1

An Introduction to Cognitive Dissonance Theory and an Overview of Current Perspectives on the Theory

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A little more than 60 years ago, Leon Festinger published *A Theory of Cognitive Dissonance* (1957). Festinger's theory of cognitive dissonance has been one of the most influential theories in social psychology (Jones, 1985). It has generated hundreds and hundreds of studies, from which much has been learned about the determinants of attitudes and beliefs, the internalization of values, the consequences of decisions, the effects of disagreement among persons, and other important psychological processes.

As presented by Festinger in 1957, dissonance theory began by postulating that pairs of cognitions (elements of knowledge) can be relevant or irrelevant to one another. If two cognitions are relevant to one another, they are either consonant or dissonant. Two cognitions are *consonant* if one follows from the other, and they are *dissonant* if the obverse (opposite) of one cognition follows from the other. The existence of dissonance, being psychologically uncomfortable, motivates the person to reduce the dissonance and leads to avoidance of information likely to increase the dissonance. The greater the magnitude of the dissonance, the greater is the pressure to reduce dissonance.

Festinger used the same term, dissonance, to refer to the discrepancy between cognitions and to psychological discomfort. These two concepts are theoretically distinct and the first is now referred to as cognitive inconsistency

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or cognitive discrepancy, whereas the second is referred to as dissonance or dissonance discomfort.

The magnitude of dissonance between one cognitive element and the remainder of the person's cognitions depends on the number and importance of cognitions that are consonant and dissonant with the one in question. Formally speaking, the magnitude of dissonance equals the number of dissonant cognitions divided by the number of consonant cognitions plus the number of dissonant cognitions. This is referred to as the *dissonance ratio.* Holding the number and importance of consonant cognitions constant, as the number or importance of dissonant cognitions increases, the magnitude of dissonance increases. Holding the number and importance of dissonant cognitions constant, as the number or importance of consonant cognitions increases, the magnitude of dissonance decreases.

Dissonance can be reduced by removing dissonant cognitions, adding new consonant cognitions, reducing the importance of dissonant cognitions, or increasing the importance of consonant cognitions.[1] The likelihood that a particular cognition will change to reduce dissonance is determined by the resistance to change of the cognition. Cognitions that are less resistant to change will change more readily than cognitions that are more resistant to change. Resistance to change is based on the responsiveness of the cognition to reality and on the extent to which the cognition is consonant with many other cognitions. Resistance to change of a behavioral cognitive element depends on the extent of pain or loss that must be endured and the satisfaction obtained from the behavior.

An example used by Festinger (1957) may assist in elucidating the theory. A habitual smoker who learns that smoking is bad for health will experience dissonance because the knowledge that smoking is bad for health is dissonant with the cognition that he continues to smoke. He can reduce the dissonance by changing his behavior, that is, he could stop smoking, which would be consonant with the cognition that smoking is bad for health. Alternatively, the smoker could reduce dissonance by changing his cognition about the effect of smoking on health and believe that smoking does not have a harmful effect on health (eliminating the dissonant cognition). He might look for positive effects of smoking and believe that smoking reduces tension and keeps him from gaining weight (adding consonant cognitions). Or he might believe that the risk to health from smoking is negligible compared with the danger of automobile accidents (reducing the importance of the dissonant cognition). In addition, he might consider the enjoyment he gets from smoking to be a very important part of his life (increasing the importance of consonant cognitions).

Since it was presented by Festinger over 60 years ago, cognitive dissonance theory has continued to generate research, revision, and controversy. Part of

[1] Increasing the importance of consonant cognitions was not specified by Festinger as a way to reduce dissonance, although it follows logically from consideration of the dissonance ratio that is used to calculate the magnitude of dissonance and Festinger's (1957) statement that "the magnitude of dissonance (and consonance) increases as the importance or value of the elements increases" (p. 18).

the reason it has been so generative is that the theory was stated in very general, highly abstract terms. As a consequence, it can be applied to a wide variety of psychological topics involving the interplay of cognition, motivation, and emotion. A person can have cognitions about behaviors, perceptions, attitudes, beliefs, and feelings. Cognitions can be about oneself, another person or group, or about things in the environment. Rather than being relevant to a single topic, the theory is relevant to many different topics.

RESEARCH PARADIGMS IN DISSONANCE RESEARCH

We now review briefly the common paradigms used in dissonance research. Important research generated by the theory has been concerned with what happens after individuals make decisions, the consequences of exposure to information inconsistent with a prior belief, the effects of effort expenditure, and what happens after persons act in ways that are discrepant with their beliefs and attitudes.

The Free-Choice Paradigm

Once a decision is made, dissonance is likely to be aroused. After the person makes a decision, each of the negative aspects of the chosen alternative and positive aspects of the rejected alternative is dissonant with the decision. On the other hand, each of the positive aspects of the chosen alternative and negative aspects of the rejected alternative is consonant with the decision. Difficult decisions should arouse more dissonance than easy decisions, because there will be a greater proportion of dissonant cognitions after a difficult decision than there will be after an easy one. Because of this, there will be greater motivation to reduce the dissonance after a difficult decision. Dissonance following a decision can be reduced by removing negative aspects of the chosen alternative or positive aspects of the rejected alternative, and it can also be reduced by adding positive aspects to the chosen alternative or negative aspects to the rejected alternative. Altering the aspects of the decision alternatives to reduce dissonance will lead to viewing the chosen alternative as more desirable and the rejected alternative as less desirable. This effect has been termed *spreading of alternatives,* and the experimental paradigm has been termed the *free-choice paradigm.*

J. W. Brehm (1956) conducted the first experiment using the free-choice paradigm to test predictions derived from dissonance theory. In his experiment, which was presented as market research, he had women rate how desirable they found eight different products (e.g., toaster, coffeemaker) and then gave each of them a choice between two products that were close in desirability (difficult decision) or between two products that were not close in desirability (easy decision). After choosing which of the two products they would keep, the women rerated the desirability of the products. Results indicated that the women who made a difficult decision changed their evaluations of the products

to be more positive about the chosen product and less positive about the rejected product. Spreading of alternatives was less for the women who made an easy decision. The free-choice paradigm continues to be used to gain insights into dissonance processes (e.g., E. Harmon-Jones, Harmon-Jones, Fearn, Sigelman, & Johnson, 2008; Shultz & Lepper, 1996).

The Belief-Disconfirmation Paradigm

Dissonance is aroused when people are exposed to information that is inconsistent with their beliefs. If the dissonance is not reduced by changing one's belief, the dissonance can lead to misperception or misinterpretation of the information, rejection or refutation of the information, seeking support from those who agree with one's belief, and attempting to persuade others to accept one's belief. In a study of the effect of belief disconfirmation on proselytizing, Festinger, Riecken, and Schachter (1956) acted as participant observers in a group that had become committed to an important belief that was specific enough to be capable of unequivocal disconfirmation. The group believed a prophecy that a flood would engulf the continent. The prophecy was supposedly transmitted by beings from outer space to a woman in the group. The group members also believed that they had been chosen to be saved from the flood and would be evacuated in a flying saucer.

Festinger et al. (1956) described what happened when the flood did not occur. Members of the group who were alone at that time did not maintain their beliefs. Members who were waiting with other group members maintained their faith. The woman (who was "receiving transmissions from outer space") reported receiving a message that indicated that the flood had been prevented by God because of the group's existence as a force for good. Before the disconfirmation of the belief about the flood, the group engaged in little proselytizing. After the disconfirmation, they engaged in substantial proselytizing. The group members sought to persuade others of their beliefs, which would add cognitions consonant with those beliefs. This paradigm, referred to as the *belief-disconfirmation paradigm,* continues to generate insight into dissonance processes (e.g., Burris, Harmon-Jones, & Tarpley, 1997; Gawronski, Ye, Rydell, & De Houwer, 2014; E. Harmon-Jones & Harmon-Jones, Chapter 4, this volume).

The Effort-Justification Paradigm

Dissonance is aroused whenever a person engages in an unpleasant activity to obtain some desirable outcome. From the cognition that the activity is unpleasant, it follows that one would not engage in the activity; the cognition that the activity is unpleasant is dissonant with engaging in the activity. Dissonance should be greater, the greater the unpleasant effort required to obtain the outcome. Dissonance can be reduced by exaggerating the desirability of the outcome, which would add consonant cognitions.

In the first experiment designed to test these theoretical ideas, Aronson and Mills (1959) had women undergo a severe or mild "initiation" to become a member of a group. In the severe-initiation condition, the women engaged in an embarrassing activity to join the group, whereas in the mild-initiation condition, the women engaged in an activity that was not very embarrassing to join the group. The group turned out to be rather dull and boring. The women in the severe-initiation condition evaluated the group more favorably than the women in the mild-initiation condition. This paradigm is referred to as the *effort-justification paradigm,* and it continues to be used fruitfully in research (e.g., Beauvois & Joule, 1996; E. Harmon-Jones, Price, & Harmon-Jones, 2015).

The Induced-Compliance Paradigm

Dissonance is aroused when a person does or says something that is contrary to a prior belief or attitude. From the cognition of the prior belief or attitude, it would follow that one would not engage in such behavior. On the other hand, inducements to engage in such behavior, promises of reward or threats of punishment, provide cognitions that are consonant with the behavior. Such cognitions provide justifications for the behavior. The greater the number and importance of the cognitions justifying the behavior, the less the dissonance aroused. Dissonance can be reduced by changing the belief or attitude to correspond more closely to what was said. Instead of using Festinger's original term, *forced compliance,* this paradigm is now called the *induced-compliance paradigm.*

The first experiment using the induced-compliance paradigm was the groundbreaking study by Festinger and Carlsmith (1959). They tested the hypothesis derived from dissonance theory that the smaller the reward for saying something that one does not believe, the greater the opinion changes to agree with what one has said. In their experiment, men performed boring tasks for 1 hour. Then each was told by the experimenter that there were two groups in the experiment: the one the participant was in, which received no introduction, and a second group, which was told the tasks were enjoyable by a person who had supposedly just completed them. The experimenter asked the participant to substitute for the person who usually said the tasks were enjoyable, and the participant was given $1 or $20 to tell the next person (actually a female accomplice of the experimenter) that the tasks were enjoyable and to remain on call in the future. The participants were then asked to evaluate the tasks by an interviewer from the psychology department, who ostensibly had nothing to do with the experiment. Results indicated that those paid $1 rated the tasks as more enjoyable than did those paid $20 or those who merely performed the tasks and were not asked to describe them to another person.

The participants in the experiment by Festinger and Carlsmith (1959) engaged in what is referred to as *counterattitudinal behavior.* The finding that the less money received for engaging in the counterattitudinal behavior, the more

positive the attitude has been labeled the *negative-incentive effect.* The reason that term is used is that there is a negative relationship between the amount of incentive (money) and the amount of attitude change in the direction of the counterattitudinal behavior.[2] Later research by Linder, Cooper, and Jones (1967) showed that the negative-incentive effect occurs when the person feels free to decide about engaging in the counterattitudinal behavior, but when there is no perceived freedom to engage in the counterattitudinal behavior, the opposite effect occurs, that is, the more incentive, the more positive the attitude. When there is no choice about engaging in the behavior, dissonance is minimal, because there is sufficient justification for the behavior (see Festinger, Appendix B, this volume).

Other dissonance theorists have given different reasons why perceived choice is a crucial factor in dissonance effects (Beauvois & Joule, 1996; J. W. Brehm & Cohen, 1962; Cooper & Fazio, 1984; Wicklund & Brehm, 1976). However, Festinger's original theory can easily explain why perceived choice is an important variable. Low choice (i.e., being forced) to engage in counterattitudinal behavior is a cognition consonant with the counterattitudinal behavior (e.g., the person is essentially being forced to behave in that manner by the experiment). In contrast, high choice manipulations lack this consonant cognition (or at least have less of it). In layperson terms, low choice justifies the counterattitudinal behavior more than high choice does. Experiments using this choice manipulation often subtly encourage participants to engage in the counterattitudinal behavior but still feel like they chose to engage in that behavior. Research has revealed that participants given high choice, as opposed to low choice, to write counterattitudinal essays change their attitudes to be more consistent with their behavior.

A variant of the induced-compliance paradigm that involves threat of punishment rather than promise of reward is known as the *forbidden-toy paradigm.* In the forbidden-toy paradigm (Aronson & Carlsmith, 1963), young children were given the opportunity to play with toys and were threatened with severe or mild punishment if they played with a very attractive toy. The threatened punishment was sufficient to prevent the children from playing with the attractive toy. When asked at a later time to evaluate the attractive toy, children who were threatened with mild punishment evaluated the toy less positively than children who were threatened with severe punishment. The induced-compliance paradigm and the forbidden-toy paradigm continue to be used to address questions about dissonance processes (e.g., J. Aronson, Cohen, & Nail, Chapter 8; Beauvois & Joule, Chapter 3; Cooper, Chapter 9; Devine et al., Chapter 12; E. Harmon-Jones & Harmon-Jones, Chapter 4, all in this volume).

[2] As in many attitude-change studies, there was no measure of attitude before the experimental treatment. The measure of attitude was taken only after the experimental treatment. This type of design is referred to as an after-only design. In an after-only design, attitude change is shown by differences between the experimental conditions on the measure of attitude taken after the experimental treatment.

Other Paradigms

The paradigms reviewed above are the ones that have been used most frequently in tests of dissonance theory. However, other paradigms have been used and they illustrate the large array of situations in which dissonance occurs. In one early experiment testing the theory, Mills (1958) used dissonance theory to test how behaving in an honest or dishonest (cheating) manner would influence attitudes toward honesty. In the experiment, sixth-grade students first completed a measure of attitudes toward cheating. A day later, the students were given some tasks that provided an opportunity to be honest or cheat (e.g., counting dots within squares on piece of paper). On the next day, the students completed the attitudes measure again. To analyze the results, Mills first removed about 15% of participants who were initially extremely opposed to cheating and thus could not change their attitudes to become more extreme. With these extreme responders removed, the results revealed, consistent with predictions derived from dissonance theory, that students who behaved honestly changed their attitudes to be more opposed to cheating than those who cheated. More recent experiments have found other ways individuals reduce dissonance over cheating, such as motivated forgetting (Shu, Gino, & Bazerman, 2011).

Dissonance can also be evoked when individuals engage in other behaviors that might be inconsistent with their values or moral concerns. One example that has received research attention is meat eating, which may evoke dissonance because eating meat is inconsistent with having concern for the welfare for animals. To reduce dissonance over eating meat, individuals may reduce their concern for animals and deny that animals have the capacity to suffer. In one experiment testing these ideas (Loughnan, Haslam, & Bastian, 2010), participants were induced to eat dried beef or dried nuts. Then, participants reported their moral concerns for animals and cattle. As predicted by dissonance theory, participants who ate meat had less moral concern for animals and for cattle (for review of other evidence, see Loughnan, Bastian, & Haslam, 2014).

ALTERNATIVE ACCOUNTS OF DISSONANCE PHENOMENA

Over the years, various alternative theoretical accounts have been advanced to explain the effects found in dissonance experiments. The alternative accounts of dissonance have provoked considerable controversy. In some cases, the controversy has led to important empirical and theoretical advances. We briefly review the major alternative accounts and the controversy they generated.

Alternatives to Dissonance Theory

Self-Perception Theory

Self-perception theory (Bem, 1967, 1972) argues that dissonance effects were not the result of motivation to reduce the psychological discomfort produced by cognitive dissonance but were due to a nonmotivational process whereby

persons merely inferred their attitudes from their behavior and the circumstances under which the behavior occurred. The self-perception theory explanation for the negative-incentive effect found by Festinger and Carlsmith (1959) assumes that persons use their overt behavior to judge their attitudes if external cues (such as an incentive) are not seen as controlling the behavior, but they do not use their overt behavior to judge their attitudes if external cues are seen as controlling the behavior. The explanation assumes that a small incentive is not seen as controlling the behavior, whereas a large incentive is seen as controlling the behavior.

One of the consequences of the controversy generated by the self-perception account was research testing the implications of dissonance theory using the *misattribution paradigm.* In the misattribution paradigm, participants are exposed to an extraneous stimulus (e.g., a pill) that is said to have a certain effect on the person's internal state (e.g., produces tenseness). If the supposed effect of the extraneous stimulus is the same as the actual internal state the person is experiencing, the person may misattribute the internal state to the extraneous stimulus rather than attribute it to the actual cause. If this misattribution occurs, the person may not respond to the internal state in the same way (e.g., will not change cognitions to reduce dissonance, to eliminate the negative affect or arousal).

Zanna and Cooper (1974) were the first to use the misattribution paradigm to show that the attitude change found in the induced-compliance paradigm is motivated by the need to reduce negative affect or arousal, as assumed in the dissonance interpretation. In their experiment, under the guise of a study of the effects of a drug on memory, participants were given a pill to ingest that was actually a placebo with no real effect. The pill was said to cause tenseness, to cause relaxation, or to have no side effects. The participants then took part in a supposedly unrelated experiment in which they wrote a counterattitudinal message under high or low choice. If the pill was said to have no side effects, participants changed their attitudes to be more consistent with the counterattitudinal essay when choice was high but not when choice was low, in keeping with the results of other dissonance research. However, if the pill was said to cause tenseness, participants did not change their attitudes in either the low- or high-choice condition.

Zanna and Cooper (1974) reasoned that the feeling of tenseness that was experienced due to the dissonance created by writing the counterattitudinal message under high choice was misattributed to the pill when the pill was said to cause tenseness. With the tenseness misattributed to the pill, there was no need to reduce the dissonance that was the true cause of the feeling and thus no need for attitude change to reduce the dissonance.[3] Bem's (1967, 1972)

[3] High-choice participants given the pill that was said to cause relaxation changed their attitudes more than did high-choice participants given the pill said to cause no side effects. Zanna and Cooper (1974) reasoned that when the pill was said to cause relaxation, the participants deduced the amount of their tenseness by combining the amount of tenseness actually experienced and the amount of tenseness the pill supposedly reduced.

self-perception account of dissonance phenomena is unable to explain the findings of the study by Zanna and Cooper. If, as assumed by the self-perception account, attitude change was not the result of motivation to reduce the discomfort produced by cognitive dissonance, then the extraneous stimulus to which the discomfort could be misattributed would have no influence on attitude change.

Prompted in part by the controversy engendered by the self-perception account, additional research has been carried out to assess the motivational and emotional nature of dissonance. By showing that dissonance is associated with physiological arousal and psychological discomfort and that the cognitive changes that occur are motivated by this discomfort, research has demonstrated that self-perception processes cannot account for all effects produced in dissonance experiments (Elliot & Devine, 1994; Fazio, Zanna, & Cooper, 1977; Gerard, 1967; E. Harmon-Jones, Brehm, Greenberg, Simon, & Nelson, 1996; Losch & Cacioppo, 1990; Zanna & Cooper, 1974). Beauvois and Joule (Chapter 3, this volume), Devine et al. (Chapter 12, this volume), and E. Harmon-Jones and Harmon-Jones (Chapter 4, this volume) present further experimental evidence that is consistent with dissonance theory but cannot be explained by self-perception theory.

Impression-Management Theory

Another alternative theoretical account that has been offered for the effects obtained in dissonance experiments is impression-management theory (Tedeschi, Schlenker, & Bonoma, 1971). According to this interpretation, attitudes appear to change because persons want to manage the impressions others have of them. They try to create a favorable impression or avoid an unfavorable impression by appearing to have attitudes that are consistent with their behavior. This alternative theoretical account assumes that the attitude change that occurs in dissonance experiments is not genuine and that participants in experiments only appear to change their attitudes after counterattitudinal behavior to avoid being viewed unfavorably by the experimenter.

In contrast to the assumption of the impression-management account, dissonance processes do produce genuine cognitive changes. Results supporting the dissonance interpretation have been obtained in experiments in which the attitude measure was taken by someone who did not appear connected with the experimenter that observed the participant's behavior (Festinger & Carlsmith, 1959; Linder et al., 1967) and in experiments using extremely private situations (E. Harmon-Jones, 2000a; E. Harmon-Jones et al., 1996). Impression-management theory has difficulty accounting for findings that show that dissonance processes that justify recent behavior can produce physiological changes (M. L. Brehm, Back, & Bogdonoff, 1964; E. Harmon-Jones, Harmon-Jones, Serra, & Gable, 2011), and it has problems explaining results obtained in paradigms other than the induced-compliance paradigm, for example, the free-choice paradigm (Wicklund & Brehm, 1976).

Does Dissonance Reduction Only Occur in Certain Types of Cultures?

Heine and Lehman (1997) conducted a free-choice study that provided evidence that has been interpreted to suggest that individuals from some cultures may not engage in dissonance reduction. In their study, individuals who were recent immigrants to Canada from Japan and China did not show significant spreading of alternatives, whereas individuals from Canada did. Heine and Lehman posited that "a reasonable working assumption is that dissonance effects are, at least in some important ways, culturally constructed" (p. 397). Asian cultures (e.g., Japan, China) are generally more collectivistic, and Western cultures (e.g., United States, Canada) are generally more individualistic (e.g., Markus & Kitayama, 1991). In collectivistic cultures, individuals have an interdependent self, and are thus more likely to be influenced by social roles, positions, and relationships, rather internal attributes, such as their own attitudes. In individualistic cultures, individuals are more likely to be influenced by their internal attributes rather than social roles. Consequently, individuals from collectivistic cultures, who are more sensitive to social role requirements, may be more likely to attribute cognitive discrepancies to the situation. Doing so would result in less or no dissonance.

Although these results fit with theories on psychological differences between interdependent and individualistic cultures, the study of Heine and Lehman (1997) contained methodological problems that may explain the lack of spreading of alternatives in their Asian participants. That is, prior to the decision, the Canadian participants desired the decision alternatives more than the Asian participants did. These differences in desirability of the decision alternatives would likely influence the difficulty and importance of the decision, with Asian participants regarding the decision as less difficult and important than Canadian participants did. Spreading of alternatives is more likely to occur following difficult and important decisions.

Moreover, older studies conducted in collectivistic cultures had provided evidence of dissonance-related attitude change in standard dissonance paradigms (Sakai, 1981; Sakai & Andow, 1980). More recent studies have also found that individuals from collectivistic cultures show evidence of discrepancy reduction. For example, a significant amount of spreading of alternatives in the free-choice paradigm has been found in Japanese individuals (Izuma et al., 2010) and in Chinese individuals (Qin et al., 2011). These results suggest that most persons likely experience dissonance and reduce it in ways predicted by Festinger's theory.

However, situational and cultural variables may moderate the arousal and reduction of dissonance, as Festinger (1957) predicted:

> 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)

Consistent with Festinger's idea that culture may moderate dissonance responses, Japanese individuals show more discrepancy reduction when they viewed a counterattitudinal behavior from the perspective of others (Kitayama, Snibbe, Markus, & Suzuki, 2004). Moreover, Asian Canadians who identify strongly with being Asian showed more spreading of alternatives when they made the difficult decision for a close friend as compared with when they made it for themselves. On the other hand, European Canadians showed more spreading of alternatives when they made the difficult decision for themselves as compared with when they made it for a close friend (Hoshino-Browne et al., 2005). These results are in accord with Festinger's prediction that culture will "define what is consonant and what is not" (1957, p. 14). Taken together, research has revealed that dissonance processes occur in many cultures, although culture may moderate what causes dissonance and how individuals reduce dissonance. It is unlikely that dissonance processes are entirely culturally constructed, as dissonance processes have been found to occur in a wide range of animal species, including pigeons (Zentall, 2016), white rats (Lawrence & Festinger, 1962), and capuchin monkeys (Egan, Bloom, & Santos, 2010; Egan, Santos, & Bloom, 2007). Although some have challenged this research on theoretical (Zentall, 2016) and methodological grounds (Chen & Risen, 2010), these criticisms are unfounded and have been addressed (Egan et al., 2010; C. Harmon-Jones, Haslam, & Bastian, 2017; E. Harmon-Jones, 2017).

Methodological Criticisms

In the early years of dissonance theory research, some researchers expressed concerns about the methods of some dissonance experiments and suggested that methodological problems accounted for the observed effects that were attributed to dissonance (Chapanis & Chapanis, 1964). Researchers responded to these criticisms and they were all addressed (Wicklund & Brehm, 1976).

More recently, some researchers have suggested that the spreading of alternatives effect is an artifact (Chen & Risen, 2010). They have argued that the attitude ratings (or rankings) are a function of the true attitude and measurement error, and that measurement error can fluctuate from predecision to postdecision. Furthermore, they have argued that predecision attitude ratings of the decision options may appear to be similar because of measurement error, but that the true attitudes may already be different. They have contended that, in a free-choice paradigm, participants are more likely to choose the item that they already preferred, that therefore this item's true rating is likely already higher than that of the rejected item, and that the apparent spreading of alternatives reflects these prior preferences, not attitude change. Chen and Risen (2010) reported two experiments testing this hypothesis. Participants viewed and then ranked 15 postcard-sized art prints (by artists such as Monet, van Gogh, and Kandinsky) according to their preferences. Then, they made six decisions (choices) between art prints; five of the decisions were between novel art prints and one decision was between art prints previously ranked seventh and ninth. The order of rankings and decisions varied as a function

of condition. Some participants ranked, then chose, and then reranked the posters (R-C-R); this is a standard dissonance experiment. Other participants ranked, then reranked, and then chose between posters (R-R-C); this order of events should not have evoked dissonance because no decision was made. In both conditions, spreading of alternatives occurred from the first to the second ranking. However, the degree of spreading was greater in the R-C-R condition than the other condition, as would be predicted by dissonance theory. This difference was not statistically significant in the first experiment, but it was marginally significant in the second experiment.

The spreading of alternatives may have only weakly supported dissonance theory in these experiments because the decisions may have not been sufficiently difficult or important to evoke much dissonance or much dissonance reduction. Indeed, participants in these experiments made six decisions between art prints, and they were informed they would receive only one of the art prints they chose. Thus, most of their decisions had no action implications as they did not expect to receive the chosen option for most of their decisions (see the discussion of the action-based model that follows; E. Harmon-Jones & C. Harmon-Jones, Chapter 4, this volume). In a typical free-choice dissonance experiment, participants make only one decision and they expect to receive what they choose. Thus, this decision is likely more important to participants, and they are more likely to remember the option they chose. In addition, in the experiments by Chen and Risen (2010), participants chose between the seventh and ninth ranked options (out of 15). This further reduces the difficulty and importance of the decision, as many past dissonance experiments had participants decide between options that were rated or ranked more highly.

The results of Chen and Risen (2010) do suggest that measurement error may contribute to the spreading of alternatives effect (but as noted above, dissonance may produce more spreading as well). Kitayama, Tompson, and Chua (2014) suggested that several features of the experiment might create more measurement error of the predecision attitudes, which would lead to the effect observed by Chen and Risen. These features, which were all present in Chen and Risen's experiment, are: having participants make a large number of ratings; presenting participants with a large number of decisions; and rushing participants through their ratings. In contrast, J. W. Brehm's (1956) participants rated eight options rather than 15 (Chen & Risen, 2010), made one decision rather than six (Chen & Risen, 2010), and spent on average 15 minutes evaluating the eight options (no time information was presented by Chen & Risen, 2010). The methods used by J. W. Brehm are more typical of dissonance experiments (e.g., C. Harmon-Jones, Schmeichel, Inzlicht, & Harmon-Jones, 2011; E. Harmon-Jones & Harmon-Jones, 2002; E. Harmon-Jones et al., 2008; E. Harmon-Jones, Price, et al., 2015).

Since the research of Chen and Risen (2010) was published, several studies have been conducted to evaluate this alternative interpretation against the dissonance theory interpretation, and these studies have found evidence consistent with the dissonance theory prediction. For instance, experiments have

revealed that when participants make decisions without seeing the decision alternatives ("a blind choice"), they still show spreading of alternatives (Egan et al., 2010; Nakamura & Kawabata, 2013; Sharot, Velasquez, & Dolan, 2010). If postdecision spreading of alternatives were due to measurement error of predecision attitudes, then this type of experimental design should not reveal spreading of alternatives. Thus, like the early criticisms advanced by Chapanis and Chapanis (1964), these methodological criticisms have been addressed.

Revisions of Dissonance Theory

Several versions of dissonance theory assume, along with the original version, that situations evoking dissonance produce a motivation that results in genuine cognitive changes. However, these revisions offer somewhat different theoretical interpretations for the phenomena observed in dissonance experiments. The revisions differ in what they posit to be the underlying motivation for dissonance effects. Those differences are a source of controversy about dissonance. The different theoretical positions are covered extensively in the present volume by authors who have been intimately involved in the development of the revisions and the controversy they have generated.

Self-Consistency

One of the first revisions proposed was the *self-consistency* interpretation of dissonance (Aronson, 1968, 1992). It is based on the idea that situations that evoke dissonance do so because they create inconsistency between the self-concept and a behavior. Because most persons have a positive self-concept, persons are likely to experience dissonance when they behave in a way that they view as incompetent, immoral, or irrational. This revision interprets the effects observed in the Festinger and Carlsmith (1959) experiment as resulting from an inconsistency between the person's self-concept as a moral person and the person's behavior of telling a lie to another person. This revision has led to an examination of the way in which variables related to the self, such as self-esteem, are involved in dissonance processes and to the generation of new research paradigms. This revision is presented by Elliot Aronson in Chapter 7, this volume.

The New Look

Another revision has proposed that the effects observed in dissonance studies are the result of feeling personally responsible for producing foreseeable aversive consequences (Cooper & Fazio, 1984; Scher & Cooper, 1989). This revision, often referred to the *new look* version of dissonance, proposes that the attitude change observed in the Festinger and Carlsmith (1959) experiment resulted from the desire to avoid feeling personally responsible for producing the aversive consequence of having harmed the other participant by leading them to believe that a boring task was enjoyable. This revision has generated research concerned with identifying necessary and sufficient conditions for

the production of dissonance and with the role of arousal and its interpretation in dissonance processes. Controversy about this revision has spurred empirical and theoretical advances. For example, research has tested whether dissonance can occur when individuals produce positive consequences but act in a hypocritical manner (see E. Aronson, Chapter 7, this volume) or whether dissonance can occur when an individual's behavior produces no aversive consequences (E. Harmon-Jones & Harmon-Jones, Chapter 4, this volume). This revision is presented by Joel Cooper in Chapter 9, this volume.

Self-Affirmation

Self-affirmation theory proposes that dissonance effects are not the result of cognitive inconsistency, self-inconsistency, or feeling personally responsible for producing aversive consequences, but of behaving in a manner that threatens one's sense of moral and adaptive integrity (Steele, 1988; Steele, Spencer, & Lynch, 1993). This revision interprets Festinger and Carlsmith's (1959) results by assuming that the participants in that experiment changed their attitudes about the task because saying that the tasks were enjoyable when they knew they were boring made them feel foolish and threatened their sense of self-worth. The self-affirmation revision also has generated much controversy that has led to empirical and theoretical advances, such as how self-affirmation may decrease as well as increase discrepancy reduction (e.g., Cooper, Chapter 9, this volume). This revision is presented by Joshua Aronson, Geoffrey Cohen, and Paul Nail in Chapter 8 of this volume.

The Original Version Reaffirmed

Although the revisions of dissonance theory have produced serious challenges to the original version of the theory, other theorists maintain that the original version continues to be viable and that it can explain the evidence generated by the revisions (Beauvois & Joule, 1996; Mills, Chapter 2; Beauvois & Joule, Chapter 3; E. Harmon-Jones & Harmon-Jones, Chapter 4; Gawronski & Brannon, Chapter 5; McGregor, Newby-Clark, & Zanna, Chapter 6, all in this volume). The resurgence of the original version has generated new experimental paradigms and conceptual advances.

The Action-Based Model

One recent conceptual model is based on this reaffirmation of Festinger's (1957) original theory. It accepts the premise that cognitive inconsistency has the potential to cause the negative affective state of dissonance and the motivation to reduce dissonance, but goes further to explain why cognitive inconsistency causes dissonance and dissonance reduction. According to this action-based model (E. Harmon-Jones, 1999; E. Harmon-Jones, Amodio, & Harmon-Jones, 2009; E. Harmon-Jones, Harmon-Jones, & Levy, 2015), cognitions usually have implications for behavior, and when these cognitions with action implications are inconsistent with one another, dissonance occurs because unconflicted and effective action cannot occur. That is, the affective state of dissonance signals a problem and dissonance is reduced so that effective action can occur. To state

these ideas less abstractly, consider that most dissonance situations involve a commitment to a chosen course of action. Once an individual commits to a given action, any information inconsistent with that commitment is likely to arouse dissonance and prevent the action from occurring. To maintain the commitment in the face of this inconsistent information, the individual selectively enhances the value of the chosen course of action and reduces the value of the unchosen course of action. Doing so makes effective execution of the chosen action more likely (for a more complete review, see E. Harmon-Jones & Harmon-Jones, Chapter 4, this volume).

Areas of Agreement and Disagreement and a Possible Integration

Although the above revisions disagree about the specific underlying motivation for dissonance effects, dissonance theorists agree that genuine cognitive changes occur as a results of dissonance processes. They also agree that these cognitive changes are motivated in nature and that the source of this motivation is a form of psychological discomfort. Over the last 20 years, research has provided additional support for Festinger's original version of the theory, thereby suggesting that the revisions are not necessary (e.g., E. Harmon-Jones & Harmon-Jones, Chapter 4, this volume; Gawronski & Brannon, Chapter 5, this volume). For example, dissonance occurs in non-human animals (e.g., Egan, Bloom, et al., 2010; Egan, Santos, et al., 2007), suggesting that the metacognitive structure of self is not necessary. Moreover, dissonance-evoking situations have been found to evoke a general negative affect without also evoking increased self-directed negative affect (Elliot & Devine, 1994) or decreased state self-esteem (E. Harmon-Jones, 2000a). Other results have challenged the aversive consequences or "new look" revision (e.g., E. Harmon-Jones & Harmon-Jones, Chapter 4, this volume).

Although these results may suggest that the revisions are unnecessary for dissonance to occur, they do not suggest that the revisions have not offered useful information. In fact, the revisions have identified cognitions that are often important in influencing the magnitude of dissonance and they have also identified alternative ways of reducing dissonance. For example, the self-consistency version has suggested that dissonance is increased when individuals compare their dissonance-evoking behavior to their positive self-concept (E. Aronson, Chapter 7, this volume), and self-affirmation theory has suggested that dissonance is decreased when individuals focus on important self-related cognitions that are irrelevant to the dissonance-evoking event (J. Aronson, Cohen, & Nail, Chapter 8, this volume). However, the results obtained by the revisions do not indicate that dissonance will not occur as a result of a simple cognitive inconsistency.

The various results revealed by proponents of Festinger's original theory and later revisions can be integrated by appealing to the level of abstraction at which the cognitions are mentally represented. Along the lines of other theories (e.g., Carver & Scheier, 1981; Vallacher & Wegner, 1987), cognitions can range from being very concrete (e.g., "My index finger just pressed the 'e' key") to being very abstract (e.g., "I am writing this article to fulfill my need

for competence"). The lower level, concrete cognitions likely do not involve self-conceptions, whereas higher level, abstract cognitions likely do (Carver & Scheier, 1981). Discrepancies between concrete cognitions can evoke dissonance (e.g., E. Harmon-Jones & Harmon-Jones, Chapter 4, this volume; Gawronski & Brannon, Chapter 5, this volume), though this dissonance might be of lower magnitude and of a different affective quality than discrepancies between abstract, self-related cognitions. Such would likely occur because of differences in the importance of concrete versus abstract cognitions. For example, the discrepancy between the concrete attitude toward a bitter-tasting beverage and verbal behavior opposite to that attitude evokes discomfort but not self-directed negative affect (E. Harmon-Jones et al., 1996), whereas the discrepancy between the self-concept of honesty and lying to another person may evoke discomfort as well as self-directed negative affect. In other words, the motivational, affective, cognitive, and behavioral consequences of discrepancies between concrete versus abstract cognitions may differ greatly but dissonance occurs with both types of cognitions (see also, E. Harmon-Jones, 2000b). Future research is needed to examine these speculations.

OVERVIEW OF THE PRESENT VOLUME

The first edition of this book was published in 1999. Since then, several theoretical and empirical advances have occurred for dissonance theory. This second edition highlights those advances. For example, one chapter presents a new extension of dissonance theory, referred to as the action-based model (E. Harmon-Jones & Harmon-Jones, Chapter 4), while an additional chapter considers the connections between dissonance processes and other motivational processes (McGregor, Newby-Clark, & Zanna, Chapter 6). Another chapter illustrates how dissonance processes play a fundamental role in a broad array of information processes and how the theory then contributes valuable insights into a wide range of phenomena (Gawronski & Brannon, Chapter 5). A new mathematical model of dissonance processes is presented in one chapter (Read & Monroe, Chapter 10), and evidence on the neural correlates of dissonance processes is presented in another chapter (Izuma & Murayama, Chapter 11). In addition, other chapters that already presented important advances in the first edition have been updated with coverage of more recent research supporting these original advances (J. Aronson, Cohen, & Nail, Chapter 8; Cooper, Chapter 9; Devine et al., Chapter 12). Finally, some chapters were reproduced verbatim from the first edition; this occurred for chapters written by authors who are deceased (Mills, Chapter 2) or who have retired (Beauvois & Joule, Chapter 3; E. Aronson, Chapter 7). Also reproduced from the first edition are two chapters by Festinger (Appendix A, Appendix B) and a chapter by Mills (Appendix C). One chapter by Festinger contains his first draft of the theory of cognitive dissonance, which he presented to his graduate student class in 1954; the other chapter by Festinger contains his last

public speech about the theory, which he delivered in 1987 at the American Psychological Association conference. The chapter from Mills contains his recollections of how the Festinger and Carlsmith (1959) experiment was conducted, and it addresses an important misunderstanding of how it was conducted.

The chapters included in the second edition have been grouped into three parts, organized on the basis of themes shared by the chapters. The placement of the chapters into different parts should not be taken to mean that what is included in the chapters in one part is not relevant to the material contained in the chapters in a different part. Each of the chapters shares the common theme of dealing with issues of importance for the continued development of theory and research on dissonance processes.

Part One, "Perspectives Employing the Original Version of the Theory," consists of chapters discussing work that uses the original version of dissonance theory. In Chapter 2, Judson Mills presents suggestions for improving the original version. He contends that the magnitude of avoidance of new dissonance is not influenced by the amount of existing dissonance and that spreading of alternatives occurs before a choice. He proposes changing the definition of dissonance to include the degree to which a behavior will lead to a consequence and the desirability of the consequence.

Jean-Leon Beauvois and Robert-Vincent Joule present their radical dissonance theory in Chapter 3. They suggest that dissonance theory is a theory concerned with rationalization of behavior and that as such, it is not a theory of cognitive consistency, the management of personal responsibility, or the management of one's moral worth. They review experiments supporting their viewpoint and describe two new paradigms for dissonance research.

In Chapter 4, Eddie Harmon-Jones and Cindy Harmon-Jones present arguments and evidence suggesting, in contrast to the "new look" version of dissonance, that feeling personally responsible for the production of aversive consequences is not necessary to create cognitive dissonance and that dissonance will occur even when aversive consequences are not produced. After considering how the "new look" and other revisions cannot explain all of the evidence produced by dissonance theory, they present the action-based model of dissonance theory and review evidence supporting it.

In Chapter 5, Bertram Gawronski and Skylar M. Brannon posit that cognitive consistency plays a vital role in information processing and that the breadth of processes associated with cognitive consistency suggests that an even wider range of phenomena should be considered within Festinger's theory of dissonance. In support, they review several lines of evidence on processes in areas such as impression formation and stereotyping/prejudice that they argue should be united under the cognitive dissonance theory.

In Chapter 6, Ian McGregor, Ian R. Newby-Clark, and Mark P. Zanna review research on two phenomena related to Festinger's original theory of dissonance—ambivalence and discrepancy detection. Research on these topics support the original theory by demonstrating that a mere cognitive inconsistency evokes psychological discomfort. By considering these topics

together with research on the simultaneous accessibility of cognitive elements, McGregor et al. illustrate dissonance theory's relevance to contemporary issues.

Part Two, "The Role of the Self in Dissonance," comprises chapters that discuss the revisions of cognitive dissonance theory that use the self as a crucial factor in dissonance processes. In Chapter 7, Elliot Aronson presents his self-consistency interpretation of dissonance and describes a new paradigm for dissonance theory, the *hypocrisy paradigm,* that makes persons mindful of the fact that they are not practicing what they are preaching. He argues that evidence obtained in this paradigm indicates that the production of aversive consequences is not essential for the creation of dissonance.

Joshua Aronson, Geoffrey Cohen, and Paul R. Nail present the self-affirmation reformulation of dissonance theory in Chapter 8. They describe research derived from self-affirmation theory that was used to challenge the original version of dissonance theory and discuss evidence that poses challenges for a self-affirmation theory account of dissonance research.

In Chapter 9, Joel Cooper presents the new look version of dissonance theory and discusses recent research on how the self is implicated in dissonance processes. Proposing an interpretation different from self-consistency and self-affirmation theories, he reviews evidence showing that the self is multiply involved in dissonance processes.

Part Three, "Mathematical Models, Neural Activations, and Affective Responses," includes a chapter that reviews several mathematical models of dissonance processes and then presents a novel one. This section also includes a chapter that reviews research on neural activations involved in dissonance processes and a chapter that reviews research on the role of affective responses in dissonance processes.

In Chapter 10, Stephen J. Read and Brian M. Monroe suggest that cognitive dissonance processes can be mathematically modelled in a connectionist model. They provide a recurrent- or feedback-network-with-learning model that integrates the strengths (and avoids the weaknesses) of previous connectionist models. They then use this mathematical model to successfully model classic cognitive dissonance experiments based on the free-choice, forbidden-toy, induced-compliance, and effort justification paradigms.

In Chapter 11, Keise Izuma and Kou Murayama review research that has revealed several brain regions involved in various cognitive dissonance processes and suggest what functional roles those brain activations reveal about dissonance processes. They also discuss how neuroscience methods can advance the understanding of the psychological processes in cognitive dissonance in ways not revealed by other methods.

Patricia G. Devine, John M. Tauer, Kenneth E. Barron, Andrew J. Elliot, Kristen M. Vance, and Eddie Harmon-Jones argue in Chapter 12 that attitude change, the most commonly used dependent variable in dissonance research, is limited in what it can reveal about the nature of dissonance motivation and dissonance reduction. They describe research demonstrating the value of measures of self-reported affect in dissonance studies.

As editors of the book, we encouraged the authors to present their own personal views on the important issues in cognitive dissonance research and theory. We hoped to encourage a free and open exchange of ideas relevant to the theory. As expected, differing viewpoints about dissonance are expressed in the different chapters. Also as expected, the differences are not resolved within the book. We hope that the debate about the differences and the controversy about the nature of dissonance will stimulate theoretical development and lead to new insights and findings. We believe that the future of dissonance research promises to be as exciting and valuable as the past 60 years of work on the theory.

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