

A Primer on Cognitive Dissonance and its Application to Polygraph Testing

Mark Handler and Raymond Nelson

Introduction

Cognitive Dissonance (CD) theory is sometimes used to describe underlying causes of arousal resulting in reactions observed during various phases of psychophysiological detection of deception (PDD) testing. This primer explores the origin, history and maturation of CD theory and attempts to make a logical nexus into the realm of interviewing and interrogation.

Basic History

CD was the brainchild of social psychologist, Leon Festinger (1957) whose original proposal was that humans are social creatures and we don't like inconsistency. He suggested the greater the inconsistency, the more agitated we become and the more motivated we are to reduce the inconsistency causing that discomfort. Festinger saw CD as a drive state and believed people consciously and unconsciously sought ways to reduce the state (Greenwald & Ronis, 1978; Harmon-Jones & Mills, 1999).

Cognition comes from Latin meaning "knowledge or thinking" and is commonly used to refer to thought processes. It can be loosely defined as 'any piece of knowledge' a person possesses and it is our brain's psychological representation of anything that can be thought, which can include knowledge about one's behavior or attitude. *Dissonance*, on the other hand, is simply inconsistency or disagreement. Festinger (1957) described the percept of CD as a negative tension state accompanied by a drive to reduce the discomfort. The original CD model ascribed this negative affective state to inconsistent cognitions stating CD occurs when people feel two of their psychological representations differed. Festinger's original hypothesis was that the mere inconsistency created the dissonance and the resulting physiological manifestations. (Cooper, 2007).

Festinger left dissonance research and other scientists continued his work, extending our understanding of the concept. Much of the subsequent CD research focused on the isolating aspects of CD that tease out the causes of dissonance as well as the dissonance reduction strategies. The results of the CD experiments were initially heretical to the way many psychologists thought about social processes (Cooper, 2007). This radical concept was totally inconsistent with the learning and reinforcement (reward and punishment) theories that existed at the time CD was introduced. It showed there was an inverse relationship between the magnitude of incentive and the degree of *attitude change*, one metric by which CD is measured. The more negative the consequences of the behavior (pledging a fraternity, charging a hill full of enemy soldiers, studying hard to complete a training) the more people changed their attitudes towards the value of the achieved goal (they gave it greater value). The harder they fought, the more painful the experience, the greater the worth of the achievement. Other experiments consistently showed the less someone was paid for engaging in attitude-discrepant behavior, the more they changed their attitude towards liking the behavior. It just did not make sense at the time, given the prevailing teachings about punishment and reward.

CD Experimental Paradigms

Scientists developed many clever ways to study the phenomenon of CD. Experiments led to fruitful ideas spurning new hypotheses that were tested, resulting in a multitude of paradigms in which CD was observed. They included:

A. The Free Choice Paradigm - liking what you choose. CD follows decisions we make and is reduced by spreading the attractiveness of the choices (Brehm, 1956). Our choice becomes more attractive and the

one you did not pick becomes less attractive. The more difficult the choice, the greater the dissonance aroused and the greater the spread of the attractiveness. The car you ended up buying is more attractive than the one you chose not to buy.

Perhaps you were taught two test data analysis (TDA) methods and have come to prefer one over the other. You may find yourself coming up with many reasons to use your preferred method and seek faults in the non-preferred method. Another example is during a post-test interrogation, you provide a subject with two alternative reasons for engaging in a behavior, one being less egregious. Should the subject agree to engaging in that less deplorable choice, CD predicts they will feel less dissonance about that behavior. This could help alleviate some stress and allow for more follow up discussion. Post-admission narrative is crucial to ensuring the admission is not false.

B. The Induced Compliance Paradigm – when covertly induced behavior is dissonant with attitude. If you were persuaded into doing something, in which you don't believe, dissonance occurs (Festinger & Carlsmith, 1959).

An often repeated experimental example for this paradigm involves inducing (covertly persuading) a subject to lie to someone about a boring task by telling them it is great fun, and giving them a low or a high reward (\$1 or \$20) for the lie. Those who are given the \$1 will feel more dissonance about their lie and change their attitude more by rating the task less onerous than those paid the \$20. The \$20 people might think to themselves “yeah that task was boring and it was not nice to lie, so that's why they paid me the big bucks.”

This aspect of the CD phenomena has also been shown to work in the political realm. Experimenters asked college students to write counter-attitudinal essays supporting the local police (whom the college kids disliked). The students were offered incentives of 50 cents, \$1, \$2, and \$10 for writing the essays. Those who agreed to write the essays were surveyed afterwards and there was an inverse relationship between magnitude of incentive and attitude change; the lower the incentive,

the more positive the attitude towards the police.

Suppose you are required to give a speech on how countermeasure training on the Internet *benefits* PDD testing, and you hate those anti-polygraph websites. As you prepare for, and give the speech, your negative attitude towards countermeasure training will be inconsistent with your behavior of speaking on the benefits of those websites. Dissonance will result and there will be a drive to reduce the dissonance. Now, you can change your behavior (and not give the speech) or you can change your attitude to be more in-line with what you have publicly said. CD theory predicts that you will ultimately come to have a more favorable attitude about the websites. Perhaps you come to value their “raising the bar” on our instrumentation by inducing manufacturers to build better activity sensors. Maybe you feel the anti-polygraph sites have forced us to empirically defend our testing protocols and test data analysis methods.

Another example is what can occur during a posttest interrogation of a suspect who had a significant response to relevant questions pertaining to an alleged sexual assault on a child. The suspect's personal attitude towards their own behavior (if guilty and lying) may be one of disgust, shame or vilification. The resultant attitudinal disposition is not likely to be one consistent with admitting to what they did. However, if they come to believe that others around them see their transgressions as a manifestation of an illness that can be controlled through proper intervention, CD theory predicts they can alter that attitude. Modification of their attitude to one of guilt, compassion or understanding, will increase the likelihood of behavior consistent with repatriation, resulting in an admission.

C. The Effort Justification Paradigm – liking what you suffer for. The prevailing learning theory at the time CD was proffered, predicted that people would be attracted by positive rewards and would reject punishments. As logic would lead us to believe, that suffering would produce a negative attitude about what was causing it.

CD theory predicts the suffering we experience is inconsistent with our desire to

not suffer (Aronson & Mills, 1956). Let's say we enlist in the United States Navy and suffer mental and physical stress at the hands of a recruit company commander, or "drill instructor," throughout our time in boot camp. One way to reduce the dissonance is to change our attitude towards that for which we suffered by increasing its positivity. So enduring suffering in the furtherance of a goal would increase the overall attitude about the value of that goal. We come to value the boot camp experience as something "worth fighting for."

If a posttest interrogation were to ensue for a long time, any admission the suspect makes may be perceived by us, as a worthwhile reward for the effort we expended. The value of that admission can become greatly inflated because of how hard we worked for it. This is why it is of paramount importance to not let an over-valuation of an admission result in stopping short of obtaining post-admission narrative. In defense of a claim of a false confession, "I did it" should not be a stopping point, but rather a *starting point*. CD can be a double-edged sword, capable of cutting both ways, and understanding how this could affect us can increase our personal and collective professionalism.

D. The High versus Low Threat Paradigm – forbidden items are devalued more in a low threat than in a high threat situation. Let's say you have some kids playing in a room and there is an obvious "best" toy. You tell one group of kids if they touch the toy while you are gone you will be really angry and leave with all of your toys (high threat). You tell the other group of kids you will be disappointed with them if they touch that toy and ask them not to do so while you are out of the room (low threat). Later, when asked how "nice" the special toy is, those in the low threat group will rate the toy as less desirable than those in the high threat group. Both groups of kids wanted to play with the toy and none did. The high threat group needed no justification for why they didn't play with the toy; they were told they would face serious consequences for breaking the rules. The low threat group had to reduce the dissonance of not playing with the toy by changing their attitude about the value of the toy. They adjusted their attitude

such that they did not like the toy as much. This would make sense in a posttest interrogation setting as well.

If the suspect believes the consequences of admission are commensurate with the high threat of social or moral ostracization, they are unlikely to change their attitude towards making an admission. However, if they can change their attitude about how they will be perceived, the resultant behavior of denying will then become inconsistent with their new attitude, CD will result, and a change in behavior (an admission) made to reduce the dissonance. In other words, if they believe the threats of moral reprisals are high, CD theory predicts they will be less likely to make an admission. Lowering the perceived threat level should induce the subject to being more amenable to making an admission.

E. The High versus Low Choices Paradigm – freedom to choose is a necessary condition for dissonance arousal. When free (high) choice is removed, dissonance is not aroused and the behavior is justified because there was no choice. For example, in a Directed Lie Comparison Question (DLCQ) test, I am required to lie to the DLCQ. That requirement serves as an important cognition, consonant with my behavioral act. I lied because the examiner directed me to lie (it is a low choice condition). If, on the other hand, I have free (high) choice to engage in a lie or not (e.g. a Probable Lie Comparison Question), CD can result. My behavior, lying to the Probable Lie Comparison Question (PLCQ), is not consistent with my attitude that I should not lie to any question on this test in order to pass the examination.

High-low choice conditions have been studied extensively and have conclusively shown that free (high) choice is a necessity to create dissonance and the lower the incentive (i.e. \$1 versus \$20), the greater the attitude change. When low choice conditions (DLCQ) are set up, experimental results followed the prediction of learning and reinforcement and attitude change was positively correlated with the magnitude of incentive. The higher the incentive, the more attitude changed. This is inconsistent with CD theory and so the arousal associated with DLCQ testing is unlikely a result of CD, and probably more

consistent with goal achievement. When high choice conditions are established (PLCQ), arousal follows the predictions of CD theory.

F. The New Look Model of Dissonance – developed by Joel Cooper (Cooper, 2007) and colleagues at Princeton University in the early 1970’s. One of the founding principles was that CD arousal reduction was in the service of mitigating negative valence, aversive, or unpleasant feelings. People tend to identify the affective reaction to CD as discomfort. If you ask people to describe what they feel, they usually describe it along the lines of “tension” or “uncomfortable.” People experiencing CD are motivated to reduce the unpleasant state and do so by changing their attitudes about the perceived cause (usually their behavior). Several studies have shown that dissonance reduction via attitude change reduces the level of discomfort the subjects report. Alternatively, if experimenters remove the discomfort, dissonance goes away.

The New Look experiments also focused on *modifiers*, they called ‘but-onlys.’ They found;

1. CD was aroused, *but only* when decision freedom was high (high choice). Little choice results in little dissonance.
2. CD was aroused, *but only* when people are committed to their statements, beliefs or initial attitudes about their behavior. Also, if there is a chance to ‘take back’ what you did or said at a later time, CD is mitigated.
3. CD depends on perceived consequences, *but only* if those consequences are aversive. Aversive consequences play a pivotal role in the New Look model. For example, in one study students told a another student (actually a confederate) that a dull task was exciting. If the to-be-duped confederate acted excited as if they believed the student, CD resulted. However, if the confederate acted unconvinced, no CD resulted.
4. The unwanted consequences of a high choice behavior will create CD, *but only* if those consequences are foreseeable (not necessarily foreseen) for CD to occur.

Dissonance Arousal Turns to Motivation

As described earlier, CD is experienced as an unpleasant arousal state, which people become motivated to reduce. The reduced motivation can be mitigated by redirecting the subjects’ attribution of the cause of the arousal. Subjects can be fooled into “blaming” the physiological arousal on something else and CD will not result. During several experiments, subjects were tricked into attributing CD arousal to a drug (actually a placebo) and this false attribution reduced or eliminated dissonance. In one experiment, 1/3 of the students given a “memory enhancing” drug (actually a placebo), were told they would feel excited, tense or aroused (excited group), 1/3 were told the drug had no side effects (none group) and the remaining 1/3 were told they would feel calm and relaxed (calm group). Each third was further sub-divided into high-low choice groups and all engaged in an induced compliance experiment. CD theory predicts those in the high choice group would experience dissonance and those in the low choice group would not. A further hypothesis of this experiment was that the excited group-high choice participants would attribute the tenseness to the pill and not experience CD as measured by attitude change.

CD theory predictions and the hypothesis held true. There was a significant difference in the change in attitude in the calm and none groups between the high and low choice participants. There was no significant difference between the high and low choice participants in the excited group.

Measuring Physiologic Arousal

Using an induced compliance paradigm experiment, autonomic arousal has been measured via non-specific electrodermal responses (NS-EDR). High choice participants exhibited heightened physiological arousal, as measured by NS-EDR compared to the low choice participants.

Summary

Behavior inconsistent with attitudes produces CD, but only;

- a. if behavior is freely chosen,
- b. if the subject is committed to the behavior,
- c. if agency is attributable to the self (“I caused this thing”),
- d. if the behavior leads to aversive or unwanted consequences, and
- e. if those unwanted consequences were foreseeable (not necessarily foreseen) at the time of the behavior.

To reduce the dissonance one can change their attitude about the behavior or change the behavior itself. There are a number of attitude changing strategies that could be employed in a posttest interrogation to reduce the arousal associated with CD resulting from withholding information. CD theory predicts a desire to reduce arousal can foster an admission that can be developed appropriately into a true confession. One way to change attitude is to spread the choice. This can be done by emphasizing the moral and psychological benefits of an admission. The non-selected choice becomes less valuable and the selected choice increases in perceived value. Additionally, if the subject chooses the explanation for their behavior, they will tend to value that choice more than any alternative. This can result in a further reduction of dissonance which could encourage further post-admission narrative. Perhaps a “Wow, that feels better, I will keep going” kind of self-talk.

If the subject’s behavior of concern is not perceived as freely chosen, or not attributed solely to them, or was not foreseeable, then CD may be mitigated and they may be less inclined to admit to the behavior. If the moral and psychological consequences of not admitting to the behavior can be perceived as less aversive, CD arousal will be reduced, and again, an admission is less likely to occur.

In summary then, there are many ways to reduce dissonance once it has been aroused. The greater the discomfort, the greater the reduction motivation the subject feels. The easiest way to decrease the CD would be to reduce or eliminate the discrepancy. If my knowledge of my behavior and my attitude towards that behavior are consonant (they agree), there will be no dissonance. If I become aware they are

dissonant, I will feel a tension state and be motivated to move them more in line with one another.

CD theory, then, is really a theory about attitude change. It is often easier, and more likely, to change my *attitude* about my behavior than to change the behavior itself. It is difficult to alter the reality of my behavior (especially once the behavior has already occurred) but not so difficult to change my attitude towards that behavior. If I can be caused to change my attitude about the information I am withholding, it will serve to reduce the CD. If CD is reduced, the resulting tension state keeping me from divulging can be reduced and I am more likely to admit to what I did. An additional and important aspect of CD theory is that not all cognitions are made equal. If one cognition is assessed as more important than another, it will create more CD than one of perceived lesser value. Examiners can capitalize on this by motivating a suspect to change their attitude about *the importance* of a cognition to reduce the dissonance.

Applying CD theory to PDD testing and posttest interrogations can provide insight into causation of arousal and arousal reduction strategies. CD theory can inform our profession on ways to apply social science, but with one important caveat. “The wise prevail through great power and those who have knowledge muster their strength” (Proverbs 24:5, New International Version). Knowledge is said to provide strength and those empowered by this learning have an ethical obligation to use it for benevolent purposes. We should strive to use newly gained knowledge for the betterment of all members of society, without regard for our personal stakes. We should not only embrace those aspects of social science that agree with our personal beliefs and objectives, we should expand our professional horizons by opening our minds to alternative theories. Changing our own attitudes about new, novel or different theories can reduce our dissonance. There are a number of areas in which social science can improve our collective knowledge (e.g. false confession research) that we should explore as well. The march towards a science based PDD profession is inexorable, and it begins with an open mind.

References

- Aronson, E. & Mills, J. (1956). The effect of severity of initiation on liking for a group. *Journal of Abnormal and Social Psychology*, 59, 177–181.
- Brehm, J. (1956). Post-decision changes in desirability of alternatives. *Journal of Abnormal and Social Psychology*, 52(3), 384–389.
- Cooper, J. (2007). *Cognitive Dissonance: 50 Years of a Classic Theory*. London, England: Sage publications.
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Evanston, IL: Row, Peterson.
- Festinger, L., & Carlsmith, J.M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, 58(2), 203–210.
- Greenwald, A.G. & Ronis, D.L. (1978). Twenty Years of Cognitive Dissonance: Case Study of the Evolution of a Theory. *Psychological Review* (American Psychological Association) 85 (1): 53–57.
- Harmon-Jones, E., & J. Mills. (Eds.) (1999). *Cognitive Dissonance: Progress on a Pivotal Rheory in Social Psychology*. Washington, DC: American Psychological Association.