

REPLY TO COMMENTARIES

Confusion Infusions, Suggestives, Correctives, and Other Medicines

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The authors suggest that it is natural and appropriate for fields to focus on particular phenomena and approaches. For affect, the focus has been on the subset of phenomena called *emotion*, with emphasis on facial expression, physiological responses, and appraisal. However, the authors note that there is a cost to the focus. The focus on facial expression has caused researchers to ignore those signals, such as those including touch, which involve an interaction among conspecifics. The focus on “internal” accounts of emotion has resulted in relative inattention to the critical adaptive–communication function of displays. P. Rozin and A. B. Cohen (2003) believe that the frequency of confusion and concentration expressions indicates that it is important to inform conspecifics of one’s receptiveness to new information or further interactions.

Our general response to the commentaries is “yes.” All the commentators are expert researchers in emotion. All recognize the shortcomings of our study, which we acknowledge. However, all consider the findings worthy of consideration, “suggestive,” and they use the findings as a springboard to air fundamental issues in the study of emotion and affect. We find the commentaries informed and enlightening, and we consider the quality of the responses a sufficient justification for our submitting the present article on confusion to *Emotion*.

In the spirit of the commentaries, which although historically informed and appropriately critical of methodology look forward at the field, our response is primarily about implications. Our greatest interest is actually in the sociology of the development of the

study of affect in the context of foci or fads. We deal with the sociology first, expand it into a discussion of what an “appropriate” contribution is to affect or any other field, and then, taking a less lofty stand, we address some of the more proximal conceptual issues from the commentaries. Finally, in our least lofty segment, descending from the sublime to the almost ridiculous, we deal with some of the shortcomings of our particular study.

Progress in Science: The Fad–Focus/ Reject Cycle

For good adaptive reasons, humans like to impose order on their experiences. This includes a preference for relatively simple accounts and a strong tendency to categorize things. Humans are also highly susceptible to social influence. These cognitive and social features often result in fads. Fads are not always bad things (well, in the case of pet rocks or some weird excursions of fashions, they may be). Fads are a good way of getting focused effort. Often, it is best to concentrate effort on a few things rather than explore broadly. In the 20th century, psychology saw the rise and fall of the fads of psychoanalysis and behaviorism. There were good arguments for taking both of these movements seriously, and both have made major contributions to modern conceptions of psychology. The basic methodology of cognitive science de-

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rives in large part from the major methodological advances made by the behaviorists. It is unfortunately a consequence of the fad cycle that retired fads are enthusiastically rejected; oversold and then over-scorned.

Affect was out of fashion for most of the 20th century, but fortunately, this basic part of human experience has returned and is at least a “fadlet.” There are also microfads, again, often adaptive. Launched by Darwin’s (1872/1998) *The Expression of the Emotions in Man and Animals*, beautifully reissued with commentary by Paul Ekman, the modern study of affect has focused on emotion, with particular attention to expression. The development of rigorous techniques for evaluating facial responses, particularly the Facial Action Coding System (Ekman & Friesen, 1978; see also Izard, 1971), naturally promoted the detailed analysis of facial expression. But the focus on “emotion” and on the face have left major unexplored issues. As a few of the commentaries noted, for example, love, which is very salient among laypersons as an emotion, does not get much attention within the field of affect or emotion.

Faddism sounds like a bad word, and that is not our intent. A more neutral word is *focus*. Focus is good for what is in focus. It is our hope that what is in focus is important and serves as a productive means of understanding humans. We think such an argument can be made for the focus on both the face and emotion. But focus always carries with it the problems of ignoring the periphery; after all, mother nature gave us cones to allow focus but also rods to see what is going on outside and redirect focus.

The focus in fads is along two dimensions. One is substance (e.g., emotion as opposed to other types of affective reactions), and the other is methodological (e.g., the emphasis on experiment and sophisticated control procedures deriving from behaviorism).

Paul Rozin has made it a priority to note some of the consequences of either methodological or substantive focus in various areas of psychology, including, in the past, ignoring the emotion of disgust and evolutionary adaptive thinking and underestimating the importance of culture, and more generally, of context (Rozin, 2001, 2002). The latter is probably a necessary consequence of the adoption of an experimental approach.

We want to develop three examples of the costs of too much focus. One comes from sensation, one from methodology in social psychology, and one, much more extended example from the study of affect and emotion, which we consider separately.

Flavor

For good reason, scientists categorize the senses. Beginning with Aristotle, all are pretty much in agreement about the particular categories. Scientists have some strong peripheral anatomical cues to help. Thus, taste and smell are considered two separate senses. However, much of the experience of taste and smell has to do with integrated experience of things in the mouth. This is sometimes called *flavor*. Flavor, of course of central importance in eating, is a seamless merge of taste and smell, such that people are unaware of the major olfactory contribution to flavor. There is almost no research on flavor because it is an intercategory. But it is central to our experience and very important to our understanding of how sensation works (see Rozin, 1982, 1996).

Social Psychology

In an understandable urge to be precise and experimental, modern social psychologists have promoted a highly refined methodology: experiments with sophisticated controls, manipulation checks, and advanced statistical analyses. All of these features are admirable and defensible. But when they become the standard, they discourage informed description, a wider focus, and a concern for contextual effects and contact with the real world (Rozin, 2001). The research presented in the *Journal of Personality and Social Psychology* is a fine example of one approach to understanding social behavior, but the journal’s prominence discourages other approaches. In particular, the field seems almost entirely concerned with doing something really clean, which may have minimal generality, rather than doing something suggestive but with broader implications. Unlike our sister and more developed discipline, biology, psychology tends to downgrade description as a valid approach and has built an experimental science before exploring the natural history that preceded the development of modern biology.

Affect: The Face and Communication

Affect has generally been discussed in the following two frameworks: as an intrapersonal phenomenon (mobilizing, attention directing, and other functions) and as an interpersonal phenomenon (as a mode of communication and bonding; noted as well by Keltner & Shiota, 2003). The intrapersonal and facial foci have predominated in the study of emotion, and this is fine. But consider one startling consequence, raised

by Keltner and Shiota (2003). Touch is surely one of the most powerful ways of conveying affect, but it really falls outside almost all studies of emotion and affect. Why? Because, unlike facial expression, touch has meaning only in interpersonal interaction. That is, the same gesture may be meaningless or powerful, depending on whether it touches someone else, who that person is, and where the touch is made. A fist in the face or a gentle hand on the shoulder conveys a great deal of emotion. The minimal unit for study is two people.

Smith (1986, 1997) has noted, in classification of signals, the distinction between signals performed by a single organism, and sometimes comprehensible through examination of a single organism, and those that are performed by more than one conspecific in interaction (which he calls “repertoires of formalized interactions”). The complications and permutations of expressive links can be daunting. We believe, for these reasons, interpersonal perspectives have been out of favor in the study of emotion. The handshake, and touch in general, falls in the interpersonal category. Fortunately, Keltner and Shiota (2003) are opening up the range of displays that have come to our attention.

The commentaries all argued for a broad approach to emotion, which we subscribe to. There is emphasis, for example, on appraisal views that liberate us from the tight categorization of basic emotions. There is, of course, great appeal to the idea of basic emotions, and it has served us well. Less salient in the commentaries, though mentioned explicitly by Keltner and Shiota (2003), is the communication function of emotion. It is ironic that Darwin (1872/1998), the main force behind the rise in evolutionary adaptive accounts, and the first person who clearly identified the powerful concept of natural selection, does not emphasize these ideas in *The Expression of the Emotions*. He mentions communication functions of emotion only in the last chapter, almost as an afterthought, and never identifies the role of communication in natural selection of expressive displays. His interest in *The Expression of the Emotions* is in the form of emotions, their origins, and their meaning, but less in their adaptive value. It is remarkable that this very salient aspect of behavior escapes an adaptive communication account. It is hard to imagine why there would be a display at all, unless it has a communicative function. If anger is supposed to mobilize the self for action, this can be done without broadcasting the fact.

Darwin's (1872/1998) focus on emotion as expres-

sion of an internal state, and on the face, is carried through to the present in psychology. The face has dominated the field, even though there are extremely important nonfacial channels, including body and hand motions (e.g., Hejmadi, Davidson, & Rozin, 2000) and vocalization (e.g., Scherer, 1986). More critically, the role of communication (essentially reduction of uncertainty) has been modest in the study of affect, even as evolutionary psychology comes to the fore. The information–communication approach to the understanding of emotion display derives from the early ethologists and is realized in full form in the work and theorizing of W. John Smith (1975). The closest to a major expression of this view in psychology comes from Alan Fridlund's (1994) book, *Human Facial Expression: An Evolutionary View*. The idea of communication, information, and reduction of uncertainty was not tangible in Darwin's time (neither was genetics) but came to the fore in the mid-20th century. But once one thinks about it, it is almost a necessary conclusion that the function of display is to reduce uncertainty or facilitate prediction, and hence coordinate social action. This is a major adaptive function. In spite of this, the excellent and dominant extension of the Darwin approach, particularly by Paul Ekman, remains face and intrapersonally focused.

The Meanings of Confusion and Concentration

The importance of the frequency of displays that suggest confusion and concentration is in their frequency and obvious adaptive value. Confusion is a signal that, as Keltner and Shiota (2003) also pointed out, one is overloaded with information and uncertain about what to do or how to act. That is a very important signal to send to conspecifics. It can lead to withdrawal by another, or, on the contrary, to the provision of additional information, such as a better explanation. Concentration, however, usually correlates with a desire not to interact (e.g., “Don't bug me now”; see Smith, Chase, & Liebllich, 1974, for a disciplined analysis of this in children, involving a tongue show). It seems to us that in a communication framework (e.g., Fridlund, 1994), the information conveyed both lubricates social interactions and aids the signaler, calling for more information or no more information (depending on the signal and the context). Of course, this depends on the fact that the concentration versus confusion signals are differentiable, either on their own or in light of contextual information. Darwin (1872/1998), in fact, suggested a possible differentiator between something like confusion and

concentration in terms of specific movements of the musculature around the eye.

Both Hess (2003) and Ellsworth (2003) made the constructive point that the expression and perhaps experience of confusion seems linked to a blockage in an ongoing program. Anger surely fits this pattern, as they and Darwin pointed out. We consider this a good and important idea, and certainly one that we did not discuss in our article. We are not sure it is correct; however, that remains to be seen. We note that these are very intrapersonal concerns. From the point of view of an adaptive–communication perspective, which we prefer, the question is: When is it adaptive to convey to others that one is overloaded with information, uncertain about how to behave, or needs assistance? Because much of display can be explained in terms of indicating one's likely behavior in the near future (Smith, 1975), it would seem natural to include confusion and concentration in the mix.

The Shortcomings of our Study and the Idea–Evidence Unit

We are aware that our study has problems, and that in the view of some excellent psychologists, these problems would be fatal in terms of publication. In our view, there are basically two types of constructive contributions to the psychological literature. The majority, and appropriately so, are definitive studies. These studies usually are of rather narrow scope, although there are some detailed studies that actually have considerable scope (e.g., in affect; Scherer & Wallbott, 1994). But, especially in light of focus, it is important to also be reminded of what is in the penumbra. There is, in our view, an important place for studies that raise new issues, often an idea accompanied by suggestive evidence. To be sure, some such ideas will fall by the wayside, as will many experiments whose subject falls out of favor or which explore an invariance that exists only in a very narrow domain. But in the process of variation and selection that characterizes almost all lines of inquiry, including science, it is important to raise issues. And, appropriately, psychologists take an issue more seriously if it is accompanied by some data, even if only suggestive. We believe our article on confusion has raised some issues, and we take the commentaries as evidence for this. We do not mean to start another debate on what emotion is. Rather, we want to encourage people in the field to look at affect broadly and explore the more frequent ways in which people signal to others and express their feelings, whatever category they fall in.

We noted in our article (Rozin & Cohen, 2003) that Ekman (1978), who is more responsible than anyone else for the focus on the face in emotion, clearly indicated that facial expression, among other forms of expression, serves many things (including communication) other than emotion. But the clear face–emotion link has been appropriately captivating. We would like to think of our article as a mild corrective.

The virtue of our study is that it highlights some things that bear attention. The quantitative information on incidence is surely to be taken with many grains of salt, as the commentators noted. We sampled undergraduate life (though participants were also encouraged to use expressions they saw on television) using untrained observers. There are indeed demand-characteristic problems. As Hess (2003) noted, there is both the problem of not asking people what emotion they are feeling should this be embarrassing (probably less likely for confusion and concentration) and the willingness of the target to frankly reveal an emotion. This is a serious problem for incidence estimation. However, we also asked our student observers to classify the emotion they saw before asking the target (and in some cases, as with television, they could not ask the target). We did not present this analysis in our article because it was so similar to the target-reported findings. This, too, of course, could be a bias. Furthermore, our students reported a distinct difference between the frequency of reported emotions in the asymmetric versus symmetric expressions. This difference, which indicates a higher incidence of confusion among asymmetric responses, could not be easily explained in terms of observer or target biases.

Ours was a first step. Given our major commitments, the psychology of food and ethnopoliitical conflict for Rozin, and religion for Cohen, it was unlikely that we would do the important and necessary follow-up to the first results we reported. We thought it would be worth communicating the findings that surprised us (note that our study was about lateralization of asymmetric emotions, not frequency of emotions), perhaps administering a little medicine for the field. In light of the commentaries, we are glad we did.

References

- Darwin, C. (1998). *The expression of the emotions in man and animals*. P. Ekman (Ed.). Oxford, England: Oxford University Press. (Original work published 1872)
- Ekman, P. (1978). Facial signs: Facts, fantasies and possibilities. In T. Sebeok (Ed.), *Sight, sound, and sense* (pp. 124–156). Bloomington: Indiana University Press.

- Ekman, P., & Friesen, W. V. (1978). *The Facial Action Coding System*. Palo Alto, CA: Consulting Psychologists Press.
- Ellsworth, P. C. (2003). Confusion, concentration, and other emotions of interest: Commentary on Rozin and Cohen (2003). *Emotion, 3*, 81–85.
- Fridlund, A. J. (1994). *Human facial expression: An evolutionary view*. San Diego, CA: Academic Press.
- Hejmadi, A., Davidson, R. J., & Rozin, P. (2000). Exploring Hindu Indian emotion expressions: Evidence for accurate recognition by Americans and Indians. *Psychological Science, 11*, 183–187.
- Hess, U. (2003). Now you see it, now you don't: The confusing case of confusion as an emotion: Commentary on Rozin and Cohen (2003). *Emotion, 3*, 76–80.
- Izard, C. E. (1971). *The face of emotion*. New York: Appleton-Century-Crofts.
- Keltner, D., & Shiota, M. N. (2003). New displays and new emotions: A commentary on Rozin and Cohen (2003). *Emotion, 3*, 86–91.
- Rozin, P. (1982). "Taste-smell confusions" and the duality of the olfactory sense. *Perception & Psychophysics, 31*, 397–401.
- Rozin, P. (1996). The flavor-fusion illusion: The psychology of flavor. *Proceedings of the Pennsylvania Manufacturing Confectioners' Association, Fiftieth Golden Anniversary Production Conference*, 47–51.
- Rozin, P. (2001). Social psychology and science: Some lessons from Solomon Asch. *Personality and Social Psychology Review, 5*, 2–14.
- Rozin, P. (2002). The value (as opposed to growth) approach to inquiry. In R. A. Sternberg (Ed.), *Successful opposition to the crowd* (pp. 191–212). Washington, DC: American Psychological Association.
- Rozin, P., & Cohen, A. B. (2003). High frequency of facial expressions corresponding to confusion, concentration, and worry in an analysis of naturally occurring facial expressions of Americans. *Emotion, 3*, 68–75.
- Scherer, K. R. (1986). Vocal affect expression: A review and a model for future research. *Psychological Bulletin, 99*, 143–165.
- Scherer, K. R., & Wallbott, H. G. (1994). Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology, 66*, 310–328.
- Smith, W. J. (1975). *The behavior of communicating*. Cambridge, MA: Harvard University Press.
- Smith, W. J. (1986). Signaling behavior: Contribution of different repertoires. In R. J. Schusterman, J. A. Thomas, & F. G. Wood (Eds.), *Dolphin cognition and behavior: A comparative approach* (pp. 315–330). Hillsdale, NJ: Erlbaum.
- Smith, W. J. (1997). The behavior of communicating, after twenty years. In D. H. Owings, M. D. Beecher, & N. S. Thompson (Eds.), *Perspectives in ethology. Vol. 12: Communication* (pp. 7–53). New York: Plenum Press.
- Smith, W. J., Chase, J., & Lieblich, A. K. (1974). Tongue showing: A facial display of humans and other primate species. *Semiotica, 11*, 201–246.

Received December 12, 2002

Revision received December 16, 2002

Accepted December 16, 2002 ■