

Some Theoretical Considerations on Attitude, Arousal and Affect during Cognitive Dissonance

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Abstract

This article provides a general overview of cognitive dissonance research with the induced compliance paradigm. We begin by describing how dissonance affects individuals' attitude change and address issues related to measurement of attitude. Next, we describe the arousal component of dissonance, how it has been measured and the issues that have been raised about its nature. Finally, we explore the emotional component of dissonance and review different ways for measuring and identifying the negative affect associated to dissonance. We conclude by claiming that a more intensive study of the process of dissonance, and particularly of its arousal and emotional components, will allow a more in-depth understanding of the mental processes involved in cognitive dissonance.

Cognitive Dissonance: Attitudes, Arousal and Emotions

We are often committed in situations that require us to behave or think in ways that we did not intend and that sometimes cause us to undertake actions that contradict our beliefs or thoughts. For example, for the 2002 presidential elections in France, a large portion of the left-wing French population voted for the right-wing candidate, Jacques Chirac, not because they supported his political view, but because they did not want the *Front National's* candidate Jean-Marie Le Pen to be elected. Another example takes the form of smokers who are trying to give up tobacco but nevertheless feel the need to smoke a cigarette when in the company of other smokers. Such situations occur very frequently in real life and often cause us to change the way we think and behave. Social psychologists have shown that such situations create what they call cognitive dissonance, a situation experienced by individuals who are asked, or need, to behave or think in a way that is at odds with their opinions or attitudes (Festinger, 1957). In other words, cognitive dissonance relates to the mental tension that arises when an individual has to deal with incompatible cognitions (Festinger, 1957).

One major claim of cognitive dissonance theory is that inconsistency between two cognitions induces a psychological discomfort that motivates individuals to reduce their dissonance. For instance, individuals may change their attitude in a way that makes it more closely aligned with the counterattitudinal behavior they have produced (Harmon-Jones & Mills, 1999). They may also agree to undertake a second, related behavior (act rationalization, Beauvois, Joule, & Brunetti, 1993). They can modify their usual behavior (Dickerson, Thibodeau, Aronson, & Miller, 1992), play down the importance accorded to the cognitions involved in the state of dissonance (trivialization, Joule & Martinie, 2008; Simon, Greenberg, & Brehm, 1995) or feel less responsible for their behavior (denial of responsibility, Gosling, Denizeau, & Oberlé, 2006).

Dissonance usually emerges when individuals perceive that they are free to engage in or refuse the counterattitudinal behavior (Brehm & Cohen, 1962; Wicklund & Brehm, 1976) and feel responsibility for the negative consequences of their behavior (Cooper & Fazio,

1984). In experimental settings, dissonance can be induced by asking participants to choose between two equally desirable alternatives (the free-choice paradigm, e.g. Jarcho, Berkman, & Lieberman, 2010), or by first asking them to advocate a pro-attitudinal stance and then getting them to relate their past transgressions (the hypocrisy paradigm, e.g. Dickerson et al., 1992). Experimenters can also ask participants to expend considerable effort to attain a situation presented as desirable but that in fact is not (unconfirmed expectations, Aronson & Mills, 1959). In the induced compliance paradigm, participants are able to choose whether or not to undertake a behavior that runs counter to their attitudes (participants in the no-dissonance condition are simply asked to perform the counterattitudinal behavior without being given any choice in the matter). For example, participants may be asked to write a counterattitudinal essay. After producing the counterattitudinal essay, the participants are generally asked to indicate their attitude toward it. This gives them the possibility to reduce the dissonance by changing their attitude.

Studies conducted using the compliance and free-choice paradigms suggest that the processes involved in dissonance reduction differ depending on the situation that originally induced the state of dissonance. For example, using the compliance paradigm, van Veen, Krug, Schooler, and Carter (2009) detected neuronal activity related to negative emotions and not any related to dissonance reduction among participants asked to write a counterattitudinal essay. By contrast, using the free-choice paradigm, Jarcho et al. (2010) observed early neuronal activity that may be associated with the resolution of the conflict induced by dissonance. These results suggest that in the compliance paradigm, cognitive dissonance may be reduced by “processes engaged at a later point in time, perhaps during the re-evaluation of attitudes” (Jarcho et al., 2010, p. 4), while in the free-choice paradigm, rationalization processes may emerge quickly. It has also been suggested that the rationalization processes associated with the free-choice paradigm are relatively automatic and “require some minimal amount of attention, conscious awareness, or mental effort” (Lieberman, Ochsner, Gilbert, & Schacter, 2001, p. 139), whereas in the compliance paradigm, these processes are thought to be controlled.

In this article, we provide a general overview of the findings obtained with the induced compliance paradigm, which is probably the most widely used in dissonance research. We begin by describing how dissonance affects attitude by particularly focusing on individuals' attitude change. For that purpose, we address several issues related to measurement of attitude in dissonance research. Next, we shortly describe the arousal component of dissonance, how it has been measured and the issues that have been raised about its nature. Finally, we explore the emotional component of dissonance and propose different ways for measuring and identifying the negative affect associated to dissonance.

Attitude and Cognitive Dissonance

Given that attitude change is thought to be indicative of dissonance, attitude is an important concept in dissonance research. According to Allport (1935), attitude is the most distinctive and indispensable concept of social psychology and is defined as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour” (Eagly & Chaiken, 1993, p. 1). The entity or the object of the attitude may be an abstract or concrete object, a person or a specific behavior of the type generally studied in dissonance research (e.g. advocating an increase in university tuition fees). Attitudes are considered to be good predictors of behaviors (Campbell, Converse, Miller, & Stokes, 1960). However, attitudes may vary depending on the contextual demands of the situation (Baldwin & Holmes, 1987; Cooper, 2010; Schwarz, 2007; Schwarz & Bohner, 2001; Smith & Decoster, 2000).

Attitudes are thus stable, global evaluations of the associated objects which integrate general features of different contexts and local evaluations that “provide a relatively flexible guide for action by incorporating information that is unique to a specific situation” (Lederwood & Trope, 2010, p. 42). It appears that the more frequently found underlying conception of attitude in dissonance research refers only to this latter, local form of attitude which is more likely to become modified as the context changes.

As stated earlier, a main finding of cognitive dissonance research is that individuals who experience dissonance may reduce this dissonance by changing their attitude. For instance, they are generally more favorable toward the counterattitudinal behavior than individuals who have not experienced dissonance (see Cooper, 2007). It is however important to underline that, as stated by Cook, Pallack, Storms, and McCaul (1977), “frequently, attitude change, as in forced compliance procedures, represents a shift from an initial position to a more moderate position but not a shift in general side of orientation toward the attitude change” (p. 71). In other words, most often, the change in attitude does not represent a change in polarity: participants who have experienced dissonance become somewhat more favorable to the counterattitudinal position than participants who have not. This also explains the variability observed in attitude change and calls into question one of the main tenets of dissonance theory: tolerance to dissonance (Festinger, 1957). Dissonance might represent an unbearable situation for some people who would therefore respond by reducing their dissonance. For others, however, it is a bearable situation that does not require dissonance reduction. Individual factors may thus intervene in the dissonance process (e.g. Cialdini, Trost, & Newsom, 1995; Martinie & Fointiat, 2008, 2010; Scheier & Carver, 1980; Stalder & Baron, 1998).

How the change in attitude is measured is also questionable. Participants' attitudes are indeed commonly assessed with single-item scales (e.g. Cooper, 1998; Gosling et al., 2006; Harmon-Jones, Gerdjikov, & Harmon-Jones, 2008; Martinie, Olive, & Milland, 2010; Simon et al., 1995; Worchel & Arnold, 1974; Zanna & Cooper, 1974), and to our knowledge, only one study used multi-item instruments for assessing participants' attitude (e.g. Gawronski & Strack, 2004; Stalder & Baron, 1998). Therefore, drawing general theoretical conclusions about attitude change from single-item attitude scales may assess specific aspects of a more general object of attitude rather than the counterattitudinal object itself. Very often, attitudes are multidimensional. They have affective, cognitive and behavioral dimensions (Aronson, Wilson, & Akert, 2007) that may intervene jointly or separately (Zanna & Rempel, 1988).

A further difficulty with how attitude is assessed is that it is usually measured only at a postexperimental stage. Concluding in terms of attitude change may thus be somewhat erroneous since participants' initial attitude is not known. One simple way to overcome this difficulty would be to measure the participants' initial (or preexperimental) attitude.

Preexperimental measurement of attitude has indeed at least two advantages. First, it would ensure that the behavior participants are willing to engage in is genuinely counterattitudinal for them. Ignoring participants' attitude toward the object of attitude may result in including in the studies participants who are in fact in favor of the counterattitudinal topic and thus that are not expected to experience dissonance. At this point, it should be noted that in almost all published studies, the assumption that the participants are unfavorable to the topic proposed in the experiment has been based on the experimenter's implicit beliefs or has been checked by measuring the attitudes of other samples of participants (as in Cooper, 1998; Gawronski & Strack, 2004; Martinie et al., 2010, for example).¹ Second, it allows analyzing the magnitude of attitude change or, more precisely, the extent of dissonance reduction and consequently indicates the amount of dissonance experienced by calculating a difference score between the preexperimental and

postexperimental attitude. Since dissonance reduction is proportional to the amount of dissonance (Festinger, 1957), the magnitude of attitude change should be an indicator of the amount of dissonance.

It could be argued that measuring the attitude prior to the experiment would make it salient and therefore resistant to change (Scheier & Carver, 1980; Shaffer, 1975). This problem can be avoided by simply asking different experimenters to collect the initial and postexperimental attitudes (Cook et al., 1977), by presenting the relevant attitude scale among various other scales or by leaving an appropriate delay between the attitude measurement and testing (Widgery & Miller, 1973).

Consequently, we think that dissonance research should on the one hand develop more sophisticated tools which will permit a precise assessment of how individuals' attitudes change in response to dissonance and on the second hand measure participants' initial attitude. Finally, because "it is also possible to experience dissonance and not reduce it" (Harmon-Jones, Amodio, & Harmon-Jones, 2009, p. 143), it is difficult to assume the presence of dissonance only on the basis of a change in participants' attitudes or the presence of another mode of dissonance reduction. This is one of the reasons why cognitive dissonance research has focused mainly on the process of dissonance reduction rather than on the state of dissonance itself (see also Cooper, 2007). Is it possible to investigate the state of dissonance directly? We believe that this is indeed possible provided that researchers study the properties of the psychological state of dissonance. In the next section, we examine two of these properties that should be investigated in greater depth: the arousal related to dissonance and the associated emotions.

Measuring the Arousal Related to Dissonance

Dissonance has drive-like or motivational properties that increase general activity (e.g. Cook et al., 1977; Pallak, Brock, & Kiesler, 1967; Pallak & Kiesler, 1968), as indicated by vasoconstriction (Gerard, 1967), heartbeat (Mann, Janis, & Chaplin, 1969), alpha waves (McMiller & Geiselman, 1974), galvanic skin responses (Elkin & Leippe, 1986) and the frequency of nonspecific skin conductance responses (Harmon-Jones, Brehm, Greenberg, Simon, & Nelson, 1996). Additionally, the physiological arousal is undifferentiated since it can be misattributed to a positive (e.g. Cooper, Fazio, & Rhodewalt, 1978) or a negative (e.g. Zanna, Higgins, & Taves, 1976) external source. Finally, the energizing properties of dissonance arousal have also been demonstrated by artificially modifying arousal. For example, if arousal is increased by caffeine (Steele, Southwick, & Critchlow, 1981), or a sports session (Fazio & Martin, 1981, cited by Fazio & Cooper, 1983), attitude change increases. Conversely, if dissonance arousal is lessened by alcohol (Steele et al., 1981) or by a tranquilizing drug (Cooper et al., 1978), attitude change is reduced. Arousal has also been identified on the basis of indirect measures of misattribution of arousal such as incidental retention (e.g., Kiesler & Pallak, 1976) and response competition (e.g., Pallak & Pittman, 1972).

More recently, using functional magnetic resonance imaging (fMRI) to study how the brain responds to cognitive dissonance, van Veen et al. (2009) confirmed that dissonance is accompanied by autonomic physiological arousal. However, while it is true that participants experiencing dissonance exhibit greater left frontal cortical activity, Harmon-Jones et al. (2008) showed that this greater brain activity is not limited to dissonance but is involved in motivational processes in general as a result of commitment to the behavior (see also Harmon-Jones, Harmon-Jones, Serra, & Gable, 2011). Thus, the left frontal cortical activity cannot be considered as an indicator of physiological arousal associated with the state of dissonance.

In short, with the exception of the activity of the left frontal cortex, both physiological and behavioral measures demonstrate the presence of an arousal related to dissonance. More importantly, the increase in arousal related to dissonance may explain why dissonance facilitates performance in simple tasks. For instance, Martinie et al. (2010) collected the reaction times of participants who were writing counterattitudinal essays in dissonance and no-dissonance conditions. The participants in the dissonance condition had shorter reaction times than those in the no-dissonance condition. Martinie et al. (2010) interpreted this finding within the framework of the energetic models of cognitive resources (see Sanders, 1998, for an example), which postulate that the level of arousal affects the total amount of available cognitive resources. For instance, the shorter reaction times observed in dissonance condition indicated more available cognitive resources, which resulted from an increase in participants' level of arousal. Interestingly, participants' reaction times returned to baseline once they had completed the counterattitudinal behavior.

Although the drive-like properties of dissonance are well documented, there is much debate about the nature of the arousal related to dissonance. Indeed, for some authors, arousal of dissonance is first undifferentiated and is then labeled as a negative emotion, whereas for others, this arousal emerges directly as a negative state. Because misattributions to negative (e.g. Cooper, 1998; Losch & Cacioppo, 1990; Zanna & Cooper, 1974) or positive (Drachman & Worchel, 1976) stimuli do not result in reduction of dissonance, Cooper and Fazio (1984) speculated that the arousal of dissonance is malleable and distinguished between dissonance arousal and dissonance motivation. More specifically, according to these authors, dissonance arousal is an undifferentiated physiological arousal, which a person can interpret either negatively or positively. If a person labels the undifferentiated physiological arousal negatively and attributes it to his performance of the counterattitudinal behavior, then dissonance arousal becomes dissonance motivation that presses a person to reduce his uncomfortable tension by attitude change.

Measuring the Negative Affect Associated to Dissonance

Measuring the affect associated with the state of dissonance is an alternative way of ensuring that the participants have genuinely experienced dissonance. The psychological discomfort associated with dissonance is indeed related to a negative emotion. To identify the affective component of the state of dissonance, Elliot and Devine (1994) proposed a self-reported measure of affect which subsequently came to be known as the "dissonance thermometer" (Devine, Tauer, Barron, Elliot, & Vance, 1999). The dissonance thermometer is a 24-item questionnaire covering four dimensions: discomfort, negative self, positive self and embarrassment. In this article (Elliot & Devine, 1994), the responses to the questionnaire showed that only those participants who both experienced dissonance and reported their affect before their attitude identified their psychological state as discomfort. This discomfort decreased to a baseline level once they had been given the opportunity to change their attitude. In addition, the other dimensions of the questionnaire, which assess other forms of psychological distress or positive affect, were not affected. This suggests that dissonance is accompanied by an aversive state.

Although useful, the dissonance thermometer has some disadvantages since it can affect the process of dissonance. In Elliot and Devine's article (1994, Expe. 1), postexperimental attitude was indeed not affected when it was measured after the affect and before testing. Given that the verbal expression of an affect can make attitude change disappear (Pyszczynski, Greenberg, Solomon, Sideris, & Stubing, 1993), it cannot be excluded that the dissonance thermometer reduces dissonance. Furthermore, responses to the dissonance thermometer have been found

to be uncorrelated with responses to a scale assessing dissonance reduction (e.g. Elliot & Devine, 1994; Harmon-Jones, 2000; Norton, Monin, Cooper, & Hogg, 2003) even though the reduction of dissonance helps lessen the psychological discomfort.

Recently, brain imaging and facial EMG have been used to examine the nature of the state of dissonance. Using an adapted compliance paradigm, van Veen et al. (2009) found that dissonance was accompanied by activation of the anterior cingulate cortex and dorsal anterior insula, i.e. brain areas that have been associated with negative emotions (Craig, Reiman, Evans, & Bushnell, 1996; Critchley, 2005). Martinie, Joule, Milland, Olive, and Capa (2013) recorded participants' facial EMG during the production of a counterattitudinal argument in dissonance and no-dissonance conditions. They first observed an increase in facial muscle activity related to negative affects. Second, they observed that the negative affect did not appear just after commitment to perform the counterattitudinal essay but later during composition of the essay. So, the findings suggest that arousal of dissonance is first undifferentiated and then labeled as negative as speculated by Cooper and Fazio (1984). Martinie et al. (2013) also observed that intensity of the negative affect positively correlated with postexperimental attitude, suggesting that attitude change served to reduce the negative affect related to dissonance (for similar proposals, see Elliot & Devine, 1994). Physiological measurements of emotions may thus provide interesting ways to investigate the emotions that individuals experience when in a state of dissonance.

Finally, analyzing the emotional lexicon used in the counterattitudinal essays that participants often produce in dissonance studies may also deepen our understanding of the negative affect related to dissonance. Because individuals have their own specific linguistic styles, language is a window open into a person's psychological state and personality that may inform on his/her psychological processes such as attentional focus, emotions, social relationships, status, dominance and social hierarchy and group processes (for a review, see Tausczik & Pennebaker, 2010). For instance, automatic tools that automatically analyze the words present in the essays (e.g. LIWC, Pennebaker, Booth, & Francis, 2007; EMOTAIX with Tropes, Piolat & Bannour, 2009) might be useful for investigating the emotional component of dissonance and identifying the nature of the emotions that are elicited by different dissonance conditions.

Conclusion

Research on cognitive dissonance involves theoretical considerations about the psychological processes and mental states of individuals experiencing dissonance. Cognitive dissonance also involves applied issues related to attitude and behavioral changes. It is now well documented that individuals can reduce their dissonance by adapting their behavior or their thoughts. They do this primarily in order to avoid psychological discomfort and the associated negative affect created by inconsistencies between two cognitions. Interestingly, this conflict also increases general activity that sometimes facilitates performance on simple tasks.

The further study of dissonance will require a more extensive investigation of the nature of this state in order to discover its properties. Measuring participants' initial attitudes and comparing these with postexperimental values may contribute to our knowledge of dissonance by making it possible to analyze the magnitude of the attitude change. We also need to emphasize the importance of focusing on dissonance itself rather than on how it is reduced. We have shown that both self-reported questionnaires and physiological measures can account for the arousal and affective components of dissonance. Arousal can be measured directly by physiological measurements or indirectly on the basis of performance on a task. Finally, we suggest conducting more in-depth analyses of the essays to analyze further the nature of the negative affect related that is experienced by individuals in dissonance.

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Endnote

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¹ In addition, it is typically postulated that all the participants involved in a dissonance study belong to the same social group. Research into social representations (Deaux & Philogene, 2003; Rateau, Moliner, Guimelli, & Abric, 2011) has however challenged the idea that representations among a group such as students, i.e., a group regularly involved in dissonance research, are homogeneous (Flament, 1999).

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