

Running Head: From BET to BECV

Inside-Out: From Basic Emotions Theory to the Behavioral Ecology View

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Abstract

Basic Emotions Theory (BET) is the most popular and deeply rooted psychological theory of both emotion and the facial behavior held to express it. We review its Western foundations and the key developments in its evolution, focusing on its parsing of facial expressions into two kinds: biological, categorical, iconic, universal “facial expressions of emotion,” versus modified, culturally diverse versions of those iconic expressions due to intermediation by learned “display rules.” We suggest that this dichotomy and its many corollaries are oversimplified, and that many of BET’s recent modifications are inconsistent in ways that may render it impossible to test and immune to falsification. In contrast, we suggest that the behavioral ecology view of facial displays, as an externalist and functionalist approach, resolves the quandaries and contradictions embedded in BET’s precepts and extensions.

Keywords: facial expressions, basic emotions theory, behavioral ecology, history of emotions, display rules

Inside-Out: From Basic Emotions Theory to the Behavioral Ecology View

All scientific theories are approximations. Within the sociology of science, it is prosaic to note that their value is not only to guide hypothesis-testing in research but to inspire research in the first place. Basic Emotions Theory (BET) as a scientific enterprise is now nearly 60 years old (e.g., Ekman & Friesen, 1969b; Izard, 1971; Tomkins, 1962, 1963). BET and its various formulations brought the study of human facial behavior from back burner to front page (Ekman, 1972, 1980, 1993; Ekman & Cordaro, 2011) (Figure 1). It led many psychologists into contact with the Darwinism of the day, and with longstanding questions about biology-culture interaction. Its unabashed promotion of emotion concepts was counterpoint to Psychology's dalliances with a "mindless" Behaviorism and the brewing, desiccated "Cognitive Revolution." Likewise, BET supporters made their findings accessible to larger audiences and bridged the gap between basic and applied sciences. BET became canonical, and its "ground truths" provided solid foundations for researchers interested, directly or indirectly, in investigations of emotions and facial expressions.¹

Insert Figure 1 about here.

BET started with a bang, and it easily rode the Zeitgeist. Illustrated studies of people's faces in exotic locales in the late 1960s captured public attention and real-world applications of BET started to emerge. Pronouncements that certain facial expressions were produced and understood identically by everyone, everywhere, suggested that military efforts to improve interrogation and detection of deception would be globally applicable (Ekman, 1985; cf. U.S. Government Accountability

Office, 2013, 2018; Vrij, Granhag, & Porter, 2011).

Although BET certainly catalyzed research, modifications and concessions mandated by new evidence, as well as findings of incomplete reportage, now leave the different mutations of BET in need of repair (Buck, 1984; Ekman, 1997, 2017; Izard, 2011; Keltner & Ekman, 2000; Keltner, Tracy, Sauter, Cordaro, & McNeil, 2016; Levenson, 2011; Matsumoto, Keltner, Shiota, O'Sullivan, & Frank, 2008; Sauter, 2017; Scarantino, 2017; Tracy, 2014).

Numerous critiques of BET have appeared since its inception, and these have focused mostly on the validity of “basic emotions,” or the weight of evidence bearing on some of its related claims (Aviezer, Trope, & Todorov, 2012; Durán, Reisenzein, & Fernández-Dols, 2017; Fridlund, 1994; Gendron, Crivelli, & Barrett, 2018; Jack, Garrod, Yu, Caldara, & Schyns, 2012; Leys, 2017; Ortony & Turner, 1990; Russell, 1994). This paper is different. It centers on the internal inconsistencies within BET that have resulted in logical incoherence and vitiated its core assumptions. Some of these problems led one of us (Fridlund) to break off from BET more than 25 years ago and propose a more workable view, the Behavioral Ecology View of facial displays (BECV; Crivelli & Fridlund, 2018; Fridlund, 1991a, 1992a, 1994, 2017a).

In the early 1990s, BECV began to offer a functional and externalist perspective based on modern theories of animal communication and biological and cultural evolution. Almost 30 years after BECV emerged as a robust alternative theory for describing and explaining human facial behavior, we believe it is appropriate to provide an account of what drove BET's ascent, along with the internal contradictions it accumulated along the way. We hope to convince the reader that BET, although it once catalyzed facial-behavior research, now constrains it, in ways that both adherents and novitiates have not appreciated. We suggest that BECV's more open framework

circumvents many of the difficulties inherent in BET, and offers the promise of new discoveries outside the strictures imposed by BET's presuppositions.

BET as an Essentialist View of Emotions and Facial Displays

We are obliged once more to begin with William James's subversive (1884) query, "What is an emotion?" To any empiricist, the quote is now an embarrassing jab. Well over a century later, there remains no scientific consensus about how "emotion" should be defined or measured, which makes debates as to how it should be categorized, or whether it can be, especially tendentious (Kagan, 2007; Solomon, 2003). One research team tabulated 92 separate definitions of "emotion," even when the search was restricted just to English-language experimental psychology papers between 1872 and 1980 (Kleinginna & Kleinginna, 1981). Those 92 emotion definitions, however, barely cover how the term has been used historically or is now bandied about in philosophy, theology, and by non-Western thinkers (Plamper, 2015).

Even given that the term "emotion" lacks consensual meaning (Kagan, 2007; Kleinginna & Kleinginna, 1981), BET supporters are not alone in believing that their own varied definitions are uniquely correct. Because the term is used and distended in so many different ways, both in and out of BET theorizing, arguments about whether or how emotion causes or relates to facial expressions are just shadow-boxing (Fridlund, 1994).²

Philosophical Origins of Separable, Numerable Emotions

Notwithstanding pre-emptive objections that vex any theory of "emotion," BET stipulates the existence of numerable, separable emotions. The beginnings of this claim lie in Western preconceptions about emotions and the nature of the Self, which can be traced at least to the Golden Age of Greece. Plato dealt with the "passions," and he cast them as forces competing with Reason (i.e., in his celebrated metaphor from *Phaedrus*,

a Charioteer, the Intellect, steered his two horses, the righteous and the impetuous Passions). It was Aristotle, though, who listed categorical passions of “anger, pity, fear, and all similar emotions and their contraries” as among the *pathé* that caused “men to change their opinion in regard to their judgments” (Konstan, 2006).

Descartes continued the Hellenic, and especially Platonic, notion of Emotion as set against Reason (Sihvola & Engberg-Pedersen, 1998). Descartes’ (1649/2015) *Les passions de l’âme* (“passions of the soul”) elaborated upon Aristotle’s system and listed six primary “passions”—*wonder, love, hatred, desire, joy, and sadness*. These passions approximate contemporary notions of “emotions.” For the dualist Descartes, the passions were perturbations in the “animal spirits” that animated the corporeal body. The passions could become sufficiently intense to traverse the metaphysical pineal divide, sabotaging the rationality of the incorporeal Soul and fomenting incivility in the material world (Crivelli & Fridlund, 2018).

Artistic Proclamations about Separable, Numerable Expressions

The Cartesian system concerned internal turbulence but not facial expression. Indeed, pre-Cartesian thought focused on facial physiognomy and character assignments, and paid scant notice to facial movements (Fridlund, 1994). The passions were tied systematically to the face by Descartes’s French contemporary, artist Charles LeBrun.

LeBrun was court painter to Louis XIV, and he came to dictate nearly all artistic mores throughout 17th century France and beyond (Browne, 1985). In a celebrated lecture to the *Académie Royale de Peinture et de Sculpture* in 1668, LeBrun prescribed the anatomically correct and appropriately nuanced facial configuration for each Cartesian passion. He depicted these using schematic heads with overlaid grids as well as finished paintings (Hogg, 2014; Ross, 1984).

These artistic prescriptions regarding emotions and facial expressions soon became conventional wisdom.³ They were integral to the 19th century *Zeitgeist* via both the biological and medical sciences, and the teleological proclamations of Natural Theology (Montagu, 1994). One proponent of Natural Theology was the 19th century English painter, physician, and anatomist Charles Bell, known best for the type of unilateral facial paralysis that bears his name. In his *Essays on the Anatomy of Expression in Painting* (1806), Bell claimed that humans possessed “a peculiar set of muscles to which no other office can be assigned than to serve for expression” (p. 121), and these were proof that “the design of man’s being was, that he might praise and honor his maker” (p. 105).

Facial Expressions as Vestiges: Darwin’s Reflexology

Originally, BET called upon the work of Charles Darwin, whose *The Expression of the Emotions in Man and Animals* (1872/1965) was a meandering though brilliantly observant overflow of notes originally intended for *The Descent of Man* (1871; see Browne, 1985). Darwin (1872/1965) set out an expression reflexology whereby most of our facial expressions were vestiges of behaviors that were ancestrally “once serviceable.” These behaviors were not Cartesian passions, but movements associated with numerous “states of mind” (e.g., *horror, determination, devotion, modesty, hunger, meditation*) that were sometimes vestigial themselves.

In Darwin’s system, if you offend me, I might sneer at you because my ancestor would have kill-bitten at your neck. My sneer is a degenerated habit passed down via Lamarckian inheritance, as is the “state of mind” that provoked it; both are weakened forms of the originals.⁴ Others might find a sneer informative, but that is not what that sneer is *for*. Indeed, for Darwin, that sneer was not “for” anything. This non-adaptationist account of expressions was forced on Darwin, who based his main defense

of natural selection *writ large* not on adaptation—this would have also supported Bell’s advocacy of Divine Creation—but on evidence of useless structures and behaviors that could only indicate descent with modification (Burkhardt, 1985). Indeed, Darwin confided to Alfred Russel Wallace that, in *Expression*, this tactic was precisely to disarm Charles Bell and his version of Natural Theology: “I want, anyhow, to upset Sir C. Bell’s view ... that certain muscles have been given to man solely that he may reveal to other men his feelings” (Fridlund, 1992b, 1994).

Socialization and Variation: Allport’s Developmental Modification of Darwin’s Reflexology

Social psychologist Floyd Allport (1924) accepted the Darwinian reflexology but added an ontogenetic superstructure. Allport proposed that our facial behavior constituted a “language of the face” wherein “in their various combinations and degrees the manifest expressions run well into the hundreds.” These expressions belonged in six categories that only partially overlapped the Cartesian six: pain-grief, surprise-fear, anger, disgust, pleasure, and “various attitudes” of neutral hedonic tone. Using anatomical drawings and engravings from several contemporary painters and photographers, Allport tabulated the exact facial movements that represented each group.

Allport did not consider the Darwinian expressive habits to be linked innately to our adult emotional and mental states. This was a frank break with Darwin’s vestigial reflexology. For Allport, the expressions predate their connections to any hedonics; those connections were acquired via early social conditioning. That conditioning, in turn, was due to our expressive habits’ producing reactions in others which resulted in reciprocal counteractions. This meant that our expressions would automatically become socially functional during development. Our facial response repertoires enlarged and

differentiated with along with the process of analogizing, as formulated in prior *mimesis* theories (e.g., Piderit, 1867; Wundt, 1897). For instance, I may be made nauseous by foul tastes and odors to start. Then, by “unconscious metaphor,” I learn to become “disgusted” by redolent ideas or actions, and these associations may become part of a culture’s aesthetic sensibilities.

Although many researchers in Allport’s time granted that some facial behavior was probably universal (e.g., startle to noise, wincing to pain), Allport (1924) stressed just how much the meanings of our facial expressions depend upon the context in which they are issued:

When we come upon an individual or a group of people expressing some strong emotion, we immediately attempt to find out *what has happened*. This knowledge at once gives significance to the otherwise chaotic mass of facial expressions. (p. 226)

Whereas this insight received support in studies by Landis (1924) and others, BET assumed nonetheless that the iconic “facial expressions of emotion” were automatic, suppressed only with great difficulty, and had meanings that were invariant and minimally context-dependent (Calder & Young, 2005; Ekman, Friesen, Ellsworth, 1972; Ekman & O’Sullivan, 1987). BET’s claim became the new regnant view until the late 1990s, when the earlier findings of context-dependency in affective attributions to facial displays were reconfirmed in multiple studies (Barrett, Mesquita, & Gendron, 2011; Carroll & Russell, 1996; Fernández-Dols & Carroll, 1997; Hassin, Aviezer, & Bentin, 2013).

Tomkins’s Primary Affects

BET’s formulation of categorical, universal emotions and matching expressions of them was cemented in the writings of Silvan Tomkins (Tomkins, 1962, 1963, 1991,

1992). Leys (2017) has detailed the development of Tomkins's theory, beginning in the 1950s. Tomkins laid out his sprawling view in four long volumes spanning 30 years, in what probably amounts to the last of the grand, personal, oracular theories of personality.

Tomkins inveighed against the prevailing Freudian drive theory, which was object-oriented (the drives were about things) and “intentional” (in a philosophical sense; i.e., they were goal-oriented). He aimed to supplant the Freudian approach by appropriating parts of the new field of cybernetics, a set of approaches toward self-regulating systems which goes back to antiquity but gained its footing in WWII research by Norbert Weiner, Alan Turing, John von Neumann, and others (Leys, 2017). Cybernetics contained the concepts of negative feedback and semi-autonomous servomechanisms, both of which facilitated wartime technical developments such as game theory and inertial guidance.

Tomkins's personal revelation was envisioning a set of “primary affects” which acted like self-contained automata, independent of cognition, inherently objectless, and “non-intentional.” As such, these affects “happened to us” rather than being within our agency or instrumentality. Consequently, the “primary affects” Tomkins presented were not only primary among the affects, they had primacy over the drives and were co-equal and concurrent with cognition (e.g., our affects might be triggered and we might or might not know why). This elevation of affect—which co-opted the same cybernetic model that was *au courant* in cognition—allowed Tomkins to strike an ancillary blow against the prevailing behaviorism that had captured Psychology and had devalued or disqualified mentation as a proper subject of study (Leys, 2017).

Despite his cybernetic turn, Tomkins endorsed Darwin's account of universal expressive habits, and re-discovered “faradic” (electrical) stimulation studies conducted

by the 19th century French physician G. B. A. Duchenne, best known for inventing the biopsy and discovering a type of muscular dystrophy. Duchenne's mechanistic creation of simulated expressions led Tomkins to a similar view of everyday ones. Tomkins postulated pre-wired "triggers" for each of his affects, and the affect automata, in turn produced distinguishable and universally recognizable facial configurations.

What were Tomkins's primary affects and how did he derive them? Like those of Descartes, Lebrun, and Allport before him, Tomkins's were pronouncements born of personal observation, especially of his young child. For Tomkins, there were eight at first: *interest, surprise, joy, anger, fear, distress, disgust, and shame*. He later added *dissembl*, or *contempt* (Leys, 2017).

BET Goes Mainstream and Toward Predictability

Fitting Passions to Expressions

The Cartesian categories did not map neatly onto Aristotle's *pathé*, nor did Allport's map neatly onto either. Tomkins, like his predecessors, added emotions purely by intuition.⁵ Thus, on the "passions" side there was little consensus regarding how many emotions there were to be expressed. Unsurprisingly, Descartes gave no formal thought to whether the "passions" would be expressed universally because his concern was how those corporeal, material passions affected the immortal and immaterial Soul. LeBrun took it for granted that the expressions he painted and prescribed reflected common humanity. Allport's theory was the exception. It granted socialization such sway that strong links between emotion and expression could not be assumed.

Darwin's writings suggested a "common humanity" to our expressive behavior but tied it to a litany of "states of mind" rather than a constrained set of "passions." Tomkins's theory appears to be the first systematic scheme that stipulated both a delimited set of emotions and a matching set of characteristic, universally produced and

understood expressions.

Ekman's Neurocultural Theory: Defining Extremes and Claiming the Middle

Tomkins's conception that facial expressions were "released" by pre-wired triggers was strikingly similar to the views of ethologists Niko Tinbergen (1953) and Konrad Lorenz (1970) from the 1940s and 50s. They regarded animals as rather hapless creatures governed by tripwire Fixed Action Patterns, and these stereotyped behavioral patterns were triggered by "releasing stimuli" that engaged Innate Releasing Mechanisms. Likewise, Tomkins's primary affects were entirely internal and evoked by external triggers, their evocation was eruptive, and they had no inherent object or action plan (again, Tomkins's affects did not imply "intentionality"; Leys, 2017).

This mid-20th century ethology—via Tomkins's writings—was concretized in Paul Ekman's Neurocultural Theory (Ekman, 1972, 1980, 1982). Ekman's approach to facial displays and emotions remains overwhelmingly the most influential and best-developed form of BET (and for the remainder of this paper, "BET" when unqualified will refer to Ekman's Neurocultural model).⁶

Prior to the 1970s the field of emotions and facial expressions was largely the domain of a small group of social-anthropological researchers, who viewed expressions as culturally situated and idiomatic like language. In his late 1960s and early 1970s writings, Ekman inveighed against these "relativists" (at times, "cultural relativists"), who "[hold] that all facial expressions are culture-specific" (Ekman, 1972, p. 240). He singled out anthropologist Ray Birdwhistell as someone who "cannot admit the possibility of universals in facial expressions and maintain his central claim that facial and body behavior is a language..." (Ekman, 1972, p. 209).

This characterization was inaccurate, as the issue was never about admitting possibilities but about which ones to emphasize. Birdwhistell (1970), like his mentors

and colleagues Gregory Bateson, Margaret Mead, and Erving Goffman, focused on the microsociology of social interaction, and he pioneered the detailed study of filmed social behavior in normal and clinical settings, at home and abroad. Birdwhistell was impressed by the cultural variation in expressions, gestures, and customs in the everyday interactions he filmed. Ekman wanted to claim universality in facial expressions, and mainly used still photos isolated from any wider context. Compared to the conventional anthropological approach, Ekman's Neurocultural Theory, albeit with all its presuppositions and stipulations, suggested a way to study facial behavior that lent itself far better to deductive hypothesis-testing and standard laboratory methods.

The stark portrayal of the “relativists” extended to the Neurocultural Theory's treatment of Darwin, who—despite his ample discussion of cultural variation in *Expression*—was rhetorically counterpoised by Ekman as a strong universalist. This portrayal underplayed Darwin's highlighting of the paralinguistic use of the face and his belief that variations among facial expressions might be as informative about culture as linguistic variations. As linguist Halszka Bąk (2016) put it, “Darwin's ideas appear to have more in common with those [of] Edward Sapir than those of later reductionist theorists of emotion who claim for themselves Darwin's intellectual legacy ... (Ekman, 1998).” (p. 29).

In the Neurocultural Theory, there were originally six iconic expressions, each produced by a “basic emotion,” with the expressions selected somewhat arbitrarily from Tomkins's nine (Colombetti, 2014). There were categorical expressions for *happiness*, *sadness*, *anger*, *fear*, *surprise*, and *disgust* (at times, *disgust-contempt*; e.g., Ekman, Sorenson, & Friesen, 1969). Determining which emotions were basic appeared simple, if circular. The occurrence of a unique, pan-culturally recognized “facial expression of emotion” by definition verified that the emitter was experiencing that emotion (Ekman,

1980). Conversely, the emotions were considered “primary” (basic) if and only if they had such expressions associated with them (Ekman, 1972, 1982). In this way, the “facial expression of emotions” became a royal road by which otherwise unobservable, subpersonal basic emotions were “read out” and “communicated.”

Having situated Darwin on one side with the relativists on the other, the Neurocultural Theory positioned itself as ecumenical. For Ekman and his colleagues, however, their studies and reinterpretations of prior literature served to “conclusively demonstrate” that “facial expressions of emotion” were biological and universal (Ekman, Friesen, & Ellsworth, 1972), with the Theory’s extreme rendering of the cultural-relativist position “substantially refuted” (Ekman, 1972, p. 210). Despite this avowal, the Neurocultural Theory attempted to assimilate cultural influence by carrying over Tomkins’s expropriation and modification of the anthropological conception of “display rules”—cultural conventions that ostensibly overrode the biological expressions (Ekman & Friesen, 1969b). This Wundtian concept was offered to explain imperfect results in the original cross-cultural studies, in which participants matched posed photos of faces to emotion terms or scenarios (e.g., Ekman, Sorensen, & Friesen, 1969).

The criteria required to confirm universality varied. For most BET supporters, greater-than-chance matches of facial expressions and later vocalizations, derived inductively, to Western emotion terms, approximated via translation, implied universality (Ekman & Friesen, 1971; Sauter, Eisner, Ekman, & Scott, 2015; Tracy, 2014; Tracy & Robins, 2004). Haidt and Keltner (1999), however, proposed a more stringent criterion beginning at 70%. Critics questioned the theoretical and methodological bases for using such arbitrary thresholds to declare the universality of a given “facial expression of emotion” (Crivelli & Gendron, 2017; Nelson & Russell,

2013; Russell, 1994, 1995). As a ready counterexample, rates of dexterity are roughly 90% in every human culture, but no one has ever claimed the “universality of dexterity;” sinistrality is accepted as consistent variation that is biological, congenital, and substantially immutable (Crivelli & Fridlund, 2018).

Although Ekman’s Neurocultural Theory attempted to incorporate roles for both nature and nurture in its account of facial expressions, it was rigid in the strict partition it made between biology and culture and the respective roles of each. Specifically, the Theory held that: (1) because of our common phylogeny, humans shared certain “facial expressions of emotion” that expressed those specific emotions, and (2) culture acted to supervene on and modify the innate, prototypic expressions (Figure 2).

Insert Figure 2 about here.

For the Neurocultural Theory, the six original, iconic “facial expressions of emotion” had phylogenetic origins and were “hard-wired” in the brain. As such, they were expressed and recognized pan-culturally, and were authentic or “felt” expressions of interior, basic emotions that erupted spontaneously and often unbidden to the emitter. In contrast were those faces that were products of ontogenesis, largely due to cultural training or tradition instantiated via “display rules.” Such rules were required to modify (e.g., mask, attenuate, dissimulate) the authentic, unruly emotional expressions that might disadvantageously erupt in public. The Neurocultural Theory’s use of dramatic, even “cartooney” posed expressions in so many of its studies followed directly from the Theory itself. The assumption was that because public expressions were typically under cultural constraints, those poses “in their very caricatural intensity are among the best examples we have of what we would be like if we were alone” (Leys, 2010, p. 77). The

Theory's partition (Figure 2) was parsimonious, but unfortunately, it engendered inattention to other possibilities. As we shall see, culture can be a source of commonality, and biological inheritance a source of variation (Crivelli & Fridlund, 2018).

The Neurocultural Theory Becomes A Moving Target

Following the original exposition of the provisions of the Neurocultural Theory (Ekman, 1972), the theory has shifted in major ways. We grant, of course, that all theories should change with the evidence, but from our careful reading of BET writings, changes to the Neurocultural Theory and its variations have not been evidence-led. Rather, new arguments have replaced older ones with little or no discussion as to what new reasoning, or new evidence, justified the changes.

The problem of *qualia*. Particularly problematic among BET's criteria for "emotion" is emotional *experience* or "feelings." Most emotion researchers recognize that *qualia* cannot—yet, and philosophically perhaps never—be verified empirically. Consequently, such researchers cope by using three end-runs around the problem. First, participants' testimony about their experience is used as a proxy, and leveraging a journalistic metaphor, that testimony is then termed "self-report." Second, experimental conditions are arranged which the researchers believe will produce the desired *qualia*, with "verification" provided by end-run #1. Finally, some internal or external physiological activity is used as a proxy (e.g., limb movements, blushing or blanching, heart rate, EEG or fMRI activity), with the choice of measure stipulated theoretically and "verified" by concurrent results from end-runs # 2 and/or #1.⁷

One BET proposal grounded in *qualia* was advanced by Ekman and Friesen (1982), who used them to distinguish different kinds of smiles:

... Another confusing matter is the role of smiling when people lie about

their feelings. Can the true smile be distinguished from the false? Or, are people misled by smiling expressions, unable to tell how someone really feels because of smiling? (p. 240)

Anchoring any distinction in *qualia* is always tempting but empirically unworkable. Ekman, Davidson, and Friesen (1990) believed they had found a surrogate for *qualia* when they suggested the concepts of “true” or “felt” versus “false” or “unfelt” smiles. Smiling with wincing was named the “Duchenne smile.” Such Duchenne smiles, because they were supposedly involuntary and could not be faked, were therefore authentic and “felt.” “Polite” or appeasing smiles, however, were often voluntary and so had to be false and “unfelt.” This distinction, though unprovable because it was based on *qualia*, continues to be accepted uncritically by many contemporary researchers (Matsumoto & Willingham, 2009; Niedenthal, Mermillod, Maringer, & Hess, 2010; Rychlowska, Cañadas, Wood, Krumhuber, Fischer, & Niedenthal, 2014; cf. Fernández-Dols & Carrera, 2011; Fernández-Dols & Crivelli, 2013).

Ekman et al. (1990) provided no discriminant validation of their Duchenne-smile hypothesis, and so the inevitable difficulties with their formulation surfaced in later research. Dichotomizing smiles into “true” versus “false” depending on whether the emitter was happy not only turned everyday courtesy into mendacity, but it also produced puzzling paradoxes when new evidence was gathered (Fridlund, 2017b). First, the supposedly authentic Duchenne smiles could be readily faked. Second, these smiles occurred equally along with “non-Duchenne” smiles under conditions when “happiness” was and was not expected. Finally, Duchenne smiles were produced with intense but unpleasant stimulation. Fridlund (1994) had earlier suggested that wincing was not a marker of *qualia*, but of response intensity regardless of hedonics, and this

suggestion appears confirmed.

The shifting sands of basic emotions. The most basic shifts occurred in the number of emotions that were considered “basic.” The difficulties in pinpointing what made an emotion “basic” began early, and they were, and are, readily understandable given that “emotion” itself remains consensually undefined. Illustrating the problem, Ekman and Friesen gave conflicting lists in two papers published the same year. Ekman, Sorenson, and Friesen (1969) listed and used cross-culturally the six basic emotions we noted above, whereas Ekman and Friesen (1969a) included *interest* in their list of “seven primary affects states” (p. 97).

We have searched for some discussion of what led Ekman et al. to place “interest” on one list and not the other (for the arbitrary origin of the six initial “basic emotions,” see Colombetti, 2014). Perhaps a deeper issue was at stake: how did Ekman et al. conceive or reconceive *emotion* such that the lists differed? In those early writings, we found that Ekman et al. (1969) used the terms “emotion,” “affect,” “emotional states,” “primary affect” and “affect states” interchangeably, and we found no definitions or usages that allowed clear distinctions among the terms.

The early 1990s saw unprecedented challenges to BET. Ortony and Turner (1990) disputed the integrity of the “basic emotions” concept. To its credit, BET researchers responded by issuing lists of inclusion criteria to indicate what constituted emotions and particularly “basic emotions.” Unfortunately, these lists of criteria were not only imprecise, their construction appeared *ad hoc*, and some evidence for that conclusion lies in the rapidity with which they changed (Bağ, 2016, p. 39). To our knowledge, matching *exclusion* criteria (i.e., what specifically would rule out emotion, or a particular emotion) have never been stipulated, rendering any definitive classification unworkable. Equally important are lists of inclusion and exclusion criteria for

verification of emotion, or a particular emotion, as it occurs or does not occur in real time. These efforts, too, have foundered (Durán et al., 2017).

Normally, one would hope that the list of criteria for basic emotions *would* change to accommodate new evidence or argument, either that certain criteria were unjustified and deserved omission, or missing and deserved inclusion. We have been unable to find among BET writings such analytical treatment of the grounds by which the lists of criteria were altered *and* the previous criteria were found unsuitable.

Moving beyond six basic emotions. The list of “basic emotions” naturally contracted and expanded with the ever-changing inclusion criteria, and some recent BET supporters have claimed to “reveal” new basic emotions by altering the fundamental BET criteria that defined them (Ekman & Cordaro, 2011; Keltner & Cordaro, 2017; Keltner, Tracy, Sauter, Cordaro, & McNeil, 2016; Sauter, 2017; Tracy & Randles, 2011).

Some recent pronouncements of “new” emotions have been accomplished by discarding Ekman and Friesen’s (1975) dictum that a characteristic facial expression was definitive for an emotion. For Ekman and Friesen (1975), bodily activities like postures, gaze direction, and self-touching did not indicate emotion but efforts to cope with emotion; as such, those activities could not be criterial.

Ekman and Friesen’s reasoning has, without any suitable scholarly discussion, been bypassed repeatedly by current BET supporters, mostly on utilitarian grounds. Keltner and Cordaro (2017) proclaimed that “the scientific study of facial expressions has moved significantly beyond static portrayals of six emotions,” and that “focusing on more modalities than facial expression alone has enabled the *discovery* [italics ours] of new emotional expressions” (p. 59). But such redefinition in order to “move beyond” existing criteria may not be justified. One does not increase the number of dog breeds

by including cats unless there is evidence or argument to justify grouping the two.

Finding “new” emotions and expressions. BET researchers have engaged with the current positive psychology movement and announced the “discovery” of expressions for the so-called self-conscious emotions (e.g., shame, pride, guilt) and some positive ones (e.g., love, compassion), which they suggest have special relevance to health, well-being, personal development and even ethical actions, cooperative societies, and “global compassion” (Dalai Lama & Ekman, 2008; Keltner, 2009; Keltner, Marsh, & Smith, 2010).

The hypothetical expression of “pride” presents familiar criterial issues. One team of BET researchers proposed that a “head up, eyes down” posture signified pride (Keltner & Cordaro, 2017; Shiota, Campos, & Keltner, 2003). In contrast, another BET team argued that the “universal expression of pride” included an “expanded posture,” backward head tilt, arms akimbo, and smiling without wincing (Tracy, 2016; Tracy & Robins, 2004). These two purported expressions were wholly different but both were suggested to be phylogenetic and universal.

Nothing in biological or cultural evolutionary theory precludes two pride displays, but we have found no serious discussion among BET researchers regarding whether this is so, and if so, how both evolved and when or where they each might occur. Both BET research teams assume phylogenetic origination of their iconic and universal representations of pride. However, the only feature common to these two prototypes of “pride”—the head tilted back—may easily arise ontogenetically from “look at me” gestures directed toward caretakers by children (Fridlund, 2018). Here again, neither Keltner nor Tracy took time to consider Ekman and Friesen’s (1975) stipulation that a distinctive facial expression was prerequisite for such a “basic” emotion as pride. We observed a similar silence on this issue from Keltner and Shiota

(2003) in their response to a litany of suggested new emotions proposed by Rozin and Cohen (2003).

We are not judging the validity of Ekman and Friesen's (1975) declaration, of course, only the inattention among BET researchers toward it. This state of affairs might lead cynics to conclude that BET has evolved more by successive proclamations than new evidence or argument. Yet another patent example returns us to recent disavowals by BET proponents of *qualia* as essential to definitions of emotion (Beck, 2015; Ekman, 2017; Keltner & Cordaro, 2017). Although Ekman and Friesen's felt/false smile distinction was "anchored" in *qualia*, Ekman (cited by Beck, 2015) stated, "If [self-report] is the method that's used, I won't read the article." Following a similar disavowal, Keltner announced the "capture" of 27 new "distinct categories of emotion" based neither on facial expressions nor bodily actions, but solely on self-report (Cowen & Keltner, 2017). By our reading, Keltner did not square the position he advanced in Keltner and Cordaro (2017) with the seemingly contradictory one he relied upon that same year in Cowen and Keltner (2017).

In sum, despite the many inconsistencies entailed in these recent announcements, relevant BET supporters lauded their own findings of "new" emotions as powerful extensions to both Darwin's *Expression* and Ekman's Neurocultural Theory (Keltner, Tracy, Sauter, Cordaro, & McNeil, 2016). As we shall see when discussing BECV, such extensions (e.g., Keltner & Cordaro, 2017) are destined to fail because they are based on superseded theories and conceptualizations of animal communication and evolutionary biology (Al-Shawaf, Conroy-Beam, Asao, & Buss, 2016; Fischer, 2017; Richerson & Boyd, 2005; Waller, Whitehouse, & Micheletta, 2017).

BET's Twin Escape Clauses: Blends and Display Rules

Two BET concepts have lent it an unusual ability to accommodate evidence that

departs from its own predictions. Critics might term these “escape clauses,” and they have accompanied all stages in BET’s evolution. They are the notions of “blends” and cultural “display rules.” It appears from BET writings that both are used to account for shortfalls and unpredicted results in BET research, as well as to claim relevance to applied science (Ekman, 2016; Martinez, 2017; Matsumoto, Frank, & Hwang, 2013). We believe and hope to show that both these conceptions are *ad hoc*, and likely make certain BET predictions unfalsifiable.

Blends. According to the Neurocultural Theory, and taken most directly from Tomkins, everyday facial expressions need not always look like the prototypical six “facial expressions of emotion” because people might have “blended emotions” (Ekman, 1972, 1973; Ekman & Friesen, 1975). According to this proviso, such blended emotions may consist of conflictual emotions (the happiness and sadness of Schadenfreude or Gluckschmerz), or a transition from one emotion to another (fear turning to anger). These blended emotions would produce blended or “compound” faces in predictable ways, as explained by an additive model in which the basic-emotion constituents would be identifiable within the expression as a whole as either concurrent or diachronic composites. This approach is not exclusive to BET. Other affect theories have relied on a similar additive approach (for review, see Ortony & Turner, 1990), and one team of AI researchers used an additive model to accommodate the variety of everyday human facial behavior (e.g., Du, Tao, & Martinez, 2014).

The first problem with the “blend” model is conceptual, in that it, like prior uses in disciplines such as personality psychology, relies on circular reasoning by confusing relationships with properties (Boag, 2011). Thus, according to the additive “blend” model, facial behavior *X* is explained by its assumed corresponding emotion *Y*, which in turn can be verified solely by the occurrence of behavior *X*. Thus, in BET, facial

behavior F_1 is an “expression” of emotion E_1 , F_2 of E_2 , etc. Then, if we see facial behaviors $F_1 + F_2$, then within BET we must conclude that the person is “having” emotions $E_1 + E_2$. How could we conclude otherwise? Yet how could this conclusion ever be justified when the presence neither of E_1 nor E_2 can be verified independently, much less together?

Indeed, to date, we have seen no reliable evidence that admixed expressions can be decoded reliably into admixed emotions, nor that admixed emotions are reliably encoded into additively admixed expressions. The same conceptual and verifiability problems plague the popular, and popularized, notion of “microexpressions” (Matsumoto, Frank, & Hwang, 2013), transient partial expressions that supposedly reflect fleeting or “masked” emotions. We have seen no evidence that such transient facial movements either reliably encode, or can be reliably decoded to, suppressed or fleeting “emotion” (cf. Durán et al., 2017). In contrast, BECV regards these extraneous movements as incipient or conflict behaviors, commonly observed in numerous animals under conditions of conflict or ambivalence (e.g., Fridlund, 1994). Such explanation requires no recourse to BET’s version of Ryle’s ghost—subpersonal events like “masked emotions” that are undefinable and therefore unverifiable—but are nonetheless granted causal potency.

Display rules. The second overexplanatory exception to BET’s claim of prototypic, evolved “facial expressions of emotion,” was to grant from the outset that these iconic expressions were rarely observed. BET’s explanation was that these expressions were nearly always modified by culture before they could erupt on the face. Indeed, because these expressions were vestigial, Darwinian eruptions, we *had* to manage them preemptively in order to live civilly (Ekman, 1972). Thus, to make the claim that “facial expressions of emotion” were produced uniformly and recognized

universally, BET immediately had to incorporate a mechanism that accommodated failures to support it.

The Neurocultural Theory contained the postulate that social and cultural learning somehow intermediated the neural outflow to the facial muscles before the muscles actually contracted. The result was the mitigation, distortion, curtailment, or masking of the prototypical expression *en passant*.⁸ This “interference system” constituted a set of display rules that insured, and explained, variation in facial expressions among cultures (Ekman, 1972). It also was used to explain low to moderate agreement scores in “recognition” studies. Consequently, facial expressions were universal signals of emotion, but sometimes they were not.⁹

In the first BET cross-cultural study conducted with indigenous societies, displays rules were invoked *ad hoc* to explain lower-than-expected emotion label/photo matching (“recognition”) scores (Ekman, Sorensen, & Friesen, 1969). There was no evidence available to support this claim, nor did the authors ever entertain the possibility that display rules might instead explain *high* matching scores. This same apparently *ad hoc*, one-sided use of display rules has been repeated in cross-cultural tests of the universality hypothesis in industrialized (e.g., Matsumoto et al., 2002) and non-industrialized societies (Tracy & Robins, 2008).

Experimental evidence to confirm the existence of cultural display rules was sought in the study that comprised Wallace Friesen’s unpublished Ph.D. dissertation (Friesen, 1972; see Fridlund, 1994, for exposé and critique, and Leys, 2017, for further analysis). Friesen, under Ekman’s supervision, compared American vs. Japanese college students who watched stressful films in three conditions: (1) alone, (2) while viewing with an experimenter, and (3) in a third, divided-attention condition wherein the students were interviewed while simultaneously re-viewing the films. Thus, there was

one “solitary” condition and two “social” conditions; as such, the conditions straddled both sides of the Neuro-Cultural partition (Figure 2).

As Ekman (1984) consistently interpreted the findings, “in private, when no display rules to mask expression were operative, we saw the biologically based, evolved, universal facial expressions of emotion...In a social situation, we had shown how rules for the management of expression led to culturally different facial expressions” (p. 321). This interpretation masked the actual results. Only in the Divided-Attention condition did the Japanese and American faces show the differences Ekman described (“masking” of negative faces by smiles among the Japanese). In the other, more purely social co-viewing condition, the faces of the two groups were similar, as they were for solitary viewing.

Unfortunately, Ekman (1972, 1973, 1980, 1985) repeatedly omitted key details of the experiment in his re-tellings, reporting the existence of only two experimental conditions and thereby obscuring the results of the two social ones. He consistently reported the cultural differences observed in the third, divided-attention condition as belonging to the more purely social co-viewing second condition, where there were no such differences. Thus, Ekman was able to present the contrast as a solitary one, when display rules were inoperative, vs. a social one, in which they were. Ekman only recently wrote about the missing second, mere co-viewing condition.

In Ekman’s (2017) response, he admitted to the previously undisclosed condition, but again misreported the conditions participants faced (enumerations ours):

After [1] watching the films alone, they were then [2] interviewed by a graduate student (dressed in a white coat to enhance his authority), and then [3] watched the stress films in the presence of that authority figure... It is only when they were viewing the very unpleasant films

with the authority present that the differences emerged (p. 48)

Of course, this is not what Friesen (1972) reported in his dissertation. Cultural differences in faces emerged not in solitude, nor in the following social condition of mere co-viewing, but only in the final condition, a divided-attention one during which the interviewer questioned the participants during a final replay. Ekman (2017) wondered why Fridlund (1994) hadn't regarded "the similarity when being interviewed as further evidence of universality" (p. 48). The answer is patent. The contrast Ekman (1972) posed was between solitary and social conditions; the null finding of no cultural differences in the social, mere co-viewing condition does not constitute *ad hoc* and *post hoc* evidence of universality, but a failure of the experimental prediction.

In our review of the relevant literature, it appears that, despite the fact that all three conditions were revealed over 25 years ago (Fridlund, 1991a, 1994), other BET researchers have inexplicably repeated Ekman's incomplete version of the Japanese-American study. Ekman's recounting still prevails among contemporary users of the display-rules construct (e.g., Matsumoto & Hwang, 2013; Matsumoto, Willingham, & Olide, 2009). For instance, Matsumoto and Hwang (2013) stated, "their existence [display rules] was demonstrated in Friesen's (1972) study, in which the Japanese were more likely than the American participants to mask their negative emotions in the presence of a higher status experimenter but not when alone" (p. 356).¹⁰ This flawed account has been repeated in emotion handbooks and reviews by BET and non-BET researchers alike (e.g., Elfenbein & Ambady, 2002; Keltner & Ekman, 2000; Martin & Carlson, 2019; Matsumoto, 2001; Niedenthal & Ric, 2017; Parkinson, Fischer, & Manstead, 2005; Shiota & Kalat, 2017). As we shall see, it has permeated many Psych 1 textbooks as well.

Misreporting aside, in hindsight it is clear that the study could never have

succeeded. The reasons lie in how “cultural display rules” were defined. Specifically, any determination of their operation would require that: (1) individuals from different cultures have the same emotions but produce different faces, (2) the facial expressions would be identical in their neurological instigation but modified in their final expression, and (3) those differences in faces result not from biology but enculturation. None of these requirements was satisfied in the Japanese-American study, and we suggest that none could be.

Verifying the first condition may be impossible because emotion is not consensually definable or measurable. Even stipulating this, it is nearly inconceivable that individuals from two cultures, with different understandings of the conditions of measurement, would have identical emotions within those conditions. Japanese and American students can be expected to differ not only in their facial expressions, but also in their attitudes to authority, their approaches to being experimental participants, and their different perceptions of what it means to watch a film alone and then with another person. All these differences would be expected to affect the participants’ emotions differentially. Without equal emotions between the two cultures (and how would equivalence ever be established?), differences in their faces cannot be attributed to intervention by cultural display rules.

The second claim of neurologically identical instigation with “downstream” modification may be impossible to verify because we currently know of no way to detect and discern unmodified vs. modified expressions before either appears on the face.

Finally, verifying the final predicate of cultural origination may be just as dubious, given that we cannot trace the exact origins of any individual’s facial expressions, and those origins will always result from complex interactions of biology

and culture (Fridlund, 1991a, 1994; Leys, 2017; Whiten, Ayala, Feldman, & Laland, 2017).

The last point on origins is telling. It corroborates BET's dated and restrictive view toward nature and nurture. BET always envisaged culture as diversifying and evolution as unifying. This construal was simple, and it provided an easy rubric by which to assign roles to both. As modern evolutionary theory progressed, the interactions between natural and cultural selection now appear much more complex than BET ever allowed (Richerson & Boyd, 2005).

The Match Game, or Procrustes Revisited

Darwin (1872/1965) conducted the first cross-cultural research on facial expressions to ascertain commonalities among humanity's expressions. In postal contact with his English correspondents all over the world, Darwin sent them survey questionnaires which asked about what faces the local peoples made when they were possessed of certain "states of mind." Darwin did not schematize either the expressive habits or their associated elicitors. He just noted the reports of his correspondents, one after another, in successive chapters of *Expression*, including nearly thirty "states of mind" (e.g., anxiety, dejection, despair, sulkiness, tenderness, devotion, hatred, anger, surprise, fear, shame, shyness). Some of these, Darwin suggested, elicited inherited habits that were comprised not of faces, or faces alone, but of postures or autonomic signs (e.g., blanching, blushing). Darwin contended that the majority of these habits was "common to all the races of mankind," a phrase he repeated throughout *Expression*.

Darwin's cross-cultural research was groundbreaking, but it was mostly anecdotal. Both the reports of expressive behaviors and their associated "states of mind" were based on testimony by Englishman who presumed to know the ethnographies of the cultures on which they informed Darwin. The possibilities for distortion are

manifold (Crivelli, Jarillo, & Fridlund, 2016; Medin & Bang, 2014).

Darwin proceeded with a more structured inquiry. He conducted a “free-response study” using standard faces, with participants free to give any description of each face (for a detailed description of this study, see Snyder, Kaufman, Harrison, & Maruff, 2010). Darwin, who had corresponded with Duchenne and obtained rights to reproduce some of his roughly 60 photographs of faradically stimulated faces, intuited which of these looked “the most characteristic” (see letter to Dr. James Crichton-Browne, cited in Snyder et al., 2010). He settled on 11 photos and compiled lists of the responses to each made by 24 houseguests at his Down House residence. Such free-response methods were extended by Langfeld (1917) and Allport (1924).

Darwin’s home study was single-blind, used poses he preselected, and assayed largely English participants. It is debatable whether it could have been more informative than his prior surveys. How, then, did BET hope to verify its claims that humans worldwide experience the same emotions, and then express them the same way? Despite methodological attempts to address the problem of equivalence (Matsumoto & van de Vijver, 2011), we return yet again to the trivial observation that this question is empirically unanswerable because *qualia* remain unverifiable.

BET researchers attempted to bypass this issue by employing simple matching-to-sample studies in which proxies were substituted for both the emotions and the expressive behaviors. Typically, still photos of faces substituted for facial behaviors *in situ* as per Darwin, Langfeld, and Allport. Now, restricted lists of emotion words—typically the same numbers as the faces—substituted for the emotions. The emotion words were always selected from the English lexicon by the Western researchers and then translated if necessary for the field. The face photos were best-guess matches to those words, as selected by those same researchers. In a kind of circular but perhaps

inescapable logic, “matches” between the emotion terms and the still photos were taken to confirm the “basicness” and “universality” of both: (1) the facial behavior freeze-framed by the photos, and (2) the emotions “read out” by them.

The direct forerunner of the “famous” BET studies used a design similar to that devised by Allport 40 years earlier (Allport, 1924, p. 223). Tomkins and McCarter (1964) conducted a matching-to-sample study in which participants matched photos of posed facial expressions to words representing each of Tomkins’s primary affects. Like Darwin, Tomkins picked the photos to represent prototypical exemplars of each affect, and then provided names for the affects, so the result unsurprisingly was self-confirming (Russell, 1994).

This type of study, with its more-or-less foregone conclusion, became the template for the studies that first popularized BET: the cross-cultural matching-to-sample studies conducted by Paul Ekman and Carroll Izard (Ekman & Friesen, 1971; Ekman, Sorenson, & Friesen, 1969; Izard, 1971). The photos were said to be of “emotional expressions,” and matching scores for photos to either emotion terms or stories were termed “recognition scores,” because participants were assumed to have recognized emotion “in” the faces rather than having picked among forced-choice ascriptions. The methods used and evidence gathered in small-scale, indigenous societies lent the status of “settled science” to BET since the 1970s (Matsumoto et al., 2008; Keltner & Ekman, 2000; Keltner et al., 2016), but such studies are now under fire for making these assumptions and a host of other issues. Most telling are contrary findings obtained by testing participants from small-scale societies, or by using psychophysical methods to model mental representations of those facial displays labeled “expressions of basic emotions.”

New evidence gathered in African and Melanesian societies, using more

sophisticated and diverse research designs and rigorous data analytical techniques, did not confirm the BET proposition that humans pan-culturally “recognize” basic emotions from the predicted “facial expressions of emotion” (Crivelli, Jarillo, Russell, & Fernández-Dols, 2016; Crivelli, Russell, Jarillo, & Fernández-Dols, 2016; Crivelli, Russell, Jarillo, & Fernández-Dols, 2017; Crivelli, Jarillo, Fernández-Dols, & Russell, 2018; Gendron, Roberson, van der Vyver, & Barrett, 2014). Moreover, agnostic, data-driven psychophysical methods (e.g., reverse correlations) used with educated European and East Asian college students failed to support BET’s claim of the universality of “facial expressions of emotion” (Jack, Garrod, Yu, Caldara, & Schyns, 2012; Jack & Schyns, 2017).

BET Goes Ev-Psych and Swaps Emotion Concepts

BET initially espoused the early “passion” view of emotion. The “Facial Affect Program” of the Neurocultural Theory (Ekman, 1972) fired off patterns to the face keyed to our emotions, and those spontaneous, eruptive patterns were indicants of our reflexive predispositions (i.e., Darwin’s Principle of Serviceable Associated Habits; Darwin, 1872/1965). However, those displays were now vestigial, and we needed cultural display rules to mitigate them (Fridlund, 2017a).¹¹

Directly following attacks on the “basic-emotion” concept spearheaded by Ortony and Turner (1990), and on the reflexology of Darwin’s *Expression* by Fridlund (1992b), the Neurocultural Theory began to discard its foundation in Darwin and adopt a replacement view of emotion (Ekman, 1992), an evolutionary-psychology view propounded by Tooby and Cosmides (1990). On this view, reminiscent of early 20th century functional accounts, emotions were no longer vestigial reflexes that produced eruptive faces; they were organized, strategic motivations that arose in our Pleistocene “Environment of Evolutionary Adaptedness” (EEA). Thus, in earlier versions of BET,

cultures had to evolve display rules to manage our troublesome vestigial Darwinian expressions. In Ekman's post-1992 version of BET, expressions were not strictly once-serviceable, but may be serviceable *now*.

Although it is understood within the Tooby-Cosmides formulation that what evolved in the hypothetical EEA may not be currently adaptive (in a reproductive sense, necessarily), we have found no demonstration that any facial display, or set of displays, has measurable reproductive repercussions. Thus, arguments about the “adaptiveness” of emotions or their expressions have tended to be the “it makes sense that evolution would have” variety, drawn not from natural history but our speculation about it from our current point of retrospection (e.g., Tracy, Randles, & Steckler, 2015). Nonetheless, arguments that facial displays *are* adaptations (e.g., Schmidt & Cohn, 2001) have major implications for BET theorizing, because they undercut the need for cultural display rules, unless one speculates that they were adaptations but are no longer, which is a reversion to Darwin's position in *Expression*.

Most of the current theoretical confusion comes from BET supporters using facial displays (i.e., overt behaviors) as proxies for emotions, which, again, are consensually undefinable. Thus, defining emotions as “adaptations to solve everyday problems” leads many BET researchers to assume that the “expressions” of those emotions are part of those problem-solving adaptations (e.g., Shariff & Tracy, 2011). For Al-Shawaf, Conroy-Beam, Asao, and Buss (2016), an evolutionary account need not imply that if emotions are “evolved solutions to problem-solving tasks,” then they must have distinctive, universal signals.¹² And if emotions are adaptations to “solve everyday problems,” the Tooby-Cosmides view offered no distinction between emotion and other traits that evolved to aid problem-solving, such as intelligence, attention, motivation, and muscular coordination. Nor did it provide any basis for restricting

telltale facial expressions just to “emotions.”

BET Faces the New Millennium

The Demise of Display Rules

In the early 1990’s, new findings began to show that people’s facial behavior was altered not only by those who were physically present, but also by those believed to be nearby or imagined to be present (see review by Fridlund, 1994, and detailed discussion below). The demonstrations of these “implicit audience effects” had unanticipated ramifications for the BET notion of “cultural display rules,” which relied crucially on presumptions about solitary faces (Fridlund, 1991b, 1994). The new evidence on implicit audience effects showed that sociality impacted even solitary behavior, undermining Ekman’s assertion that his solitary condition was, by its nature, culture-free. How could the Neurocultural Theory accommodate these findings when culture, via display rules only influenced public facial behavior?

To his credit, Ekman (1997) presented a breathtaking change to the Neurocultural Theory, whose importance was first noted by historian Ruth Leys (personal communication to A. J. Fridlund, March 4, 2015). In perhaps the most significant change since the Theory’s inception, Ekman suggested:

“I expect that some display rules are so well established that some people may follow them even when they are alone. And some people when alone may imagine the reactions of others, and then follow the appropriate display rule, as if the others were present. And finally, there may be display rules that specify the management of expression not just with others but when alone” (p. 328).

As Leys also discovered (personal communication to A. J. Fridlund, September 2, 2015), the seeds of this development were evident in the Neurocultural Theory as

early as 1982, when “miserable smiles” were noted among solitary participants yet, with no evident awareness of the contradiction, were still considered “masking” social faces (Ekman & Friesen, 1982; for discussion, see Leys, 2017, pp. 188-119).

This dramatic admission solved one problem, but it opened up far bigger ones. It offered no method by which to ascertain when such solitary display rules were in effect and when they were not. Furthermore, the social-solitary contrast on which the Japanese-American experiment relied now afforded no solution.

There were bigger implications than verifiability. Prior to this change, Ekman contended that solitary facial behavior was free of display rules, and the viability of the only empirical evidence for cultural display rules depended on this premise. With Ekman’s expansion of BET to include solitary display rules, could it now be certain that the solitary faces observed in the Japanese-American study were display-rule-free and thus “biologically based, evolved, universal facial expressions of emotion”? If so, how would that be verified? Thus far, neither Ekman nor other BET supporters have offered any way to answer this question. Thus, researchers who use “cultural display rules” as a default explanation for cultural variation in facial displays appear to have lost their only evidence to support that claim.

In the face of Ekman’s (1997) own undermining of the Japanese-American experiment and its status as the only empirical evidence for display rules, what has happened to BET’s position on them? Our reading suggests that “display rules” are still widely studied within BET. Likewise, the misreporting of the Japanese-American experiment and BET concept of display rules proceeds not only within professional outlets, but it remains standard fare in most introductory psychology textbooks (e.g., Berry, Poortinga, Breugelmans, Chasiotis, & Sam, 2011; Gilovich, Keltner, Chen, & Nisbett, 2016; Martin & Carlson, 2019).

How have “display rules” survived when the evidence for them has been vitiated? Just as we observed earlier with the shifting criteria for “basic emotions,” the display-rules enterprise has thrived because of a shift in the definition of display rules themselves. Display rules within BET are no longer studied as neurological mechanisms that intermediate the eruption of expressions. They are *perceptions* of what behaviors different cultures permit and disallow, as judged by the self-reports of individuals within those cultures. The result of this wholesale redefinition is a proliferation of questionnaire-based, correlational surveys that rely on popular, yet problematic, cross-national value scales (e.g., Koopmann-Holm & Matsumoto, 2011). By our reading, this fundamental redefinition of “display rules” has gone unacknowledged in the BET literature, most conspicuously among display-rules researchers themselves.

A critic might remark acerbically that “cultural display rules” have become a counterfeit construct passed off as the original but nothing like it. Certainly, there are reasons for skepticism (e.g., Fernández-Dols, 1999; Leys, 2017; Parkinson, 2005; Russell, Bachorowski, & Fernández-Dols, 2003).

BET’s Last Stand?

Ekman’s (1997, 2017) announcement of solitary display rules, in our opinion, had crucial and perhaps fatal implications not only for the display rules concept, but for many of BET’s founding tenets. We count three:

1. The notion of private display rules drew Basic Emotions Theory much closer to the ground staked out by the “relativists,” which the Theory contested and claimed it had refuted. Ironically, those relativists were actually saying what Ekman now proposed; i.e., a culture’s rituals and traditions are able to permeate all aspects of its members’ lives (Fridlund, 2017b).

2. When social conventions about facial conduct can pervade the private sphere,

it became uncertain whether any of the faces observed in the solitary condition of the Japanese-American experiment were untainted eruptions of emotion. This eroded the Neurocultural “partition” assumed in that experiment: private faces had to be authentic emotional expressions, untainted by culture, but social faces were tailored for public consumption. To us, this leaves stranded the concept of “authentic” emotional expressions. Where, if not in solitude, would one ever observe them?

3. Ekman’s announcement would appear to undercut his own prior rationale for using photographed poses in his cross-cultural studies. Originally, BET supporters agreed that posed expressions were the best exemplars of those spontaneous, authentic, culture-free “expressions of emotions” that typically occurred in private. Now that solitary faces were permeable to culture, could it be certain that the largely Western posed photos used in those cross-cultural studies represented culture-free expressions?

The Behavioral Ecology View of Facial Displays

We would like to suggest an alternative account of facial behavior, one that grew out of the simple acknowledgment that the Lorenz-Tinbergen “tripwire” view of animal signaling, on which BET was based, had been superseded. Animals were no longer seen as reflexive responders but as skilled negotiators that used graded, context-dependent signals in social negotiation (e.g., Smith, 1977). This meant that animals were being granted more sophistication in their signaling behavior than humans as seen by BET (Fridlund, 1994, 2017a).

Let us suggest an alternative history. Imagine that in the 1960s, facial behavior researchers had not begun with preconceptions about what faces “expressed” or how they were used, and about the originating roles of biology and culture. What if they had not assumed that all cultures share our conceptions of emotion? What if they had not

used self-confirmatory methods but developed more data-driven approaches? And what if they had not traveled the planet dead-set on showing universality?

This tack, we believe, would have led us deeper into those cultures' specific understandings of their facial behaviors. For example, using a data-driven approach, we could have built a huge database of facial and nonfacial behavior and how each culture used them (Jack, Crivelli, & Wheatley, 2018). Those interested in "emotion" might have pursued agnostic inquiries regarding whether diverse cultures packaged their experiences and behaviors the way Westerners do, and connected those packages to facial expressions as BET theorists do today.

A Functional Account of Facial Behavior

The Behavioral Ecology View of facial displays (BECV) was formulated in the early 1990s as a way to enable this kind of reboot of the study of our facial displays in ways that freed them from their presumed intimacy with emotion and the incumbent entanglements. BECV, by being externalist and functionalist, was able to reconnect the study of human facial displays with evidence from contemporary evolutionary biology and studies of animal communication (Fridlund, 1991a, 1994, 1997).¹⁵ It provides an agnostic framework for studying our facial behavior with minimal constraints or preconceptions.

BET was an intrapsychic theory in which hypothetical neuromodular mechanisms were responsible for facial behavior and produced it iconically and universally. For BECV, in contrast, facial behavior and our sensitivity to it are flexible tools that have co-evolved because they allowed the modification of the behavioral trajectories of social interactants in ways beneficial overall to both parties (Fridlund, 1992b, 2017b). The co-evolution could occur via natural or cultural selection, and because either could produce uniformity or diversity, BECV is open and agnostic as to

whether there are “universal” facial behaviors apart from those that aid regulatory functions, like eyeblinks, tears, yawns, burps, coughs, sneezes, or nasal aversion (e.g., with trigeminal irritation to ammonia) (Crivelli & Fridlund, 2018; Fridlund, 1994).

BECV proponents discount the ideas that faces have fixed morphologies with invariant meanings, or that they have meanings inviolably linked to specifiable subpersonal states. Rather, facial displays are “social tools” that have meanings within interactions that depend on the interactants, their aims within the interactions, and the proximal and historical contexts of their interactions (Table 1). The flexibility of tool uses and context-dependency that BECV predicates for our facial behavior are well supported by Bayesian models of phenotypic flexibility developed by contemporary evolutionary biologists (Richerson, 2019).

Insert Table 1 about here.

Thus, for BECV, what is important about faces is not what they are theorized intrapsychically to “reflect” or “express,” or by what hypothetical mechanisms they are produced, but how they function in social interactions. In other words, our faces are not about us, but about you, and what we would like you to do. They, like our words and our nonfacial communicative behaviors, are ways we change our social trajectories.

Audience Effects

As we noted earlier, BECV was influential in questioning the strict private-public distinction embedded in the Neurocultural partition (Figure 2). The sanctity of that distinction, and the different kinds of facial expressions assigned to it was the linchpin that supported the entirety of the Japanese-American experiment.

The distinction was obviated in studies by Fridlund and his colleagues on

audience effects that extended novel avian research (Marler, Duffy, & Pickert, 1986a, 1986b). These studies demonstrated audience effects in solitary smiling with audiences that were both explicit (friends were present) and implicit (participants were alone but believed friends were co-participants elsewhere), and with social vs. nonsocial imagery (Fridlund 1991b; Fridlund, Kenworthy, & Jaffey, 1992; Fridlund, Sabini, Hedlund, Schaut, Shenker, & Knauer, 1990). These findings showed that the mere *psychological* presence of others could modify the facial displays of solitary subjects. Other investigators then replicated such *implicit audience effects*, expanding the findings to infants, beyond smiling, and to augmenting vs. decrementing effects of friends vs. strangers (Hess, Banse, & Kappas, 1995; Jones, Collins, & Hong, 1991; Schützwohl & Reisenzein, 2012; Wagner & Smith, 1991).

Other solitary faces reflect implicit interactions we have with inanimate objects, like soda machines that won't give us our change, or computers that spontaneously reboot. The curse words we sometimes utter toward these defiant objects demonstrate that, in those moments, we have given them agency and a sensorium. Fridlund (1994) and Crivelli and Fridlund (2018) itemized some common examples of faces that are solitary but implicitly social (e.g., those made while praying to God or calling out for help).

Participants in any psychological experiment were seen, in effect, as actors in a drama. In turn, the experimenters were seen as the directors of the scene. Finally, the role of "experimental participant" itself was conceptualized as a cultural norm that would be in place even when the subject was alone on the experimental stage (i.e., the video viewing room; Fridlund, 1991a, 1994). These conclusions were consistent with the massive data collected in the earlier wave of findings on experimental "demand characteristics" (Rosenthal & Jacobson, 1992), many of which are readily interpretable

as explicit and implicit audience effects.

From all these findings, the distinction between solitary (culture free) vs. social conditions relied upon by BET to demonstrate display rules began to appear unsustainable.

A Modern View of Biological and Cultural Evolution

Despite over 50 years of advances in our understanding of the varied, interactive contributions of genetic, epigenetics, and enculturation to human diversity (Crivelli & Fridlund, 2018), we have found no indication that BET advocates have advanced beyond the dichotomous Neurocultural partition proposed by Ekman and Friesen in the 1960s (Figure 2). BET's research agenda still promotes "new" universal expressions of emotion using problematic "recognition" techniques and then claims that high rater agreements across societies imply biological origins (e.g., Keltner, Tracy, Sauter, Cordaro, & McNeil, 2016). Likewise, BET researchers continue to attribute variance from their universalist predictions to enculturation via the *ad hoc* invocation of "display rules" or analogous mechanisms.

For example, one recent study examined the heterogeneity of "long-history migration" (i.e., prevalence of non-indigenous peoples) within 35 cultures as a possible determinant of variation in the frequency of "emotionally expressive behavior," and the use of smiles specifically (Rychlowska et al., 2015; also see Niedenthal, Rychlowska, Wood, & Zhao, 2018). Migratory heterogeneity was assessed only over the last 500 years, an instant in the 70,000-year migratory flow of *Homo sapiens* out of Africa. Nonetheless, 500 years is time enough to permit assessment not only of cultural but also epigenetic modes of inheritance, which were not acknowledged. The study assumed from the outset that any differences would indicate "norms guiding emotional expressivity" and "the use of the smile to solve problems of social living" (Rychlowska

et al., 2015). Despite its self-description, the study did not examine cultural diversity in facial behavior, only questionnaire behavior, obtained when members were asked for their *beliefs* about their own cultures. Boccagni and Baldassar (2015) provided a useful orientation to the complexity of migration studies and emotions, variously defined, and noted the limitations of such “closed-ended” survey methods in formulating and interpreting those studies.

One cannot infer either that commonality implicates biology whereas diversity implicates culture (Crivelli & Fridlund, 2018). Money is universal, but money is not genetic. Blood hemoglobin types are diverse and regionally dispersed, but blood types are not cultural (Fridlund, 1994). Thus, natural selection can, depending upon the circumstance, result in both: (1) uniformity via convergence, and (2) diversity via well-established mechanisms like adaptive radiation, genetic drift, founder effects, epigenetic markers, and/or a host of other factors. Likewise, cultural factors may account for: (1) commonalities via migration and convergent cultural evolution, as well as (2) diversity due to ecological, political and historical influences specific to the culture (Fridlund, 2017a).

Studies within *cultural phylogenetics* have established mechanisms of cultural selection, analogous to those in natural selection, and their proper methods of inquiry (Mace & Holden, 2005; Mendoza-Straffon, 2016). Differences in population density, mortality likelihood, sex ratios, and resource availability and predictability, may influence individuals across societies to differ morphologically and behaviorally within programmed contours in the alteration of gene expression (Sng, Neuberg, Varnum, & Kenrick, 2018).

Unlike BET, BECV has no interest in presupposing that any facial display might be or should be universal, because the outcome is low-stakes, implying neither

biological nor cultural origins, nor any specified interaction of the two. These days, whether or not certain facial expressions of “emotion” are universal bears mostly on issues like travel, trade, and territory, not human nature. The exact origins of any morphology or behavior can be ascertained only after painstaking assays of a range of possible contributors, using a host of varied methods. Although they may be informative about current states of affairs, origins and evolutionary paths don’t follow from a few matching-to-sample experiments or questionnaire surveys.

Because BECV’s emphasis is functionalist, its focus is how we use our faces in everyday life, and this kind of inquiry is entirely external. For BECV advocates, explaining our facial behavior using unverifiable, subpersonal constructs like emotion is a wasteful diversion, because what I do with my face is best explained by what you do with yours. Our faces, like our words, are ways of influencing our interaction trajectories with others. Given this emphasis, most BECV studies have relied on observational designs conducted in laboratory or natural settings (Fernández-Dols & Crivelli, 2013; Reisenzein, Studtmann, & Horstmann, 2013).

Since BET’s inception, researchers have focused their efforts on a romanticized, semantic approach to facial behavior, in which that behavior has iconic “content” that must be conveyed for communication to occur. That fundamental misunderstanding has resulted in self-confirming theorizing and hypothesis-testing that, while amenable to laboratory study, never achieved escape velocity from BET’s presuppositions.

As long as certain facial behaviors are termed “facial expressions of emotion,” BET researchers are not free to test the strength of the link between those behaviors and emotion. As long as BET researchers use “emotion” without deciding what they mean, then the link they claim will never be determined. As long as face-to-emotion-term, matching-to-sample tasks are labeled tests of emotion “recognition,” then BET

researchers are stuck with a semantic view of facial behavior that can never be open to question. And as long as “universality” is considered commensurate with biology, then BET will never advance beyond 20th century, outdated understandings of biology and culture (Bender, Hutchins, & Medin, 2010; Richerson, 2019; Richerson & Boyd, 2005).

We believe that the future of the field does not rest on expanding a “grammar of the face” that relies on problematic theorizing and questionable data and methods.

Because BECV stresses the context-sensitivity of facial behavior in interaction (Fernández-Dols & Carroll, 1997; Hassin, Aviezer, & Bentin, 2013), it also faces major challenges. The complexity of everyday verbal and nonverbal communication does not allow easy reduction to the kinds of basic rules and categories of production and attribution enshrined in BET. What BECV offers is a framework that recognizes and aligns with that complexity at its own level, without retreat to explanation via prior categorization and interior causation.

Foundational experiments and observational studies have shown BECV quite useful in understanding neglected and counterintuitive instances of facial behavior. State-of-the-art data-driven, inductive methods using big data gleaned from social interaction scenarios, will allow a much deeper understanding, and more useful modeling—whether of interpersonal or human-AI interaction—of how, when, with whom, and to what ends we deploy the powerful “social tools” we have in our facial behavior (Crivelli & Fridlund, 2018; Fernández-Dols, 2017).

Conclusion

The last 60 years saw the advent and evolution of Basic Emotions Theory, still the most popular theory of emotion and of the facial expressions it considered integral (Ekman, 2016). It was a theory designed to split the difference between nativist and cultural-relativist accounts by which emotions and facial expressions were products of

evolution vs. enculturation, respectively. It assimilated the longstanding Western, Cartesian account of numerable, categorical emotions, and rode the globalist Zeitgeist of the 1970s to promote a uniformitarian ideology regarding certain specific “basic emotions” and the “expressions of emotion” they were held to produce.

In this article, we have summarized what we see as incoherencies embedded in the core precepts of BET, as well as numerous contradictions that have accrued over its evolution. Our review of the BET literature suggests that: (1) these problems have largely gone unnoticed or unremarked; and (2) successive pronouncements of new emotions, new criteria for emotions and basic emotions, and new redefinitions of terms like “emotion” and “display rules” have been received without recognition, analysis, and evaluation of the changes, even when those pronouncements have mooted or contradicted previous BET understandings.

It can be argued that all theories contain the kinds of internal contradictions and escape clauses that we have found in BET. This may be true, but we are puzzled why BET writings have been so inattentive to them and uneager to address them. We are also puzzled by the lack of normal and desirable scientific skepticism accorded BET by other psychologists since its inception. We offer some possible explanations for BET’s uncritical acceptance:

First, BET’s view of emotion is distinctly the Western “received wisdom,” and the vast majority of BET researchers and onlookers are Westerners who have little direct acquaintance with diverse non-industrialized societies and their conceptions and rituals, except as seen through a Western, BET lens (Crivelli, Jarillo, & Fridlund, 2016). Among these Western preconceptions is the assumption that “emotions,” however defined, are linked inextricably to facial expressions, even though the evidence suggests otherwise (Durán, Reisenzein, & Fernández-Dols, 2017). The acceptance of that linkage

as “settled science” in defiance of the evidence is confirmed by the near-total overlap of articles citing “emotion” or “facial expression” published over the last century (Figure 1). We wonder how our knowledge might have proceeded if the two had begun as separate research areas, with the relations between the two a third area of study.

Second, BET is simplistic, and so researchers in other areas like social psychology, cognitive neuroscience, and AI have been able to show “due diligence” by using BET’s prescribed iconic faces and matching emotion terms, without delving into the real-world diversity and subtlety of emotion concepts and facial behavior.

Finally, the uniformitarianism at BET’s core is still presented as a hopeful Aquarian view in which universal, shared emotions are a gateway to global peace, understanding, and compassion (e.g., Keltner, 2009). BET is still the sole account of emotions and facial expressions in most Psychology 1 textbooks. During preschool, most children worldwide are taught that certain iconic faces have univocal meanings using colorful wall posters with cartoony faces and that culture’s emotion words. These are faces and emotions that are supposedly universal and phylogenetic and shouldn’t need to be taught at all.

In the present paper, we chose not to focus on problems like the indefinability of emotion, or cultural conceptions of emotion, which vex BET and non-BET emotion researchers and theorists alike. These have been suitably treated elsewhere, many times. Nor have we engaged in a critical review of evidence on any one topic. We have focused instead on what we believe are instances of illogic, incoherence, and frank contradiction within BET itself. Many of these were present during BET’s initial theorizing, and have accumulated since its inception. They include: (1) a simplistic and antiquated view of biology-culture interactions, (2) a set of dichotomies, reflected in the Neurocultural partition (Figure 2), that is no longer sustainable, (3) a set of shifting

criteria and concepts by which findings are obtained and interpreted, and (4) a limited awareness of how broadly and deeply culture pervades our concepts, beliefs, and experiences.

Finally, we showed how modern evolutionary and functional accounts, such as the Behavioral Ecology View of facial displays, provide a useful alternative for researchers who share our view of BET's limitations. Our goal is not to supplant one orthodoxy by another. Rather, we hope to offer an open, reasonable framework grounded in contemporary findings in biological and cultural evolution, animal signaling, and human nonverbal communication. For decades, researchers have tendentiously linked murky, undefined intrapsychic processes to facial movements to resolve a mystery of their own construction, "*What do our facial expressions express?*" From our functionalist standpoint, this essentialist, semantic approach to facial behavior has been wasteful and tangential (for a similar critique from a pragmatic approach, see Fernández-Dols, 2017). The research question, we suggest, should be, "*What do our facial behaviors do for us?*"

Footnotes

¹ Throughout this chapter, we use facial behavior or facial display following the ethological tradition. On occasion, we use the term "expression" out of tradition, but without the implication that facial behaviors transmit any "content."

² Unless otherwise stated, whenever we use the term "emotion," it denotes "the construal of that term within that particular research." Thus, it should not be assumed that "emotion" as used in one study or line of research is the same construct, or refers to the same set of behaviors, used in the next.

³ LeBrun's depictions of the passions lie at the heart of BET, and via their insinuation into Basic Emotion Theories, they became ubiquitous in psychology and neuroscience.

Indeed, skeptical approaches to these iconic Western representations of the passions are regarded by some BET advocates as anti-Darwinian or non-evolutionary (Ekman, 2017; Izard, 1971; Tracy, 2014).

⁴ Lamarckian use-inheritance was popular during Charles Darwin's time, and Darwin invoked it throughout *Expression*. It is now considered untenable. Note that inheritance through *usage* was required for Lamarckian transmission—unlike epigenetic marking, a mechanism for within-lifespan acquisition of heritable traits (Armstrong, 2014).

⁵ In Tomkins's theoretical hermeneutics, (1) the "affects" were the bodily responses and the expressions, (2) the awareness of affect was the "feeling," and (3) the feeling embedded in the context of memories of prior similar feelings was the "emotion." These distinctions largely dropped out of subsequent BET formulations, which regarded "basic emotions" as hermetic packages which might be modulated by drives or triggered by memories.

⁶ Tracy and Randles (2011) highlighted four BET "models" and invited their representative supporters to a special issue of *Emotion Review* dedicated to BET (Ekman & Cordaro, 2011; Izard, 2011; Levenson, 2011; Panksepp & Watt, 2011). Although Ekman, Izard, Levinson, and Panksepp proposed different theories of basic emotions, Ekman's model remains the most comprehensive in its stipulations and predictions.

⁷ There is considerable hand-waving among BET theorists, and emotion researchers generally, about the multifactorial nature of emotion, along with the discounting provision that *qualia* are only one component. Because *qualia* are unverifiable, no measurable proxies have been substantiated, and alterations in the other averred components (overt movements, autonomic adjustments, neutrally localized activities) are only weakly intercorrelated and do not appear to conform to standard emotion

typologies (e.g., Duran, Reisenzein, & Fernández-Dols, 2017). We find no fault with a “multifactorial” definition of anything, of course, providing that the definition sets out what factors are expected and when. No such specification has been forthcoming, lending weight to the interpretation that the “multifactorial” definition merely postpones definition.

⁸ The mechanism governing display rules mutated over the years. Originally, there were universals in the antecedent events that could trigger activation of the Facial Affect Program (Ekman, 1984; Ekman & Cordaro, 2011), and the Program’s outputs were intercepted and aligned with display rules before they could erupt on the face. The interception points were never spelled out, but the pre-post interception expressions may “differ in the involvement of the pyramidal and nonpyramidal pathways” (Ekman, Hager, & Friesen, 1981, p. 102). Objections by appraisal theorists (Scherer & Wallbott, 1994) were accommodated by allowing that cultural differences in displays might hold sway on the stimulus end, such that complex appraisals could differentially determine what combination of basic emotions was activated. Thus, for appraisal theorists the action of “cultural display rules” changed from an output mechanism that altered the production of expressions, to an input mechanism that selected the emotions elicited. This particular redefinition of display rules appears to inject further doubt into how one interprets the three conditions of the Japanese-American experiment, which predicated its test of display rules on the prior assumption of equal emotions (Fridlund, 1994; Leys, 2017).

⁹ We confine our discussion here to BET’s categorical “facial expressions of emotion.” Ekman and Friesen (1969b) provided examples of other kinds of facial behavior such as symbolic faces (e.g., stylized tongue protrusions for “yucks!,” tongues in cheeks for skepticism), movements that highlighted language (e.g., brow flashes to show

momentary interest) or regulated conversation (e.g., frowns to indicate disapproval, brow flashes in turn-taking), and self-stimulatory behavior (e.g., lip-wiping). These protolinguistic and paralinguistic movements probably constitute the vast majority of everyday facial behavior. Chovil's detailed observations of dyadic conversations suggested that fewer than 20% could be classified as one of BET's categorical "expressions of emotion" (Chovil, 1989, 1991). Likewise, Fridlund (1994, p. 312) suggested that many occurrences of those iconic BET faces may simply be paralinguistic interjections.

¹⁰ Apart from repeating Ekman's incomplete account, Matsumoto and Hwang's (2013) quote illustrates the common conflation of "emotions" and "expressions" within BET: What can be masked within BET is not the emotions but the expressions of those emotions.

¹¹ Western commentators on the Neurocultural Model and its origins in Tomkins's and prior categorical views on emotion often do not indicate just how Western the models are, when they: (1) reductively neurologize emotion and make its "essence" a collection of neural circuits, (2) make emotion intracorporeal and thus subpersonal. Different ideas about "emotion" that are not reductive or subpersonal abound in other cultures and even in the history of Western conceptions of emotion, and non-reductive emotion accounts have emerged in contemporary psychology (e.g., Barrett, 2017; Russell, 2009). Given the ineffability and intractability of modern emotion concepts, one is hard-put to be presentist and claim progress. Lang (2018), Matt (2011), Reddy (2009), Rosenwein (2014) and especially Plamper (2015) have reviewed "turns" in scholarly treatments of emotion and how it has been: (a) experienced (originally in largely moral and/or theological terms), (b) expressed (as a function of race, religion, social class, gender roles, family structure and child-rearing practices, and a host of other factors), (c)

localized (in neurology, as adduced from ritual actions or other culturally situated action trajectories, or as an emergent process interstitial among cultural members), and (d) judged (dangerous, unruly, or advantageous). As Stearns and Stearns (1985) stated in their classic paper on “emotionology,” “No longer can we assume without proof ... that people in the past shared our emotional experience, that we can use contemporary psychology to elucidate past behavior, or that we can use past data, without careful analysis, to bolster contemporary psychological theory” (p. 820).

¹² Al-Shawaf et al. (2015) do not account for how “emotions” could be products of natural selection unless they were causal entities that produced behavior benefitting reproductive fitness, directly or indirectly. Natural selection works on proximal effects and not interior causes, and so the evolution of specific “emotions” would imply selection of behaviors specifically attributable to those emotions. BET (pre-1990) was not adaptationist given that it embraced Darwin’s reflexive, vestigial view. The ev-psych framework (post-1990), however, emphasized adaptive, strategic movements, but not necessarily automatic “expressions of emotions.” Indeed, much of evolutionary game theory had already suggested the tactical benefits of *non*-expression (e.g., Krebs & Dawkins, 1984).

¹³ Previous treatments of BECV presented facial displays from the emitter’s standpoint, as “declarations of intent,” or indications of “social motives” (e.g., Fridlund, 1994, 2017a). Here (Table 1) we present common usages of those facial displays. We made this shift because, despite our repeated statement that “intentions” and “motives” in BECV were external and to be adduced from the emitter’s line of action, many readers insisted on treating them as subpersonal, psychological states that were interchangeable with, or part of, emotion. The alternative presentations are equivalent because the likeliest scenario for the evolution of signals like facial displays is that they arose

biologically via the ritualization, or culturally via the conventionalization, of Heinroth's and Huxley's "intention movements." These movements were incipient versions of social actions (Fridlund, 1994; Smith, 1977).

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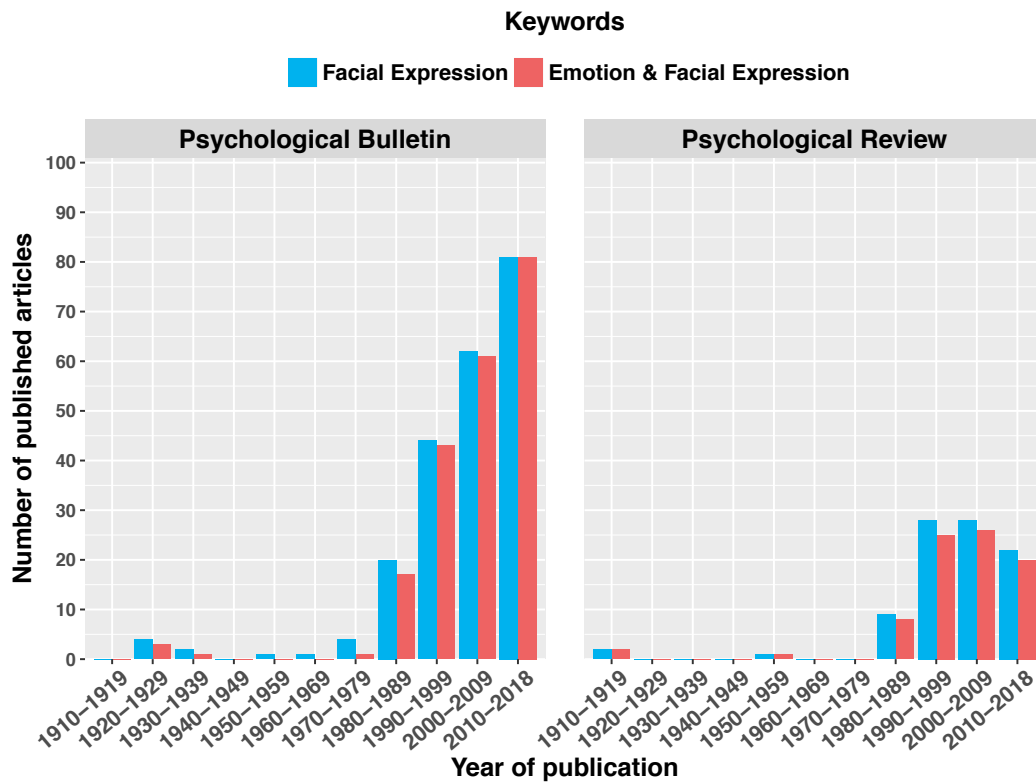


Figure 1. Number of Articles Published with the Keywords “Facial Expression” or “Facial Expression and Emotion,” by Journal and Year of Publication. As these data show, the number of review articles published by both *Psychological Bulletin* and *Psychological Review* rose dramatically beginning in the 1980’s, due in part to BET’s role in vitalizing studies of emotion and of facial expressions. The overall concordance between publications that used “facial expressions” alone (.52, 95% CI [.48, .56]), vs. with “emotions” (.48, 95% CI [.48, .56]) was near-total, $\chi^2(1, N = 600) = 1.47, p = .225, 95\% \text{ CI} [-.02, .09]$. This finding illustrates the Western “received wisdom” that the two are related inexorably, despite ample empirical evidence to the contrary.

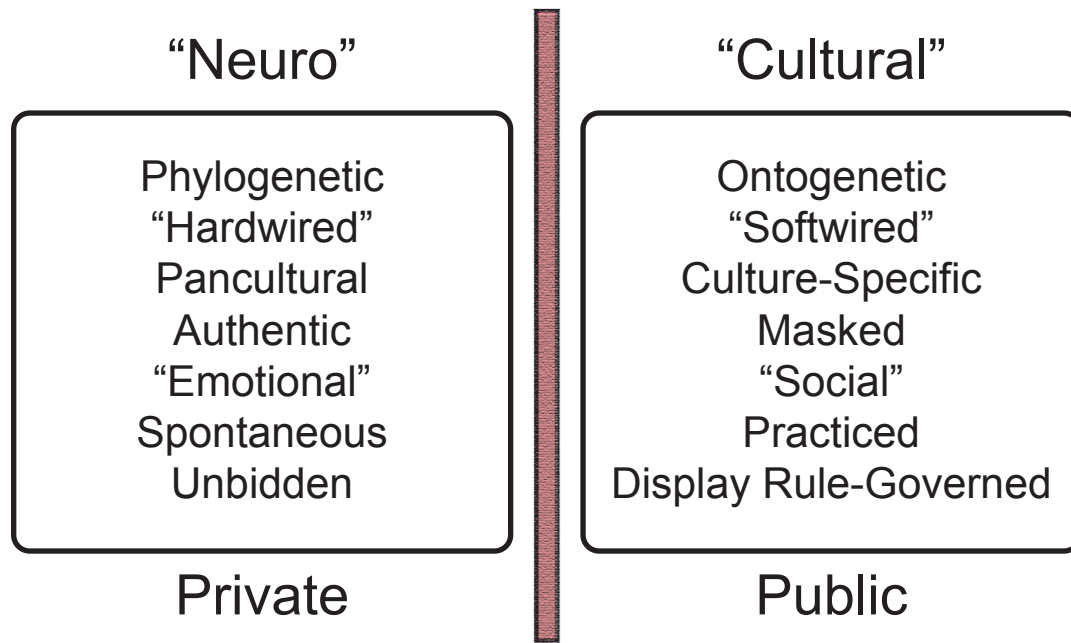


Figure 2. The Neurocultural Partition. Ekman's "Neurocultural theory" partitioned facial expressions into two kinds (Ekman, 1972; Ekman & Friesen, 1969). On the left were the categorical "facial expressions of emotion," which were hardwired (hence, "neuro"), spontaneous, "biological," and cross-culturally, they were uniformly produced and universally "recognized." These iconic expressions occurred mainly in private, but were approximated in art and by photographed poses. On the right were public facial expressions, those that resulted from supervision by learned "display rules" which suppressed or modified those native expressions and were required because of the demands of civility (hence, they were "cultural"). Such "social" expressions varied across cultures, and because they no longer freely expressed their originating emotions and could even simulate them, they were judged unspontaneous and inauthentic or "unfelt."

Table 1. Two Approaches to Facial Displays: Expressions vs. Functional Social Tools

Sample facial behavior	State expressed (BET)	Social use (BECV)
Smiling	Happiness	Influence interactant to play or affiliate
Pouting	Sadness	Recruit interactant's succor or protection
Scowling	Anger	Influence interactant to submit
Gasping	Fear	Deflect interactant's attack via one's own submission or incipient retreat
Nose scrunching	Disgust	Reject current interaction trajectory
Neutral	"Suppressed emotion" (Poker face) or no emotion	Lead the interactant nowhere in interaction trajectory
"Micromomentary," blended or "compound" expressions	"Leaked" or "blended" emotion	Conflict between displayer's interactional tactics

Note. The table includes common usages of facial behaviors as social tools, as reflected by their behavioral consequences; the exact usages of facial displays in BECV depend on the interactants and their specific interaction context.

BET = Basic Emotions Theory. BECV = Behavioral Ecology View of facial displays.