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REPLY TO COMMENTARIES

More Thoughts About Anger Determinants

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The authors propose that (a) although strong negative affect can evoke anger without appraisals, appraisals after the initial reactions conceivably might influence the later emotional experience independently of the felt displeasure; (b) maintaining that particular stimuli can automatically elicit anger does not imply that anger will be dominant; and (c) anger is frequently blended with other negative emotions such as fear. A particular stimulus' context can affect this stimulus' meaning and thus determine its effect, but if the stimulus' meaning is held constant, the stimulus will evoke the response to which it is connected. Carefully controlled experiments are required to resolve the issues raised. The theories advanced should offer testable postulates rather than untestable assertions of what processes supposedly were operating.

We thank the commentators for their thoughtful responses to the fairly novel perspective we presented and the questions we have raised. Believing that progress in the understanding of anger, and the other emotions as well, may well be furthered by the elucidation of the challenges posed by our target article (Berkowitz & Harmon-Jones, 2004), we spell out our answers to a number of their remarks.

What Our Formulation Proposes

Perhaps because we were not sufficiently explicit in our arguments, the commentaries seem to attribute a number of ideas to us that we do not actually hold. It is helpful to clarify our position on these matters.

Appraisals Can Promote Anger

Most important, we certainly do not think that appraisals have no effect on anger. With the conventional approach to anger generation, our analysis agrees, for instance, that appraisals blaming an external agent for a negative occurrence often bring about an angry reaction. Where the cognitive–neoassociationistic (CNA) model does depart from conventional thinking on this matter is on the necessity of appraisals for the elicitation of anger. CNA holds that strong negative affect in itself evokes the anger-related reactions, among other emotional responses, independently of how the emotion-arousing incident is interpreted (see, e.g., Berkowitz, 2003). Adding to the evidence cited in our target article (Berkowitz & Harmon-Jones, 2004), Berenbaum, Fujita, and Pfennig (1995) offered some "cautious" support for our line of thought, suggesting that a good part of the variance in the experience of anger might be a function of the negative affect that is felt. Initially at least, then, the first, fairly rudimentary anger arising when a particular appraisal is made is presumably due primarily to the displeasure this construal creates. Our target article noted, as an example, that events appraised as the deliberate and wrongful thwarting of a strong desire are much more unpleasant than unintended and relatively minor frustrations and, consequently, are likely to produce stronger anger than the latter occurrences. CNA also proposes that activated higher order cognitive processes bringing appraisals into play can then shape, intensify, or suppress the initial, fairly rudimentary emotional responses. It is presumably only in this latter cognitively active stage that the person's thoughts (not necessarily conscious in nature) operate to consider such factors as the situation's dangerousness, the extent to which the disturbance can be controlled, the possible source and legitimacy of the instigating event, and other relevant

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matters. This kind of consideration can also greatly affect the intensity of the experienced displeasure and may also determine how dominant the anger-related reactions are relative to the other emotional patterns that are evoked. We actually are open to the possibility that the interpretations made *after the initial emotional reactions* can have a direct impact on the specific nature of the resulting affective state. Further investigation obviously is required to test this possibility, but in our view, it is desirable to assess whether the appraisals exert their influence independently of the negative feelings these construals may also produce.

On the Intensity of the Elicited Anger

Contrary to the commentators' characterization of our formulation, CNA does not contend that the anger elicited by aversive occurrences (or by situational stimuli linked to negative events and/or by anger-associated bodily movements) is necessarily the only, or even dominant emotional reaction. Our use of associationistic principles should indicate what we do expect about the intensity of the elicited anger. An aggressive cue such as a nearby weapon or a person linked to an earlier frustrater is usually only partially representative of prior anger-creating occurrence(s) and often has a number of different meanings. Moreover, the cue-presenting situation frequently also has a number of characteristics that might interfere with the anger elicitation. All in all, then, an anger-related stimulus is likely to produce only a relatively weak anger reaction. Similarly, the muscular movements typically made when people are angry are only a small part of the usual situations in which anger is generated and expressed, so that we would not expect the movements to elicit very intense angry feelings. Therefore, it certainly is not surprising that the surrounding situational context can have a stronger impact on the resulting emotional experience than the facial and/or bodily movements. Nonetheless, the point is that under the right circumstances, these stimuli can automatically elicit the emotional reactions to which they are linked.

The Co-Occurrence of Anger With Other Negative Emotions

Several commentators argued that our formulation is troubled by the variety of emotions usually produced by aversive events. One way to spell out our thinking on this matter is to elaborate on the target article's (Berkowitz & Harmon-Jones, 2004) discussion of the effects of an overwhelming danger. People who believe they are facing an inescapable or unavoidable powerful threat are very likely to be more afraid than angry. Unlike the usual appraisal analyses, however, CNA suggests that anger is often intermixed with the fright so that the fearful persons are all too apt to be angry as well, particularly when they think they cannot escape from the danger. In his commentary, Buss (2004), supported by everyday understandings and innumerable studies (e.g., Lerner, Gonzalez, Small, & Fischhoff, 2003), asked whether fear and flight reactions do occur together. We propose that this emotion blending does take place, and more frequently than is usually expected.

When Scherer and Tannenbaum (1986) asked a random sample of ordinary people about their emotional experiences, they found that a great many of the respondents' negative emotional feelings were blends, with the most of these being combinations of anger and fear and/or anger and sadness. What is especially interesting is that the investigators also reported that anger and fear "tend to occur more frequently in combination with one another than singly" (p. 304). Findings obtained by Berenbaum and his colleagues (1995), based on college student samples, also document this frequent co-occurrence of anger with fear and sadness (although these three negative emotions obviously also differ in important ways). Miller's (1948) internal-conflict model of hostility displacement also proposes that anger and fear can occur together. And so, in accord with Miller's thesis, research (see, e.g., Berkowitz, 1998, pp. 54–55) indicates that frightened people may be reluctant to attack their tormentor when this person can punish them for their aggression but still be willing to assault another individual associated with the tormentor. In this case, the anger evidently is not eliminated by a fear-arousing threat.

Of course, other emotions besides fear and anger can also be present in the blend of aversively generated feelings. Showing this, Roseman (2004) referred to an article by Hale and Hadjistavropolous, indicating that adults undergoing venipuncture exhibited expressions of "disgust and fear, as well as anger and pain." What is more important to the commentators, though, is that the aversively generated negative affective states are supposedly often quite independent of each other. For Clore and Centerbar (2004), feelings of frustration have little in common with anger, whereas Roseman noted that frustrating occurrences frequently result in a "behavioral invigoration," as if this reaction were different from and relatively independent of anger. CNA, however, asks whether these

negative emotions are as independent as the reviewers appear to imply (see also Yik, Russell, & Barrett, 1999). The frustration-engendered heightened arousal state certainly can be tied in with, and intensify, the elicited anger.

Clearly, here are matters warranting careful investigation. Are these combinations of emotions merely because of rapidly shifting appraisals, or do they reflect the operation of various psychological and/or neurophysiological systems somewhat independently of the types of appraisals posited by many theorists, perhaps along with some confusion as to how the feelings are to be labeled? It also would be nice to know when a particular nonanger affective state becomes dominant. Under some circumstances, the initial rudimentary emotional reactions could promote heightened cognitive activity, and with this activity, a search for some source to which the feelings might be attributed (Frijda, 1993). Depending on a variety of factors (Liu, Karasawa, & Weiner, 1992), the aroused persons might attribute their arousal to a number of causes, thus leading to a blend of feeling states or to one major factor so that a dominant emotion emerges.

On the Role of Associations

Another major difference between the present formulation and many of the more usual analyses of anger arousal has to do with our greater emphasis on associative processes. The Smith and Kirby (2004) conception, with its explicit recognition of the roles of both associations and reasoning in emotion generation, is fairly similar to CNA in important ways, but we go further than they do in the use of associationistic ideas. Arguing that automatic associative processing typically plays a more important part than "conscious, volitional" reasoning in the initiation of emotional responses, Smith and Kirby proposed that in such instances, a stimulus linked to previously acquired emotional representations in memory activates an associated appraisal. And similarly, they asserted that "physical discomfort and various muscle actions will only evoke anger to the extent to which, through associative processing, they sufficiently activate the theoretically relevant appraisals" (p. 135).

CNA agrees that a stimulus' association with an earlier emotion-generating appraisal could evoke a linked emotional reaction, but also raises the broader possibility of associations with events at some psychological distance away from the usual emotion-relevant appraisals. The anger-arousing stimulus' connection might also be to something that is intrinsically unpleasant or that has an unpleasant meaning because of its association with negative words. The findings reported by Berkowitz and Knurek (1969) are especially instructive here. After the undergraduate men in this experiment were first verbally conditioned to have a negative attitude toward a particular name, either Ed or George,[1] some of them were then deliberately angered by the conditioning trainer. In the next phase of the study, conducted by a second experimenter, each of the participants engaged in a brief discussion with two other students, "coincidentally" named Ed and George. In this interaction, only the previously insulted men were more unfriendly to the partner bearing the name they had been conditioned to dislike than to the person having the neutral name. The target's negative name evidently had heightened his capacity to evoke hostility from those angered by another source. There is no good reason to think that this person had been held responsible for the first trainer's earlier insults or even the negative feelings they experienced.

Of all the commentators, Clore and Centerbar (2004) seemed to have the strongest objections to CNA's emphasis on the role of associations. Perhaps because of their general unhappiness with such ideas, these researchers apparently question our conception of emotions as syndromes composed of somewhat distinct but associatively linked components such as particular action tendencies, feelings, and ideas. Any given emotion should be regarded as a whole, they insisted. "Asking whether expressions cause emotions is like asking whether eggs cause omelets" (p. 142). Our response is to point to the tremendous body of evidence consistent with the emotional syndrome perspective: Numerous studies have demonstrated that the activation of any one component of an emotional state tends to activate the other parts of the associative network, very much as if an activation spreads from this component of the syndrome to the other parts with which it is linked. In the Velten procedure, for instance, reading and thinking about a series of depressive statements often elicits a depressive mood.

The bodily feedback research provides yet another example of this kind of spreading activation to other components of the emotional syndrome. But here, too,

[1] In this conditioning, using the procedure developed by Staats and Staats (1958), each of the displayed first names in a 10-name series was paired with an adjective spoken aloud, with the adjective being either pleasant or unpleasant in nature.

Clore and Centerbar (2004) have decided misgivings. They strongly insist that "affective influences do not stem from muscle actions but from their contextualized meaning" (p. 142). We agree in part: The surrounding situation's unequivocal meaning can substantially affect how a particular detail is understood, and thus determine its consequences. However, such an influence is entirely consistent with associationism. Adherents to this particular perspective, including Miller (1959), have long recognized the role of associations based on a stimulus' meaning. A swastika can evoke emotional reactions only to the degree that it is connected in one's mind with terrible events, and thus has a horrific meaning. Still, unless a clear situational influence alters how emotionally related muscular movements are understood, these skeletal muscle actions in themselves can affect the feelings that are experienced. Consider the findings obtained by Laird and his colleagues (1994). When the participants in this experiment inhibited their facial movements as they watched a happy movie, they enjoyed the film less than did other persons who were free to smile spontaneously as they saw the movie. Enacted happy smiles evidently intensify (and may even initiate) a happy mood (e.g., Strack, Martin & Stepper, 1988) so that the blocking of the smiling reaction can dampen the good feeling that otherwise would occur.

Some Concluding Thoughts

We conclude our response to the commentators with some thoughts prompted by their arguments regarding the role of perceived coping potential in anger production. It is clear that they disagree on this matter. Whereas Clore and Centerbar (2004) said very little about this particular type of appraisal, Roseman (2004) held that there must be some perceived ability to cope with the disturbing occurrence if anger is to be generated, whereas Smith and Kirby (2004) maintained that anger could arise without such a belief. We have two questions here: If at least some appraised coping potential is necessary for anger arousal, why is this so, and then, too, what do the commentators have to say about the contrary research findings summarized in our target article (Berkowitz & Harmon-Jones, 2004)?

Roseman (2004) was one of the few appraisal theorists to address the first question explicitly. Very much in accord with the functional approach that is so widespread in contemporary discussions of the emotions, Roseman suggested that people's appraisal of their control potential determines whether they will become angry because this perception tells them whether their anger reaction will be successful in changing the undesirable event. It is interesting to note that, for him, such an appraisal does not rest on prior learning; he maintained that "an associationistic model [is deficient because it] leaves the principal determinants of anger and other emotions to the accidents and idiosyncrasies of experience" (p. 148)—the anger does not occur because of past reinforcements. It would appear, then, that for Roseman, appraised coping potential functions to evoke anger only because of our evolutionary history. We wonder whether the functional perspective is indeed this restrictive and excludes the possibility that an emotional function can be acquired in the individual's lifetime because it had repeatedly paid off in the past.

Turning to our second, and perhaps more important, issue, we believe any insistence on the necessity of appraised coping potential for anger generation does not adequately address the relevant evidence summarized in the target article (Berkowitz & Harmon-Jones, 2004).[2] Indeed, in our view, the contention that appraised other blame is necessary if there is to be any anger arousal also ignores available research findings. In both cases, many appraisal theorists rely primarily on the not-entirely-adequate evidence provided by participants' self-reports and anecdotal observations. This is not to say that the investigations typically seen in the appraisal literature are without any value; they have contributed importantly to the development and refinement of emotions theorizing. However, as everyone is well aware, self-reports and anecdotes are also highly susceptible to distortions arising from the reporters'/observers' theoretical predilections. The reports all too frequently only tell us what the participants are willing or able to say about

[2] Sometimes a strong theoretical preference leads to distorting interpretations of subtle observations. A possible example can be seen in Roseman's (2004) interpretation of the results obtained in the Harmon-Jones, Seligman, Bohlig, and Harmon-Jones (2003) experiment. Whereas Roseman had said that "all negative emotions were somewhat *lower*" (emphasis added) in this study's "high control potential conditions" (p. 8), the results actually tended to be in the opposite direction; these researchers had found that the participants who were informed they could not affect a change in the disapproved policy—and who thus had low-control potential—reported somewhat more intense anger (as well as fear and sadness) than their high-control potential counterparts, although this difference was not statistically significant.

the described situation. It might well be that people are angered most often when they think an external agent has deliberately mistreated them, as the self-report investigations have found. However, the respondents conceivably might not mention instances of pain- or discomfort-elicited anger because they are reluctant to report such seemingly "unreasonable" occurrences, or they want to create a favorable impression of themselves, or maybe even because such incidents are less common. All in all, as quite a few researchers have observed, the conclusions drawn from these self-report studies are generally equivocal at best. Further research, especially of a well-controlled nature, clearly is required to determine the conditions under which the appraisal propositions hold and what psychological processes operate on these occasions to produce the outcomes.

And finally, let us again raise the Popperian criterion stressed in our target article (Berkowitz & Harmon-Jones, 2004): Theories serve science to the degree that they can be refuted. We are not really helped by formulations that use untested ad hoc assertions to wave away opposing research observations. These assertions make appraisal theorizing nonfalsifiable, and thus reduce the conception's scientific status.

References

Berenbaum, H., Fujita, F., & Pfennig, J. (1995). Consistency, specificity, and correlates of negative emotions. *Journal of Personality and Social Psychology, 68,* 342–352.

Berkowitz, L. (1998). Affective aggression: The role of stress, pain, and negative affect. In R. G. Geen & E. Donnerstein (Eds.), *Human aggression: Theories, research, and implications for social policy* (pp. 49–72). San Diego, CA: Academic Press.

Berkowitz, L. (2003). Affect, aggression, and antisocial behavior. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 804–823). New York: Oxford University Press.

Berkowitz, L., & Harmon-Jones, E. (2004). Toward an understanding of the determinants of anger. *Emotion, 4,* 107–130.

Berkowitz, L., & Knurek, D. A. (1969). Label-mediated hostility generalization. *Journal of Personality and Social Psychology, 13,* 200–206.

Buss, A. H. (2004). Anger, frustration, and aversiveness. *Emotion, 4,* 131–132.

Clore, G. L., & Centerbar, D. (2004). Analyzing anger: How to make people mad. *Emotion, 4,* 139–144.

Frijda, N. H. (1993). The place of appraisal in emotion. *Cognition & Emotion, 7,* 357–387.

Harmon-Jones, E., Seligman, J. D., Bohlig, A., & Harmon-Jones, C. (2003). Anger, coping, and frontal cortical activity: The effect of coping potential on anger-induced left frontal activity. *Cognition & Emotion, 17,* 1–24.

Laird, J. D., Alibozak, T., Davainis, D., Deignan, K., Fontanella, K., Hong, J., et al. (1994). Individual differences in the effects of spontaneous mimicry on emotional contagion. *Motivation and Emotion, 18,* 231–247.

Lerner, J. S., Gonzales, R. M., Small, D. A., & Fischhoff, B. (2003). Effects of fear and anger on perceived risks of terrorism: A national field experiment. *Psychological Science, 14,* 144–150.

Liu, J. H., Karasawa, K., & Weiner, B. (1992). Inferences about the causes of positive and negative emotions. *Personality and Social Psychology Bulletin, 18,* 603–615.

Miller, N. E. (1948). Theory and experiment relating psychoanalytic displacement to stimulus-response generalization. *Journal of Abnormal and Social Psychology, 43,* 155–178.

Miller, N. E. (1959). Liberalization of basic S-R concepts: Extensions to conflict behavior, motivation, and social learning. In S. Koch (Ed.), *Psychology: A study of a science* (Vol. 2). New York: McGraw-Hill.

Roseman, I. J. (2004). Appraisals, rather than unpleasantness or muscle movements, are the primary determinants of specific emotions. *Emotion, 4,* 133–138.

Scherer, K. R., & Tannenbaum, P. H. (1986). Emotional experiences in everyday life: A survey approach. *Motivation and Emotion, 10,* 295–314.

Smith, C. A., & Kirby, L. D. (2004). Appraisal as a pervasive determinant of anger. *Emotion, 4,* 133–138.

Staats, A., & Staats, C. (1958). Attitudes established by classical conditioning. *Journal of Abnormal and Social Psychology, 57,* 37–40.

Strack, F., Martin, L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology, 54,* 768–777.

Yik, M. S. M., Russell, J. A., & Barrett, L. F. (1999). Structure of self-reported negative affect: Integration and beyond. *Journal of Personality and Social Psychology, 77,* 600–619.

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