



# INTEGRATING FACIAL CODING INTO YOUR NEXT QUALITATIVE PROJECT



**By Bob Granito**

- President, IVP
- Morganville, NJ
- bobg@interactivevideo.com



**By Peter Hartzbech**

- CEO, iMotions
- Boston, MA
- peter.hartzbech@imotionsglobal.com

Qualitative researchers rely on asking consumers to consciously think about and share their feedback on products and brands. Yet, consumers are often unable or unwilling to fully express their emotional responses to stimuli.

Facial coding, a neuromarketing technology, enables researchers to get inside the minds of consumers and record responses as they process and respond to brand messages. It provides reliable data for researchers to optimize their clients' ability to create and deliver brand messages that powerfully connect with the minds of their target.

### What Is Facial Coding?

In the simplest terms, facial coding scientifically and unobtrusively measures non-verbal emotional engagement of a participant, revealed through facial expression. Facial coding allows for researchers to passively bridge the gap between stated responses and actual responses to stimuli.

Worldwide, there are seven scientifically validated emotional states: anger, fear, disgust, contempt, joy, sadness, and surprise. Each emotional state has specific characteristics associated with recognizing the emotion, regardless of demographics.

In 1978, Swedish anatomist Carl-Herman Hjortsjö, psychologist Paul Ekman, and author Wallace V. Friesen developed one of the most influential methods to objectively code facial behavior, which was further fine-tuned in 2002. Their approach, named the Facial Action Coding System (FACS), represents a fully-standardized classification system of facial expressions for expert human coders based on anatomic features. Experts carefully examine face videos and describe any occurrence of facial expres-

sions as combinations of elementary components called Action Units (AUs). Using these AUs as a map to emotion, facial coding software reads a participant's facial muscle activity to reveal true emotions.

### The Process of Facial Coding

The face reveals both conscious and non-conscious reactions. Facial coding relies on sophisticated software to gain deeper insights into human emotional reactions via facial expressions.

There are three phases of facial coding.

#### 1. Data Collection

During the data collection phase, participants are exposed to stimuli such as a video ad, trailer, or TV program. Key action units (AU) are captured in real-time, via webcam. Most tools are very flexible, accommodating all types of respondent features including facial hair, glasses, and less facially expressive respondents.

**Figure 1.** Picture of Affectiva Replay courtesy of iMotions® and powered by AFFDEX Engine from Affectiva.



## 2. Facial Expression Analysis

Once the AUs are identified, each pixel in that region is evaluated by the software for shape, movement, and texture by the software’s algorithms. This algorithm then returns the likelihood that the facial frame under analysis is representative of the emotional state. This is completed for each participant at high speed, then aggregated across participants and married to demographic information to support more complex analysis.

## 3. Metrics

Metrics are visualized on screen, simultaneously displaying a recording of the respondent’s face, the stimulus, and the emotion channel responses. The data visualizations can be easily cross-referenced with data from other respondents and dropped into client presentations, providing engaging scientific evidence of your findings.

### How Does In-Person Qual Facial Coding Differ from Online Quant Facial Coding?

While the data collected in both scenarios is the same, the true value of

qualitative facial coding software is demonstrated in the delivery of moment-by-moment data, from which emotional insights can be quickly and easily revealed. The online scenario simply collects the data, aggregates the data for analysis, and provides a dashboard for later review of the results. The in-person mode collects the data in the same manner, but it also allows for real-time observation using a live viewer. This data is clearly and visually represented frame-by-frame, allowing for more granular insights. During an interview, a moderator can track facial-coding responses through an interactive dashboard and then probe the respondent for further understanding of the emotional measures, allowing for a more dynamic interview.

### Facial Coding Applications

Facial coding can be used to test the emotional impact of any content, product, or service. This can cover physical objects such as food probes on packages, videos and images, sounds, odors, tactile stimuli, etc.

Facial coding is most frequently used for research involving:

- **Media Testing & Advertisement**

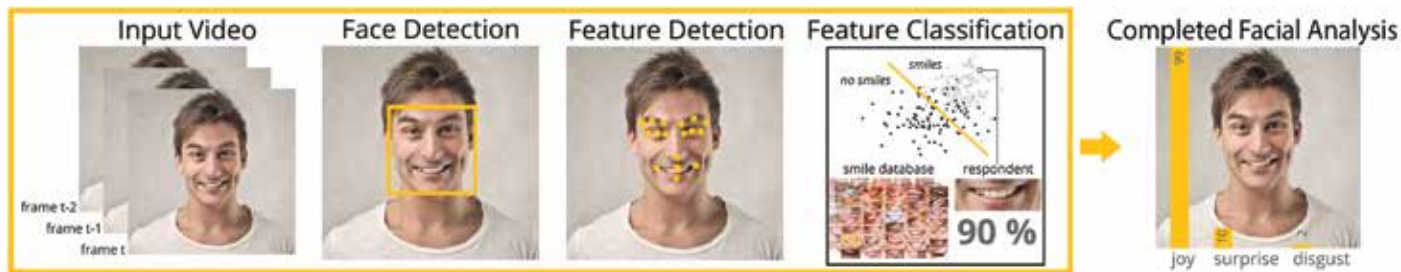
In media research, respondents can be exposed to TV advertisements, trailers, and full-length pilots while monitoring their facial expressions. Identifying scenes where emotional responses (particularly smiles) were expected but the audience just didn’t “get it” is as crucial as finding the key frames that result in the most extreme facial expressions. In this context, clients might want to isolate and improve scenes that trigger unwanted negative expressions that indicate elevated levels of disgust, frustration or confusion, or they might want to utilize the audiences’ response toward a screening in order to increase the overall level of positive expressions in the final release.

- **Software UI & Website Design**

Facial coding can be used to study response to usability and content of websites and applications. Monitoring



**Figure 2.** Picture of Probabilistic Analysis courtesy of iMotions® and powered by AFFDEX Engine from Affectiva.



facial expressions while testers browse websites or software dialogs can provide researchers with insights into the emotional satisfaction of the desired target group. Whenever users encounter roadblocks or get lost in complex sub-menus, one might certainly see increased “negative” facial expressions such as brow furrowing or frowning.

### The Science of Translating Facial Activity into Metrics

For those readers interested in the science behind the facial coding, the primary facial coding engines available within the industry include Affectiva AFFDEX, Emotient FACET, and Noldus FaceReader. Each engine differs by the metrics they automatically code, but they are governed by the same principles outlined through the Facial Action Coding System (FACS).

The translation from facial features into metrics is accomplished statistically, comparing the actual appearance of the face and the configuration of its features numerically with the normative databases provided by the facial expression engines. Rather than returning a “yes” or “no” for each emotional classifier, the engines give a probabilistic result, reflecting the likelihood or chance that the expression is an authentic one. Each of these classifiers is interpreted independently from the others. Automatic facial expression analysis returns numeric scores for each of the facial expressions or Action Units and emotions, along with the degree of confidence. As the facial expression or emotion occurs and/or intensifies, the confidence score rises from 0 (no expression) to 100 (expression fully present).

### DIY or Lab Specialist?

Fortunately, it’s not necessary to understand the science of facial coding to benefit from the research metrics it can provide. For researchers ready to invest in facial coding as a future research method, who are prepared to allocate budget, and are comfortable in exploring and deploying new technologies, a license and elementary training for the software is available for purchase from providers. Alternatively, an expert research lab provider can deliver a package of full support prior to and during your in-person interviews, with an on-site technician managing the equipment, respondent preparation, and deliverables. This involves a cost only on a per-project basis and frees up the researcher to focus on what he or she does best.

### What Does All this Mean for Qualitative Researchers?

The real-time metrics provided through facial coding bring a scientific assessment of instinctive emotional response to research and give researchers an opportunity to enhance the quality of their in-depth interviews. Using data captured in the facial coding session as a framework, researchers are able to dig deeper during the self-report part of the session. Data can be shared with clients in real-time or post-session. In addition, visual data can be captured to enhance your client presentation.

The facial-coding options now available to researchers allow for the integration of facial coding into qualitative studies with ease and confidence.

**Figure 3.** Picture of Action Units courtesy of iMotions® and powered by AFFDEX Engine from Affectiva.

