
Toward an Understanding of the Motivation Underlying Dissonance Effects: Is the Production of Aversive Consequences Necessary?

Eddie Harmon-Jones

In the 1960s, researchers began to challenge the original theory of cognitive dissonance and proposed that cognitive discrepancy (as defined by the original version of the theory; see Harmon-Jones & Mills, chap. 1, this volume) was not the cause of the cognitive and behavioral changes that were observed in experiments testing dissonance theory. Several revisions to the original theory emerged (Aronson, 1969; Collins, 1969; Cooper & Worchel, 1970). One of the most prevalent revisions posited, in contrast to the original theory of dissonance, that cognitive discrepancy was not necessary or sufficient to generate the cognitive and behavioral changes. This revision, which I refer to as the aversive-consequences revision, posited that feeling personally responsible for the production of foreseeable aversive consequences was necessary and sufficient to cause these effects (Cooper & Fazio, 1984). Addressing whether the production of aversive consequences is necessary to create dissonance is one of the most fundamental and important questions for dissonance theory and research—it concerns the under-

---

Thanks to Jack Brehm, Trish Devine, Cindy Harmon-Jones, and Judson Mills for providing helpful comments on a draft of this chapter.
lying motivational force driving dissonance effects. In the present chapter, I provide a brief overview of the original version of the theory of cognitive dissonance (see Festinger, 1957, and Harmon-Jones & Mills, chap. 1, this volume, for more complete descriptions) and the aversive-consequences revision. I then review evidence obtained in a variety of experimental paradigms that indicates that the production of aversive consequences is not necessary to create dissonance effects and that cognitive discrepancy, as defined by the original theory, is sufficient to cause dissonance effects. I conclude by proposing an extension of the original theory that assists in understanding the function of dissonance processes.

THE ORIGINAL VERSION

The original statement of cognitive dissonance theory (Festinger, 1957) proposed that discrepancy between cognitions creates a negative affective state that motivates individuals to attempt to reduce or eliminate the discrepancy between cognitions (see Devine, Tauer, Barron, Elliot, & Vance, chap. 12, this volume, and Harmon-Jones, in press, for a more complete description of this process). Several paradigms have been used to test predictions derived from dissonance theory. In each of these paradigms, the availability of the cognitions that serve to make the entire set of relevant cognitions more or less discrepant is manipulated. In the induced-compliance paradigm, participants are induced to act contrary to an attitude, and if they are provided few consonant cognitions (few reasons or little justification) for doing so, they are hypothesized to experience dissonance and reduce it, usually by changing their attitude to be more consistent with their behavior. In one of the first induced-compliance experiments, Festinger and Carlsmith (1959) paid participants either $1 (low justification) or $20 (high justification) to tell a fellow participant (confederate) that dull and boring tasks were very interesting and to remain on call to do it again in the future. After participants told this to the confederate, they were asked how interesting and enjoyable the tasks were. As predicted, participants given little justification for performing the counterattitudinal behavior rated the tasks as more interesting than did participants given much justification. Festinger and Carlsmith posited that participants provided low justification (just enough justification to say the counterattitudinal statement) experienced dissonance and changed their attitudes because of the inconsistency between their original attitude (they believed that the task was boring) and their behavior (they had said that the task was interesting). Participants provided with high justification, on the other hand, experienced little dissonance, because receiving $20 to perform the behavior justified the behavior or was consonant with the behavior.

In later research (Brehm & Cohen, 1962), dissonance was manipulated by means of perceived choice. Having low choice to behave counterattitudinally is consonant with that behavior whereas having high choice is not. Experiments found that participants who were given high choice, as opposed to low choice, to write counterattitudinal essays changed their attitudes to be more consistent with their behavior.

AVERSIVE-CONSEQUENCES REVISION

Within the decade after the publication of the provocative Festinger and Carlsmith (1959) experiment, researchers offered alternative theoretical and experimental accounts for their results. One alternative account suggested that low-justification participants in the Festinger and Carlsmith experiment changed their attitudes not because of cognitive discrepancy, but because their actions brought about an aversive event (convincing another person to expect boring tasks to be interesting). In one of the first experiments testing this explanation, Cooper and Worchel (1970) replicated and extended the Festinger and Carlsmith study. Cooper and Worchel found that low-justification participants changed their attitudes to be consistent with their behavior when the confederate believed their statement but not when the confederate did not believe their statement.

Using a slightly different procedure, other research has suggested that when the counterattitudinal actions do not cause aversive consequences, attitude change does not occur (e.g., Collins & Hoyt, 1972; Goethals & Cooper, 1975; Hoyt, Henley, & Collins, 1972). In these ex-
experiments, participants’ counterattitudinal statements were to be shown to persons who could or could not affect a disliked policy. For example, Hoyt et al. (1972) gave participants low or high choice to write counterattitudinal essays saying that “toothbrushing is a dangerous, unhealthy habit” (p. 205). Participants were told that the essays would or would not produce the aversive consequence of influencing junior high school students to quit toothbrushing. Hoyt et al. found that only high-choice–aversive-consequences participants changed their attitudes. Other experiments have been offered as support for this revision (Cooper & Fazio, 1984; Scher & Cooper, 1989), and this revision has been widely accepted.

According to the aversive-consequences revision, a sufficient cognitive discrepancy is neither necessary nor sufficient to cause dissonance and discrepancy reduction. Instead, feeling personally responsible for the production of foreseeable aversive consequences is necessary and sufficient. Aversive consequences are events that one would not want to occur (Cooper & Fazio, 1984).

**Alternative Explanations for the Evidence Produced by the Aversive-Consequences Revision**

The aversive-consequences revision is supported by evidence obtained in the induced-compliance paradigm. More specifically, the support for the aversive-consequences revision comes from the absence of measurable attitude change in the conditions in which aversive consequences are not produced. Note that there are numerous explanations for the absence of this attitude-change effect in the no-aversive-consequences conditions, and these alternative explanations must prevent us from concluding that cognitive discrepancy is not necessary or sufficient to create dissonance. First, this is a null effect. It is difficult to draw clear inferences from null effects. A variety of factors could have produced the null effects. Had these past theorists and researchers drawn the conclusion that feeling personally responsible for producing an aversive outcome intensifies dissonance, I would be in complete agreement, for it is likely that feeling personally responsible for such will intensify dissonance and dissonance-produced attitude change. However, these past theorists and researchers did not draw this conclusion but instead proposed that feelings of personal responsibility for aversive outcomes were necessary to produce dissonance effects.

At least two sets of alternative explanations can be offered for the lack of attitude change in the no-aversive-consequences conditions. The first set of alternative explanations argues that the level of dissonance was not large enough to generate dissonance sufficient to produce attitude change and that the addition of the production of aversive consequences was necessary to produce dissonance sufficient to cause attitude change. Several of the past induced-compliance experiments that included a no-aversive-consequences and an aversive-consequences condition used attitudinal issues that were not extremely negative or positive, that is, control-condition participants reported moderately negative or positive attitudes (e.g., Calder, Ross, & Insko, 1973; Nel, Helmreich, & Aronson, 1969). Moreover, the lack of extremity might have reflected ambivalence or a mix of positive and negative attitudes toward the issues. Because the attitudes used in past experiments were not extremely positive or negative and might have been held with ambivalence, they were likely not to arouse much dissonance when behavior counter to them occurred. In essence, the magnitude of dissonance aroused may have been too small to generate attitude change.

In the past experiments, the researchers often encouraged participants to generate lengthy counterattitudinal statements. This may increase the likelihood of finding no attitude change in the no-aversive-consequences conditions. Research has shown that the length of the counterattitudinal statement relates inversely with the amount of attitude change that occurs (e.g., Beauvois & Joule, chap. 3, this volume; Rabbie, Brehm, & Cohen, 1959), that is, longer essays are likely to produce less attitude change. This inverse relationship between essay length and attitude change may occur because participants may provide their own justifications and hence more cognitions consonant with the behavior in these lengthy essays. As the number of consonant cognitions increases, the magnitude of dissonance decreases.

In addition, because of the salience of the audiences in these experiments, the participants’ attention may have been focused more on
the audience and whether they were convinced or could affect a disliked policy than on the nature of their own counterattitudinal actions or their own attitudes. As a result of this, the magnitude of dissonance may have been determined in large part by what the audience did or would do as a result of the counterattitudinal advocacy. Thus, the unconvincing audience, in contrast to the convinced audience, may have reduced the importance of the dissonant cognitions, to the point of making the counterattitudinal action seem trivial. If the perceived importance of dissonant cognitions is low, dissonance may not reach a magnitude that requires reduction.

Another possible explanation is that participants in these past experiments may have been provided too much justification (too many consonant cognitions) for producing the counterattitudinal statement, and the production of aversive consequences may have been necessary to elicit enough dissonance to produce measurable attitude change. This explanation seems very reasonable when one considers the high compliance rates observed in most if not all of this past research. Typically, 100% of the participants have complied with the experimenter’s request to write the counterattitudinal statement. As Festinger (1957) has explained, for attitude change to result from dissonance, the person should be offered “just enough reward or punishment to elicit the overt compliance” (p. 95, italics in original). Thus, the past experiments on the necessity of aversive consequences may have had inducing forces (the friendliness of the experimenter, the benefits to science) that were so great that little or no dissonance was produced, and the addition of feeling personally responsible for producing aversive consequences may have been necessary to produce sufficient dissonance to cause measurable discrepancy reduction (e.g., attitude change).

Another set of alternative explanations for the lack of attitude change in the no-aversive-consequences conditions argues that dissonance may have been aroused in participants in the no-aversive-consequences conditions of the past experiments but was not detected. The sole method of detecting dissonance in the experiments testing the aversive-consequences model against the original version of the theory has been assessment of attitude change. Because no assessments of dissonance were obtained in experiments testing the aversive consequences model, it is impossible to know whether dissonance was aroused in the no-aversive-consequences conditions. The only conclusion that can safely be drawn is that measurable attitude change did not occur. On the other hand, attitude change may have occurred in the no-aversive-consequences conditions but may have been small, and it would not have been detected if one had only 10–12 persons per condition, as was done in much of the past research (e.g., Calder et al., 1973; Cooper & Worchel, 1970). In addition, the dissonance may have been reduced in a route other than attitude change. Persons whose counterattitudinal actions had no undesired effects may have reduced dissonance by reducing the importance (Simon, Greenberg, & Brehm, 1995) or the perceived effectiveness (Scheier & Carver, 1980) of the counterattitudinal behavior.

It is unlikely that one of these possible alternative explanations accounts for all of the nonsignificant effects that have been found in the past no-aversive-consequences conditions. However, given the number of plausible alternative explanations for the null effects produced in the past experiments that had been used to support the aversive-consequences revision, my colleagues and I thought it was premature to abandon the original version of the theory.

Induced-Compliance Experimental Results Inconsistent With the Aversive-Consequences Revision

All of the research on the aversive-consequences revision has been conducted using the induced-compliance paradigm, which is the focal paradigm in which predictions derived from dissonance theory and its revisions have been tested. My colleagues and I have conducted several
induced-compliance experiments to test the hypothesis that feeling personally responsible for producing aversive consequences is not necessary to produce dissonance and that cognitive discrepancy is sufficient to produce dissonance even in the induced-compliance paradigm. In conducting these experiments, we created a situation in which participants would write counterattitudinal statements but not produce aversive consequences. We designed the experiments so that conditions present in previous induced-compliance experiments that might have prevented attitude change from occurring were not present. We took special care to ensure that the inducing force was “just barely sufficient to induce the person” to behave counterattitudinally (Festinger & Carlsmith, 1959, p. 204), to reduce the number of consonant cognitions to a bare minimum, so that the dissonance aroused after the action would be at high levels. In addition, we had participants write short counterattitudinal statements about objects toward which they held attitudes that were highly salient, strongly negative (or positive), simple, and not ambivalent. Also, in some of the experiments, we assessed negative affect and arousal, to provide measures of dissonance.

In each experiment, under the guise of an experiment on recall, participants were exposed to a stimulus, were given low or high choice to write a counterattitudinal statement about that stimulus, threw away the statement they wrote, and then completed questionnaires that assessed their attitudes toward the stimulus. We assured participants that their counterattitudinal statements and their responses to the questionnaires would be made in private and would be anonymous. We did so to create a situation in which the counterattitudinal behavior would not lead to aversive consequences, because, as Cooper and Fazio (1984) argued, “making a statement contrary to one’s attitude while in solitude does not have the potential for bringing about an aversive event” (p. 232). We predicted that participants provided high choice for engaging in the counterattitudinal behavior would change their attitudes to be more consistent with their behavior, whereas participants provided low choice would not.

**Dissonance and a Bitter Beverage**

In Experiment 1 (Harmon-Jones, Brehm, Greenberg, Simon, & Nelson, 1996), the experimenter told participants that he was interested in fac-

tors that affect the recall of characteristics of products and that at this point in his research, he was seeing how writing a sentence evaluating a product would affect recall of the characteristics of the product. He told participants that he would have them drink a beverage and that they would be asked to recall characteristics of it. He also informed participants that he was using a variety of drinks, that he would not know what type of drink they would receive, and that they should not let him know what type of drink they received. He also explained that all of their responses would be anonymous and that he would not see their responses to questionnaires but that an assistant would enter them into a computer.

Then the experimenter gave the participant a cup covered with a lid. The cup contained 4 oz of fruit-punch-flavored Kool-Aid. The Kool-Aid was mixed either with the amount of sugar suggested on the package (1 cup per two qt), to create a pleasant-tasting drink, or with 2 teaspoons of white vinegar (no sugar), to create an unpleasant-tasting drink. Because the experimenter was unaware of whether participants were given a pleasant- or an unpleasant-tasting drink, he was unaware of whether participants experienced dissonance.

After the participant drank some of the beverage, the experimenter returned to the participant’s cubicle and induced the choice manipulation. He told participants in the low-choice condition that they were randomly assigned to write a statement saying they liked the beverage. He told participants in the high-choice condition that they could write a statement saying they liked or disliked the beverage and that it was their choice. The experimenter explained that he needed some more persons to write that they liked the beverage, and he asked the participant if she or he would write that she or he liked the beverage. Once the experimenter gained compliance from the participant, he reminded her or him that it was her or his choice.

The experimenter then asked both low-choice and high-choice participants to write one sentence saying they liked the beverage. He also told participants that he did not “need the sheet of paper you will write your sentence on; we just need for you to go through the process of writing the sentence. So when you are done, just wad it up and throw
it in the wastebasket.” He did this to ensure that the participants perceived that they had anonymity and that there would be no consequences to their behavior. The experimenter then left the participants alone to write the sentence.

After the participant discarded the sentence, the experimenter gave the participant an envelope and said that previous research had indicated that the characteristics a person recalls about a product may be affected by whether they liked the product and that to take this into account, he needed them to answer a questionnaire that assessed their thoughts about the drink. The questionnaire assessed how much the drink was liked. The experimenter left the participant alone to answer this questionnaire. After the participant finished with this questionnaire, the experimenter had the participant complete a questionnaire that assessed the effectiveness of the manipulation of choice. After assessing suspicion, ensuring that participants perceived their questionnaires and statements to be anonymous, and debriefing, the experimenter collected the participants’ statements from the trash can, to assess whether participants complied with the request to write the counterattitudinal statement, and placed the statement with the participants’ questionnaires.

Approximately 15% of the participants did not write counterattitudinal statements. This effect suggests that we had designed a situation in which there was just enough but not too much external justification to write the counterattitudinal statement. Results indicated that unpleasant-tasting drink—high-choice participants reported more positive attitudes toward the drink than did unpleasant-tasting drink—low-choice participants. This effect was significant when both compliers and noncompliers were included in the analysis. Thus, the results of the first experiment suggested that dissonance can be created in induced-compliance situations void of aversive consequences.

**Dissonance, Boring Passages, and Electrodermal Activity**

To increase confidence that the results obtained in Experiment 1 were valid, my colleagues and I attempted to conceptually replicate the effects by means of a different manipulation of choice and a different attitudinal object. Using the same procedures as used in the first experiment, we had participants read a boring passage and gave them low or high choice, by means of written instructions, to write a statement saying that the passage was interesting. Thus, in this experiment, we had only two conditions: low choice and high choice. Because choice was induced by means of written instructions, the experimenter was unaware of when dissonance was expected. Results from Experiment 2 replicated those of Experiment 1, showing that high-choice participants rated the boring passage as more interesting than did low-choice participants (Harmon-Jones et al., 1996).

In Experiment 3 (Harmon-Jones et al., 1996), we measured nonspecific skin conductance responses (NS-SCRs) that occurred in the 3 min after the writing of the counterattitudinal statement but before the assessment of attitude. Previous research has indicated that increased NS-SCRs are associated with increased sympathetic nervous system activity, which is increased during emotional arousal. If our experimental procedure evoked dissonance, we would observe increased NS-SCRs. Results indicated that participants given high choice to write the counterattitudinal statement evidenced more NS-SCRs and reported that the passage was more interesting than did participants given low choice to write the statement.

**Dissonance and a Hershey’s Kiss**

The previous results demonstrate that the production of aversive consequences is not necessary to arouse dissonance and dissonance-related attitude change. However, they may be subject to an alternative explanation: Perhaps the manipulation of choice to write the statement affected individuals’ reconstructive construal of the situation, so that high-choice participants felt as though they had high choice to partake of the negative stimulus, whereas low-choice participants felt as though they had low choice to partake of the negative stimulus. If this were so, then the aversive-sequences revision could explain these results as being due to feeling personally responsible for inflicting a negative event on oneself (choosing to drink the bitter Kool-Aid). To eliminate this alternative explanation, I recently conducted the following experiment (Harmon-Jones, 1998). In this experiment, instead of having persons write a counterattitudinal statement about a negative stimulus, I had them write a counterattitudinal statement about a positive stimulus.

Using the same cover story as used in the previous two experiments,
I had participants eat a Hershey's Kiss and then gave them high or low choice to write that they did not enjoy it. In keeping with the previous results, high-choice participants reported that they disliked the Hershey's Kiss more than did low-choice participants (see Figure 1).

In addition, in this experiment, I assessed state self-reported affect. It was assessed immediately after the writing of the counterattitudinal statement or after the attitude-change opportunity. Time between counter-attitudinal action and attitude assessment was controlled by having participants complete an affect questionnaire or a filler questionnaire, comparable in length. From the state affect measure, four indexes of affect were derived. Discomfort was measured with the scale developed by Elliot and Devine (1994). State social self-esteem and appearance self-esteem were measured with the subscales of the State Self-Esteem Scale (Heatherton & Polivy, 1991). Positive affect was measured with the items happy, proud, and enthusiastic.

Results indicated that participants who were given high choice and who completed the affect questionnaire before the attitude measure reported significantly more discomfort than did participants in the other conditions (see Figure 2). Positive affect, state social self-esteem, and state appearance self-esteem did not differ significantly among conditions. These results suggest that the cognitive discrepancy evoked in this situation increased discomfort. The present results also suggest that the cognitive discrepancy evoked in this situation was more likely to increase discomfort than to decrease state self-esteem or positive affect.3

3In the three induced-compliance experiments by Harmon-Jones et al. (1996) that are described in this chapter, compliance was approximately 85%. However, in the reported experiment by Harmon-Jones (1998), in which participants ate a piece of chocolate and then wrote that they did not enjoy it, only 1 participant did not comply. In the experiments by Harmon-Jones et al., persons were asked to write that they believed a boring passage they had just read was interesting or that an unpleasant-tasting beverage was pleasant tasting. The attitudes toward these simple stimuli were quite negative, as evidenced by low-choice-condition and control-condition participants (see Harmon-Jones et al., 1996). In contrast, in the experiment by Harmon-Jones (1998), persons' attitudes toward the chocolate were not extremely positive. Thus, although this latter experiment had compliance rates similar to the ones discussed above, it still produced dissonance. Thus, compliance rates are not an infallible assessment of amount of justification within an experiment. Other factors, such as the size and importance of the discrepancy between attitude and behavior and number and importance of justifications for the behavior (promised rewards or punishments, which are probably largely social in nature), need to be taken into account. Attempts to measure size and importance of discrepancy and justifications would aid tremendously in specifying the magnitude of dissonance.
Summary

The experiments presented thus far were all conducted using the induced-compliance paradigm. The results from these experiments support the original theory of dissonance and are inconsistent with the aversive-consequences revision. These experiments are important because they show that dissonance arousal, dissonance affect, and dissonance-produced attitude change can occur in situations in which a sufficient cognitive discrepancy is present but feeling personally responsible for the production of aversive consequences is not present. The present evidence convincingly demonstrates that dissonance effects can be generated by a cognitive discrepancy that does not produce aversive consequences. Indeed, these results suggest that the original version of the theory was abandoned prematurely (see also Beauvois & Joule, 1996, chap. 3, this volume).

Aversive Consequences and Attitude Change

Earlier I argued that producing aversive consequences might intensify dissonance. Why would this occur? The production of aversive consequences may intensify dissonance because aversive consequences are a cognition dissonant with one’s preexisting attitude. If the attitude were the generative cognition, the cognition about the counterattitudinal behavior and the cognition of producing aversive consequences would be dissonant cognitions. Thus, the magnitude of dissonance aroused would be greater in psychological situations where counterattitudinal behavior and aversive consequences were produced than in situations where only counterattitudinal behavior was produced, because there are more dissonant cognitions in the former than in the latter situation. However, if the counterattitudinal behavior were the generative cognition, then the cognition of producing aversive consequences would be a consonant cognition (it follows from the behavior), and thus it would decrease the magnitude of dissonance aroused. Beauvois and Joule (1996) have reported results consistent with this latter interpretation, but the past research on the aversive-consequences model is consistent with the former. This inconsistency between these two sets of data can be resolved by positing that in the induced-compliance paradigm, both the attitude...
and the behavior can serve as generative cognitions, and there may be a potential dissonance associated with each. That is, there is a potential dissonance associated with the attitude and a potential dissonance associated with the behavior. In general, the greater dissonance would be the one reduced. The generative cognition associated with that greater dissonance would not be altered, whereas the generative cognition associated with the lesser dissonance would be altered. However, the reduction of dissonance depends also on the availability of discrepancy-reduction routes. Hence, when the potential dissonances are not very different in magnitude, the discrepancy may be reduced by means of the most available route, which has been attitude change in most previous dissonance experiments.

In contrast, the production of aversive consequences may increase the dissonance because it increases the commitment to the behavior, making the behavior more resistant to change and attitude change more likely to result. In addition, when behavior produces important consequences, it will be regarded as a more important cognition and thus has the potential to create more dissonance. Although these explanations are more elegant in their simplicity, they do not fit with the large body evidence presented by Beauvois and Joule (1996), whereas the explanation offered in the previous paragraph does.

Past Evidence From the Belief-Disconfirmation Paradigm
Inconsistent With the Aversion Consequences Revision

Research on the aversive-consequences revision has focused exclusively on the induced-compliance paradigm. However, other paradigms have been used to test predictions derived from dissonance theory, and evidence obtained in these paradigms is difficult to explain with the aversive-consequences revision (see also Berkowitz & Devine, 1989).

One such paradigm is the belief-disconfirmation paradigm. This paradigm is based on Festinger, Riecken, and Schachter's (1956) observations of belief intensification among members of a group whose belief that a flood would destroy the continent was disconfirmed. This evidence suggests that the cognitive discrepancy that occurs when an important and highly resistant to change belief is disconfirmed produces dissonance, leading to the use of dissonance-reducing strategies such as belief intensification. Results obtained in this paradigm are not subject to an aversive-consequences alternative explanation, because individuals involuntarily exposed to belief-discrepant information have not produced an aversive consequence and thus cannot feel responsible for having done so.

In an experiment by Brock and Balloun (1967), committed churchgoers were confronted with audiotaped information that did or did not support their religious values. These individuals were less likely to press a button to eliminate white noise from the communication and thus clarify it when the information was inconsistent with their values. Other research has replicated these findings (e.g., Schwarz, Frey, & Kumpf, 1980), further suggesting that dissonance effects occur even when inconsistencies are produced by outside information, not from actions that produce aversive consequences.

In a quasi-experiment by Batson (1975), girls attending a church youth program were asked to declare publicly whether they believed in the divinity of Jesus. After completing a measure of Christian orthodoxy, the girls were then presented with belief-disconfirming information (i.e., information that indicated that Jesus was not the son of God). Orthodoxy was once again assessed. As expected, those who believed in the divinity of Jesus and accepted the truthfulness of the disconfirming information intensified their belief in Jesus' divinity, whereas those who were not believers or who believed but did not accept the truthfulness of the disconfirming information did not.

It is difficult to explain the results obtained in the belief-disconfirmation paradigm as resulting from the motivation to avoid feeling personally responsible for producing aversive consequences. That is, the person exposed to belief-inconsistent information has not acted in a manner to produce aversive consequences and thus cannot feel responsible for having done so. In this paradigm, persons are exposed to information from an external source; they have not done anything for which to feel responsible. Note that Cooper and Fazio (1989), two of the main proponents of the aversive-consequences revision, have stated that according to the aversive-consequences revision,
Eddie Harmon-Jones

Evidence obtained in the belief-disconfirmation paradigm is not the result of dissonance. Cooper and Fazio (1989) have stated that exposure to belief-discrepant information “will not necessarily create an unwanted consequence and will not necessarily arouse dissonance” (p. 525). In my view, this is not an accurate statement, and the aversive-consequences revision has unfortunately excessively narrowed the range of application of dissonance theory. One way to demonstrate that evidence obtained in the belief-disconfirmation paradigm is the result of dissonance processes is to show that the negative affect that motivates the cognitive effects occurs as a result of belief disconfirmation and is reduced after reconciliation of the cognitive discrepancy.

Recent Evidence From the Belief-Disconfirmation Paradigm Inconsistent With the Aversion Consequences Revision

My colleagues and I recently conducted two belief-disconfirmation experiments, to assess whether the reactions observed in past belief-disconfirmation experiments resulted from the affective and motivational pressures presumed by dissonance theory to drive the cognitive effects (Burris, Harmon-Jones, & Tarpley, 1997). We tested Allport’s (1950) idea that “the suffering of innocent persons is for most people the hardest of all facts to integrate into religious sentiment” (p. 81). In the experiments, Christian participants were exposed to a newspaper article that highlighted the discrepancy between belief in a loving, protecting, just, and omnipotent God and knowledge of the gratuitous suffering humans often experience. The newspaper article reported the drive-by shooting death of an infant boy in his grandmother’s arms as she and the child’s father prayed for protection because a similar incident had occurred two nights earlier. The article concluded with a quote from the infant’s grandfather that expressed his continued faith in God. The cognitive discrepancy between the participants’ religious beliefs (God is a good God who protects the innocent and answers prayers) and this tragic outcome (the infant dies during a prayer for protection) was highlighted by having participants read, “Some people would think that the grandfather’s continued belief and trust in a good God is naive and misguided.”

Belief Disconfirmation and Transcendence Experiment

In the first experiment, we tested the hypothesis, offered by Abelson (1959), that “theosophical dilemma of God’s presumed permisiveness toward evil is sometimes resolved by appeal to transcendental concepts” (p. 346). If participants exposed to this belief-discrepant story were allowed to engage in transcendence (i.e., allowed to reconcile dissonant cognitions under a superordinate principle), they would experience less negative affect. Moreover, the more they engaged in transcendence, the less their negative affect would be.

Participants were randomly assigned to one of two conditions. In the transcendence-opportunity condition, they read the newspaper article and then completed a questionnaire that allowed them to engage in transcendence. These participants were given the explicit opportunity to reconcile the cognitive discrepancy after the dissonance had been aroused, when they were most in need of reducing the dissonance brought about by exposure to the belief-inconsistent information. They then completed a measure of self-reported state negative affect. In the no-transcendent-opportunity condition, participants completed the transcendence measure, read the tragic newspaper article, and then completed the measure of negative affect. These participants were thus not given an explicit opportunity to engage in transcendence after the dissonance had been aroused, when they were most in need of reducing the dissonance. The transcendence measure included questions such as, How much does God intervene in persons’ lives? and How often do things happen to persons because of God’s greater purpose? The measure of negative affect included items to measure discomfort (uncomfortable, uneasy, bothered; Elliot & Devine, 1994) and agitation (angry, frustrated, distressed, and threatened).

We hypothesized that endorsement of higher levels of transcendence subsequent to reading the newspaper article would relate to lower levels of dissonance-related affect, whereas higher levels of transcendence before the reading were not expected to relate to lower levels of dissonance-related affect. To test this hypothesis, separate regression
analyses were conducted, in which agitation and discomfort served as criterion variables. In each, experimental condition (effect coded) and transcendence were first entered as main effects, followed by their interaction.

For agitation, neither main effect approached significance, but in keeping with predictions, a significant two-way interaction emerged. Higher endorsement of transcendence predicted decreased agitation in the transcendence-opportunity condition, whereas it did not in the no-opportunity condition. A similar pattern emerged for discomfort. Moreover, individuals in the transcendence-opportunity condition engaged in more transcendence than did individuals in the no-transcendence-opportunity condition.

As expected, more extreme endorsement of transcendent beliefs after exposure to a belief-discrepant article was associated with reduced dissonance-related affect. In contrast, belief transcendence before exposure to the belief-discrepant article did not relate to reduced dissonance-related affect. This evidence strongly suggests that exposure to belief-discrepant information arouses dissonance that motivates persons to engage in discrepancy reduction, which then reduces the dissonance. Because persons in the belief-disconfirmation paradigm do not produce aversive consequences for which to feel responsible, this evidence suggests that the production of aversive consequences is not necessary to create dissonance.

**Belief Disconfirmation and Belief Affirmation Experiment**

In the previous experiment, time and transcendence opportunity were confounded, making it difficult to infer what caused the observed effects. That is, those who completed the transcendence scale after reading the article and before responding to the affect measures may have been distracted by this intervening task compared with those who completed the transcendence scale before the article. This explanation does not seem plausible, given that there was no main effect of transcendence-opportunity condition on dissonance-related affect but only an interaction with level of transcendence endorsement. However, to eliminate this explanation, we conducted a second study that conceptually replicated the first. In addition, instead of assessing transcendence in response to belief disconfirmation, we assessed belief affirmation, much like Batson (1975) and Festinger et al. (1956) did, to test the hypothesis that religious individuals would “rigidly maintain or even intensify” (Batson, 1975, p. 178) their beliefs when faced with disconfirming evidence. Religiously interested participants completed religious belief measures either after (belief-affirmation condition) or before (no-affirmation condition) reading the belief-discrepant article or completed comparable-length nonreligious belief measures after the article (distraction condition). All then completed affect measures (e.g., agitation). Results revealed that, as predicted, agitation was lower in the religious-affirmation condition than in either the no-affirmation or the distraction condition; agitation levels in the latter two conditions did not differ.

Past results from the belief-disconfirmation paradigm cannot be interpreted in terms of the aversive-consequences revision. This past research, however, suffers from an important limitation because no measures of dissonance-related affect were obtained either during the experience of dissonance or after discrepancy reduction, rendering it difficult to know whether the effects generated in this belief-disconfirmation paradigm were indeed caused by the mechanisms proposed by dissonance theory. The recent research by Burris et al. (1997) demonstrates quite convincingly that the effects produced in the belief-disconfirmation paradigm are due to dissonance processes.

**Other Experimental Results Inconsistent With the Aversive-Consequences Revision**

Other experiments provide evidence of dissonance in situations void of the production of aversive consequences. For instance, Aronson and Carlsmith (1962) found that individuals with experimentally created expectancies for failure reacted with dissonance to behaving successfully. In the experiment, after individuals had repeatedly failed at a task, they were given feedback indicating that they were succeeding at the task. Then the individuals were given an opportunity to change their responses. Results indicated that these individuals changed their responses from being correct to being incorrect. Because failure is regarded as
negative and success as positive, the behavior of these individuals would be difficult to interpret in the aversive-consequences formulation. In addition, Aronson, Stone, and colleagues (Aronson, chap. 5, this volume; Aronson, Fried, & Stone, 1991; Fried & Aronson, 1995; Stone, Aronson, Crain, Winslow, & Fried, 1994) have demonstrated that dissonance can occur even when participants engage in proattitudinal behavior that has positive consequences. Beauvois and Joule (1996, chap. 3, this volume) and McGregor, Newby-Clark, and Zanna (chap. 13, this volume) also have reported recent experimental evidence indicating that dissonance can occur in the absence of the production of aversive consequences.

SUMMARY OF EVIDENCE
Results from experiments using several methodologies suggest that a cognitive discrepancy in the absence of feeling personally responsible for the production of aversive consequences can cause increased dissonance-related negative affect and discrepancy reduction. The results of these experiments suggest that a cognitive discrepancy is enough to generate dissonance and discrepancy reduction. Feeling personally responsible for producing aversive consequences is not necessary to generate dissonance and discrepancy reduction, but it may enhance the magnitude of dissonance effects because producing aversive consequences is an important cognition that is dissonant with one’s preexisting attitude or because the aversive consequences increase the commitment to behavior.

A cognitive discrepancy, however, will produce an aversive state, in keeping with Festinger’s speculations and the data presented in this chapter. This aversive state is not equivalent to the aversive consequences that dissonance theory revisionists discussed. Further research is necessary to understand why cognitive discrepancy creates a negative affective state and motivates discrepancy reduction.

WHAT IS THE MOTIVATION UNDERLYING DISSONANCE EFFECTS?
The reviewed research cogently demonstrates that the motivation to avoid the production of aversive consequences is not the motivation underlying dissonance effects. According to the original version of the theory, a sufficient cognitive discrepancy is the source of the motivation underlying dissonance and its effects. But why would a cognitive discrepancy evoke such a motivation? What function does the capacity to experience negative affect in response to a sufficient cognitive discrepancy and then be motivated to reduce it have for the organism? Is this set of psychological mechanisms adaptively beneficial? That is, is the dissonance mechanism functional or beneficial for the organism?

Understanding of dissonance processes could be improved and extended with an explanation of why cognitive inconsistency arouses negative affect and how and why this negative affect motivates the cognitive and behavior adjustments. The present model begins with the assumption that cognitions (broadly defined) can serve as action tendencies. The idea that cognition is for action is seen not only in the writings of William James (1890/1950) but also in ecological approaches to perception (Gibson, 1979; McArthur & Baron, 1983) and in the study of attitudes, both historically (Bain, 1868; Spencer, 1865) and currently (Cacioppo & Berntson, 1994). In this sense, the cognitions that are of primary concern for this approach are those that provide useful information, and usefulness of information is defined by its relevance to actions and goals. When information inconsistent with cognitions that guide action is encountered, negative emotion (dissonance) is aroused because the dissonant information has the potential to interfere with effective and unconflicted action. For the present model, effective behavior can occur in the absence of consciousness; in other words, effective behavior can be produced automatically. Thus, the present model does not propose that cognitive consistency is necessary for effective behavior. It only proposes that cognitive inconsistency interferes with effective behavior.

Thus, cognitive discrepancy may create negative affect because discrepancy among cognitions undermines the requirement for effective and unconflicted action (Beckmann & Irl, 1985; Harmon-Jones, in press; Jones & Gerard, 1967). Research on the theory of dissonance has identified commitment as an important, if not necessary, condition for the arousal of dissonance (Beauvois & Joule, 1996; Brehm & Cohen,
1962; Festinger, 1964). For most dissonance theorists, the notion of commitment implies that the person has engaged in a behavior for which he or she feels responsibility and that he or she has a definite understanding of the consequences of the behavior. However, persons can regard cognitions that may not involve a behavioral commitment as true or certain (Mills, 1968) and would experience dissonance if information were presented that was inconsistent with these cognitions. A good example of this type of cognition is a person's knowledge of the law of gravity. Information that violates the law of gravity would probably arouse dissonance in most persons. Therefore, a commitment occurs when a person regards a behavior, belief, attitude, or value as a meaningful truth. Defining commitment in this way allows for viewing commitment as a continuous variable. When commitment is defined as overt behavior, as with previous dissonance theorists, commitment is reduced to a categorical variable, which then may present problems. The psychological commitment to the cognition guides information processing, which serves the ultimate function of producing and guiding behavior.

If dissonant information is encountered, negative emotion may result and cause the person to engage in cognitive work to support the commitment. However, if dissonant information continues to mount, the negative emotion that results may motivate the person to discontinue supporting the commitment and give in to the dissonant information. Whether the person's cognitive work is aimed toward supporting the commitment or discontinuing the commitment would be determined by the resistance to change of each cognition. If the commitment is more resistant to change than the dissonant information, then cognitive work would be aimed at supporting the commitment. If, however, the dissonant information is more resistant to change than the commitment, then the cognitive work would be aimed at discontinuing the commitment. Resistance to change of cognitions is determined by the responsiveness of the cognitions to reality (e.g., the grass is green), the extent to which the cognitions are in relations of consonance to other cognitions, the difficulty of changing the cognition, and so on. From the present view, resistance to change is ultimately determined by the degree to which individuals believe the information assists them in controlling and predicting outcomes and thus behaving effectively. When knowledge about the environment, about oneself, or about one's actions, beliefs, or attitudes is in a dissonant relation, the sense of being able to control and predict outcomes may be threatened, and ultimately, the need to act effectively would be undermined.

From the current perspective, the proximal motivation to reduce cognitive discrepancy stems from the need to reduce negative emotion, whereas the distal motivation to reduce discrepancy stems from the requirement for effective action. When the maintenance of true and certain knowledge and thus the potential for effective action are threatened by information that is sufficiently discrepant from the psychological commitment, negative emotion results, which prompts attempts at the restoration of cognitions supportive of the commitment (i.e., discrepancy reduction). Thus, negative emotion works much like pain in that it provides the information and motivation that prompts the person to engage in cognitive action aimed at resolving the discrepancy. These speculations about the adaptive function of dissonance processes suggest interesting avenues of research.

REFERENCES


Harmon-Jones, E. (in press). *A cognitive dissonance theory perspective on the role of emotion in the maintenance and change of beliefs and attitudes*. In


