9. ABSTRACT

The proposal that there are specific adaptations for the expression and detection of pain appears premature on both conceptual and empirical grounds. Criteria for the validation of a pain facial expression are discussed. We also describe recent findings from our lab on coping styles and pain expression, which illustrate the importance of considering individual differences when considering evolutionary explanations.

We applaud Williams’ aim that pain be adequately recognized and treated, and her cross-disciplinary synthesis of several literatures. However, there are pitfalls to such an effort, and the fit between her theory and the empirical findings appears questionable.

Williams argues that natural selection shaped specific adaptations for the production and decoding of pain expressions. According to her logic, the inclusive fitness benefit to the sender is the receipt of succor from conspecifics, while the benefit to the observer is awareness of potential dangers. Logically this would require that the facial expression of pain be clear and distinct from other emotional expressions and that observers be able to reliably detect such expressions. Thus, pain action units (AUs) must be: (1) co-occurring; (2) evident among some percentage of subjects; (3) elicited by a variety of pain-evoking stimuli; and (4) differentiated from other expressions. Williams does not analyze the most relevant data (frequency, percentages of subjects displaying each AU, co-occurrence of AUs), which are essential in evaluating the robustness of a proposed pain expression. Also problematic is that people are poor at reliably detecting another’s
pain and don’t necessarily rely on the AUs implicated in the proposed pain expression (e.g. nasolabial furrow, AU 11, Chambers & McGrath, 1998).

To address these difficulties, Williams proposes selective pressures for the detection of faked pain expressions to prevent “social cheating.” As evidence she points out that physicians with incentives to avoid unnecessarily prescribing analgesics are particularly prone to underestimate pain. This illustrates a general weakness in her theoretical approach -- insufficient consideration of other possibilities besides operant behaviorism and evolutionary psychology. It is gratuitous to propose specific adaptations for behaviors that would be expected to emerge from general processes of means-ends problem-solving (cf Harris & Pashler, 1995). People are alert to cues that are relevant to their goals and interests in many different domains, including activities that only emerged in recent human history and for which no specific adaptations could exist. To achieve their goal of accurate diagnosis, health care professionals must be able to detect misleading pain expression; thus they will become sensitive to possible cues of that (whether valid or invalid). There is no need to invoke "evolved propensities or inference rules" for detecting pain or the dissimulation of pain to explain this, and such behavior may have little to do with the types of “social contracts” that occurred in the Pleistocene era.

From Williams’ review, the pain expression appears subject to the same complexities as emotional expression. Like emotional expressions (Alvarado & Jameson, 2002), pain expressions are reliably decoded only when extreme and they convey amplitude of
experience poorly. Their interpretation varies with context and is biased by suggestion. Pain expressions are influenced by display rules, and show large individual differences in both production and decoding. As with emotional expressions, the relationship between facial activity, physiological response, and self-report is poorly understood and difficult to demonstrate. These similarities suggest that pain expressions belong to a more generalized phenomenon of facial expressive behavior best studied together with and in the same manner as emotional expressions. This demands greater rigor than is usually possible in clinical or naturalistic settings.

Williams shows little recognition of the controversies among those studying facial behavior. She claims that FACS cannot be used to record durations, onset or offset times, asymmetries, co-occurrence of AUs, or other subtleties present in dynamic stimuli. Studies by Ekman & Rosenberg (1997) contradict this assertion, as does the FACS manual. Williams overemphasizes the potential impact of posing/deception, anxiety, or embarrassment on the behavior of lab participants. In this, she uncritically accepts arguments raised by critics of Ekman’s approach (Russell & Fernandez-Dols, 1997), without showing that they matter in the empirical studies reviewed. Such “methodological” criticisms, if valid, work against her argument: An expression so fragile as to be disrupted by subtle lab-induced anomalies cannot have evolved a survival-related meaning sufficiently reliable to be useful in clinical situations.

What else can be made of the empirical work reviewed in Williams’ article? Her proposed pain expression includes “lip corner stretch” (AU 12), better known as a smile
in other contexts. Is this a grimace or help-seeking through ingratiation? If a pain
expression communicates to conspecifics, then perhaps it arose not during threat or
trauma but as a means of keeping rough-and-tumble play from becoming dangerous. It
may signal “stop hurting me,” not “help me.” Its intensity may reflect the message’s
urgency, not amount of pain. Its appearance during other injury may be incidental to this
more frequent scenario.

Williams acknowledges that no gold standard exists for measuring pain, then uses self-
report as the measure of accuracy for those judging facial behavior. We suspect the
relationship between self-report and expressivity is too complex to be explained by
physician bias. In our research, we classified individuals using the Weinberger
and found that the correlation between facial expression and self-report varied with
coping style (Alvarado & Harris; Harris & Alvarado, submitted). Figure 1 shows the
mean correlation by WAI type between scores on the McGill Pain Inventory (sensory
scale) and facial activity. No significant differences in either measure were found across
WAI types (ruling out amplification or suppression by type), but correlations between the
two varied considerably. This is obscured in many studies, where a low mean correlation
typically emerges from the averaging of divergent patterns. Those highest on
Weinberger’s restraint scale (repressives) showed the least correlation, suggesting
idiosyncratic control of facial expression. The oversocialized and undersocialized both
showed an inverse correlation, smiling or grimacing while reporting little pain. These
findings suggest that facial expression is difficult to interpret without knowing a person’s
habitual coping style, knowledge normally inaccessible to clinicians. Perhaps an increase in expressivity when others are present results from a switch from emotion-focused or cognitive coping to reliance on social support. These individual differences suggest that clinicians should not consider facial expressions alone a reliable measure of pain, much less use them to determine medication dosages.
References


