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The Future's So Bright, I Gotta Wear Shades

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Abstract

In this article I consider the future of the field of emotion. My conclusion—borrowing the title of a little-remembered song from the 1980s—is that "the future's so bright, I gotta wear shades." I begin this article by considering some of the many daunting conceptual and empirical challenges here; this is clearly not a field for the faint of heart. I then turn to some of the incredible conceptual and empirical opportunities here; there are so many it's easy to feel dizzy. In the final section, I predict that the field of emotion will broaden and become more problem focused, and hazard a "top 10" list of hot topics.

Keywords
emotion, research, theory

In this article I first consider some of the challenges associated with studying emotion. There are many daunting conceptual and empirical challenges here, and I do not recommend reading this section if you're faint of heart. In the second section, I turn to some of the many opportunities associated with studying emotion. There are incredible conceptual and empirical opportunities here, and I do not recommend reading this section if you are prone to getting dizzy. In the last section, I summarize my take on the field by arguing that all things considered, this field's "future's so bright, I gotta wear shades."[1]

(Some of) the Challenges in Studying Emotion

Conceptual Challenges

In the earliest days of psychology, William James famously asked "What is an emotion?" (James, 1884). He still hasn't received a satisfactory answer. This should give any potential (or actual) emotion researcher pause. If we can't even make up our minds about what we're studying, it seems unlikely we're going to get very far. Why is it so difficult to answer this question? The problem is that *emotion* is a heavily freighted term that was lifted directly from common language, excess baggage and all. This means that *emotion* refers to an astonishing diversity of happenings, ranging from the mild to the intense, the simple to the complex, the brief to the extended, and the private to the public (Gross, 1998). Mild irritation with a jammed stapler, intense rage at a grave miscarriage of justice, passing sadness over a wilted orchid, unremitting grief at the death of a loved one, slight amusement at a funny cartoon in a magazine, and gut-wrenching laugh-till-you-cry hilarity all count as emotions. How is it possible to meaningfully capture all of these diverse processes using a single construct?

And definitional imprecision surrounding *emotion* is only the beginning. The whole lexicon of emotion-related terms is in a bit of a jumble (or, as Ross Buck colorfully put it two decades ago, in a state of "conceptual and definitional chaos" [Buck, 1990, p. 330]). Figure 1 shows key emotion-related terms as I (and many others) would order them. Affect is at the top, and refers to valenced (good versus bad) states. There are many types of affective states, including attitudes, moods, and emotions. *Attitudes* are relatively stable beliefs about the goodness or badness of something or someone; they bias how a person will think about, feel towards, and behave regarding that thing or person (Frijda, 1994). *Moods* are less stable than attitudes, and unlike attitudes, often do not have specific objects. Changes in feeling tone are predominant, and moods seem to bias cognition more than action (Siemer, 2005). *Emotions* are the shortest lived of these three affective processes. They are responses to situations that are perceived as relevant to an individual's current goals, and consist of appraisals (or ways of construing the situation) which give rise to loosely coordinated changes in

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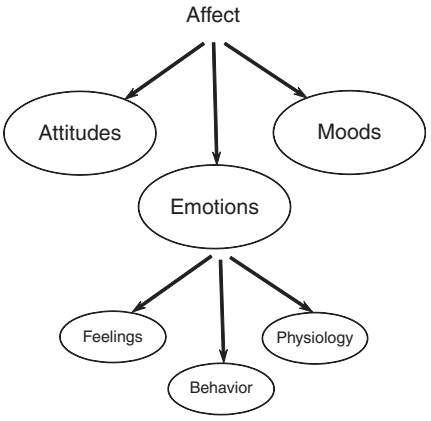

Figure 1. One way of organizing key terms in affective science.

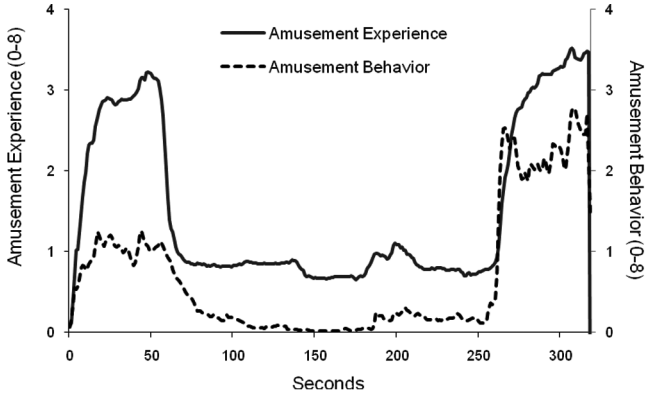

Figure 2. Emotions unfold over time, as shown in these continuous plots of amusement experience and amusement behavior during film viewing (Mauss et al., 2005). Making sense of how experiential, behavioral, and physiological responses interrelate as emotions unfold over time represents a formidable challenge.

experiential, behavioral, and physiological response channels (Levenson, 1999).

Even this basic ordering of terms is by no means uniformly accepted. To take one example, consider the term *affect.* As shown in Figure 1, I find it useful to think of affect as the superordinate category. Others, however, use *affect* to refer to the experiential aspects of emotion, two levels below my proposed placement (MacLean, 1990). Others still use *affect* to refer to the behavioral aspects of emotion, again two levels below my preferred ordering of these terms (Kaplan & Sadock, 1991).

The more one thinks about this terminological slippage, the more confused one gets. Things only get worse when one stops to appreciate the fact that although emotions appear to come and go as they wish, they are often regulated. By *emotion regulation*, I mean the processes that are engaged in order to influence which emotions people have, when they have them, and how these emotions are experienced or expressed (Gross, 2007). The reason this complicates things is that it turns out that it is very difficult to distinguish when someone is "just having an emotion" from times when someone is "having an emotion and trying to regulate it." Indeed, there are ongoing debates about just how to draw the line—and whether such a line even exists—between emotional reactivity and emotion regulation.

Empirical Challenges

So far I have suggested that it is very difficult to predict what an "emotion" researcher is actually studying because there are so many competing definitions of emotion in play. But let's assume we could decide what we mean by emotion. What do we do next? If we're ambitious, we might want to simultaneously measure as many response channels as we can to detect the occurrence of the emotion we're interested in studying. This may be done either in the field or in the laboratory. However, it turns out that catching emotions as they unfold is a bit like catching butterflies, only harder. For those interested in the natural ebb and flow of emotion in everyday life, there's the challenge of knowing when in an ongoing organism–environment interaction an emotion has occurred. Emotions unfold over time, and there is usually no clear non-emotion baseline with a clearly marked state change to an emotional state. For those who are experimentally inclined, there's the additional challenge of eliciting emotions. I suspect I'm not the only emotion researcher who has felt frustrated when research participants come into the lab smiling broadly, frowning, or looking tearful, but then say they feel nothing at all despite being plied with all sorts of carefully developed films, slides, and the like. Yet another practical challenge, should one be so lucky as to observe what appears to be an emotion, is to know what to do with all of the many response channels that you've been so carefully measuring (Figure 2). Although emotion theories postulate "response coherence," it turns out that this coherence is quite a fragile flower, and very difficult to capture and quantify (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005).

(Some of) the Opportunities in Studying Emotion

Conceptual Opportunities

The upside of all this conceptual confusion is that there is lots of room for new and exciting conceptual developments. As long as the writer is clear about what he or she means by emotion, or the facet of emotion under investigation, and as long as the reader has an open mind about what others mean when they talk about (and study) emotion, we can make good progress. The key here is to appreciate that neither the superordinate construct *affect* nor its subordinate members are neatly definable constructs that map cleanly onto unique processes. There are a very large number of possible emotional states. These are experienced in different ways by different people (Feldman, 1995), and there is significant variation in how emotions play out over time (Stearns, 2008) and across cultural contexts (Mesquita & Frijda, 1992). Why should we expect otherwise? A comparison

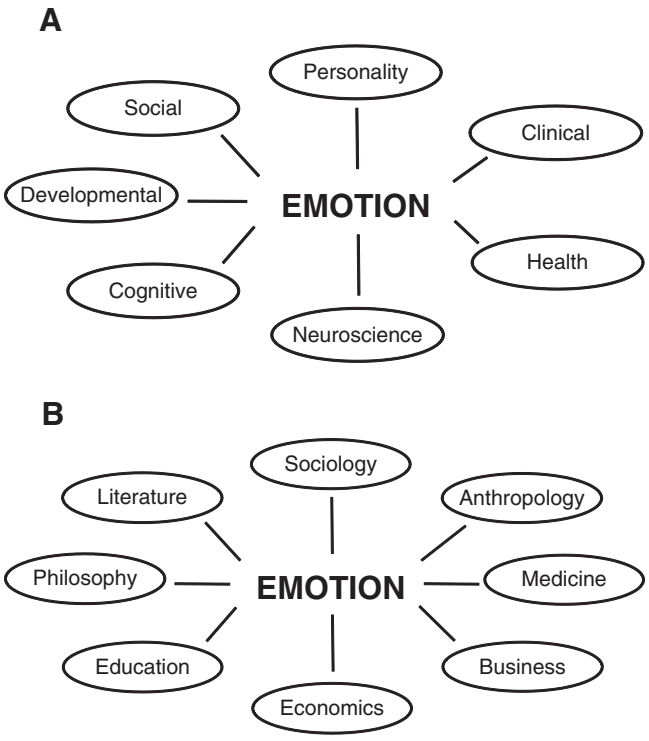

Figure 3. Panel A: Emotion is an important topic in each of the traditional subdisciplines in psychology. Panel B: Emotion is a major concern in many disciplines outside of psychology. These panels are meant to be illustrative, not exhaustive.

to the field of cognitive science is instructive. There, everyone agrees cognition is important, and sees that there are many ways to operationalize cognition. However, this doesn't seem to be slowing progress; most researchers happily focus on one or more specific aspects of cognition and get to work.

In a similar fashion, even though *emotion* is not a well-defined construct, the field of emotion is buzzing with life. Scholars are developing increasingly well-specified accounts of emotion generation (Barrett et al., 2007), and are working productively on a range of specific emotions including fear and anxiety (Ohman, 2008), pride (Tracy & Robins, 2004), and embarrassment (Keltner & Buswell, 1997). Researchers also are exploring underlying affective dimensions such as valence and activation (Lang, 1995). This excitement about emotion-related processes is evident across subdisciplines within psychology, and also across historically distinct disciplines (Figure 3). We have moved beyond sterile debates about which emotional states are "true" emotions, as well as debates about which affective dimensions are most "real" (Cacioppo, Gardner, & Berntson, 1999). We also have moved beyond broad theoretical debates about whether emotion does or doesn't require cognition (Lazarus, 1981, 1984; Zajonc, 1980, 1981, 1984), and instead we are now focusing productively on the details of cognition–emotion interactions.

This increasingly open-minded and tolerant zeitgeist is, I think, a sign of increased self-confidence as a field. It is creating a positive spiral so that new generations of emotion researchers are welcomed to the field in a variety of venues, including both stand-alone conferences such as the International Society for Research on Emotion meetings and tag-along conferences such as the annual preconference on emotion at the Society for Personality and Social Psychology. In the early days of the field, small numbers of people had primary identifications with the field of emotion. This is changing, and I believe it will continue to change, as larger and larger numbers of us self-identify as emotion researchers or affective scientists. It's a good thing, too. That's because, as psychologists are fond of reminding anyone who will listen, most of the big problems we face today have significant psychological—and more specifically, affective—components. Take the state of the environment, including global warming; intractable conflict and violence; health and disease; equitable distribution of critical resources including fresh water; education; and economic justice. These problems all involve affective responses that either do or don't support constructive engagement with these challenges. Progress requires that we model and understand emotions as they play out at the level of the individual and the group.

Empirical Opportunities

In a mutually synergistic fashion, conceptual advances have led to—and are supported by—new methods. These methods are providing emotion researchers with exciting empirical opportunities, and the pace of innovation is only accelerating. Some of these methodological advances include high-density scalp and intracranial electroencephalography, magnetoencephalography, positron emission tomography, and functional magnetic resonance imaging. Such methods are opening new windows onto emotional processes that have unprecedented temporal and spatial resolution. Coupled with advances in signal processing, these neuroimaging tools can now be harnessed to provide near-real time feedback, and a whole new generation of consumer games are becoming available that involve "mind control" of game elements. Other technologies include increasingly targeted pharmacological agents, as well as transcranial magnetic stimulation and deep brain stimulation. Using such tools, emotion researchers are tackling thorny problems ranging from emotion differentiation (Kober et al., 2008) to cognition–emotion interactions such as instructed emotion regulation (Ochsner & Gross, 2008). These tools are helping to inform discussions about how emotions differ from one another, and the degree to which different people seem to spontaneously regulate their emotions (Drabant, McRae, Manuck, Hariri, & Gross, 2009).

Although neuroscientific methods have been a major focus, many other new tools are now (or will soon be) available. Some of these tools are statistical or computational. Others are technological, ranging from physiological sensors that can be embedded in clothing to smart car systems that can intervene to shape a driver's behavior when he is too tired or angry to safely proceed. To take just one example, iphones are now equipped with GPS and audiovisual playback and capture. These capabilities promise exciting new vistas for (a) real-time recording of emotional and behavioral responses in context,

and (b) targeted and tailored interventions that can be provided in a context-sensitive fashion. There is much that we don't yet know about the many functions emotions play in everyday life, and as Rozin (2001) has convincingly argued, this kind of descriptive analysis must be a priority. All of these theoretical and empirical possibilities are extremely exciting, and I suspect there are many more opportunities just around the corner, particularly as researchers from diverse backgrounds and home disciplines converge on the field of emotion, bringing their diverse theories and methods with them.

The Future's So Bright

If whether we should do something (such as study emotion) is a joint function of (a) how difficult it is to do that thing, and (b) how important it is to do that thing, I think it's clear that the field of emotion has a bright future indeed. I am far from unique in this assessment. Growing numbers of researchers from diverse backgrounds are becoming interested in emotion-related processes, and journal submissions to new emotion-related journals (such as *Emotion* and *Emotion Review*) continue to grow rapidly.

Apart from the general prediction that emotion will be a growth industry for the foreseeable future, I see two major trends. The first is a broadening of the field of emotion research as it grows into affective science, which I believe will become a recognized subdiscipline in psychology alongside more traditional subareas such as cognitive or developmental psychology. Emotion will remain a central focus, but there will be a softening of boundaries as researchers from a variety of home disciplines employ new methods to understand the nature and functions of emotions, moods, and other affective processes. A second major trend is an increased emphasis on organizing scientific efforts around the practical problems we face, many (if not all) of which require an understanding of affective processes. As I look to the next few decades, I foresee a future in which researchers from a growing number of home disciplines will seek training in affective science so that they can become members of problem-focused teams. In this environment, I believe there will be an increased emphasis on developing theoretical and practical tools that work, and then rapidly disseminating findings to the public.

If pressed for more specific hot topics, here's my top ten:[2] (1) investigating the antecedents of emotions, moods, and other affective processes; (2) developing new tools for analyzing specific emotion-response components, as well as cross-component coherence; (3) examining bidirectional relations among emotional and cognitive processes ranging from sensation and perception through judgment and decision making to memory; (4) describing the functions of emotion-related processes in everyday life; (5) assessing patterns of stability and change in emotion and emotion regulation over the lifespan, from childhood to older age; (6) examining instructed and spontaneous emotion regulation; (7) analyzing individual differences in emotion-related processes, with an eye to genetic and epigenetic factors; (8) exploring cultural differences and similarities in emotion-related processes; (9) exploring conceptual and empirical relations between emotion and emotion regulation, on the one hand, and psychological health outcomes on the other; and (10) assessing the impact of emotion and emotion regulation processes on physical health outcomes. This is more than enough work to keep all of us busy who are interested in emotion, so don those sunglasses and let's get to work!

Notes

1 This is the title of an oddly catchy song from the 1980s by Timbuk 3.
2 This list is ordered conceptually, rather than by priority.

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