to maintain the importance of inconsistency, but he posited that the inconsistency needed to involve an aspect of the self-concept. He suggested that most situations that evoked dissonance arousal and dissonance reduction challenged individuals’ expectancies or beliefs about themselves. For example, he suggested that the dissonance evoked in Festinger and Carlsmith’s (1959) experiment was not the result of the inconsistency between the cognitions, “I believe the tasks were boring” and “I told someone the tasks were interesting.” Instead, Aronson posited that the dissonance evoked was the result of the inconsistency between cognitions about the self (e.g., “I am a decent and truthful human being”) and cognitions about the behavior (e.g., “I have misled a person and led him to believe something that just isn’t true”). Moreover, Aronson suggested that, because cognitions about the self are highly resistant to change, dissonance should motivate individuals to change their attitudes or beliefs rather than their self-concepts. In addition, Aronson proposed that many dissonance experiments had almost implicitly assumed that participants had positive expectations for their behavior. In other words, he proposed that participants would not experience dissonance in the Festinger and Carlsmith experiment when they mislead the “next participant” about the dullness of the task if they had negative expectancies for their behavior (i.e., believed they were the kind of person who misled persons). He went further to propose that individuals with negative self-concepts (i.e., negative expectancies) would not experience dissonance under the same conditions as individuals with positive self-concepts (i.e., positive expectancies). Therefore, Aronson’s self-consistency revision of dissonance theory predicted that individual differences in the self-concept should moderate dissonance processes (Thibodeau & Aronson, 1992).

Experiments designed to explicitly test this self-consistency model manipulated or measured self-concept differences to assess whether they moderated dissonance processes. For instance, in one experiment by Aronson and Carlsmith (1962), the expectancy about the self was manipulated and reactions to a disconfirmation of this self-expectancy were measured. Some individuals were given positive feedback about their performance over several trials of a task, whereas others were given negative feedback about their performance over the task. This manipulation of self-expectancy was crossed with performance feedback manipulation on the last block of trials; the feedback manipulation was either positive or negative, thus being consistent or inconsistent with the previous self-expectancy. The most important test of self-consistency model was for those participants given a negative expectancy over the first part of the experiment (i.e., 80 trials). If they were given positive

feedback on their performance on the last block of trials (i.e., 20 trials), then they should attempt to alter their performance, if given the chance, so that it would be negative and thus consistent with the earlier expectation that had been created. Results supported this prediction. Individuals with a strong negative expectancy who received positive performance feedback on the last block of trials sabotaged their subsequent performance when given the opportunity to do so. Subsequent research also found that individuals with negative self-expectancies (Brockner, Wiesenfeld, & Raskas, 1993; Mettee, 1971); low self-esteem (Glass, 1964; Maracek & Mettee, 1972); or mild depression (Rhode-walt & Agustsdottir, 1986) had less attitude change after a discrepant act, compared to individuals with more positive expectancies, high self-esteem, or no depression.

Aronson's proposal that dissonance occurs when behavior threatens important aspects of the self-concept provided an explanation for many previously inexplicable dissonance theory findings. However, some studies failed to provide support for the prediction that the self-concept would moderate dissonance processes (for reviews, see Jones, 1973; Shrauger, 1975). For example, several studies were unable to replicate the results of Aronson and Carlsmith's (1962) experiment (e.g., Ward & Sandvold, 1963), and other studies failed to find evidence of self-esteem moderating dissonance effects (e.g., Cooper & Duncan, 1971). Moreover, research has revealed that nonhuman animals (e.g., rats), which presumably lack self-concepts of morality, rationality, and competence, have dissonance arousal and reduction (Egan, Santos, & Bloom, 2007, 2010; Lawrence & Festinger, 1962).

### *Aversive Consequences Model*

In 1984, Cooper and Fazio published an impactful review article that proposed a "new look" at dissonance theory. They proposed that responses observed in past dissonance experiments were not due to cognitive inconsistency but were instead due to individuals feeling personally responsible for having produced aversive consequences. As a result of this feeling, individuals were motivated to change their attitudes to be more in line with their recent behavior so that they could reduce the perceived aversive consequences they believed they had caused.

Cooper and Fazio's aversive consequences revision proposed that, once individuals engage in behavior, they evaluate the consequences of it. If those consequences are perceived to be outside of the individuals' standards of acceptance and to be irrevocable, individuals will believe that the consequences are aversive or unwanted. They will then try to attribute responsibility for the aversive consequences by assessing two other bits of information: choice and foreseeability. If they believe that they freely chose to behave in the way they did and believe that they could have foreseen the consequences, they will accept responsibility for the consequences of the behavior. And this acceptance of responsibility for the aversive consequences will cause them to experience dissonance arousal and a motivation to reduce it.

Cooper and Fazio reviewed several studies that provided evidence in support of this aversive consequences revision. In one of the earliest experiments providing support, Cooper and Worchel (1970) replicated the Festinger and Carlsmith (1959) design and gave participants either \$1 or \$20 to tell a confederate that a dull and boring task was enjoyable. In addition, Cooper and Worchel manipulated whether the confederate believed or did not believe the counterattitudinal statement made by the participants; this latter manipulation was designed to manipulate aversive consequences, such that no aversive consequences were believed to have been produced if the statement was not believed. Results indicated that participants rated the boring task as more interesting when their counterattitudinal statement was believed by the confederate than when it was not. In another experiment, Scher and Cooper (1989) found that, after individuals perform a proattitudinal behavior, they will change their attitudes about this behavior if they believe the behavior led to aversive consequences. According to Cooper and Fazio (1984, p. 234), these results and others suggested



that feeling personally responsible for producing aversive consequences was necessary for dissonance to occur. In sum, they stated, “Dissonance has precious little to do with the inconsistency among cognitions per se, but rather with the production of a consequence that is unwanted” (Cooper & Fazio, 1984, p. 234).

The aversive consequences model was criticized by several scientists. Some argued that this revision had an extremely narrow view of cognitive dissonance phenomena (e.g., Aronson, 1992; Berkowitz & Devine, 1989). For example, the research testing the revision focused exclusively on the induced compliance paradigm and the theoretical proposals do not seem to apply to other paradigms such as the belief disconfirmation one (Harmon-Jones, 1999). Subsequent research also suggested that feeling personally responsible for producing aversive consequences was not necessary to cause dissonance arousal and dissonance reduction. For instance, one experiment, ostensibly concerning memory, gave participants low or high choice to write a statement that an unpleasant-tasting beverage (Kool-Aid mixed with vinegar and no sugar) was enjoyable. Prior to writing the statement, participants were told to discard in the trash the paper on which the statement would be written, because the researcher did not need it. This design feature should eliminate any possible aversive consequences associated with writing the statement, because there was nothing produced that could harm anyone. Results revealed that participants in the high-choice condition had significantly more positive attitudes toward the unpleasant-tasting beverage than did participants in the low-choice condition (Harmon-Jones et al., 1996). Other experiments replicated these results (e.g., Friedman & Arndt, 2005) and also revealed that this simple high-choice condition caused an increase in sympathetic nervous system activity and more self-reported negative affect (Harmon-Jones et al., 1996; Harmon-Jones, 2000a,b). Taken together, these results suggest that aversive consequences are not necessary to arouse dissonance. Thus, the aversive consequences model does not provide a complete understanding of how behavior influences attitude change.

### *Self-Affirmation Theory*

Claude Steele (1988) proposed another revision of dissonance theory that proposed that cognitive inconsistency was not the motivation underlying the attitude changes and other responses that had been discovered in dissonance theory research. He argued that, in dissonance experiments, individuals are typically induced to engage in behaviors that may threaten the integrity of their favorable views of themselves. He further argued that individuals could restore their self-integrity by changing their attitudes to be more in line with their behavior. However, attitude change is only one way to maintain their globally positive self, according to Steele (1988). Steele posited that, because individuals are primarily motivated to maintain and repair their positive views of themselves, then action that restores self integrity should work to address the event that caused dissonance. For example, if individuals mentally activate other positive aspects of their self-views when they are threatened with something like dissonance, they will not be motivated to change their attitudes to be more in line with their behavior. In other words, simply bringing to mind other positive aspects of the self, such as virtues or past successes, can reduce the need to change attitudes after counterattitudinal behavior.

In one test of these ideas, Steele and Lui (1983) had participants first engage in counterattitudinal behavior as in a typical dissonance experiment. Then, among participants with strong sociopolitical values, half of them completed a scale measuring their sociopolitical values before they completed the measure of attitudes toward the counterattitudinal act. Reminding individuals of their values is one way to cause self-affirmation. Results revealed that participants with strong sociopolitical values who completed the sociopolitical values scale, and presumably affirmed those values, did not show the typical attitude change effect. In contrast, participants who did not have these values and those who had these values but did not complete the sociopolitical value scale showed the typical attitude change effect. Other research supported predictions derived from this revision (Steele, 1988). In

other words, when individuals are reminded of valued aspects of themselves, they are less likely to show attitude change that typically occurs after counterattitudinal behavior (for a more detailed review, see Olson & Stone, 2005).

Subsequent research questioned some of the propositions of self-affirmation theory. For instance, J. Aronson, Blanton, and Cooper (1995) and Blanton, Cooper, Skurnik, and Aronson (1997) conducted research that questioned whether affirming the self on positive self-attributes directly related to the counterattitudinal behavior would have the effects predicted by self-affirmation theory (i.e., that self-affirmation would decrease attitude change). In experiments in this line of research, participants wrote uncompassionate essays, and they were led to believe they chose to do so (high-choice condition). In the J. Aronson et al. (1995) experiment, after participants wrote the counterattitudinal (uncompassionate) essay, they were given the opportunity to read positive information on self-attributes that were related to the essay (i.e., compassion) or unrelated to the essay (i.e., creative). Results revealed that participants avoided positive feedback about self-attributes related to the counterattitudinal behavior but approached positive feedback unrelated to the counterattitudinal behavior. In the Blanton et al. (1997) experiment, after participants wrote the counterattitudinal (uncompassionate) essay, they were given relevant (compassionate) or irrelevant (creative) positive feedback about themselves. When participants were informed they were highly compassionate, they showed more attitude change compared to participants in a no-feedback—high-choice condition. In contrast, when participants were informed they were highly creative, they showed less attitude change compared to participants in a no-feedback—high-choice condition. Taken together, these results suggest that in order for self-affirmation to prevent dissonance reduction via attitude change, the self-affirmation needs to be irrelevant to the recent counterattitudinal behavior. It is as though it needs to be positively distracting from the recent event. If, however, the self-affirmation is directly related to the counterattitudinal behavior, it will likely increase the motivation to engage in dissonance reduction via justifying behavior through attitude change.

Other research used a hypocrisy paradigm (about AIDS and condom use; Stone, Wiegand, Cooper, & Aronson, 1997) to test whether participants would be more motivated to reduce the cognitive discrepancy or self-affirm. Once hypocrisy was induced, participants were given two options. One option would directly resolve the cognitive discrepancy involving hypocrisy; that is, they could purchase condoms. The other option would allow participants to engage in a self-affirmation that would not directly resolve the cognitive discrepancy; that is, they could donate to a homeless shelter. When participants were only offered the self-affirmation option, 83% of participants in the hypocrisy condition used it (donated to a homeless shelter). However, when participants were given the choice between the two options of directly resolving the cognitive discrepancy or engaging in self-affirmation, 78% selected the direct option (purchased condoms) while 13% selected the self-affirmation option (donated to homeless shelter).

Other researchers have proposed alternative explanations for the effects of self-affirmation manipulations on responses to dissonance-arousing counterattitudinal behaviors. Following on Festinger's (1957) proposal that the importance of cognitions determines the magnitude of dissonance, Simon, Greenberg, and Brehm (1995) posited that self-affirmation manipulations may cause participants to view the dissonance-arousing behavior as less important. In support, they found that a self-affirmation manipulation after counterattitudinal behavior caused participants to believe that their behavior was less important. Alternatively, Tesser (2000) suggested that self-affirmation manipulations might exert their effects because they increase positive affect. He further suggested that, because that dissonance causes negative affect, any positive affect manipulation such as self-affirmation might decrease dissonance reduction because it decreases the negative affect associated with dissonance. Along these lines, Tesser and Cornell (1991) found that, after participants wrote a counterattitudinal essay under high choice, those given the opportunity to bask in the reflected glory

of a close other or provided with a positive social comparison to a close other showed less attitude change than participants in a high-choice control condition.

Although research on self-affirmation theory has found that reminders of positive self-attributes reduce defensive responses to various self-threats (e.g., Sherman & Cohen, 2002), the exact psychological processes by which these manipulations decrease attitude change following counterattitudinal behavior are debated and not well understood (Galinsky, Stone, & Cooper, 2000). Self-affirmations may cause these effects because they cause individuals to be distracted, to trivialize recent behavior, or to feel more positive affect.

### *The Self-Standards Model*

Stone and Cooper (2001) proposed a self-standards model that attempted to integrate several revisions of dissonance theory. It used principles from the study of action identification (Vallacher & Wegner, 1985); cognitive accessibility; and the structure of self-knowledge to propose how cognitions about the self-concept influence dissonance processes. They suggested that the revisions of dissonance made different assumptions about the types of information individuals use to interpret and evaluate their dissonance-relevant behavior. Furthermore, they proposed that individuals use important attitudes, beliefs, or self-knowledge to understand the meaning of their dissonance-related behavior, but which criterion used to understand the behavior depends on the type of information that is activated and accessible in the situation.

According to the self-standards model, once individuals behave counterattitudinally, they assess their behavior against a standard of judgment. The specific standard of judgment used may or may not relate to the self. The model predicts that, if normative standards of judgment are salient in the context, then individuals will evaluate their behavior against the conventions used by most individuals in the culture (i.e., normative standard). Thus, if the behavior is discrepant from a salient normative standard, then, as predicted by the aversive consequences model (Cooper & Fazio, 1984), dissonance will occur, and it will not be moderated by self-concept differences. In contrast, if personal standards are salient in the context, then the behavior will be evaluated against the individual's own idiosyncratic self-expectancies. Thus, if the behavior is discrepant from personal standards, then as predicted by self-consistency theory (Aronson, 1968), individuals with high self-esteem, who have more positive expectancies for their behavior, will be likely to assess their behavior as discrepant from their positive expectancies, and they will change their attitudes as a result. However, individuals with low self-esteem, who have more negative expectancies for their behavior, will be less likely to assess their behavior as discrepant from their negative expectancies and perceive less of a discrepancy, and they will not change their attitudes. Therefore, according to the self-standards model, self-concept differences will moderate dissonance responses when personal standards are salient and used to evaluate discrepant behavior.

To accommodate self-affirmation theory and research, the self-standards model posited that once dissonance is aroused, the accessibility of specific cognitions about the self will influence whether one changes attitudes or engages in self-affirmation (Steele et al., 1993). Like the original theory of dissonance, the self-standards model predicts that the dissonance-related negative affect will motivate individuals to reduce it. The self-standards model then predicts that, if individuals have no other self-relevant thoughts at that moment, they will change their attitudes to reduce their dissonance-related negative affect. If, however, new positive cognitions about the self are salient at the time, the way in which dissonance will be reduced will depend on the relevance of the self-attributes to the discrepancy and the self-esteem level. In particular, if positive self-attributes relevant to the discrepancy are made salient, individuals with high self-esteem should experience more dissonance than individuals with low self-esteem. In contrast, if positive self-attributes irrelevant to the discrepancy are made salient, individuals with high self-esteem will use them as a self-affirmation and thus show

less attitude change. Individuals who have low self-esteem, who have fewer positive self-attributes and are thus less able to self-affirm, will change their attitudes to reduce dissonance (Steele et al., 1993).

Predictions derived from the self-standards model have been tested in a few studies. For example, in one study, participants wrote an uncompassionate essay and were primed with relevant positive self-attributes (e.g., compassion) or irrelevant positive self-attributes (e.g., creative). Results revealed that priming with relevant positive self-attributes caused more attitude change for individuals with high self-esteem than for those with low self-esteem, whereas priming irrelevant positive self-attributes caused more attitude change for individuals with low self-esteem than for those with high self-esteem (Stone & Cooper, 2003). In another study, individuals with high or low self-esteem wrote a counterattitudinal essay under of high or low choice (Stone, 2003). In some of the high-choice conditions, normative or personal standards were primed with a trait-listing task. Results replicated the effect of perceived choice on attitude change, such that high choice caused more attitude change than low choice. In addition, when no standards were primed, self-esteem level had no influence on attitude change in the high-choice conditions. Similarly, when normative standards were primed, self-esteem level had no influence on attitude change. However, when personal standards were primed, individuals with high self-esteem had more attitude change than individuals with low self-esteem, who engaged in no more attitude change than individuals in the low-choice conditions. Taken together, these results support predictions of the self-standards model by demonstrating that individual differences in self-esteem influences dissonance-related attitude change as a function of the accessibility and relevance of the positive self-attributes primed after counterattitudinal behavior.

### *“A Radical Dissonance Theory”*

One meaning of radical is pertaining to the origin. Beauvois and Joule (1996, 1999) presumably had this meaning in mind when they referred to their conception of dissonance theory as a radical one, because their model is based on the core of Festinger’s (1957) original ideas. Beauvois and Joule noted that dissonance theory is not a cognitive consistency theory, and they thought it unfortunate that Festinger framed it as one. Instead, they proposed that dissonance theory is a theory about commitment, and they emphasized the core tenets of dissonance theory: (a) the relationship between two cognitions is dissonant if one contradicts what is implied by the other; (b) dissonance is a tension state that needs reduction; and (c) the amount of dissonance depends on the proportion of dissonant cognitions in the relevant set of cognitions (i.e., dissonance ratio). In order to calculate the dissonance ratio, one cognition needs to take the special status of “generative” cognition, so that the other cognitions can be defined as consonant or dissonant with this cognition. This “generative” cognition is not in the numerator or denominator of the dissonance ratio, and it is always the representation of behavior and never an attitude. In addition, Beauvois and Joule propose that aspects of the behavior (previously examined in dissonance research) are cognitions of commitment. They are not part of the dissonance ratio because they are neither inconsistent nor consistent with the generative cognition. Instead, they determine the conditions for the occurrence of dissonance. These aspects are the behavior being freely chosen, having consequences, being public, and being irrevocable.

Beauvois and Joule suggested that other revisions of dissonance theory assumed that an attitude or some other cognition, such as the self, was the generative cognition. By positing that the behavior is the generative cognition, Beauvois and Joule derived novel predictions that led to new paradigms for testing dissonance processes.

Following from their careful conceptual analysis, Beauvois and Joule noted that, in Festinger and Carlsmith’s (1959) experiment, participants engaged in two counterattitudinal actions. Previous analyses had only considered one counterattitudinal action—the “lie” to the “next participant.”

In addition, Beauvois and Joule noted that participants first experienced dissonance as a result of completing the boring task. As Beauvois and Joule (1999, p. 50) explained, “the cognition, ‘This task is boring,’ would imply the opposite psychologically of the cognition, ‘I will do this work’.” Participants also experienced a second dissonance, which was caused by telling the next participant how much they liked the boring task. Beauvois and Joule referred to the paradigm as a *double-forced compliance* procedure. They predicted that this procedure should cause less attitude than a single-forced compliance procedure, because the second forced compliance behavior is consistent with the first. They conducted experiments that found that participants liked the boring task more when they first completed the boring task and then told a “next participant” that it was boring (i.e., the truth) as compared to two other conditions: (a) when participants read a description of the task and told the next participant the task was enjoyable (i.e., lie) and (b) when participants only completed the boring task (Beauvois & Joule, 1996). Beauvois and Joule suggested that these results contradicted the aversive consequences (Cooper & Fazio, 1984) and self (Aronson, 1968; Steele, 1988) revisions of dissonance theory, because the participants who told the truth did not produce an aversive consequence or threaten the self.

Another new paradigm developed as a result of the radical theorizing posited that that individuals can reduce dissonance about a problematic behavior by engaging in a new behavior that is consistent with the first, which Beauvois and Joule labeled *act rationalization*. They suggested that act rationalization occurs when the second behavior opportunity is presented immediately after the first one. If the second behavior opportunity is not presented immediately, individuals will reduce dissonance with cognitive rationalizations such as attitude change and thus not be motivated to engage in act rationalization. Along these lines, they found that, after individuals engage in one dissonant behavior (e.g., smokers commit to abstain from smoking for 18 hours), they will chose to engage in a second more costly behavior (e.g., commit to abstain from smoking for 6 days) if they had perceived themselves to have freely chosen the first behavior or if they were presented the second behavior opportunity before being an opportunity to engage in cognitive rationalization (write down reasons they engaged in the first abstinence).

### The Action-Based Model

Harmon-Jones (1999) proposed the action-based model as evidence accumulated suggesting that Festinger’s original version of the theory was still viable. The model begins by assuming that many perceptions and cognitions automatically impel organisms to act in specific ways. One of the most important functions of cognition is guiding behavior. When information is inconsistent with an “actional” cognition (i.e., cognitions with immediate, clear, and insistent action implications), the negative affective state of dissonance occurs. This dissonance signals that there is a problem and the “cognitive inconsistency” needs to be resolved, so that action can occur.

Dissonance often occurs after difficult decisions and a commitment to action. A commitment to a course of action primes the organism for action, according to the action-based model. It motivates organisms to translate their intentions into effective actions. This motivational state is posited to be an approach-oriented one, and the attitude changes that occur are posited to help organisms follow through with, or effectively enact, the decisions or commitments (Harmon-Jones, Amodio, & Harmon-Jones, 2009; Harmon-Jones, Harmon-Jones, & Levy, 2015).

According to the action-based model, this approach-oriented state should increase the degree of cognitive discrepancy reduction. Experiments have tested this prediction by manipulating level of approach action-orientation immediately after dissonance was created in difficult-decision (free choice) and induced compliance paradigms. Some of these experiments manipulated approach action orientation using cognitive manipulations. For instance, individuals in the action-oriented conditions of these experiments thought about an important, unrelated goal and described their plan

to accomplish this goal. Results revealed that individuals in these action-orientation conditions had more attitude change consistent with the commitment/decision than did individuals in comparison conditions (Harmon-Jones & Harmon-Jones, 2002; Harmon-Jones et al., 2008).

Other experiments have manipulated approach action orientation using whole body posture. The use of this manipulation was based on past research that had revealed that, when individuals are in the supine body posture, they have less approach motivation, as evidenced by psychophysiological responses toward photographs of desirable stimuli (Harmon-Jones, Gable, & Price, 2011; Price, Dieckman, & Harmon-Jones, 2012). In difficult-decision and effort-justification dissonance experiments, participants who sat upright had the typical attitude change effects, whereas participants who sat in a supine position did not. That is, participants in a supine posture evidenced no significant attitude change (Harmon-Jones, Price, & Harmon-Jones, 2015).

Additional studies in support of the action-based model predictions have revealed that trait approach motivation is associated with greater cognitive dissonance reduction as measured by attitude change (C. Harmon-Jones et al., 2011). That is, individuals who score higher in trait behavioral activation sensitivity (Carver & White, 1994) evidence greater attitude change following difficult decisions and induced compliance manipulations.

The action-based model also led to predictions regarding the neural processes involved in dissonance arousal and reduction. In particular, based on research in cognitive neuroscience that had suggested that the anterior cingulate cortex (ACC) is involved in detection of response conflict (Botvinick, Braver, Barch, Carter, & Cohen, 2001) and that cognitive conflict and ACC activation are associated with negative affect (Hajcak & Foti, 2008), the action-based model predicted that the ACC should be involved in dissonance arousal. In support, research found that when low-prejudiced individuals made responses that suggested they were racially prejudiced, they had more ACC activation (Amodio et al., 2004). Moreover, this effect was particularly intense for low-prejudiced individuals who also had strong personal motivations to respond without prejudice (Amodio, Devine, & Harmon-Jones, 2008). Other experiments using more typical dissonance paradigms have observed increased ACC activity during dissonance arousal (van Veen, Krug, Schooler, & Carter, 2009; Izuma et al., 2010).

Dissonance reduction, however, is associated with activation of the left prefrontal cortex, as predicted by the action-based model. Building on research that had revealed that the left prefrontal cortical region was associated with approach motivational processes (Harmon-Jones, Gable, & Peterson, 2010), the action-based model predicted that commitment to a chosen course of action should increase left prefrontal cortical activity, and this activation should be associated with cognitive discrepancy reduction in support of the chosen course of action. This prediction has been supported in three EEG experiments using an induced compliance paradigm (Harmon-Jones, Gerdjikov, & Harmon-Jones, 2008; Harmon-Jones, Harmon-Jones, Serra, & Gable, 2011). In these experiments, participants in the high-choice condition had greater relative left frontal cortical activation immediately after commitment to counterattitudinal behavior as compared to individuals in the low-choice condition.

Other experiments have manipulated relative left prefrontal cortical activity and found this manipulation to influence dissonance-related attitude change. One experiment used neurofeedback of EEG (Harmon-Jones, Harmon-Jones, Fearn, Sigelman, & Johnson, 2008) and another experiment used transcranial direct current stimulation to decrease left dorsolateral frontal cortical activity (Mengarelli, Spoglianti, Avenanti, & di Pellegrino, 2015). In addition, an experiment using a functional magnetic resonance imaging (fMRI) found that post-decision activity in the left lateral prefrontal cortex predicted greater spreading of alternatives after difficult decisions (Qin, Kimel, Kitayama, Wang, Yang, & Han, 2011). Another experiment manipulated the approach-oriented state following a difficult decision (Harmon-Jones, Harmon-Jones et al., 2008, Experiment 2),

and found that this state increased relative left prefrontal cortical activity as well as spreading of alternatives.

Other experiments have found that, during difficult decisions, activity in the ventral striatum predicts spreading of alternatives (Jarcho, Berkman, & Lieberman, 2011; Kitayama, Chua, Tompson, & Han, 2013). Based on evidence that activation of the ventral striatum is associated with approach motivation, this dissonance research further suggests that increased approach motivation is associated with increased dissonance-related attitude change.

### *Summary*

These more recent conceptions of dissonance theory all seem to accept that the original version of the theory is still viable. However, these models differ in their focus. The idea of the original theory, that cognitive inconsistency was psychologically uncomfortable and motivated organisms to make some cognitive changes, continues to inspire new research (Gawronski, 2012; Proulx, Inzlicht, & Harmon-Jones, 2012). Moreover, it connects dissonance theory with other research literature concerned with motivation, emotion, cognitive conflict, self-regulation, defensive reactions to threat, and cognitive and affective neuroscience (e.g., Jonas et al., 2014).

## ***Group Processes and Culture Within Dissonance***

### *Group-Level Dissonance Processes*

Dissonance processes can involve interpersonal relationships (e.g., Cooper & Stone, 2000; Zanna & Sande, 1987). For instance, under some conditions, dissonance arousal and reduction may occur when one simply observes another person engaging in dissonance-arousing behavior. Sakai (1999) conducted an experiment testing this idea. In the experiment, two participants (one was actually a confederate) completed a boring task similar to that used in Festinger and Carlsmith (1959). Then the experimenter asked the confederate to tell the next participant that the task was interesting. The relationship between the confederate and the naïve participant was manipulated to be one that had a feeling of common fate or not. To create a feeling of common fate, the confederate suggested to the naïve participant that they go together to tell the next participant that the task is interesting; the confederate said that he would do all the talking, and he asked the participant if this would be acceptable. They also sat together when the confederate spoke to the next participant. In the no-common-fate condition, the confederate did not engage with the naïve participant, and when the confederate was telling the next participant about the task, the naïve participant was not next to the confederate. Results revealed that the “observer” participants in the common-fate condition reported feeling more familiar with their partner, feeling more responsibility for their partner’s behavior, and having more positive attitudes toward the boring task than did “observer” participants in the no-common-fate condition. These results suggest that when individuals tacitly agree to another person’s counterattitudinal advocacy, they change their attitudes to be more consistent with this advocacy.

In an extension of this research, Norton, Monin, Cooper, and Hogg (2003) manipulated the social identity (ingroup or outgroup) of the partner individuals who observed a counterattitudinal behavior. In one experiment, participants overheard an ingroup or outgroup member give a speech that was counterattitudinal for the observer participant. Those observers who identified most strongly with the ingroup had the most attitude change in the direction of the speaker’s communication, and this attitude change occurred even before the speech was given. Another experiment revealed that the attitude change in the observers was greater when the ingroup member chose to give the speech and the speech had foreseeable aversive consequences.

### *Cultural Models of Dissonance Processes*

Some social psychologists have questioned whether social psychological processes such as cognitive dissonance occur across all cultures. For instance, Markus and Kitayama (1991) suggested that cultures differ in terms of whether they are more individualistic or collectivistic and that these differences influence the way in which individuals within those cultures construe the self, which may influence dissonance processes. Many Asian cultures (e.g., Japan, China) tend to be more collectivistic, whereas many Western cultures (e.g., USA, Canada) tend to be more individualistic. They suggested that the self in collectivistic cultures, as compared to individualistic cultures, is based more on social roles, positions, and relationships. These individuals, who have an interdependent self, are less likely to use their internal attributes, such as their own attitudes, in how they construe their behavior. Moreover, because they are more sensitive to social role requirements, they may be more likely to attribute cognitive discrepancies to the situation, which would also reduce dissonance.

A study by Heine and Lehman (1997) provided some evidence suggestive of cultural differences in dissonance processes. In this free-choice/difficult-decision study, participants who were recent immigrants to Canada from Japan and China did not engage in significant spreading of alternatives; Canadian participants, however, did. Heine and Lehman (1997) concluded, "Along with the myriad conditions necessary to observe dissonance reduction in forced-choice and free-choice paradigms . . . we would add that the sample should not be from a culture representative of the interdependent view of self" (p. 397). This result fit with the idea that cognitive discrepancies between attitudes and behaviors do not cause dissonance in individuals with an interdependent view of self. However, other studies conducted in interdependent cultures have provided evidence of dissonance-related attitude change in standard dissonance paradigms (Sakai, 1981; Sakai & Andow, 1980).

Notwithstanding methodological problems that cloud the interpretation of the results of Heine and Lehman (1997; e.g., at prechoice, Canadians desired the decision options more than did Asians), the idea that culture might moderate dissonance processes should be of no surprise to readers familiar with Festinger (1957), who wrote:

Dissonance could arise because of cultural mores. If a person at a formal dinner uses his hands to pick up a recalcitrant chicken bone, the knowledge of what he is doing is dissonant with the knowledge of formal dinner etiquette. The dissonance exists simply because the culture defines what is consonant and what is not. In some other culture those two cognitions might not be dissonant at all.

(p. 14)

Moreover, Festinger suggested that culture could influence the way in which dissonance is reduced.

Consistent with these ideas, Kitayama, Snibbe, Markus, and Suzuki (2004) found that dissonance reduction in Japanese participants was more likely to occur when they viewed a counterattitudinal act from the perspective of others. In addition, Hoshino-Browne, Zanna, Spencer, Zanna, Kitayama, and Lackenbauer (2005) found that Asian Canadians (with strong Asian identities) had more post-decision spreading of alternatives when they made a decision for a close friend as compared to when they made it for themselves. In contrast, European Canadians had more post-decision spreading of alternatives when they made a decision for themselves as compared to when they made it for a close friend. In general, results are consistent with Festinger's idea that culture will "define what is consonant and what is not" (Festinger, 1957, p. 14). Research with participants from various cultures has illustrated how cultures can influence cognitive dissonance processes involved in attitude-behavior relations.

Cognitive dissonance theory provides an influential and compelling framework for understanding when, how, and why behavior influences attitudes. Although dissonance theorists do not all



agree on the exact mechanism(s) underlying the effects of behavior on attitudes, they do all agree that the effects that behavior has on attitudes is often a motivated process driven by a need to reduce a psychologically unpleasant affective state. As we review next, this assumption is not shared by another major approach to understanding how behavior influences attitudes.

### **Self-Perception Theory**

In *self-perception theory*, Daryl Bem (1965, 1967, 1972) hypothesized a potent, causal influence of behavior on attitudes (and on other internal states). The key proposition in Bem's model was that self-perception and social perception are parallel processes. Specifically, individuals may often infer their own internal states, including attitudes, from the same external, visible cues they would use to infer another person's internal states:

An individual's belief and attitude statements and the beliefs and attitudes that an outside observer would attribute to him are often functionally equivalent in that both sets of statements are "inferences" from the same evidence: the public events that the socializing community originally employed in training the individual to make such self-descriptive statements.

(1965, p. 200)

What are the visible cues that observers use to judge another individual's attitudes and preferences? Typically, observers monitor the individual's actions, as well as external factors that might have facilitated or inhibited such actions. To the extent that external constraints are absent, internal states consistent with behavior will typically be inferred. Similarly, Bem proposed that people often infer their own attitudes from their previous behavior and the circumstances in which their behavior occurred. For instance, individuals may infer attitudes that are consistent with their previous volitional actions.

### ***Self-Perception Theory as an Alternative Interpretation of Dissonance Theory***

Bem (1965, 1967) initially proposed self-perception theory as an alternative interpretation of dissonance findings. Specifically, Bem proposed that participants in dissonance studies simply used information about their own behavior and external incentives to infer their attitudes. For example, participants in Festinger and Carlsmith's (1959) study knew that they had told another person that the tasks were enjoyable; participants in the \$20 condition (but not the \$1 condition) also knew that there had been a strong external incentive for doing so. Just as they would for another person, these participants doubted that an internal state motivated their behavior, whereas participants in the \$1 condition inferred from the absence of strong incentives that an internal state compatible with the behavior probably existed. This rationale is consistent with the discounting principle later articulated by attribution theorist Harold Kelley (1973).

Two lines of research, however, provided clear evidence that self-perception theory cannot account for all dissonance phenomena (for more details, see Olson & Stone, 2005).

### ***Role of Arousal***

One difference between dissonance and self-perception theories that has yielded important data concerns the role of arousal. Dissonance theory predicts that engaging in counterattitudinal behavior causes an unpleasant state of arousal or tension, which motivates attitude change or some other form

of dissonance reduction. Self-perception theory, however, hypothesizes that attitude change following counterattitudinal behavior results from a cognitive, inferential process that is neither motivated by nor designed to reduce unpleasant arousal. As noted earlier in the section on dissonance theory, numerous studies have unequivocally supported the assumption of dissonance theory that unpleasant arousal occurs after counterattitudinal behavior (e.g., Pallak & Pittman, 1972; Zanna & Cooper, 1974).

### *Attitude-Incongruent Versus Attitude-Congruent Behavior*

Fazio, Zanna, and Cooper (1977) proposed that dissonance theory explains the impact of attitude-incongruent behavior on attitudes better than self-perception theory, whereas self-perception theory explains the impact of attitude-congruent behavior on attitudes better than dissonance theory. They defined *attitude-congruent* behavior as behavior that falls within the actor's latitude of acceptance (i.e., actions that diverge only a little from the actor's most preferred position). Attitude-incongruent behavior, in contrast, is behavior that falls outside of the actor's latitude of acceptance (i.e., behavior that is highly divergent from the actor's most preferred position). Fazio and his colleagues observed that, based on dissonance principles, only attitude-incongruent behavior should lead to arousal. Therefore, using the misattribution logic described earlier in the dissonance section (e.g., Zanna & Cooper, 1974), the presence of a plausible external cause of arousal symptoms should matter only for attitude-incongruent behavior. Thus, attitude-incongruent behavior should not lead to attitude change in the presence of a misattribution cue, but attitude-congruent behavior should lead to attitude change even in the presence of a misattribution cue, because there is no arousal involved. To test this reasoning, the researchers asked participants to write an essay under either high- or low-choice conditions. Some participants wrote an essay that argued for a highly discrepant position (attitude-incongruent behavior), whereas other participants wrote an essay that argued for a position only slightly discrepant from their own initial view (attitude-congruent behavior). Finally, some participants were given information suggesting that the small, soundproof booth in which they were completing the study might make them feel tense or uncomfortable, whereas nothing was said to other participants about any possible misattribution source.

Results supported the authors' predictions. Participants exhibited attitude change following attitude-incongruent behavior only when they had high choice and were *not* given an opportunity to misattribute their arousal; attitude change was eliminated when participants were led to believe that the small booth created their discomfort. In contrast, following attitude-congruent behavior, participants exhibited attitude change when they had high choice, and the misattribution manipulation did not affect this pattern. This latter finding is consistent with the self-perception assumption that no arousal will occur when an advocacy falls within an actor's latitude of acceptance.

Although research on the arousal properties of dissonance and the applicability of self-perception to attitude-congruent behavior has indicated that self-perception theory is not a compelling interpretation of the attitudinal consequences of voluntary, attitude-incongruent behavior (the domain of dissonance theory), self-perception theory remains a viable explanation of the impact of behavior on attitudes in many other situations. In the following paragraphs, we elaborate on a few applications of self-perception theory to domains other than counterattitudinal behavior.

### *Attitude Domains Amenable to Self-Perception Effects*

Self-perception processes have been investigated in a wide variety of attitude domains. For reasons of space, we review here only four well-known or recent applications of the theory. Other domains we will not review but to which self-perception theory has also been successfully applied include humorous enjoyment (e.g., Bem, 1965; Fazio, Sherman, & Herr, 1982; Olson, 1992); interpersonal

attraction (e.g., Kellerman, Lewis, & Laird, 1989; Seligman, Fazio, & Zanna, 1980); heterosexual anxiety (e.g., Haemmerlie & Montgomery, 1982); religious attitudes (e.g., Zanna, Olson, & Fazio, 1981); attitudes toward university issues (e.g., Albarracín & Wyer, 2000; Allison & Messick, 1988); boredom (e.g., Damrad-Frye & Laird, 1989); and introversion-extraversion (e.g., Fazio, Effrein, & Falender, 1981). In each of these domains, participants have been shown to use their behavior and the circumstances in which their behavior occurred to infer an internal state.

### *Helpfulness: The Foot-in-the-Door Effect*

Compliance with a small request increases the likelihood that an individual will also comply with a subsequent larger request, compared to someone who was not asked to perform the small request. Freedman and Fraser (1966) labeled this finding the *foot-in-the-door effect*; they showed that people who had been asked 2 weeks earlier to sign a petition about keeping their state beautiful or to put a small “Be a safe driver” sticker in a window of their home were much more likely to agree subsequently to put a large, unattractive sign in their yard displaying the words “Drive Carefully” than were individuals who did not receive an initial small request. This finding has been replicated many times, using varied small and large requests (for reviews, see Burger, 1999; Dillard, 1991; Pascual & Guéguen, 2005).

The most common explanation of the foot-in-the-door effect has been a self-perception account (e.g., DeJong, 1979; Snyder & Cunningham, 1975; but see Gorassini & Olson, 1995; Rittle, 1981). From this perspective, agreeing to perform a small favor stimulates a self-inference of helpfulness (“I am a helpful person” or “I am favorable toward being helpful”). This self-perception or self-labeling then increases the likelihood of further compliance, because the individual thinks, “I should help because I am favorable toward being helpful.” Conditions that increase the likelihood of inferring an internal state congruent with the initial compliance, such as freedom of choice and incurring more than a trivial cost, have been shown to magnify the foot-in-the-door effect (e.g., Seligman, Bush, & Kirsch, 1976).

In an interesting twist to self-perception and compliance, Rind and Kipnis (1999) showed that people who were instructed to use a particular influence strategy on another individual inferred relevant internal states for themselves if they were successful. For instance, participants who used rational arguments to successfully convince another individual described themselves as intelligent and friendly, whereas participants who successfully used authoritative influence described themselves as dominant and unfriendly.

Researchers continue to apply the foot-in-the-door effect to new contexts. For example, recent applications have included increasing the participation rate in intervention programs for risky sexual behavior (Groves, Bux, Parsons, & Morgenstern, 2009); increasing positive responses to a courtship request (Guéguen, Marchand, Pascual, & Lourel, 2008); and increasing the likelihood of bystander intervention in a theft (Guéguen, Martin, Silone, & Pascual, 2016).

### *Intrinsic Motivation: The Overjustification Effect*

Another application of self-perception theory has been to judgments of *intrinsic motivation*—the pure enjoyment of an activity or task for its own sake. A basic tenet of self-perception theory is that when there are strong external justifications for behavior, individuals are unlikely to infer that an internal state caused the action. An interesting dilemma can arise, then, when external incentives exist for performing an intrinsically enjoyable task. Self-perception theory predicts that perceivers might discount the role of internal states and infer that their behavior was caused by the incentives.

The detrimental effect of rewards on intrinsic motivation, which Lepper, Greene, and Nisbett (1973) labeled the *overjustification effect*, occurs when external incentives “overjustify” the behavior

(which would be sufficiently justified by its intrinsic enjoyableness). In an early study, preschool children drew pictures for an experimenter using attractive magic marker pens. Before agreeing to draw, some children were offered a reward for drawing (a Good Player Award); other children unexpectedly received this reward after drawing; and a third group of children never heard about or received any reward. After 1 or 2 weeks, the magic marker pens were reintroduced as a free-play activity in the preschool, and children's spontaneous use of the pens was observed. Results showed that children who had been offered the reward for drawing pictures were less likely to play with the pens during the free-play time than were children in the unexpected or no reward conditions. The researchers concluded that children who were offered a reward to draw pictures attributed their use of the pens to the reward rather than to the pens' intrinsic attractiveness, which decreased their subsequent interest in using the pens.

The overjustification effect has been replicated in many studies (see Condry, 1977; Lepper & Greene, 1978; Tang & Hall, 1995), but limiting conditions have been identified (see Deci & Flaste, 1995; Vallerand, 1997). Perhaps most important, if rewards communicate competence at a task, rather than seeming to be manipulative or controlling, they are less likely to impair intrinsic motivation. Also, if the reward is unusual for the activity (e.g., offering a monetary payment for reading), it is more likely to be seen as controlling and to have a detrimental effect on intrinsic motivation.

### *Inaccurate Self-Knowledge as a Result of Goal Priming*

Self-perception theory predicts that, when people do not have direct access to internal states, they might generate plausible but inaccurate explanations for their behavior, which could result in inaccurate self-knowledge. Bar-Anan, Wilson, and Hassin (2010) applied this logic to the effects of goal-priming manipulations. Research has shown that people do not generally perceive the causal effects of goal-priming manipulations (e.g., Fishbach & Labroo, 2007), so Bar-Anan et al. predicted that participants would be susceptible to misattributing their behavior to a plausible alternative internal state. In several experiments, participants were exposed to a priming manipulation that activated a goal, which then influenced their behavior, but a plausible "decoy" cause was also present. For example, in one study, male participants who were subtly primed with the goal of affiliating with a member of the opposite sex were more likely to choose a female tutor rather than a male tutor on a subsequent task, compared to those in a no-priming control condition. But, presumably because they did not have direct access to the activated goal, primed participants were likely to misattribute their choice to a salient decoy cause, namely, a preference for whatever topic was being taught by the female tutor (either tips for improving attention or how to prevent common illnesses). Thus, these primed participants drew an inaccurate inference about the cause of their behavior, which produced false self-knowledge regarding their preferences for topics.

### *Inferring Traits From Appearance: The Proteus Effect*

In a fascinating archival analysis, Frank and Gilovich (1988) found that professional football and hockey players were more aggressive (received more penalties) when their team was in black uniforms than when their team was in white uniforms. In a laboratory follow-up experiment, participants who were randomly assigned black uniforms selected more aggressive games to play than participants who were assigned white uniforms. The authors interpreted these findings in terms of self-perception processes: Participants inferred from their black uniforms that they were aggressive, which led to their aggressive behavior.

Yee and Bailenson (2007) applied similar self-perception logic to investigations of virtual environments (e.g., online games), where players are represented by digital representations (avatars) that can vary in appearance. The authors hypothesized that the physical features of these avatars

would lead to self-inferences of corresponding personality traits, a phenomenon they labeled the *Proteus effect*, after Proteus, a god from Greek mythology who is able to take on many different self-representations. For example, in one study, participants who were randomly assigned to be represented by a taller avatar behaved more confidently in an online negotiation task than participants who were randomly assigned to be represented by a shorter avatar. In another set of experiments, Yee, Bailenson, and Ducheneaut (2009) showed that these self-inferences transferred to offline behavior. For example, participants randomly assigned to a taller avatar in an online task negotiated more confidently in a subsequent face-to-face interaction with a confederate, compared to those assigned to a shorter avatar in the online task. Given the increasing frequency with which people will be entering virtual realities in the coming decades, these findings are of considerable interest.

### Underlying Dimensions and Future Research Directions

In this final section of the chapter, we attempt to integrate existing research and theories on the influence of behavior on attitudes. We discuss several dimensions that can be used to classify existing theories, with the goals of locating the different models of the behavior-attitude relation within a broad, integrative framework and identifying common mechanisms that underlie the models. We close with some possible directions for future research on this topic.

#### *Nature of the Attitude*

One dimension that can be used to conceptualize the theories we have described is the nature of the attitudes on which the theories focus. All models deal with the effect of behavior on attitudes, but some are most useful for specific kinds of attitudes. Also, the models address somewhat different issues within the domain of attitudes. We elaborate on these points next.

#### *Attitude Formation Versus Attitude Change*

An issue that is addressed in almost every chapter of this book is the relevance of various theories to attitude formation versus attitude change. In the context of the present chapter, behavior can influence both attitude formation and attitude change. That is, behavior can contribute to the generation of an attitude that did not previously exist, and behavior can alter an existing attitude. The different models we described can be located along this dimension.

##### (A) ATTITUDE FORMATION

Some theories describe the process by which behavior causes people to form or develop new attitudes toward objects or events in their social context. The theory that is focused most specifically on attitude formation is self-perception theory. Researchers have documented empirically that the self-perception of attitudes occurs mainly for weak, ambiguous, or poorly formulated attitudes (e.g., Chaiken & Baldwin, 1981). Also, researchers have suggested that being asked for one's attitude on an issue sometimes serves as the impetus for attitude formation via self-perception (e.g., Fazio, 1987). Further, it makes conceptual sense that going through the process of using past behavior to infer one's attitude would not occur if a strong and well-developed attitude could be easily accessed. Although self-perception theory applies best to attitude formation, it is unlikely that self-perception processes are *always* involved in the formation of every attitude; new evaluative predispositions can form in many other ways, perhaps most obviously based on information about the target.

Behavior can lead to attitude formation in ways other than through self-perception, such as via dissonance processes. Although dissonance theory deals primarily with attitude change, it is

conceivable that in addition to changing previously held attitudes, people may create new attitudes toward previously neutral targets to help justify an especially painful discrepant act. Effort justification processes may also generate new attitudes when knowledge that one has invested effort or resources toward a previously neutral goal motivates a positive evaluation of the goal (e.g., Axsom & Cooper, 1985). For instance, an individual might agree to participate in a Neighborhood Watch program without having a clear attitude toward the program or without thinking about what the commitment will involve; after attending meetings, delivering flyers for the group, and patrolling the neighborhood, the individual might rationalize these efforts by deciding that the Neighborhood Watch program is important. Finally, a process of attitude formation is described in the aversive consequences version of dissonance theory. Cooper and Fazio (1984) observed that dissonance arousal might be a conditioned emotional response that is learned when the negative consequences of behavior generate negative sanctions from parents and/or peers. "Given a sufficient number of such experiences, an association is apt to develop between personally producing negative effects and arousal" (Cooper & Fazio, 1984, p. 244). It follows that attitudes toward objects and events may develop as children learn how to reduce their discomfort following punishments from their parents or peers. Similarly, if adults believe that their behavior has created aversive consequences for a previously neutral target, they might reduce dissonance by deciding that the target deserved the misfortune. For instance, people who voted for a politician who then introduced legislation that hurt small businesses might rationalize their role in the aversive consequences by deciding that people who own small businesses (previously a neutral group to this individual) are greedy.

#### (B) CHANGE OF PRE-EXISTING ATTITUDES

Behavior can also cause people to change their pre-existing attitudes through a variety of mechanisms, the most investigated of which falls under the wide theoretical umbrella of dissonance theory. The original version of dissonance theory (Festinger, 1957) and the various revisions to dissonance theory view attitude change as a strategy for dissonance reduction. Whereas each viewpoint on dissonance posits that different processes contribute to attitude change (e.g., inconsistency between behavior and attitude versus threats to the self-concept), all perspectives share the assumption that behavior causes attitude change via motivational processes. That is, all assume that once people construe their actions as discrepant from some prevailing cognition, such as a specific attitude, belief, self-image, or standard, they experience aversive arousal that is often reduced by changing a relevant attitude. Changing pre-existing attitudes then serves to reduce the discomfort imposed by the errant behavior.

Biased scanning researchers have focused almost exclusively on attitude change (e.g., Janis & Gilmore, 1965). Participants in these studies have been asked to improvise arguments or to role play situations that are known to be inconsistent with current attitudes. The role playing is assumed to generate new, persuasive information that elicits attitude change.

#### *Attitude-Behavior Consistency*

All of the theories we described address the influence of behavior on attitude formation and/or change. A few models, however, also have implications for understanding how to get people to act consistently with their previously held attitudes. These perspectives specify how behavior can motivate individuals to behave more consistently with their attitudes and values. The clearest example of this application is dissonance research using the hypocrisy paradigm (e.g., Dickerson et al., 1992; Stone et al., 1994). The dynamics of hypocrisy induction, involving both public commitment to a position and private awareness of inconsistent behavior, motivate people to reduce dissonance by adopting an attitude-consistent course of action (e.g., purchasing condoms, taking shorter showers, or voting to provide more funding for a minority group organization), even when other options

for dissonance reduction are present, such as affirmation of an unrelated positive self-image (Stone et al., 1997). Thus, an act of hypocrisy appears to motivate people to practice what they preach by changing their behavior to bring it back into line with their attitudes about the topic.

Self-affirmation theory also can be seen as relevant to attitude-behavior consistency. Specifically, people can reduce dissonance by performing behaviors that affirm their values or self-worth—in other words, by performing behaviors that are consistent with their attitudes and values (e.g., Steele, 1988). For example, people can reduce dissonance by giving money to a charity (an attitude-consistent action) and thereby affirming their generosity. Research also indicates, however, that affirming values or self-images related to the attitude-behavior discrepancy may not always be a viable option (see Aronson et al., 1995; Stone & Cooper, 2003).

### *Attitude Accessibility*

A final characteristic of attitudes addressed in the theories we have described is accessibility. Almost all of the theories would predict that attitude formation or attitude change is associated with increased accessibility of the attitude. A newly formed attitude will, by definition, be more accessible than a non-attitude, and an attitude that has recently changed (often in the direction of becoming more polarized) will be more accessible at least in the short term. Perhaps the only model that is silent on accessibility is self-perception theory, which rests on the assumption that people do not have direct access to internal states.

The mechanisms that set attitude formation and change into motion also depend on the accessibility of attitudes. The various versions of dissonance theory disagree, however, about which elements must be accessible for dissonance to be aroused. Some conceptual models, such as self-consistency (Aronson, 1968; 1992) and self-affirmation (Steele, 1988), assume that cognitions about the self must be accessible, whereas others, such as the aversive consequences (Cooper & Fazio, 1984) and radical models (Beauvois & Joule, 1996), assume that cognitions about behavior must be accessible. A few models have integrated these assumptions by proposing that the nature of dissonance arousal is a function of the accessibility of different types of cognitions, including attitudes, beliefs, and cognitions about the self (McGregor et al., 1999; Stone & Cooper, 2001; Harmon-Jones & Harmon-Jones, 2002). Attitude accessibility may also play a role in dissonance reduction strategies. For example, Simon et al. (1995) showed that people will trivialize their behavior when their previous attitudes have been made salient or accessible in memory. It seems clear that factors associated with accessibility and memory will play a central role in future research on dissonance processes.

### *Nature of the Behavior*

Another way of classifying the theories we have described is in terms of the type of behavior on which they focus. The various models make clear that different kinds of behavior can influence attitudes in different ways. In this section, we outline two dimensions underlying behavior that provide a useful framework for categorizing the theories: the extent to which the behavior is voluntary versus constrained and the extent to which the behavior is attitude-incongruent versus attitude-congruent.

#### *Voluntary Versus Constrained Behavior*

One fundamental dimension of behavior concerns its degree of volition. Some actions are perceived to be purely voluntary, whereas others are perceived to reflect external constraints. (Of course, actions can also be partly voluntary and partly externally caused, but for our present purposes, the dichotomous classification is sufficient.) This dimension has important implications for the effect of behavior on attitudes.

(A) VOLUNTARY BEHAVIOR

Most, but not all, of the theories we described in this chapter predict attitude change only when the behavior is voluntary. These theories propose that the effects of behavior on attitudes are mediated by psychological states that occur only when the actions are perceived to be volitional. For instance, in order for a state of dissonance (the mediator of attitude change according to dissonance theory) to be aroused, people must perceive that their actions were freely undertaken (e.g., Linder et al., 1967). Similarly, the various revisions of dissonance theory, including self-consistency theory, self-affirmation theory, the aversive consequences model, and the self-standards model, all begin with the assumption that actions were voluntary. Why is volition important? When someone's inconsistent, harmful, or irrational behavior was volitional, he or she will feel a strong need to justify that behavior (to the self or to others). Volitional behavior presumably reflects the actor's true self; if this (presumed) true self appears irrational or harmful, the actor will be motivated to rationalize his or her behavior. Alternatively, volition may be important because it increases commitment to a given behavior (Brehm & Cohen, 1962; Beauvois & Joule, 1996; Harmon-Jones et al., 2009).

Self-perception theory also focuses on voluntary behavior, because volitional behavior is presumed to reflect the actor's true intentions (Bem, 1972). Here, however, the presumption of veridicality does not arouse defensive motivation but rather allows clear, rational inferences to be drawn about the self. When perceivers infer others' attitudes, they limit their attention to the others' volitional actions. Similarly, when perceivers engage in self-perceptions of attitudes, they limit their consideration to their own volitional actions. Thus, voluntary behavior generally has more impact than constrained behavior, for both motivational and cognitive reasons.

(B) CONSTRAINED BEHAVIOR

Biased scanning research has focused on constrained behavior; participants are instructed to play a role or to improvise a set of arguments without being given any opportunity to decline. Under these conditions, individuals should attribute their behavior to the assigned roles rather than personal beliefs. Nevertheless, people often change their attitudes in the direction of the advocated position. The hypothesized mediating process in this case is self-persuasion: People generate (or are more receptive to) new arguments or thoughts that are consistent with the assigned role. The processes initiated by volitional behavior (dissonance, self-perception) do not occur.

Note that the effects identified by biased scanning research should also occur when people role play voluntarily. If an individual chooses to play a role, the same processes should be initiated (of course, other processes may *also* occur, such as dissonance and self-perception). For instance, voluntary role playing should generate new arguments just as well as coerced role playing.

*Attitude-Incongruent Behavior Versus Attitude-Congruent Behavior*

A second fundamental dimension of behavior concerns its consistency with existing attitudes. Some actions are perceived to be inconsistent with the actor's existing attitudes, whereas others are perceived to be largely compatible with existing attitudes. This dimension has important implications for how behavior will affect attitudes.

(A) ATTITUDE-INCONGRUENT BEHAVIOR

Most of the theories we described emphasize the influence of counterattitudinal behavior on attitudes. For example, in biased scanning research, participants are required to argue for a position known to differ from their current attitudes. Dissonance theory also focuses on counterattitudinal



behavior—in this case, the impact of realizing that one’s voluntary actions have been inconsistent with one’s relevant attitudes, knowledge, or values. It is precisely the inconsistency that causes the arousal of dissonance (Festinger, 1957). This focus is also true of the various revisions of dissonance theory; in each case, the motivational significance of behavior derives from its incompatibility with the self-concept or other salient and important cognitions (e.g., Aronson, 1968; Beauvois & Joule, 1996; Stone & Cooper, 2001).

In Fazio et al.’s (1977) proposed integration of dissonance and self-perception theories, the researchers used the notion of *latitudes* (borrowed from social judgment theory) to understand counterattitudinal versus proattitudinal behavior. As noted earlier, these authors suggested that dissonance is aroused when behavior falls outside the acceptable range of actions—that is, outside whatever actions the actor would previously have identified as compatible with his or her attitude. This perspective underscores that, although we have talked about actions in terms of broad categories of counterattitudinal versus proattitudinal behavior, inconsistency is a continuum. Presumably, the intensity of the motivation aroused by counterattitudinal behavior will be positively related to its degree of discrepancy from the initial attitude.

#### (B) ATTITUDE-CONGRUENT BEHAVIOR

Self-perception theory is one model we have reviewed that focuses primarily on the impact of attitude-congruent behavior on attitudes. Theorists have argued that, because attitude-congruent behaviors typically do not activate the motivational processes outlined in such models as dissonance theory, congruent actions influence attitudes mainly through cognitive, inferential processes (Fazio et al., 1977). Studies of the self-perception of helpfulness, intrinsic motivation, and other states have documented that perceivers make rational inferences based on personal behavior and the circumstances in which the behavior occurred.

The hypocrisy paradigm in dissonance theory also applies to proattitudinal behavior. Participants in these studies are induced to argue for positions with which they agree, which theoretically should not cause dissonance. However, when subsequently reminded of their personal failures to adhere to this position, the discrepancy arouses dissonance, which is reduced by performing the proattitudinal behavior they advocated to others.

Other theories can be applied selectively to attitude-congruent behavior. For instance, the aversive consequences model of dissonance hypothesizes that even proattitudinal actions that result in aversive consequences will arouse dissonance (e.g., Scher & Cooper, 1989). It is the consequences of the behavior, rather than its consistency with one’s attitudes, that is assumed to produce dissonance.

### *Nature of the Underlying Processes*

A final dimension we will use to integrate the models described in this chapter is the nature of the processes assumed to underlie the impact of behavior on attitudes. Taken together, the various theories posit many mediating processes, reflecting the complexity of the behavior-attitude relation. Some models emphasize particular mechanisms, whereas others implicate multiple processes. We will examine this issue by distinguishing between automatic processes, deliberative processes, and motivational processes, though we should note at the outset that these categories are not mutually exclusive.

#### *Automatic Versus Deliberative Processes*

The theories covered in this chapter vary with respect to how much they assume that behavior influences attitudes through automatic or deliberative processes. Clearly, some effects of behavior on attitudes

reflect relatively automatic processes. By automatic, we mean that the processes occur quickly; are spontaneous (i.e., unintentional or without conscious initiation); and require few cognitive resources (Bargh, 1994). These automatic processes often reflect a least-effort strategy of decision-making; thus, they occur mainly under conditions of low importance or low personal relevance—conditions that elicit what has been labeled *heuristic processing* or the *peripheral route* in dual-process models of persuasion (Chaiken, 1987; Petty & Cacioppo, 1986). The effects of these judgments may be short-lived if people do not subsequently think about, consolidate, or act on the new attitude.

The processes described in self-perception theory can occur automatically, such as when one's past or current behavior is used as a simple heuristic for inferring one's attitude. This minimal-effort strategy of assuming behavior-attitude correspondence presumably occurs when the domain is not terribly important to the perceiver. Although effortful self-perception inferences do occur, minimal-effort, heuristic inferences are probably common manifestations of self-perception. For example, the effects of appearance on behavior (e.g., the Proteus Effect; Yee & Bailenson, 2007) seem likely to occur below conscious awareness and to be relatively automatic.

Other theories in this chapter assume that the influence of behavior on attitudes occurs via deliberative processes. By deliberative, we mean that the processes are consciously initiated, occur within the perceiver's awareness, and require significant cognitive resources. Because of the necessary cognitive resources, these processes occur mainly under conditions of high importance or high personal relevance—conditions that elicit what has been labeled *systematic processing* or the *central route* in dual-process models of persuasion (Chaiken, 1987; Petty & Cacioppo, 1986). The effects of deliberative processes are likely to be longer lasting than those of automatic processes, because the former involve conscious integration of the attitude into memory (see Albarracín, 2002; Zanna, Fazio, & Ross, 1994).

The biased scanning process hypothesized by researchers of role playing (e.g., Janis & Gilmore, 1965) provides an excellent example of a deliberative effect. When individuals are instructed to argue for a discrepant position, they consciously generate arguments in order to perform their assigned task effectively. These improvised arguments result in self-persuasion, such that participants decide that the advocated position has merit. Similarly, the effects of self-presentation on the self-concept and behavior are assumed to result, at least in part, from a biased memory search of one's prior actions (Schlenker et al., 1994). The role of deliberative biased scanning in these effects is further supported by the finding that when people are forced to consider information on both sides of an issue, the effect of behavior on attitudes is reduced (Albarracín & McNatt, 2005).

Self-perception theory also conceptualizes perceivers as engaging in reasoned thinking about their internal states, at least under certain conditions. For example, perceivers are assumed to exhibit discounting or augmentation effects based on information about external factors impinging on them (e.g., Damrad-Frye & Laird, 1989; Olson, 1992). Perceivers make causal judgments about their internal states based on salient information and attributional principles.

The wide varieties of processes falling under the rubric of dissonance theory are more difficult to characterize in terms of automatic versus deliberative processes. In most early models of dissonance, the perception and reduction of dissonance are conceptualized as involving deliberative processes. Dissonance is assumed to occur when there is a conscious awareness of a discrepancy between two cognitions (one cognition usually concerns a behavior and the other an attitude). Moreover, dissonance reduction is often described as a conscious attempt to rationalize one's behavior (but see Brehm & Cohen, 1962): A dissonant cognition is altered, or consonant cognitions are added, in order to make sense of the behavior. The assumption that dissonance reduction is conscious is supported by evidence that distracting people from their counterattitudinal behavior can eliminate attitude change (e.g., Zanna & Aziza, 1976) and by evidence that when provided a choice, people show a preference for certain dissonance reduction strategies over others (Aronson et al., 1995; Stone et al., 1997). Gawronski and Strack (2004) argued that both the causes of dissonance and the process

of dissonance reduction rely on *propositional reasoning*—which is both conscious and effortful. They showed that a dissonance manipulation affected an explicit measure of attitudes but not an implicit measure of attitudes; implicit attitudes are conceptualized as being based on *associative processes*, rather than propositional processes. The various revisions of dissonance theory, including self-consistency theory, self-affirmation theory, and the aversive consequences model, also assume that deliberative processes mediate the effects of behavior on attitude. Each model postulates relatively complex reasoning about the status of the self or the consequences of one's behavior. Finally, the discomfort that mediates the effect of behavior on attitudes in these models is assumed to be consciously experienced (Elliot & Devine, 1994; Pyszczynski et al., 1993).

Some findings suggest that dissonance may not always be conscious or deliberative. For example, dissonance arousal itself may be automatic, so long as the necessary conditions occur. Also, research on misattribution indicates that people do not always know why they feel discomfort following a discrepant behavior. Recall that the misattribution approach was based on the two-factor theory of emotion (Schachter & Singer, 1962), with the assumption that, for a discrepant behavior to motivate attitude change, it must cause arousal that is labeled negatively (see Cooper & Fazio, 1984). Research shows that, if the arousal is attributed to a source other than one's behavior, or if it is labeled positively, people do not change their attitudes. The fact that people can misattribute their arousal to something like the lights in a laboratory or can interpret their arousal as positive indicates that they do not spontaneously attribute their arousal to their own actions, possibly because they are unaware of the role their behavior played in the arousal process. The research by Lieberman et al. (2001) on the role of explicit memory in dissonance-induced attitude change provides further evidence that conscious attention and deliberation over the meaning of a discrepant behavior may not be necessary for a difficult decision to motivate rationalization.

Finally, studies show that people often use the first strategy for dissonance reduction that is offered to them, regardless of whether the strategy directly reduces the discrepancy between attitudes and behavior (e.g., Simon et al., 1995; Steele & Lui, 1983; Tesser & Cornell, 1991). One reason people may be able to misattribute their arousal, fail to recall their behavior, and use indirect strategies for dissonance reduction is that they may sometimes be unaware of the discrepancy underlying their motivated state. The apparently pliable nature of dissonance indicates that behavior may influence attitudes through automatic processes that operate without much conscious control.

Certain consequences of dissonance arousal (or, perhaps more correctly, certain consequences of *avoiding* dissonance arousal) may also operate automatically. For example, the selective exposure hypothesis predicts that people are motivated to approach consonant information and avoid dissonant information; this motivation may sometimes influence spontaneous attentional processes that occur without individuals' awareness, perhaps especially for certain personality types (e.g., *repressors*, who perceptually defend themselves from threatening stimuli, see Olson & Zanna, 1979).

Some relatively recent models of the dissonance process may be capable of accounting for both deliberative and automatic processes in dissonance arousal and reduction. For example, the self-standards model of dissonance (SSM; Stone & Cooper, 2001) was developed in part to address the role of implicit and explicit thought in dissonance-induced attitude change. The model hypothesizes that the accessibility of particular standards (e.g., personal vs. normative standards) determines the nature and consequences of dissonance arousal and, further, that different standards for interpreting behavior can be activated without individuals' realization, such as by an implicit priming procedure (Stone, 2003; Stone & Cooper, 2003). Thus, the SSM encompasses automaticity in dissonance by emphasizing the impact of the relative accessibility of different cognitions. The processing assumptions of the model, however, do not preclude the possibility that the implicit accessibility of specific cognitions can activate deliberative thought about the implications of behavior, explicit attention to discomfort, and careful consideration about how to reduce dissonance. Similarly, the effect of simultaneously accessible cognitions in affective responses is consistent with the idea that

an implicit process can influence the explicit experience of emotion when people act inconsistently with important attitudes or beliefs (Higgins, 1996; McGregor et al., 1999). Thus, contemporary models that integrate principles and methodologies from social cognition with classic dissonance assumptions and procedures hold promise for elucidating the role played by deliberate and automatic processing in dissonance phenomena.

### *Motivational Processes*

The extent to which behavior guides attitudes through motivational processes is independent of the extent to which the process is relatively automatic or deliberative. That is, some motivational processes are automatic, whereas others are deliberative (and the same goes for nonmotivational processes). But a key feature of many of the perspectives we have described is that they have motivational significance for the individual.

Dissonance theory posits that motivational processes are initiated by the awareness of inconsistencies. In Festinger's (1957) original statement, cognitive dissonance was described as an aversive state that motivates changes to cognitions to reduce the state. Researchers who have manipulated factors that influence the magnitude of dissonance, such as through the *degree* of external justification for counterattitudinal behavior, have typically found parallel differences in the *amount* of attitude change, suggesting that dissonance is a motivational state that varies in strength depending on the degree of inconsistency and justification (e.g., Cohen, 1962). The fact that attitude change following counterattitudinal behavior is eliminated by alcohol consumption, which dulls emotional intensity, is also consistent with a motivational view (e.g., Steele et al., 1981). Indeed, all of the studies showing that dissonance is a state of arousal, or that dissonance reduction requires that the arousal be labeled as being due to counterattitudinal behavior, support the argument that dissonance is a motivational state (e.g., Zanna & Cooper, 1974).

Nevertheless, the precise nature of the motivation in terms of the goals achieved by dissonance reduction continues to be a matter of some debate (Harmon-Jones & Mills, 1999). The various revisions of dissonance theory retain the original theory's motivational perspective, but the source of the motivation is different (e.g., a need for self-consistency rather than a general need for psychological consistency). Models that predict moderating effects for individual difference variables like self-esteem assume that individuals experience different degrees of discomfort, which motivate different degrees of defensive response.

Two research areas we have discussed are explicitly nonmotivational: biased scanning research and self-perception theory. These models focus on cognitive processes that are initiated by behavior: biased scanning initiated by constrained counterattitudinal behavior in role playing research or inferences about internal states based on voluntary neutral or attitude-congruent behavior in self-perception theory. These processes are not motivational but instead reflect informational effects of arguments or knowledge on attitudes.

### *Future Research on the Influence of Behavior on Attitudes*

We have reviewed and discussed a wide range of theories and research on the behavior-attitude relation. This literature has provided important insights about the influence of behavior on attitudes. Researchers have documented effects of both constrained and voluntary actions on both attitude formation and change. The mechanisms underlying these effects encompass both motivational and nonmotivational processes that occur both automatically and deliberately. Given the diversity of approaches to this topic, there are a multitude of directions that future research could take. Many avenues hold promise for important extensions to knowledge. In this final section, we outline a few possibilities that seem to us especially interesting.

### *Dissonance Processes*

As the dominant approach in this literature, dissonance theory continues to receive a lot of attention and seems likely to do so for the foreseeable future. Earlier, we described numerous new topics and models in dissonance research, and these issues warrant further attention. For example, the experience of dissonance at the group level and cultural factors in dissonance arousal and reduction are important. Simply identifying differences between individual and group dissonance or between cultures in dissonance arousal/reduction would be worthwhile, but it would be even more significant to explore the mechanisms underlying these differences. For example, when people from one culture do not show attitude change following a free-choice task, is it because they did not perceive a discrepancy, or did they experience discomfort but use a strategy other than attitude change to reduce their dissonance? Exploring such questions will greatly clarify the meaning of group or cultural moderation of dissonance processes.

The theoretical models of cognitive dissonance that have developed over the last 20 years are likely to lead to several new directions in dissonance research. The novel assumptions made by the self-standards model (Stone & Cooper, 2001); the radical model (Beauvois & Joule, 1996); and the action-based model (Harmon-Jones & Harmon-Jones, 2002) not only account for classic dissonance effects, but also present new challenges for previous revisions of dissonance theory. Although each new model was developed in part to clarify the processes underlying classic dissonance effects, each also integrates contemporary theory in areas like social cognition and self-regulation with neuroimaging techniques. Thus, the new models offer new insights and make new predictions for how dissonance affects the behavior-to-attitude link. These models deserve careful testing and comparisons of their predictive validity. Whether integration of these models is possible is another interesting question.

A long-standing issue in dissonance theory that continues to warrant attention is how people select a mode of dissonance reduction. Advances in our understanding of this question have been made (e.g., J. Aronson et al., 1995; Blanton et al., 1997; Galinsky et al., 2000; Simon et al., 1995; Stone & Cooper, 2003; Tesser, 2000), but a comprehensive model that accounts for all possibilities has yet to be developed. For example, what are the conditions following dissonance arousal that influence whether people will exhibit attitude change, trivialization, adding consonant cognitions, or behavior change? Are there factors like attitude strength that influence resistance to change, and are there other factors that influence the choices people make between various modes of dissonance reduction? Do people deliberately select one dissonance reduction technique or another, or are they activated automatically? Researchers need to identify both situational factors and stable individual differences that play a role in this process.

### *Mechanisms Underlying the Effects of Behavior on Attitudes*

Researchers have rarely examined simultaneously the possible contributions of multiple processes to the impact of behavior on attitudes. For example, few researchers have included manipulations in their studies that would yield different predictions for dissonance versus biased scanning versus self-perception mechanisms. Instead, researchers have generally focused on a single theoretical perspective and looked for evidence of a specific psychological mechanism.

A laudable exception to the paucity of research on multiple mechanisms by which behavior might affect attitudes was reported by Albarracín and Wyer (2000). These researchers constructed a situation within which competing predictions could be derived for dissonance, biased scanning, self-perception, and heuristic models concerning how past behavior should affect measures of attitudes and future behavior. Results favored biased scanning and self-perception, and raised doubts about dissonance and heuristics, in producing the findings. We need more research of this nature

to identify the conditions under which various processes account for the effects of behavior on attitudes.

The respective roles of automatic and deliberative processes also need more investigation. Although both kinds of effects are involved, we need more detailed knowledge of when and why each occurs. With the exception of the importance or significance of the attitude topic (e.g., its personal relevance), researchers have paid little attention to variables that moderate whether automatic or deliberative processes are elicited in this domain.

### *Influence of Behavior on Multiple Attitudes*

Researchers have typically examined the influence of behavior on a specific attitude, such as participants' attitudes toward an experimental task, the topic of an essay, or a choice alternative. It is very likely, however, that a single behavior can often affect numerous attitudes. Research examining this broader influence would be welcome.

For example, an individual's decision to donate or not to donate to a charity in response to a door-to-door solicitation could potentially influence his or her attitudes toward the specific charitable organization; toward door-to-door solicitations in general; toward the gender, ethnic, or age group of the solicitor; and so on. This reasoning is similar to Ajzen and Fishbein's (1980) concept of *impact effects*, which are unanticipated effects of a persuasive message on beliefs and attitudes that were not directly targeted in the message. Impact effects are probably the norm rather than the exception in persuasive campaigns, but researchers have rarely studied them. Similarly, behavior probably affects unanticipated attitudes in many circumstances, but researchers have not examined this possibility.

In addition to investigating the influence of behavior on several related attitudes, it would be interesting to extend research to examine whether behavior can affect broader, higher-order concepts like values and ideologies (Maio, Olson, Bernard, & Luke, 2003). Values can be defined as abstract ideals that function as important guiding principles in individuals' lives, such as equality, security, and freedom (Rokeach, 1973; Schwartz, 1992). Ideologies can be defined as systems of attitudes and values that are organized around an abstract theme, such as liberalism, conservatism, capitalism, or democracy (Converse, 1964; McGuire, 1985). Given that actions induced in previous behavior-attitude studies have often been related to important aspects of the self (e.g., rationality, compassion, truthfulness), it seems possible that values or ideologies could potentially be affected. To be sure, behavior would need to be very important and/or public for broad concepts like values to be affected, but these criteria may be met in some circumstances.

### *Dynamic, Reciprocal Relations Between Behavior and Attitudes*

Perhaps the most important direction in which research and theorizing must go is toward developing models that represent the dynamic, bidirectional relations between behavior and attitudes. There is no doubt that behavior affects attitudes, and there is no doubt that attitudes affect behavior. The challenge is in designing both theories and studies that capture this reciprocal interdependence. Theorists have long recognized the bidirectional nature of the relation between behavior and attitudes (e.g., see Eagly & Chaiken, 1993; Fazio & Zanna, 1981; Kelman, 1974), but such reciprocity has not often been incorporated into research.

An interesting exception to this scarcity of attention came from Holland, Verplanken, and van Knippenberg (2002), who measured the extremity and strength of participants' attitudes toward Greenpeace. Participants returned to the laboratory a week after reporting their attitudes and were given the opportunity to donate money to Greenpeace, after which their attitudes were measured again. Results showed that participants who held strong attitudes at the first session were more likely to behave consistently with their attitude when given the opportunity to donate money at the

second session than were participants who held weak attitudes at the first session. Further, participants who held strong attitudes at the first session were not influenced by their donation behavior when reporting their attitudes at the second session, whereas participants who held weak attitudes at the first session reported attitudes at the second session that were affected by their donation behavior (reporting more favorable attitudes if they donated and more unfavorable attitudes if they did not donate). The authors concluded that strong attitudes guide behavior, whereas weak attitudes are influenced by behavior.

Holland et al.'s (2002) analysis provides a nice perspective on the reciprocal relations between behavior and attitudes, incorporating a feature of the attitude itself as an important moderating variable. We hope that future research will extend this perspective by incorporating additional factors into the dynamic interplay between behavior and attitudes. For instance, does the nature of the behavior (e.g., voluntary vs. constrained, or attitude-incongruent vs. attitude-congruent) differentially influence the strength of behavior-to-attitude and attitude-to-behavior effects? Some domains or conditions may produce symmetrical interdependence between behavior and attitudes, whereas other domains or conditions may produce asymmetrical interdependence. These issues will be fascinating to explore in future research.

## Conclusion

We have discussed three theoretical perspectives on how behavior can influence attitudes: biased scanning, dissonance motivation, and self-perception inferences. This topic has yielded some of social psychology's most famous findings and theories. Although interest has waxed and waned to some extent over the years, the increasing sophistication of recent research gives us confidence that the effects of behavior on attitudes will continue to attract attention from scientists and to fascinate laypersons well into the foreseeable future.

## References

- Abelson, R. P., Aronson, E., McGuire, W., Newcomb, T., Rosenberg, M., & Tannenbaum, P. (1968). *Theories of cognitive consistency: A sourcebook*. Chicago: Rand McNally.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Albarracín, D., & McNatt, P. S. (2005). Maintenance and decay of past behavior influences: Anchoring attitudes on beliefs following inconsistent actions. *Personality and Social Psychology Bulletin*, 31, 719–733.
- Albarracín, D., & Wyer, R. S., Jr. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social Psychology*, 79, 5–22.
- Albarracín, D. (2002). Cognition in persuasion: An analysis of information processing in response to persuasive communications. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 61–130). New York, NY: Academic Press.
- Allison, S. T., & Messick, D. M. (1988). The feature-positive effect, attitude strength, and degree of perceived consensus. *Personality and Social Psychology Bulletin*, 14, 231–241.
- Amodio, D. M., Devine, P. G., & Harmon-Jones, E. (2008). Individual differences in the regulation of intergroup bias: The role of conflict monitoring and neural signals for control. *Journal of Personality and Social Psychology*, 94, 60–74.
- Amodio, D. M., Harmon-Jones, E., Devine, P. G., Curtin, J. J., Hartley, S., & Covert, A. (2004). Neural signals for the detection of unintentional race bias. *Psychological Science*, 15, 88–93.
- Aronson, E. (1968). Dissonance theory: Progress and problems. In R. Abelson, E. Aronson, W. McGuire, T. Newcomb, M. Rosenberg, & P. Tannenbaum (Eds.), *Theories of cognitive consistency: A sourcebook* (pp. 5–27). Chicago: Rand McNally.
- Aronson, E. (1992). The return of the repressed: Dissonance theory makes a comeback. *Psychological Inquiry*, 3(4), 303–311.
- Aronson, E., & Carlsmith, J. M. (1962). Performance expectancy as a determinant of actual performance. *Journal of Abnormal and Social Psychology*, 65, 178–182.

- Aronson, E., & Carlsmith, J. M. (1963). Effect of the severity of threat on the devaluation of forbidden behavior. *Journal of Abnormal and Social Psychology*, *66*, 584–588.
- Aronson, E., Fried, C. B., & Stone, J. (1991). Overcoming denial and increasing the use of condoms through the induction of hypocrisy. *American Journal of Public Health*, *81*, 1636–1638.
- Aronson, E., & Mills, J. (1959). The effect of severity of initiation on liking for a group. *Journal of Abnormal and Social Psychology*, *59*, 177–181.
- Aronson, J., Blanton, H., & Cooper, J. (1995). From dissonance to disidentification: Selectivity in the self-affirmation process. *Journal of Personality and Social Psychology*, *68*(6), 986–996.
- Axson, D., & Cooper, J. (1985). Cognitive dissonance and psychotherapy: The role of effort justification in inducing weight loss. *Journal of Experimental Social Psychology*, *21*, 149–160.
- Bar-Anan, Y., Wilson, T. D., & Hassin, R. R. (2010). Inaccurate self-knowledge formation as a result of automatic behavior. *Journal of Experimental Social Psychology*, *46*, 884–894.
- Bargh, J. A. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In R. S. Wyer, Jr., & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 1, pp. 1–40). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bem, D. K. (1965). An experimental analysis of self-persuasion. *Journal of Experimental Social Psychology*, *1*, 199–218.
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, *74*, 183–200.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). New York, NY: Academic Press.
- Beauvois, J. L., & Joule, R. V. (1996). *A radical dissonance theory*. Bristol, PA: Taylor & Francis.
- Beauvois, J. L., & Joule, R. V. (1999). A radical point of view on dissonance theory. In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 43–70). Washington, DC: APA.
- Berkowitz, L., & Devine, P. G. (1989). Research traditions, analysis, and synthesis in social psychological theories: The case of dissonance theory. *Personality and Social Psychology Bulletin*, *15*, 493–507.
- Blanton, H., Cooper, J., Skurnik, I., & Aronson, J. (1997). When bad things happen to good feedback: Exacerbating the need for self-justification with self-affirmations. *Personality and Social Psychology Bulletin*, *23*, 684–692.
- Botvinick, M. M., Braver, T. S., Barch, D. M., Carter, C. S., & Cohen, J. D. (2001). Conflict monitoring and cognitive control. *Psychological Review*, *108*, 624–652.
- Brehm, J. W. (1956). Post-decision changes in desirability of alternatives. *Journal of Abnormal and Social Psychology*, *52*, 384–389.
- Brehm, J. W., & Cohen, A. R. (1962). *Explorations in cognitive dissonance*. San Diego, CA: Academic Press.
- Brockner, J., Wiesenfeld, B. M., & Raskas, D. F. (1993). Self-esteem and expectancy-value discrepancy: The effects of believing that you can (or can't) get what you want. In R. F. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 219–240). New York, NY: Plenum.
- Burger, J. M. (1999). The foot-in-the-door compliance procedure: A multiple-process analysis and review. *Personality and Social Psychology Review*, *3*, 303–325.
- Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology*, *67*, 319–333.
- Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 5, pp. 3–39). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Chaiken, S., & Baldwin, M. W. (1981). Affective-cognitive consistency and the effect of salient behavioral information on the self-perception of attitudes. *Journal of Personality and Social Psychology*, *41*, 1–12.
- Cohen, A. R. (1962). An experiment on small rewards for discrepant compliance and attitude change. In J. W. Brehm & A. R. Cohen (Eds.), *Explorations in cognitive dissonance* (pp. 73–78). New York, NY: Wiley.
- Condry, J. (1977). Enemies of exploration: Self-initiated versus other-initiated learning. *Journal of Personality and Social Psychology*, *35*, 459–477.
- Converse, P. E. (1964). The nature of belief systems in mass publics. In D. E. Apter (Ed.), *Ideology and discontent* (pp. 206–261). New York, NY: Free Press.
- Cooper, J. (1980). Reducing fears and increasing assertiveness: The role of dissonance reduction. *Journal of Experimental Social Psychology*, *16*, 199–213.
- Cooper, J., & Duncan, B. L. (1971). Cognitive dissonance as a function of self-esteem and logical inconsistency. *Journal of Personality*, *39*, 289–302.
- Cooper, J., & Fazio, R. H. (1984). A new look at dissonance theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 17, pp. 229–266). New York, NY: Academic Press.



- Cooper, J., & Stone, J. (2000). Cognitive dissonance and the social group. In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership* (pp. 227–244). Mahwah, NJ: Lawrence Erlbaum Associates.
- Cooper, J., & Worchel, S. (1970). Role of undesired consequences in arousing dissonance. *Journal of Personality and Social Psychology, 16*, 199–206.
- Cooper, J., Zanna, M. P., & Taves, P. A. (1978). Arousal as a necessary condition for attitude change following induced compliance. *Journal of Personality and Social Psychology, 36*, 1101–1106.
- Damrad-Frye, R., & Laird, J. D. (1989). The experience of boredom: The role of self-perception of attention. *Journal of Personality and Social Psychology, 57*, 315–320.
- Deci, E. L., & Flaste, R. (1995). *Why we do what we do: The dynamics of personal autonomy*. New York, NY: Putnam.
- DeJong, W. (1979). An examination of self-perception mediation of the foot-in-the-door effect. *Journal of Personality and Social Psychology, 37*, 2221–2239.
- Dickerson, C., Thibodeau, R., Aronson, E., & Miller, D. (1992). Using cognitive dissonance to encourage water conservation. *Journal of Applied Social Psychology, 22*, 841–854.
- Dillard, J. P. (1991). The current status of research on sequential-request compliance techniques. *Personality and Social Psychology Bulletin, 17*, 283–288.
- Eagly, A. H., & Chaiken, S. (1984). Cognitive theories of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 17, pp. 267–359). San Diego, CA: Academic Press.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich.
- Egan, L. C., Bloom, P., & Santos, L. R. (2010). Choice-induced preferences in the absence of choice: Evidence from a blind two choice paradigm with young children and capuchin monkeys. *Journal of Experimental Social Psychology, 46*, 204–207.
- Egan, L. C., Santos, L. R., & Bloom, P. (2007). The origins of cognitive dissonance evidence from children and monkeys. *Psychological Science, 18*, 978–983.
- Elkin, R. A., & Leippe, M. R. (1986). Physiological arousal, dissonance, and attitude change: Evidence for a dissonance—arousal link and a “don’t remind me” effect. *Journal of Personality and Social Psychology, 51*, 55–65.
- Elliot, A. J., & Devine, P. G. (1994). On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort. *Journal of Personality and Social Psychology, 67*(3), 382–394.
- Elms, A. C. (1967). Role playing, incentive, and dissonance. *Psychological Bulletin, 68*, 132–148.
- Elms, A. C., & Janis, I. L. (1965). Counter-norm attitudes induced by consonant versus dissonant conditions of role-playing. *Journal of Experimental Research in Personality, 1*, 50–60.
- Fazio, R. H. (1987). Self-perception theory: A current perspective. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 5, pp. 129–150). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Fazio, R. H., Effrein, E. A., & Falender, V. J. (1981). Self-perceptions following social interaction. *Journal of Personality and Social Psychology, 41*, 232–242.
- Fazio, R. H., Sherman, S. J., & Herr, P. M. (1982). The feature-positive effect in the self-perception process: Does not doing matter as much as doing? *Journal of Personality and Social Psychology, 42*, 404–411.
- Fazio, R. H., & Zanna, M. P. (1981). Direct experience and attitude-behavior consistency. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 14, pp. 161–202). San Diego, CA: Academic Press.
- Fazio, R. H., Zanna, M. P., & Cooper, J. (1977). Dissonance and self-perception: An integrative view of each theory’s proper domain of application. *Journal of Experimental Social Psychology, 13*, 464–479.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Festinger, L. (1999). Social communication and cognition: A very preliminary and highly tentative draft. In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 355–379). Washington, DC: APA.
- Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology, 58*, 203–210.
- Festinger, L., Riecken, H., & Schachter, S. (1956). *When prophecy fails*. Minneapolis: University of Minnesota Press.
- Freedman, J. L. (1965). Long-term behavioral effects of cognitive dissonance. *Journal of Personality and Social Psychology, 1*, 145–155.
- Fishbach, A., & Labroo, A. A. (2007). Be better or be merry: How mood affects self-control. *Journal of Personality and Social Psychology, 93*, 158–173.
- Frank, M. G., & Gilovich, T. (1988). The dark side of self- and social perception: Black uniforms and aggression in professional sports. *Journal of Personality and Social Psychology, 54*, 74–85.
- Freedman, J. L., & Sears, D. O. (1965). Selective exposure. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 57–97). New York, NY: Academic Press.
- Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: The foot-in-the-door technique. *Journal of Personality and Social Psychology, 4*, 195–202.

- Friedman, R. S., & Arndt, J. (2005). Reexploring the connection between terror management theory and dissonance theory. *Personality and Social Psychology Bulletin*, *31*, 1217–1225.
- Frey, D. (1986). Recent research on selective exposure to information. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 41–80). New York, NY: Academic Press.
- Fried, C. B. (1998). Hypocrisy and identification with transgressions: A case of undetected dissonance. *Basic and Applied Social Psychology*, *20*, 145–154.
- Fried, C. B., & Aronson, E. (1995). Hypocrisy, misattribution, and dissonance reduction. *Personality and Social Psychology Bulletin*, *21*(9), 925–933.
- Galinsky, A. D., Stone, J., & Cooper, J. (2000). The reinstatement of dissonance and psychological discomfort following failed affirmations. *European Journal of Social Psychology*, *30*, 123–147.
- Gawronski, B. (2012). Back to the future of dissonance theory: Cognitive consistency as a core motive. *Social Cognition*, *30*(6), 652–668.
- Gawronski, B., & Strack, F. (2004). On the propositional nature of cognitive consistency: Dissonance changes explicit, but not implicit attitudes. *Journal of Experimental Social Psychology*, *40*, 535–542.
- Gerard, H. B., & Mathewson, G. C. (1966). The effects of severity of initiation on liking for a group: A replication. *Journal of Experimental Social Psychology*, *2*, 278–287.
- Gerard, H. B., & White, G. L. (1983). Post-decisional reevaluation of choice alternatives. *Personality and Social Psychology Bulletin*, *9*, 365–369.
- Glass, D. (1964). Changes in liking as a means of reducing cognitive discrepancies between self-esteem and aggression. *Journal of Personality*, *32*, 531–549.
- Gonzales, A. L., & Hancock, J. T. (2008). Identity shift in computer-mediated environments. *Media Psychology*, *11*, 167–185.
- Gorassini, D. R., & Olson, J. M. (1995). Does self-perception change explain the foot-in-the-door effect? *Journal of Personality and Social Psychology*, *69*, 91–105.
- Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. In A. G. Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 147–170). New York, NY: Academic Press.
- Greenwald, A. G. (1969). The open-mindedness of the counterattitudinal role player. *Journal of Experimental Social Psychology*, *5*, 375–388.
- Greenwald, A. G. (1970). When does role playing produce attitude change? *Journal of Personality and Social Psychology*, *16*, 214–219.
- Greenwald, A. G., & Albert, R. D. (1968). Acceptance and recall of improvised arguments. *Journal of Personality and Social Psychology*, *8*, 31–34.
- Grov, C., Bux, D., Jr., Parsons, J. T., & Morgenstern, J. (2009). Recruiting hard-to-reach drug-using men who have sex with men into an intervention study: Lessons learned and implications for applied research. *Substance Use and Abuse*, *44*, 1855–1871.
- Guéguen, N., Marchand, M., Pascual, A., & Lourel, M. (2008). Foot-in-the-door technique using a courtship request: A field experiment. *Psychological Reports*, *103*, 529–534.
- Guéguen, N., Martin, A., Silone, F., & Pascual, A. (2016). The foot-in-the-door technique, crime, and the responsive bystander: A field experiment. *Crime Prevention and Community Safety*, *18*(1), 60–68.
- Hajcak, G., & Foti, D. (2008). Errors are aversive: Defensive motivation and the error-related negativity. *Psychological Science*, *19*, 103–108.
- Harmon-Jones, C., Schmeichel, B. J., Inzlicht, M., & Harmon-Jones, E. (2011). Trait approach motivation relates to dissonance reduction. *Social Psychological and Personality Science*, *2*, 21–28.
- Harmon-Jones, E. (2000a). Cognitive dissonance and experienced negative affect: Evidence that dissonance increases experienced negative affect even in the absence of aversive consequences. *Personality and Social Psychology Bulletin*, *26*, 1490–1501.
- Harmon-Jones, E. (2000b). An update on dissonance theory, with a focus on the self. In A. Tesser, R. Felson, & J. Suls (Eds.), *Psychological perspectives on self and identity* (pp. 119–144). Washington, DC: APA.
- Harmon-Jones, E., Amodio, D. M., & Harmon-Jones, C. (2009). Action-based model of dissonance: A review, integration, and expansion of conceptions of cognitive conflict. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 41, pp. 119–166). San Diego, CA: Academic Press.
- Harmon-Jones, E., Brehm, J. W., Greenberg, J., Simon, L., & Nelson, D. E. (1996). Evidence that the production of aversive consequences is not necessary to create cognitive dissonance. *Journal of Personality and Social Psychology*, *70*, 5–16.
- Harmon-Jones, E., Gable, P. A., & Peterson, C. K. (2010). The role of asymmetric frontal cortical activity in emotion-related phenomena: A review and update. *Biological Psychology*, *84*, 451–462. doi:10.1016/j.biopsycho.2009.08.010

- Harmon-Jones, E., Gable, P. A., & Price, T. F. (2011). Leaning embodies desire: Evidence that leaning forward increases relative left frontal cortical activation to appetitive stimuli. *Biological Psychology*, *87*, 311–313.
- Harmon-Jones, E., Gerdjikov, T., & Harmon-Jones, C. (2008). The effect of induced compliance on relative left frontal cortical activity: A test of the action-based model of dissonance. *European Journal of Social Psychology*, *38*, 35–45.
- Harmon-Jones, E., & Harmon-Jones, C. (2002). Testing the action-based model of cognitive dissonance: The effect of action orientation on postdecisional attitudes. *Personality and Social Psychology Bulletin*, *28*, 711–723.
- Harmon-Jones, E., Harmon-Jones, C., Fearn, M., Sigelman, J. D., & Johnson, P. (2008). Action orientation, relative left frontal cortical activation, and spreading of alternatives: A test of the action-based model of dissonance. *Journal of Personality and Social Psychology*, *94*, 1–15.
- Harmon-Jones, E., Harmon-Jones, C., & Levy, N. (2015). An action-based model of cognitive dissonance processes. *Current Directions in Psychological Science*, *24*, 184–189.
- Harmon-Jones, E., Harmon-Jones, C., & Price, T. F. (2013). What is approach motivation? *Emotion Review*, *5*, 291–295. doi:10.1177/1754073913477509
- Harmon-Jones, E., & Mills, J. (1999). *Cognitive dissonance: Progress on a pivotal theory in social psychology*. Washington, DC: APA.
- Harmon-Jones, E., Harmon-Jones, C., Serra, R., & Gable, P. A. (2011). The effect of commitment on relative left frontal cortical activity: Tests of the action-based model of dissonance. *Personality and Social Psychology Bulletin*, *37*, 395–408.
- Haemmerlie, F. M., & Montgomery, R. L. (1982). Self-perception theory and unobtrusively biased interactions: A treatment for heterosexual anxiety. *Journal of Counseling Psychology*, *29*, 362–270.
- Harmon-Jones, E., Price, T. F., & Harmon-Jones, C. (2015). Supine body posture decreases rationalizations: Testing the action-based model of dissonance. *Journal of Experimental Social Psychology*, *56*, 228–234.
- Harmon-Jones, E., Peterson, H., & Vaughn, K. (2003). The dissonance-inducing effects of an inconsistency between experienced empathy and knowledge of past failures to help: Support for the action-based model of dissonance. *Basic and Applied Social Psychology*, *25*, 69–78.
- Heine, S. J., & Lehman, D. R. (1997). Culture, dissonance, and self-affirmation. *Personality and Social Psychology Bulletin*, *23*(4), 389–400.
- Higgins, E. T. (1996). The “self-digest”: Self-knowledge serving self-regulatory functions. *Journal of Personality and Social Psychology*, *71*, 1062–1083.
- Higgins, E. T., Rhodewalt, F., & Zanna, M. P. (1979). Dissonance motivation: Its nature, persistence, and reinstatement. *Journal of Experimental Social Psychology*, *15*, 16–34.
- Holland, R. W., Meertens, R. M., & Van Vugt, M. (2002). Dissonance on the road: Self-esteem as a moderator of internal and external self-justification strategies. *Personality & Social Psychology Bulletin*, *28*, 1713–1724.
- Holland, R. W., Verplanken, B., & van Knippenberg, A. (2002). On the nature of attitude-behavior relations: The strong guide, the weak follow. *European Journal of Social Psychology*, *32*, 869–876.
- Hoshino-Browne, E., Zanna, A. S., Spencer, S. J., Zanna, M. P., Kitayama, S., & Lackebauer, S. (2005). On the cultural guises of cognitive dissonance: The case of easterners and westerners. *Journal of Personality and Social Psychology*, *89*, 294–310.
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: Psychological studies of opinion change*. New Haven, CT: Yale University Press.
- Izuma, K., Matsumoto, M., Murayama, K., Samejima, K., Sadato, N., & Matsumoto, K. (2010). Neural correlates of cognitive dissonance and choice-induced preference change. *Proceedings of the National Academy of Sciences*, *107*, 22014–22019.
- Janis, I. L. (1968). Attitude change via role playing. In R. P. Abelson, E. Aronson, W. J. McGuire, T. M. Newcomb, M. J. Rosenberg, & P. H. Tannenbaum (Eds.), *Theories of cognitive consistency: A sourcebook* (pp. 810–818). Chicago: Rand McNally.
- Janis, I. L., & Gilmore, J. B. (1965). The influence of incentive conditions on the success of role playing in modifying attitudes. *Journal of Personality and Social Psychology*, *1*, 17–27.
- Janis, I. L., & King, B. T. (1954). The influence of role playing on opinion change. *Journal of Abnormal and Social Psychology*, *49*, 211–218.
- Jarcho, J. M., Berkman, E. T., & Lieberman, M. D. (2011). The neural basis of rationalization: Cognitive dissonance reduction during decision-making. *Social Cognitive and Affective Neuroscience*, *6*, 460–467.
- Johnson, D. J., & Rusbult, C. E. (1989). Resisting temptation: Devaluation of alternative partners as a means of maintaining commitment in close relationships. *Journal of Personality and Social Psychology*, *57*, 967–980.
- Jonas, E., McGregor, I., Klackl, J., Agroskin, D., Fritsche, I., Holbrook, C., Nash, K., & Quirin, M. (2014). Threat and defense: From anxiety to approach. *Advances in Experimental Social Psychology*, *49*, 219–286.

- Jones, S. C. (1973). Self- and interpersonal evaluations: Esteem theories versus consistency theories. *Psychological Bulletin*, 79(3), 185–199.
- Kellerman, J., Lewis, J., & Laird, J. D. (1989). Looking and loving: The effects of mutual gaze on feelings of romantic love. *Journal of Research in Personality*, 23, 145–161.
- Kelley, H. H. (1973). The process of causal attribution. *American Psychologist*, 28, 107–128.
- Kelman, H. C. (1962). The induction of action and attitude change. In S. Coopersmith (Ed.), *Personality research* (pp. 81–110). Copenhagen, Denmark: Munksgaard.
- Kelman, H. C. (1974). Attitudes are alive and well and gainfully employed in the sphere of action. *American Psychologist*, 29, 310–324.
- Kitayama, S., Chua, H. F., Tompson, S., & Han, S. (2013). Neural mechanisms of dissonance: An fMRI investigation of choice justification. *NeuroImage*, 69, 206–212.
- Kitayama, S., Snibbe, A. C., Markus, H. R., & Suzuki, T. (2004). Is there any “free” choice? Self and dissonance in two cultures. *Psychological Science*, 15, 527–533.
- Lawrence, D. H., & Festinger, L. (1962). *Deterrents and reinforcement: The psychology of insufficient reward*. Palo Alto, CA: Stanford University Press.
- Lepper, M. R., & Greene, D. (Eds.). (1978). *The hidden cost of reward*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children’s interest with extrinsic rewards: A test of the “overjustification effect.” *Journal of Personality and Social Psychology*, 28, 129–137.
- Lieberman, M. D., Ochsner, K. N., Gilbert, D. T., & Schacter, D. L. (2001). Do amnesics exhibit cognitive dissonance reduction? The role of explicit memory and attention in attitude change. *Psychological Science*, 121, 135–140.
- Linder, D. E., Cooper, J., & Jones, E. E. (1967). Decision freedom as a determinant of the role of incentive magnitude in attitude change. *Journal of Personality and Social Psychology*, 6, 245–254.
- Loughnan, S., Haslam, N., & Bastian, B. (2010). The role of meat consumption in the denial of moral status and mind to meat animals. *Appetite*, 55, 156–159.
- Loughnan, S., Bastian, B., & Haslam, N. (2014). The psychology of eating animals. *Current Directions in Psychological Science*, 23, 104–108.
- Losch, M. E., & Cacioppo, J. T. (1990). Cognitive dissonance may enhance sympathetic tonus, but attitudes are changed to reduce negative affect rather than arousal. *Journal of Experimental Social Psychology*, 26, 289–304.
- Lowin, A. (1967). Approach and avoidance as alternative modes of selective exposure to information. *Journal of Personality and Social Psychology*, 6, 1–9.
- Maio, G. R., Olson, J. M., Bernard, M. M., & Luke, M. A. (2003). Ideologies, values, attitudes, and behaviour. In J. Delamater (Ed.), *Handbook of social psychology* (pp. 283–308). New York, NY: Kluwer Academic/Plenum.
- Maracek, J., & Mettee, D. (1972). Avoidance of continued success as a function of self-esteem, level of esteem certainty, and responsibility for success. *Journal of Personality and Social Psychology*, 22, 98–107.
- Markus, H. R., & Kitayama, S. (1991). Culture and self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.
- McGregor, I., Newby-Clark, I. R., & Zanna, M. P. (1999). “Remembering” dissonance: Simultaneous accessibility of inconsistent cognitive elements moderates epistemic discomfort. In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 325–355). Washington, DC: APA.
- McGuire, W. J. (1985). Attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), *Handbook of social psychology* (3rd ed., Vol. 2, pp. 233–346). New York, NY: Random House.
- Mengarelli, F., Spoglianti, S., Avenanti, A., & di Pellegrino, G. (2015). Cathodal tDCS over the left prefrontal cortex diminishes choice-induced preference change. *Cerebral Cortex*, 25, 1219–1227, doi:10.1093/cercor/bht314
- Mettee, D. (1971). Rejection of unexpected success as a function of the negative consequences of accepting success. *Journal of Personality and Social Psychology*, 17, 332–341.
- Mills, J. (1958). Changes in moral attitudes following temptation. *Journal of Personality*, 26, 517–531.
- Mills, J. (1965a). Avoidance of dissonant information. *Journal of Personality and Social Psychology*, 2, 589–593.
- Mills, J. (1965b). Effect of certainty about a decision upon postdecision exposure to consonant and dissonant information. *Journal of Personality and Social Psychology*, 2, 749–752.
- Norton, M. I., Monin, B., Cooper, J., & Hogg, M. A. (2003). Vicarious dissonance: Attitude change from the inconsistency of others. *Journal of Personality and Social Psychology*, 85, 47–62.
- Olson, J. M. (1992). Self-perception of humor: Evidence for discounting and augmentation effects. *Journal of Personality and Social Psychology*, 62, 369–377.
- Olson, J. M., & Stone, J. (2005). The influence of behavior on attitudes. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 223–271). Mahwah, NJ: Lawrence Erlbaum Associates.

- Olson, J. M., & Zanna, M. P. (1979). A new look at selective exposure. *Journal of Experimental Social Psychology*, *15*, 1–15.
- Olson, J. M., & Zanna, M. P. (1982). Repression-sensitization differences in responses to a decision. *Journal of Personality*, *50*, 46–57.
- Pallak, M. S., & Pittman, T. S. (1972). General motivational effects of dissonance arousal. *Journal of Personality and Social Psychology*, *21*, 349–358.
- Pascual, A., & Guéguen, N. (2005). Foot-in-the-door and door-in-the-face: A comparative meta-analytic study. *Psychological Reports*, *96*, 122–128.
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123–205). San Diego, CA: Academic Press.
- Price, T. F., Dieckman, L., & Harmon-Jones, E. (2012). Embodying approach motivation: Body posture influences startle eyeblink and event-related potential responses to appetitive stimuli. *Biological Psychology*, *90*, 211–217. doi:10.1016/j.biopsycho.2012.04.001
- Proulx, T., Inzlicht, M., & Harmon-Jones, E. (2012). Understanding all inconsistency compensation as a palliative response to violated expectations. *Trends in Cognitive Sciences*, *16*, 285–291. doi: 10.1016/j.tics.2012.04.002
- Pyszczynski, T., Greenberg, J., Solomon, S., Sideris, J., & Stubing, M. J. (1993). Emotional expression and the reduction of motivated cognitive bias: Evidence from cognitive dissonance and distancing from victims' paradigms. *Journal of Personality and Social Psychology*, *64*, 177–186.
- Qin, J., Kimel, S., Kitayama, S., Wang, X., Yang, X., & Han, S. (2011). How choice modifies preference: Neural correlates of choice justification. *NeuroImage*, *55*, 240–246.
- Rhodewalt, F., & Agustsdottir, S. (1986). Effects of self-presentation on the phenomenal self. *Journal of Personality and Social Psychology*, *50*(1), 47–55.
- Rhodewalt, F., & Comer, R. (1979). Induced-compliance attitude change: Once more with feeling. *Journal of Experimental Social Psychology*, *15*, 35–47.
- Rind, B., & Kipnis, D. (1999). Changes in self-perception as a result of successfully persuading others. *Journal of Social Issues*, *55*(1), 141–156.
- Rittle, R. H. (1981). Changes in helping behavior: Self versus situational perceptions as mediators of the foot-in-the-door effect. *Personality and Social Psychology Bulletin*, *7*, 431–437.
- Rokeach, M. (1973). *The nature of human values*. New York, NY: Free Press.
- Rosenberg, M. J. (1965). When dissonance fails: On eliminating evaluation apprehension from attitude measurement. *Journal of Personality and Social Psychology*, *1*, 28–42.
- Sakai, H. (1981). Induced compliance and opinion change. *Japanese Psychological Research*, *22*, 32–41.
- Sakai, H. (1999). A multiplicative power-function model of cognitive dissonance: Toward an integrated theory of cognition, emotion, and behavior after Leon Festinger. In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 267–294). Washington, DC: APA.
- Sakai, H., & Andow, K. (1980). Attribution of personal responsibility and dissonance reduction. *Japanese Psychological Research*, *22*, 32–41.
- Schachter, S., & Singer, J. E. (1962). Cognitive, social and physiological determinants of emotional state. *Psychological Review*, *69*, 379–399.
- Scher, S. J., & Cooper, J. (1989). Motivational basis of dissonance: The singular role of behavioral consequences. *Journal of Personality and Social Psychology*, *56*, 899–906.
- Schlenker, B. R., Dlugolecki, D. W., & Doherty, K. (1994). The impact of self-presentations on self-appraisals and behavior: The power of public commitment. *Personality and Social Psychology Bulletin*, *20*, 20–33.
- Schlenker, B. R., & Trudeau, J. V. (1990). Impact of self-presentations on private self-beliefs: Effects of prior self-beliefs and misattribution. *Journal of Personality and Social Psychology*, *58*, 22–32.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). San Diego, CA: Academic Press.
- Seligman, C., Bush, M., & Kirsch, K. (1976). Relationship between compliance in the foot-in-the-door paradigm and size of first request. *Journal of Personality and Social Psychology*, *33*, 517–520.
- Seligman, C., Fazio, R. H., & Zanna, M. P. (1980). Effects of salience of extrinsic rewards on liking and loving. *Journal of Personality and Social Psychology*, *38*, 453–460.
- Sherman, D. K., & Cohen, G. L. (2002). Accepting threatening information: Self-affirmation and the reduction of defensive biases. *Current Directions in Psychological Science*, *11*, 119–123.
- Shrauger, J. S. (1975). Responses to evaluation as a function of initial self-perceptions. *Psychological Bulletin*, *82*(4), 581–596.
- Shu, L. L., Gino, F., & Bazerman, M. H. (2011). Dishonest deed, clear conscience: When cheating leads to moral disengagement and motivated forgetting. *Personality and Social Psychology Bulletin*, *37*(3), 330–349.

- Simon, L., Greenberg, J., & Brehm, J. (1995). Trivialization: The forgotten mode of dissonance reduction. *Journal of Personality and Social Psychology, 68*(2), 247–260.
- Skinner, B. F. (1953). *Science and human behavior*. New York, NY: Palgrave Macmillan.
- Snyder, M., & Cunningham, M. R. (1975). To comply or not to comply: Testing the self-perception explanation of the “foot-in-the-door” phenomenon. *Journal of Personality and Social Psychology, 31*, 64–67.
- Son Hing, L. S., Li, W., & Zanna, M. P. (2002). Inducing hypocrisy to reduce prejudicial responses among aversive racists. *Journal of Experimental Social Psychology, 38*(1), 71–78.
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 261–302). San Diego, CA: Academic Press.
- Steele, C. M., & Lui, T. J. (1983). Dissonance processes as self-affirmation. *Journal of Personality and Social Psychology, 45*, 5–19.
- Steele, C. M., Southwick, L. L., & Critchlow, B. (1981). Dissonance and alcohol: Drinking your troubles away. *Journal of Personality and Social Psychology, 41*, 831–846.
- Steele, C. M., Spencer, S. J., & Lynch, M. (1993). Dissonance and affirmational resources: Resilience against self-image threats. *Journal of Personality and Social Psychology, 64*(6), 885–896.
- Stice, E. (1992). The similarities between cognitive dissonance and guilt: Confession as a relief of dissonance. *Current Psychology: Research & Reviews, 11*, 69–77.
- Stone, J. (2003). Self-consistency for low self-esteem in dissonance processes: The role of self-standards. *Personality and Social Psychology Bulletin, 29*, 846–858.
- Stone, J., Aronson, E., Crain, A. L., Winslow, M. P., & Fried, C. B. (1994). Inducing hypocrisy as a means of encouraging young adults to use condoms. *Personality and Social Psychology Bulletin, 20*(1), 116–128.
- Stone, J., & Cooper, J. (2001). A self-standards model of cognitive dissonance. *Journal of Experimental Social Psychology, 37*, 228–243.
- Stone, J., & Cooper, J. (2003). The effect of self-attribute relevance on how self-esteem moderates dissonance processes. *Journal of Experimental Social Psychology, 39*, 508–515.
- Stone, J., Wiegand, A. W., Cooper, J., & Aronson, E. (1997). When exemplification fails: Hypocrisy and the motive for self-integrity. *Journal of Personality and Social Psychology, 72*(1), 54–65.
- Tang, S., & Hall, V. C. (1995). The overjustification effect: A meta-analysis. *Applied Cognitive Psychology, 9*, 365–404.
- Tesser, A. (2000). On the confluence of self-esteem maintenance mechanisms. *Personality and Social Psychology Review, 4*, 290–299.
- Tesser, A., & Cornell, D. P. (1991). On the confluence of self processes. *Journal of Experimental Social Psychology, 27*, 501–526.
- Thibodeau, R., & Aronson, E. (1992). Taking a closer look: Reasserting the role of the self-concept in dissonance theory. *Personality and Social Psychology Bulletin, 18*(5), 591–602.
- Tice, D. M. (1992). Self-concept change and self-presentation: The looking glass self is also a magnifying glass. *Journal of Personality and Social Psychology, 63*, 435–451.
- Vallacher, R. R., & Wegner, D. M. (1985). *A theory of action identification*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 271–360). San Diego, CA: Academic Press.
- Van Veen, V., Krug, M. K., Schooler, J. W., & Carter, C. S. (2009). Neural activity predicts attitude change in cognitive dissonance. *Nature Neuroscience, 12*, 1469–1474.
- Walster, E. (1964). The temporal sequence of post-decision dissonance. In L. Festinger (Ed.), *Conflict, decision, and dissonance* (pp. 112–128). Palo Alto, CA: Stanford University Press.
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23*, 3–44.
- Walther, J. B. (2007). Selective self-presentation in computer-mediated communication: Hyperpersonal dimensions of technology, language, and cognition. *Computers in Human Behavior, 23*, 2538–2557.
- Walther, J. B., Liang, Y., Deandrea, D. C., Tong, S. T., Carr, C. T., Spottswood, E. L., & Amichai-Hamburger, Y. (2011). The effect of feedback on identity shift in computer-mediated communication. *Media Psychology, 14*, 1–26.
- Ward, W. D., & Sandvold, K. D. (1963). Performance expectancy as a determinant of actual performance: A partial replication. *Journal of Abnormal and Social Psychology, 67*, 293–295.
- Waterman, C. K. (1969). The facilitating and interfering effects of cognitive dissonance on simple and complex paired associates learning tasks. *Journal of Experimental Social Psychology, 5*, 31–42.
- Watts, W. (1967). Relative persistence of opinion change induced by active compared to passive participation. *Journal of Personality and Social Psychology, 5*, 4–15.

- Yee, N., & Bailenson, J. (2007). The Proteus effect: The effect of transformed self-representation on behavior. *Human Communication Research, 33*, 271–290.
- Yee, N., Bailenson, J., & Ducheneaut, N. (2009). The Proteus effect: Implications of transformed digital self-representation on online and offline behavior. *Communication Research, 36*, 285–312.
- Zanna, M. P., & Aziza, C. (1976). On the interaction of repression-sensitization and attention in resolving cognitive dissonance. *Journal of Personality, 44*, 577–593.
- Zanna, M. P., & Cooper, J. (1974). Dissonance and the pill: An attribution approach to studying the arousal properties of dissonance. *Journal of Personality and Social Psychology, 29*, 703–709.
- Zanna, M. P., Fazio, R. H., & Ross, M. (1994). The persistence of persuasion. In R. C. Schank & E. Langer (Eds.), *Beliefs, reasoning, and decision-making: Psycho-logic in honor of Bob Abelson* (pp. 347–362). Mahwah, NJ: Lawrence Erlbaum Associates.
- Zanna, M. P., Higgins, E. T., & Taves, P. A. (1976). Is dissonance phenomenologically aversive? *Journal of Experimental Social Psychology, 12*, 530–538.
- Zanna, M. P., Lepper, M. R., & Abelson, R. P. (1973). Attentional mechanisms in children's devaluation of a forbidden activity in a forced-compliance situation. *Journal of Personality and Social Psychology, 28*, 355–359.
- Zanna, M. P., Olson, J. M., & Fazio, R. H. (1981). Self-perception and attitude-behavior consistency. *Personality and Social Psychology Bulletin, 7*, 252–256.
- Zanna, M. P., & Sande, G. N. (1987). The effect of collective actions on the attitudes of individual group members: A dissonance analysis. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 5, pp. 151–163). Hillsdale, NJ: Lawrence Erlbaum Associates.