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Feeling Better or Doing Better? On the Functions of Inconsistency Reduction (and Other Matters)

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In the target article, Travis Proulx and Michael Inzlicht suggest that expectancy violations cause an arousing negative affective state (or aversive arousal) and that humans are motivated to behave in several ways in order to reduce this negative state. They propose their meaning maintenance model as an integration of a diverse array of phenomena, including research on cognitive dissonance and terror management theory, Piaget's ideas about the processes of cognitive development, and the ideas of Freud and the existentialist philosophers.

We applaud Proulx and Inzlicht for this integrative effort. Too often, social psychologists try to make their mark by coming up with a new name for an old phenomenon. Unfortunately, this tendency has been rewarded by a field that prizes innovation. Although innovation is important, the resulting fragmentation of the field of psychology has not been beneficial. And so we appreciate the fact that Proulx and Inzlicht find common ground regarding the responses to a wide variety of expectancy violations noted by many sources.

We were particularly impressed by the evidence that inconsistencies can enhance creativity and abstraction. Proulx and Inzlicht review evidence that expectancy violations motivate individuals to seek patterns, and actually improve their ability to find patterns in existing data. Furthermore, they note that expectancy violations motivate individuals to create new content and enhance the quality of their creative output. These effects of inconsistency are important and currently underexplored within the cognitive dissonance tradition.

Reducing Anxiety versus Effective, Adaptive Behavior

Although we agree with many of the points made in the target article, our own conception differs when it comes to the function of responses to expectancy violations. Throughout the article, Proulx and Inzlicht emphasize that responses to inconsistency are palliative. The term *palliative* means relieving the symptoms without addressing the underlying cause of the aversive arousal (or discomfort or anxiety). Thus, Proulx and Inzlicht maintain that responses to expectancy violations relieve the anxiety provoked by these violations but do not benefit the organism in any other way.

This viewpoint contradicts our action-based model of dissonance, which proposes that although the proximate motive for resolving cognitive inconsistency is to reduce discomfort, a distal motive also exists (C. Harmon-Jones, Schmeichel, Inzlicht, & Harmon-Jones, 2011; E. Harmon-Jones, 1999; E. Harmon-Jones, Amodio, & Harmon-Jones, 2009). The distal motivation functions to facilitate effective, adaptive behavior. For instance, when an individual makes a choice between two equally attractive options, the positive aspects of the unchosen option and the negative aspects of the chosen option are dissonant from the decision. If the individual does not resolve this dissonance, and regrets the decision, it will be difficult for him or her to act effectively with regard to the decision. Conversely, if he or she changes cognitions to reduce the discrepancy, effective action in regards to the decision will be facilitated.

We believe the action-based model can apply to the other forms of expectancy violation noted by Proulx and Inzlicht. Human meaning systems are not completely accurate representations of reality. However, they must form a pretty decent representation of reality in order for the organism to survive. Like Piaget's child-subjects, human adults continually refine their meaning models to incorporate new information. We propose that, in response to inconsistency, the models are often altered in ways that make them more accurate and/or useful.

The evidence Proulx and Inzlicht cited regarding the effect of inconsistencies on creativity and abstraction is particularly significant in this regard. Inconsistencies do not merely motivate individuals to engage in creative pursuits and to engage in abstraction. Instead, inconsistencies actually enhance the quality of creative output and abilities to recognize patterns. Thus, the responses are broadly adaptive, not merely palliative.

From this perspective, it is functional to be discomforted by expectancy violations. These inconsistencies signal a possible mismatch between one's model of reality and actual reality. Faced with such a signal, the anxiety that motivates one to reconcile the discrepancy within one's model is adaptive. The proximal motivation may be to reduce anxiety, but the distal motivation is to build a system of meaning that allows one to behave effectively and thus to thrive in the environment.

Adaptive responses to expectancy violations may involve justifying recent behavior, changing attitudes to prefer a chosen option over an unchosen option, reaffirming one's worldview, updating working memory, learning new patterns of information, and being creative, consistent with the research reviewed by Proulx and Inzlicht. Far from being merely palliative, these responses may allow the individual to navigate the environment more effectively, sometimes by altering the meaning model to be more consistent with reality, sometimes by facilitating more effective behavior.

Conceptualizing discrepancy reduction as a basically functional process helps us to develop hypotheses regarding which responses will be chosen in a particular instance of encountering an expectancy violation. When an inconsistency is encountered, the individual may sometimes focus on reducing the discomfort (the proximal motive) and in other cases focus on altering the model. We suggest that individuals are more likely to focus on merely reducing anxiety when action is not needed at the moment. When action related to the inconsistency is needed, we would predict that discrepancy reduction would primarily focus on resolving the inconsistency.

Adding Variables to the Equation to Determine the Magnitude of the Anxiety and Motivation and the Direction of the Inconsistency Resolution

We would like to suggest the addition of variables that may assist in determining the magnitude of the anxiety that results from cognitive inconsistency, the motivation to resolve the inconsistency, and the direction of the inconsistency resolution. Most of these variables have been previously discussed within the cognitive dissonance theory tradition, though they have received less empirical attention than other outcomes produced by inconsistency.

Before doing this, though, we briefly explain the original theory of cognitive dissonance. Festinger (1957) presented the theory in abstract terms and consequently the theory has been used to understand a variety of phenomena. Festinger theorized that, when an individual holds two or more elements of knowledge that are relevant to each other but inconsistent with one another, a state of discomfort is created. He referred to this unpleasant state as "dissonance." Further, he theorized that the degree of dissonance in relation to a cognition = $D / (D + C)$, where D is the sum of cognitions dissonant with a particular cognition and C is the sum of cognitions consonant with that same particular cognition, with each cognition weighted for importance. Several theorists have proposed that the discrepancy between cognitions could be determined

by assessing whether a person expects one event to follow from another.

Festinger theorized that individuals are motivated by the unpleasant state of dissonance and that they may engage in a variety of psychological processes to reduce the cognitive discrepancy. This group of processes has been referred to as dissonance reduction, and it will typically be oriented around the cognition most resistant to change. Thus, to reduce dissonance, individuals could add consonant cognitions, subtract dissonant cognitions, increase the importance of consonant cognitions, or decrease the importance of dissonant cognitions. One of the most often assessed ways of reducing dissonance is change in attitudes. Attitude change is expected to be in the direction of the cognition that is most resistant to change. In tests of the theory, it is often assumed that the knowledge about recent behavior is usually most resistant to change, because if a person behaved in a certain way, it is often very difficult to undo that behavior. Thus, counterattitudinal behavior was often used to induce dissonance and attitude change was found to be in the direction of that recent counterattitudinal behavior. But it is important to note that dissonance theory is not limited to counterattitudinal behavior and attitude change.

The theory of cognitive dissonance separated itself from cognitive consistency theories of the 1950s and 1960s by positing the conceptual variable of resistance to change of cognitions. According to the theory, resistance to change of cognitions is important in at least two ways. First, when cognitions are low in resistance to change (and thus easy to change), the state of dissonance should be lower because dissonance can be easily reduced by changing a cognition. Second, the resistance-to-change-of-cognitions is also useful for determining the way in which dissonance will be resolved, as dissonance reduction efforts target cognitions that are less resistant to change.

Another useful variable in determining the magnitude of dissonance and dissonance reduction efforts is the importance of the cognitions involved. The more important the dissonant cognitions and/or the less important the consonant cognitions, the greater the dissonance state and, presumably, the motivation to reduce the dissonance. Along these lines, dissonance can cause individuals to reduce the importance of the cognitions involved in arousing dissonance (Simon, Greenberg, & Brehm, 1995).

Cognitions regarding the occurrence of recent behavior are especially resistant to change. According to dissonance theory, the individual can add consonant cognitions to reduce dissonance. For example, if an individual believes he or she was forced to engage in counterattitudinal behavior, this would add a cognition consonant with the behavior. Conversely, when the discrepancy or expectancy violation does not involve recent behavior or have strong implications for

behavior, the individual may be more likely to reduce the discrepancy without attitude change. Other modes of dissonance reduction have been discussed previously, but few empirical studies have tested them (for review, see E. Harmon-Jones, 2000b). Examples include intensifying the original belief or attitude (Batson, 1975), reducing commitment to the action (Fleming & Rudman, 1993), forgetting or reducing the salience of dissonant cognitions (Elkin & Leippe, 1986), and cognitive restructuring (Burris, Harmon-Jones, & Tarpley, 1997).

Some modes of dealing with inconsistency proposed by Proulx and Inzlicht are suited for merely reducing anxiety. These modes would be adaptive when action with regard to the inconsistent information is not needed. Other modes are more suited to facilitating effective action, such as attitude change (accommodation). Still others are better suited to improving the individual's meaning model more generally (creativity and abstraction). These modes should be chosen when the inconsistency signifies a flaw in the meaning model itself.

Unpacking the Cognitive and Emotive Neuroscience of Inconsistency Detection and Resolution

Regarding whether individuals consciously feel a negative affective state when confronted with inconsistency, we suspect that they may when confronted with some inconsistencies but not all, and that whether they do depends on the degree and importance of the inconsistency and whether they have yet reduced the inconsistency (for review, see E. Harmon-Jones, 2000a). When inconsistencies can be easily reduced, the conscious experience of negative affect may not occur, or may be experienced so briefly that is not remembered or reported. But when inconsistencies are difficult to reduce, individuals may become highly aware of their negative affective states and may seek treatment for them as in the case of some instances of depression and anxiety.

Proulx and Inzlicht write, "All experiences that violate expected relations (a) evoke a common, biologically based syndrome of aversive arousal, which in turn (b) motivates compensation efforts to relieve this arousal" (p. 318). They then suggest that this aversive arousal involves "increased skin conductance, constriction of the blood vessels, and a marked variability in cardiac activity" (p. 323). Further, they suggest that it involves increased heart rate and increased activity in the anterior cingulate cortex.

We agree with this depiction of the aversive arousal state that may be evoked by cognitive inconsistency. However, it is important to emphasize that these physiological activations are not perfectly associated with aversive arousal or anxiety. That is, it is very difficult

to assume a one-to-one relationship between a psychological and physiological variable.

Moreover, these physiological responses may increase or decrease to a given inconsistency. Proulx and Inzlicht are aware of this latter point with regard to dopamine as they cite evidence suggesting that dopamine levels can increase or decrease depending on the valence of the expectancy violating information. In addition, heart rate does not always increase in response to expectancy violations, and it may decrease depending on the situation. For instance, heart rate decelerations often occur during the orienting response (Graham & Clifton, 1966), which may be triggered by expectancy violations. The research cited by Proulx and Inzlicht regarding other cardiac responses indicates a more complex response than just low versus high arousal. That is, in response to counterstereotypical partners, individuals had less ventricular contractility, lower cardiac output, and increased total peripheral resistance (Mendes, Blascovich, Hunter, Lickel, & Jost, 2007). Blascovich, Mendes, and colleagues have interpreted this pattern of responses as a psychological threat response and contrast it to a psychological challenge response, which involves greater ventricular contractility, greater cardiac output, and decreased systemic vascular resistance (total peripheral resistance).

In addition, we wonder whether some inconsistencies are experienced as states of low arousal. Indeed, the research on self-discrepancy theory suggests that an actual-ideal discrepancy may evoke depression and sadness (Higgins, 1987) and some states of sadness are associated with low rather than high arousal (Gable & Harmon-Jones, 2010).

The neuroscience of responses to inconsistency detection probably goes beyond the indices noted by Proulx and Inzlicht, particularly when inconsistency is viewed from the wide angle they use. Research using event-related brain potentials (ERPs) has revealed a number of waves or components that are sensitive to inconsistencies, such as the mismatch negativity (MMN), error-related negativity, N2, P3, N400, and P6. Moreover, each of these ERPs is evoked by different psychological "inconsistencies," and these ERPs do not relate with each other psychologically. Also, each of these ERPs is related to different neural structures and neurophysiological responses. We explain just a few of these ERPs, in the interest of space (and your attention). The MMN (Näätänen, Gaillard, & Mäntysalo, 1978) occurs in response to a "deviant" or inconsistent stimulus within a sequence of other stimuli (e.g., in a sequence of sounds such as *s s s s s s s d s s s s d s s s . . .*). The MMN occurs over fronto-central scalp regions, and it is likely generated by sources in the primary and nonprimary auditory cortex (to auditory stimuli). It peaks 150 to 250 ms after the onset of the deviant stimulus (for review, see Alho, 1995). The N400 (Kutas & Hillyard, 1980) occurs in response to

semantic inconsistencies (particularly unexpected words in sentences). The N400 occurs over centro-parietal scalp regions, and it is likely generated by a highly distributed neural source including the temporal lobes. It peaks 250 to 500 ms after the onset of the unexpected stimulus word (for review, see Kutas & Federmeier, 2011). Thus, at least as this level of analysis, there is plenty of evidence of different neurophysiological responses to inconsistencies. It would be interesting to know whether these “inconsistencies” that differ at the neural level nonetheless produce similar compensatory behaviors, or whether they actually produce different compensatory behaviors.

However, the fact that different physiological responses exist for different inconsistencies should not be taken to negate the concept that there may be something similar in human responses to all expectancy violations, as proposed by Proulx and Inzlicht. We simply do not believe that it is necessary to maintain that physiological responses are identical in order to make their point.

We also wonder whether some mild inconsistencies cause positive affective states (Maddi, 1968) and whether these inconsistencies would still cause all forms of meaning maintenance or only a subset of them (e.g., creativity). Future research is needed to understand which inconsistencies might cause positive affective states and whether these inconsistencies also influence meaning maintenance responses.

Conclusions

We applaud Proulx and Inzlicht’s integrative model and are particularly impressed with their review of evidence suggesting that inconsistencies cause abstraction and assembly, two novel and important modes of responding to inconsistencies. Although we find much to value in their target article, we raise some questions that we hope will inspire further integrative efforts in research.

Note

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References

- Alho, K. (1995). Cerebral generators of mismatch negativity (MMN) and its magnetic counterpart (MMNm) elicited by sound changes. *Ear and Hearing, 16*, 38–51. doi:10.1097/00003446-199502000-00004
- Batson, C. D. (1975). Rational processing or rationalization?: The effect of disconfirming information on a stated religious belief. *Journal of Personality and Social Psychology, 32*, 176–184.
- Burris, C. T., Harmon-Jones, E., & Tarpley, W. R. (1997). “By faith alone”: Religious agitation and cognitive dissonance. *Basic and Applied Social Psychology, 19*, 17–31.
- Elkin, R. A., & Leippe, M. R. (1986). Physiological arousal, dissonance, and attitude change: Evidence for a dissonance-arousal link and a “don’t remind me” effect. *Journal of Personality and Social Psychology, 51*, 55–65.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Fleming, J. H., & Rudman, L. A. (1993). Between a rock and a hard place: Self-concept regulating and communicative properties of distancing behaviors. *Journal of Personality and Social Psychology, 64*, 44–59.
- Gable, P. A., & Harmon-Jones, E. (2010). The blues broaden, but the nasty narrows: Attentional consequences of negative affects low and high in motivational intensity. *Psychological Science, 21*, 211–215.
- Graham, F. K., & Clifton, R. K. (1966). Heart-rate change as a component of the orienting response. *Psychological Bulletin, 65*, 305–320.
- Harmon-Jones, C., Schmeichel, B. J., Inzlicht, M., & Harmon-Jones, E. (2011). Trait approach motivation relates to dissonance reduction. *Social Psychological and Personality Science, 2*, 21–28.
- Harmon-Jones, E. (1999). Toward an understanding of the motivation underlying dissonance processes: Is feeling personally responsible for the production of aversive consequences necessary to cause dissonance effects? In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Perspectives on a pivotal theory in social psychology* (pp. 71–99). Washington, DC: American Psychological Association.
- Harmon-Jones, E. (2000a). Cognitive dissonance and experienced negative affect: Evidence that dissonance increases experienced negative affect even in the absence of aversive consequences. *Personality and Social Psychology Bulletin, 26*, 1490–1501.
- Harmon-Jones, E. (2000b). A cognitive dissonance theory perspective on the role of emotion in the maintenance and change of beliefs and attitudes. In N. H. Frijda, A. R. S. Manstead, & S. Bem (Eds.), *Emotions and beliefs* (pp. 185–211). Cambridge, UK: Cambridge University Press.
- Harmon-Jones, E., Amodio, D. M., & Harmon-Jones, C. (2009). Action-based model of dissonance: A review, integration, and expansion of conceptions of cognitive conflict. In M. P. Zanna (Ed.), *Advances in experimental social psychology, 41* (pp. 119–166). San Diego, CA: Academic Press.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94*, 319–340.
- Kutas, M., & Federmeier, K. D. (2011). Thirty years and counting: Finding meaning in the N400 Component of the Event-Related Brain Potential (ERP). *Annual Review of Psychology, 62*, 621–647.
- Kutas, M., & Hillyard, S. A. (1980). Reading senseless sentences: Brain potentials reflect semantic incongruity. *Science, 207*, 203–208.
- Maddi, S. A. (1968). The pursuit of consistency and variety. In R. P. Abelson, E. Aronson, W. J. McGuire, T. M. Newcomb, M. J. Rosenberg, & P. H. Tannenbaum (Eds.), *Theories of cognitive consistency: A sourcebook* (pp. 267–274). Chicago, IL: Rand McNally.
- Mendes, W. B., Blascovich, J., Hunter, S., Lickel, B., & Jost, J. T. (2007). Threatened by the unexpected: Physiological responses during social interactions with expectancy-violating partners. *Journal of Personality and Social Psychology, 92*, 698–716.
- Näätänen, R., Gaillard, A. W., & Mäntysalo, S. (1978). Early selective-attention effect on evoked potential reinterpreted. *Acta Psychologica, 42*, 313–329. doi:10.1016/0001-6918(78)90006-9
- Simon, L., Greenberg, J., & Brehm, J. W. (1995). Trivialization: The forgotten mode of dissonance reduction. *Journal of Personality and Social Psychology, 68*, 247–260.