



A comment on Prescott's call for prudence and rigor when measuring emotions



Sylvain Delplanque*

Swiss Center for Affective Sciences, University of Geneva, Geneva 1202, Switzerland

Laboratory for the Study of Emotion Elicitation and Expression, Department of Psychology, FPSE, University of Geneva, Geneva 1205, Switzerland

Prescott's article encourages sensory analysis researchers to be prudent in their ever-growing enthusiasm to measure emotions elicited by the consumption of products, and in particular, food. Many questions were raised in this article concerning the definition of emotions, the number of emotions, the individual and cultural factors modulating their occurrence and their differentiation as well as the methods used to measure them. Researchers in affective sciences have long been confronted with these questions and they make for fascinating debates (see for recent examples, Barrett, 2016; Coppin & Sander, 2016). These theoretical debates can appear overwhelming for any individual learning about affective sciences. Additionally, it is often difficult to find clear and applicable answers in sensory analysis or consumer research. The temptation to not take into account theories and methods coming from affective sciences is great. It should be noted that though the author adopts a constructivist perspective, which is not a point of view shared by all, I fully endorse his call for prudence destined to sensory analysis researchers. Moreover, I would like to contribute further arguments going in the same direction.

I would like to come back to the definition of emotion that, as the author highlights, is a central and highly debated question in affective sciences. Prescott stresses from the outset the multi-componential nature of emotions and mentions that "all emotions [have] three distinct aspects [components], namely facial expressions, internal feelings, and variations in autonomic nervous system arousal". This approach deconstructs emotion into a subset of components, which constitutes as many angles of study of emotion. Currently, many researchers in affective sciences willingly admit there are in fact five components: 1) the cognitive component that represents the evaluation of a situation and determines an emotion, 2) the autonomic component supporting the organism's physiological regulation, 3) the expressive component for the communication of reactions and behavioural intentions, 4) the motivational component corresponding to the preparation and direction of actions (e.g., approach/avoidance), and 5) the subjective feeling component that constitutes a monitoring system. However, this deconstruction of an emotion into components is only one aspect of its definition, it is important to specify the conditions to be met for its occurrence. In other words, it is recommended to

determine what causes the occurrence of an emotion, in a given individual and context in response to a given stimulation. Moreover, it is also advised that its definition should characterize what differentiates an emotion from other phenomena such as mood, preference, attitude, passion, and affect. As specified in Coppin and Sander (2016), there is a broad consensus in the literature that typically presents emotions as "brief periods of time during which several components of the organism [cited above] are mobilized in a synchronous way in response to an event considered relevant to an individuals' needs, goals, and/or values".

Such a definition of emotion can serve as a guide to adopt a (more) rigorous attitude, which the author longs for. Let us examine certain implications that could emerge from the adoption of this definition for its application in sensory analysis.

- 1) Emotion mobilizes several components of the organism. It seems unrealistic to affirm that it can be captured and measured in its entirety by studying only one of its aspects. To measure consumers' emotions exclusively through the use of emotional words, subjective scales, facial or vocal expression, physiological measures or even their brain activity does not allow us to account for the multi-componential nature of emotion. As very well exemplified by the author in questioning the use of emotional word lists, each component obeys certain structural and functional constraints and their measure is submitted to specific biases (e.g., social desirability for subjective measures).
- 2) Emotion is clearly differentiated from other affective phenomena as it is transitional and elicited by a particular object (stimulus, thoughts, etc.). This makes it distinct from mood for example, which is a longer lasting affective state that does not need a clear identifiable object. The researcher will thus avoid, for example, the use of mood questionnaires to identify the consumer's emotions, or avoid measuring emotions when he or she is interested in a change of mood induced by a product.
- 3) An emotion can be elicited once a situation is evaluated as relevant for the organism's needs, goals, or values. We therefore understand why emotional responses to a particular stimulus are not identical

* Address: Swiss Center for Affective Sciences, University of Geneva, Campus Biotech, Chemin des Mines 9, 1202 Geneva, Switzerland.
E-mail address: sylvain.delplanque@unige.ch.

from one consumer to another, from one culture to another, and even within the same individual from one moment to another. This evaluation component consists of all information processing (sensory, attentional, memory, etc.), which allows for the occurrence and differentiation of emotions. It is carried out at different levels, unconsciously as well as consciously. This evaluation also takes into account the stimulation, the individual's state, and the context in which it is presented. Theories of emotions can be differentiated based on the evaluation mechanisms of the stimulation put into place by the individual in a given context (for an overview, see Scherer, 2009). Nevertheless, since an emotional receptor does not exist, it should be accepted that a stimulation becomes emotional when an organism appraises it as such.

- 4) According to this definition, an emotion is triggered and differentiated when the goals, needs, and values of the individual are involved. This explains why it seems very difficult to measure strong quantitative and qualitative emotional differences (with scales, questionnaires or physiological measures) during the presentation of similar products. It is very unlikely that similar products engage different goals, needs, and values in a given individual in a given context (see Pichon et al., 2015 for a discussion). Sensory analysis researchers that wish to characterize different emotional responses (happiness, anger, fear, etc.) in a given individual during the consumption of similar products in the same context should ask themselves the relevance of their approach. Importantly, since emotions depend on the individual's goals, needs, and values, it seems essential to know these aspects of the consumer to characterize their emotional reactions, which was a fair point also raised by the author.

I would like to finish this commentary by bringing forth a couple of notions regarding the author's recommendation to measure valence and arousal to characterize emotional responses to products. The apparent simplicity of the concepts and measures of valence and arousal hide open-ended discussions on their definitions and organizations (e.g., Sander, 2013). For example, regarding valence, though certain stances defend that a feeling is either positive or negative, certain scholars postulate that a feeling can be ambivalent. An individual could feel

both aspects conjointly as a response to an event. If this stance is true, then it seems erroneous to request consumers to report their feeling of valence on only one axis with pleasant at one extremity and unpleasant at the other, instead of having two separate axes. The discrimination of products based on valence can then be strongly affected. As for arousal, it has not always been used in its original physiological activity framework (e.g., Fowles, 2009; Picard, Fedor, & Ayzenberg, 2016). The most prototypical example is its meaning being regularly confused with emotional intensity. While arousal is increased during intense happiness, intense sadness or a depressive episode is accompanied by low arousal. It is important that the sensory analysis researcher conceptually and practically clarifies whether he or she wishes to measure the intensity of the emotion felt or the arousal.

In conclusion, Prescott's call for prudence and rigorosity should be heard by the community of sensory analysis researchers, who will certainly need to confront the complexity of the concepts and the debates from the different schools of thought for a priceless more rigorous knowledge of emotional effects elicited by products.

References

- Barrett, L. F. (2016). Navigating the science of emotion. In H. L. Meiselman (Ed.), *Emotion measurement* (pp. 31–63). Oxford: Elsevier. <http://dx.doi.org/10.1016/B978-0-08-100508-8.00002-3>.
- Coppin, G., & Sander, D. (2016). Theoretical approaches to emotion and its measurement. In H. L. Meiselman (Ed.), *Emotion measurement* (pp. 3–30). Oxford: Elsevier. <http://dx.doi.org/10.1016/B978-0-08-100508-8.00001-1>.
- Fowles, D. C. (2009). In D. Sander, & K. R. Scherer (Eds.), *The oxford companion to emotion and the affective sciences* (pp. 50–51). Oxford University Press.
- Picard, R. W., Fedor, S., & Ayzenberg, Y. (2016). Multiple arousal theory and daily-life electrodermal activity asymmetry. *Emotion Review*, 8(1), 62–75. <http://dx.doi.org/10.1177/1754073914565517>.
- Pichon, A. M., Coppin, G., Cayeux, I., Porcherot, C., Sander, D., & Delplanque, S. (2015). Sensitivity of physiological emotional measures to odors depends on the product and the pleasantness ranges used. *Frontiers in Psychology*, 6. <http://dx.doi.org/10.3389/fpsyg.2015.01821>.
- Sander, D. (2013). Models of emotion. In J. Armony, & P. Vuilleumier (Eds.), *The Cambridge handbook of human affective neuroscience* (pp. 5–56). Cambridge: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511843716>.
- Scherer, K. R. (2009). Emotion theories and concepts (psychological perspectives). In D. Sander, & K. R. Scherer (Eds.), *Oxford companion to emotion and the affective sciences* (pp. 145–151). Oxford: Oxford University Press.