

Seeing emotions: a review of micro and subtle emotion expression training

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Abstract In this review I explore and discuss the use of micro and subtle expression training in the social sciences. These trainings, offered commercially, are designed and endorsed by noted psychologist Paul Ekman, co-author of the Facial Action Coding System, a comprehensive system of measuring muscular movement in the face and its relationship to the expression of emotions. The trainings build upon that seminal work and present them in a way for either the layperson or researcher to easily add to their personal toolbox for a variety of purposes. Outlined are my experiences across the training products, how they could be used in social science research, a brief comparison to automated systems, and possible next steps.

Keywords Facial expression of emotion · Teacher as researcher · Authentic inquiry · Sociocultural theory · Computer analysis

Searching and researching emotions in the classroom

The social sciences are not lacking in methods or methodologies that can be utilized by researchers. Whether it is basic field notes or complex technological tools these approaches, means, and techniques allow for a greater understanding of how the parts of a classroom work separately and as a whole. One such approach seeks to enable the user to

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detect some of the things that we, as social beings, often try to suppress, conceal, or obfuscate from each other: our emotions.

In my experience as a science and technology teacher | researcher at both the elementary school and collegiate levels, different topics and teaching methods elicit very different emotions across the members of the classroom. Students react to material not only based on prior knowledge but also on personal preferences and biases. Additionally, the teachers themselves react emotionally to the students, the material, and the overall atmosphere of the school. This emotional ecology, as defined by Michalinos Zembylas (2007), illustrates a greater and more detailed image of teaching, learning, and community of practice within a classroom. However, in order to enhance the appreciation of science teachers and their students as both products and producers of emotions (Zembylas 2007) a researcher must be able to detect those emotions either as they are expressed in real-time or via an artifact from the events as they unfold.

One such way to identify emotions comes from a series of trainings provided by the Paul Ekman Group (Paul Ekman Group, LLC 2014) founded by noted psychologist and researcher Paul Ekman who, along with Wallace Friesen, developed the a version of the Facial Action Coding System or FACS (1977) and, with Joseph Hager, an update 25 years later (Ekman, Friesen, and Hager 2002). The Ekman–Friesen coding system is itself informed by earlier work, in the actions of facial muscles, by Swedish anatomist Carl-Herman Hjortsjö (1969).

The Facial Action Coding System was designed to manually code facial expressions by isolating them and the muscles that make them into Action Units or AUs. A score is then calculated using these Action Units as well as the duration, intensity and (a)symmetry of the movements. Tools have subsequently been developed around the System to aid in the training of individuals across various professional backgrounds in the evaluation of emotional expression in the face.

More specifically, the tools offered by the Paul Ekman Group can be viewed, in my opinion, as a form of analyses across levels (micro through macro) especially when salient events are identified.

There is a great deal to recommend from Paul Ekman and the Paul Ekman Group's series of innovative online trainings. Available on the company's website, paulekman.com, the trainings will enable the user to recognize various micro-expressions, defined as occurring in timeframes between 1/15 and 1/25 of a second, and subtle expressions of each of the seven universal emotions (anger, fear, disgust, contempt, surprise, sadness, and happiness) as displayed in the face.

The experiences that the website delivers are not specifically aimed at any group or groups of people but have been utilized by various law enforcement branches, professional negotiators, therapists, researchers, and health professionals. In-person workshops are also available for government and security firms in the United States, Canada and the United Kingdom through the Paul Ekman Group or for the general public through its sister organization Paul Ekman International.

All of the trainings, either currently offered or in development, have been designed upon much of Ekman's previous research, most notably his work with Wallace V. Friesen developing the Facial Action Coding System (1977), which is a training tool itself, and "Unmasking the Face" (1975). This research, and the affiliated research that followed, is considered by many to be the gold standard in emotion recognition. Additionally many fields of social science have adopted this research in various ways including automated emotional recognition (Valenti, Sebe, and Gevers 2007), mindfulness and contemplative

studies (Ekman, Davidson, Ricard, and Wallace 2005), dispute resolution (Freshman 2010), and emotional intelligence (Davidson with Begley 2012).

Utilizing emotion recognition as a component of criteria for ethnographic authenticity

All research is subject to scrutiny in how it situates the stakeholders; most specifically the researchers and the participants. Of greatest import within that analysis is the benefit gained by those participants in both the short-term and the long-term. It is important that research views its participants as active members of the research who (can) have high-stakes and interest within the overall scope of the research. For the researchers, it is important to demonstrate and undergo some professional and intellectual growth throughout the research experience.

Utilizing the techniques developed by the Paul Ekman Group opens the door for rich ethnographic research in education especially when placed alongside other research methodologies. Emotional expression analysis adds a new piece of valuable information to the overall tapestry of what can be gleaned from investigating aspects of teaching and learning in the science classroom. The bricolage created invites rich and vibrant analyses that can be examined and utilized across levels, methods, and theoretical frameworks such as those of Randall Collins (2005) and Jonathan Turner (1999).

One study I was recently involved in that employed such a bricolage took place in a graduate level science education class for pre- and in-service teachers in an urban public university. Although our research was primarily set to focus on mindfulness, breathing meditation, emotional climate, coteaching and cogenerative dialogue (Tobin and Roth 2005), we have taken an emergent and contingent approach with our entire study. This approach permitted the researchers to include patterns of coherence as well as nuance that made this reflexive social inquiry study a valuable resource for those interested in conducting qualitative research in the science classroom.

Each 3-h class session consisted of breathing meditation, class discussions, a group presentation/coteaching and the voluntary post-class extended discourses, or cogenerative dialog (cogen) sessions. The purpose of the cogen was for the participants to contribute, elaborate, or explain their ideas or opinions about the topic presented and to provide feedback on whether the goals set for the class were met. The research group was in attendance for each class session recording audio, video, and the heart rate and blood oxygenation of at least one presenter (via a fingertip pulse oximeter).

As a result of the sensitive nature of some of the topics being presented in the class, such as eugenics or race and education, as well as the discussions that grew out of them, emotions were volatile at times. Presenters and other members of the class became very emotional when the topics were salient to certain aspects of their lives. During the weekly teacher group presentations and the cogen the students and professor were recorded. These video artifacts were used for analysis. The (aforementioned) salient moments were identified from data collected from several sources (such as physiological data or conversation analysis), timestamps were recorded, and vignettes made for each (see Fig. 1). Each vignette was then examined for evidence of emotional expression in the face. Ekman and Friesen's Facial Action Coding System (1977) was the guiding force behind the initial investigation into emotions here and contributed to the richness of the ethnography.



Fig. 1 Facial expressions from video vignettes

Another study (Jennings and Greenberg 2009) instituted the Ekman training with mindfulness training as part of a multi-faceted training strategy. Ultimately the findings of this study reported back “reduced self-reported depression and rumination and increased emotional self-awareness” and improved classroom climate (2009, pp. 511–512). Other studies, such as Johnson, Sullivan, and Williams 2009, which have utilized video artifacts to investigate other phenomena that could also revisit their recordings to examine and explore emotions in the classroom in order to expand knowledge.

Many universities, government level agencies and segments of private industry have been utilizing this type of training in various ways. The most promising with regards to conducting research, in my opinion, has been the automation of the emotion identification through the use of technology. Many of these systems are primarily built for market research while others investigate affect (Picard 2000).

Several of these systems claim single-frame (video) precision in the detection of expressions of emotion while other systems attempt to extend beyond Ekman’s aforementioned basic seven emotions and can capture the nuances of facial expressions and focus on more relevant or complex expressions of emotions, such as confusion. Despite their underlying mechanics these automated systems are, and will continue to be, extremely useful for research purposes. However, no matter how well they can interpret what can be seen, they cannot take the place of a well-trained human being who can include context, large degrees of nuance, and experience. What a human may lack in speed, resources, and (assumed) objectivity is compensated by interpretive and appropriate situational relevance. Herein lies the strength of the training: humans interpreting humans. I liken it to commerce in this way: very few people would choose a mass produced piece of furniture or an automobile over a handcrafted one if money were not a factor. This is because we value the nuance, variation, and craftsmanship that a human can deliver over a machine.

It is not to say that human-based analyses are better than computer-based analyses, they are just different; trade-offs are involved. One provides a cost effective and more rapid delivery of the product that requires no training while the other takes time in order to develop, skillfully master, and produce. Admittedly, I do not know if, in order to evaluate the video data, I would want to train for over 100 hours or set aside the time it would take to become expert in the Facial Action Coding System. Ultimately, it is my opinion that

these trainings are more than enough to make assessments of emotional expression in a research setting.

When dealing with large amounts of video, computer-assisted analysis can (generally) digest hours of data without supervision, triangulation, review or rewinding, or other limitations that occur when using human resources. On the surface it may seem that the computer-assisted facial analyses would be useful quantitatively. This may indeed be true generally. Various software packages, such as Sightcorp's InSight Software Development Kit, Noldus' FaceReader, or iMotions Emotient Module output and provide the researcher several hundred, if not thousands, of lines of data from one video clip for raw analysis. These data may be very useful and informative as a tool for identifying events (Sewell 2005) as contradictions against or patterns within. For example, the researcher may be looking solely for events where a specific individual displays a specific emotion. Depending on the amount of video recorded this would require a human to watch all of the video where the individual is present. This may be on the order of hours or days worth of man-hours. A technological solution could process several hours of video without the need for a large amount of human supervision.

The only caveat to this is that each video must be correctly set up and calibrated to give the researcher the most accurate results possible. Hence, the largest drawbacks to the use of computer-assisted facial emotional analysis are the physical parameters required for consistent, reliable results. Some of this is addressed in the Ekman Micro Expression Training Tool Profile training module and is becoming more common within the technology. But ultimately if the file cannot be read or if a face cannot be properly identified within a video using technology, then it is useless; a human can make those determinations without 'minimum specifications'.

Although I stated earlier that the software should be geared to the non-expert, I feel that it is important to understand and qualitatively contextualize what the people in the video archives are displaying. As such I would recommend that researchers who may rely on technological means to collect emotion display data complete the Paul Ekman Group's training to a high level of proficiency order to attain a measure of 'reliability' between the software package and a more holistic measure. Essentially, treating their new skills and the technology, as they should: as tools to be used as part of a bricolage of practice and theory.

An in-depth review of one or more of these automated emotion recognition systems is forthcoming.

The starting gate and the price of admission

For the purposes of this review four different trainings were utilized: the Micro Expression Training Tool 3.0 (eMETT), the Subtle Expression Training Tool 3.0 (eSETT), the Micro Expression Training Tool Profile, and the Micro Expression Training Tool Plus (eMETT Plus). It should be noted, in the effort of extending full disclosure, that I have previously taken METT training (METT Original and METT Advanced) via a previous version of the website, currently located at "oldface.paulekman.com/face". The older trainings no longer accept new enrollees however, previous customers may log into their accounts and trainings at any time. Also, my training in the 3.0 series comes several years after my initial training in the summer of 2012. The Paul Ekman Group does not recommend taking post-test more than once per quarter in an effort to not have final scores affected by memorizing

faces and/or expressions. There will be more explanation of this in later sections of the review.

The new trainings are reviewed in the order in which they were taken. All of the trainings are delivered only in English for a single user with repeated and unlimited access for 1 year at a cost of \$210 USD. The Paul Ekman Group categorizes various user entry points as Beginner, Intermediate, and Expert. Beginners are considered first-time users and advised to use eMETT Lite (a limited and less expensive version of the METT) or eMETT 3.0 before moving on to eSETT 3.0. Intermediate users are advised to use eMETT Plus and Expert level users are directed to eMETT Profile.

Technical requirements are fairly easy to meet across various computers but have been tested on Windows 7, Windows 8 and Mac OS X. Amongst the suggestions are using Google Chrome and avoiding Internet Explorer (with no reason given). Mobile device use is available for eMETT and eSETT with the suggestion that the device be larger than seven inches. Additionally, Adobe Flash should be updated to the most current version.

The 'slides' that are displayed can be broken down into three parts: a neutral expression, then the emotive expression, and a repeat of the neutral expression. These three parts are 'loaded' into the browser as one 'slide' that is displayed for the user to evaluate. The entire emotive expression is only shown for a fraction of a second and cannot be controlled by the user.

Each training was completed, in the order as described below, on the same computer, a 17" MacBook Pro, running Mac OS X using the Google Chrome web browser.

Ekman Micro Expression Training Tool 3.0 (eMETT)

As with the previous iterations the training information displayed for version 3.0 lets the user know that the approximate time for completion is 75 min and that it should be completed in one sitting away from distractions including those that could arise from other programs being left open. The training itself is separated into six components: Introduction (inclusive of the aforementioned information), Benchmark, Training, Practice, Review, and Improvement Measure.

In addition to informing the user to be free of distraction, the Introduction allows the user to set a desired speed. 'Slow' and 'fast' are the only two choices given to the user with the default set to fast. This is an important moment in the training as newcomers and novices may be tempted to change the speed to slow. I agree with the Paul Ekman Group in suggesting completing the training at least once on the higher speed. This approach, in my opinion, gives the user a more real-world experience. Often times we only get a passing glance at an expression of emotion in social life. Also, events that unfold in real-time don't have the convenience of being recorded. However, as recommended, if the user does not score above a desired proficiency level, 80 % is suggested, then the user could always repeat the training at the lower speed.

The Benchmark section serves as a pre-test for the user. Each of the seven expressions is flashed twice after a 'warm-up' of three non-scored expressions. It is a fairly straightforward, low stakes exercise and the user is given no guidance. Upon completion the benchmark score is presented and the user is prompted to move on to the Training section.

The Training section consists of 8 different videos (anger, disgust, anger and disgust I, anger and disgust II, fear and surprise, contempt, happy, and sad), each narrated by Ekman. All of the videos can be viewed as often as the user would like and, with the exception of

contempt and sad, displays a split screen view of looped slow-motion footage showing the progression of the emotion(s) as it is expressed. The videos either show how one emotion may be expressed in two different ways by the same individual or how two different emotions can be confused for one another and how they can be properly differentiated (see Fig. 2). The value of this approach lies in the detailed explanation given by Ekman to the user. The narration alongside the looped slow-motion video enables the user to see what muscle groups are being activated for each emotion. While Ekman does not refer to them in any physiological manner, if the user had to do this without guidance she would have to refer to the Facial Action Coding System manual. Ekman's guidance here allows for nuance between emotions to be detected as they are expressed.

After completing training the user is directed to the Practice Section. Here 42 new sets of images are displayed. After each answer selection, new controls are available for greater control over the experience. After selecting an expression three buttons appear below the slide: a 'repeat' button (shown as counter-clockwise arrow), a 'flash' button (shown as a lightning bolt), and a 'next' button (shown as a right arrow). The flash button is particularly useful, as the emotion expressed will only stay on for as long as the button is pressed, meaning the user has control over the speed or duration at which it is flashed. The 'repeat' button simply reloads the slide; flash included, in its entirety.

If the correct expression is chosen, the expression will be displayed the user is given the option to use any of the buttons: 'repeat', 'flash', or 'next'. However, if the incorrect choice is made, the user will not be allowed to proceed to the next slide via the 'next' button. In either case, when the correct selection is made, Ekman will give a tip on many of the slides commenting on the expression itself.

In this low-stakes environment users are able to make mistakes and control the rate of information and learning. Once complete, a Practice score is displayed with a score for each emotion and the user is prompted to move on to the Review section.

The Review section is almost identical to the Training section in design and execution. One primary difference is new set of photographed faces. As before the user can choose to watch any or all of the 8 videos presented with Ekman's narration for reference or guidance. The commentary includes more detail and nuance as well as specific areas in the expressions to focus in on.

The final area is the Improvement Measure section. Here the user must identify expressions from 28 different slides. Each slide must be completed and is only flashed once. There is no option to repeat, flash, or move to the next slide. When complete, the user's accuracy and improvement measure are displayed. The Paul Ekman Group suggests that users who have problems with any of the emotions go back and review the specific videos they need.

Fig. 2 Example of eMETT 3.0 training demonstration video layout

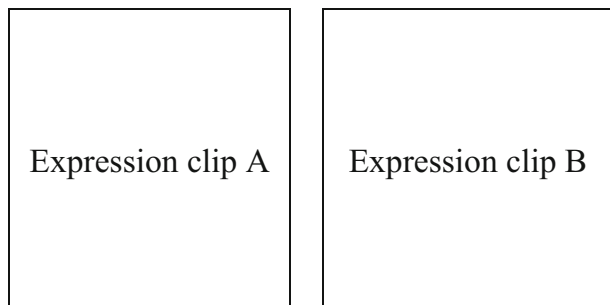


Table 1 eMETT 3.0 scores

Emotion	Initial practice (%)
Happy	100
Sad	25
Disgust	75
Contempt	100
Anger	100
Fear	100
Surprise	100

My Improvement Measure was 86 % and my score for each emotion is shown in Table 1.

Although a certificate of completion was awarded based on my Improvement Measure, I had a greater desire to identify why my score for sadness was so low and what aspect of the micro-expressions I had difficulty in detecting. Could these inaccuracies in identification have a root cause or similar underlying trait such as the gender or ethnicity of the individuals pictured or is something else at play?

Ekman Subtle Expression Training Tool 3.0 (eSETT)

The Subtle Expression Training is a more focused and targeted identification of emotions. As opposed to the more global look at the face, specific regions are examined in order to detect the initial manifestations, slight expression, and involuntary emotional leakage. These types of expression tend to happen when the subject is attempting to be deceptive or prior to them becoming aware of their emotional state (Ekman 2003).

The concept of leakage is more useful when reviewing video artifacts than in real-time. Practically, real-time identification of subtle expressions is difficult and made more difficult when a person is in motion and not subject to scrutiny.

eSETT offers a more streamlined experience than the eMETT which makes it feel more like a traditional training. In the Learn section the user can choose the specific emotion s/he wishes to investigate and the sequence in which s/he chooses to do them.

The two control interfaces allow the user to choose the speed at which the slide is displayed (to the left of the slide viewer) and a set of controls below the viewer make it possible to replay the slide (at the selected speed), hear a tip from Ekman, or proceed to the next slide.

The best examples that were demonstrated were from black-and-white photographs of a young woman whose expressions seemed to burst onto her face. At first this emotional burst seemed strange due to how regional, in the facial sense, it was. For example, in her expression of fear the only detectable difference was the widening of her eyes; her eyebrows and the lower part of her face did not move. After viewing it a few more times it became clear that either the emotive component of the slide was a blend or edit combining her neutral face with a section of a second image where she displayed the emotion *or* the woman in the slide is very good at isolating muscle groups and staying extremely still. I tend to lean toward the former and not the latter. This edit was so well done that even when viewing the emotive component as a still image I had a hard time detecting the edit in a slide in which she appeared.

Many of the comments made by Ekman are critical to understanding proper identification, especially when placed into a greater environmental context. Sadness, for example, could be mistaken for fatigue, boredom, doubt (particularly in the lower part of the face) and, in my opinion, apathy. Such ambiguous identifications should be challenged via other means such as stimulated recall (Lyle 2003) or conversation analysis. Emotional blending can also be present, such as the nose-wrinkling component of disgust mixed with happiness, which is seen more in pictured females than the males. Unfortunately, these gender specific issues are not addressed in any consequential way during the training.

After completing any of the Learn sections the user is taken to the Practice section where the user is asked to test his/her new skills over 41 slides. As with the eMETT those who score below a certain benchmark are encouraged to retake the training using a lower speed. A certificate of training is available to the user upon completion.

Ekman Micro Expression Training Tool Profile (eMETT Profile)

Although the eMETT Profile training is almost identical structurally to the eMETT 3.0, the major difference is in the presentation of the samples. In the eMETT 3.0, the user is generally presented with two side-by-side looped videos of how an emotion can be expressed frontally. With the Profile tool the presentation includes the same videos accompanied by profile videos taken at the same time (see Fig. 3).

The training is divided into the following parts: Introduction, Training, Review, and Practice A, B, and C. It is recommended that Profile training be attempted after completing the eSETT.

Profile training was possibly the most challenging of all of the offerings tested and the scores I recorded during the training reflected that difficulty as seen in Table 2. Unlike the eMETT 3.0 and the eSETT, this training does not grant a certificate of completion (although it did provide me with a sense of satisfaction).

Ekman Micro Expression Training Tool Plus (eMETT Plus)

The eMETT Plus can be best described as an extended version of the eMETT 3.0. The value in this training lies in the tips and commentary by Ekman.

The training consists of the Introduction, three Training sections (A, B, and C), and three Test sections (also A, B, and C). Practice sessions at this point are rendered moot

Frontal clip A	Frontal clip B	Profile clip A	Profile clip B
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Fig. 3 Example of eMETT Profile training demonstration video layout

Table 2 eMETT profile scores

Emotion	Initial practice (%)	Practice A (%)	Practice B (%)	Practice C (%)
Disgust	83	50	100	50
Anger	50	25	50	75
Contempt	100	75	50	25
Happy	100	100	75	100
Sad	67	60	100	100
Surprise	83	100	100	100
Fear	33	33	50	75
Overall	60	64	76	75

because users here are expected to have taken at least the eMETT 3.0 and possibly the eSETT and/or eMETT Profile trainings previously.

Throughout the Training sections Ekman identifies certain contradictions in certain expressions such as upward head tilt in sadness or head moving forward for fear, lack of nose wrinkle for disgust. Other ‘mini-micro’ expressions are shown to display a wide array of possibilities within a given expression. These are very useful instructions since some of the expressions have more nuance than those that may have been expressed in the other training tools offered.

Although the training is described as ‘micro,’ I found that most of the highlighted details expressed quite intuitive and more ‘macro’ in display. Things such as shouting anger, prissy anger, and terror were expressed quite vividly and the loss of focus expressed in the eyes of sadness was very obvious. Others such as looking for stretching in the neck (fear), jaw thrusts in the correct direction, head tilts are less obvious and more nuanced.

The most difficult expression that Ekman comments on during the training is the emotion most easily recognized: happy. Differentiating between the social smile and the genuine, or Duchenne, smile is difficult (Ekman et al. 1990) especially at high speed.

Of greatest importance within all of the training sessions is overall improvement of the skills of the user. Based upon the final scores received on this section (see Table 3) I would have to fall into the affirmative.

Table 3 eMETT plus scores

Emotion	eMETT + Test A (%)	eMETT + Test B (%)	eMETT + Test C (%)
Happy	75	100	100
Sad	100	100	100
Disgust	100	100	100
Contempt	100	100	100
Anger	100	100	100
Fear	100	100	100
Surprise	100	100	100
Overall	96	100	100

Where do we go from here...

After completing the series of trainings I did find myself looking at random people with greater scrutiny than before in an attempt to see how practical the skills were in an everyday situation. It was very interesting employing this new knowledge on a New York City subway platform during the evening rush hour. Whether engaged in a conversation, listening to music in their headphones, or waiting (im)patiently for the next train I easily noticed how facially emotive several individuals were in a short period of time.

The Ekman series of trainings can be a powerful tool not only for research in the social sciences but as a reflexive tool. Incorporating the user results with auto ethnographic research using video and Richard Davidson's work in emotional styles (Davidson and Begley 2012) the training could be a great asset to educators, especially pre-service educators. High stakes certification and licensing requirements, such as the Education Teacher Performance Assessment (or edTPA) pre-service teacher assessment process which require video artifacts of teaching practice (American Association of Colleges for Teacher Education, n.d.), become more mainstream, teacher education programs will begin to stress more reflexive practices. As a result, pre-service teachers will begin to closely examine video artifacts they are required to do for their academic work and requirements. As part of that reflexive practice they should (and possibly will need to) examine their own emotional expressions with greater scrutiny. Also, as part of what I would consider good professional practice, several teacher candidates who are trained in examining emotional expression could serve each other in small group evaluations of themselves and peers. Engaging in stimulated recall research within small group analysis could benefit both the teacher/student being viewed (Calderhead 1981) and the peer viewers in their ability to identify emotional expression of any (and every)body who is viewable on the recording as practice or maintenance of the training experience.

Regarding the trainings themselves, I would have preferred a more robust explanation of the data other than my final score. Some of the data of interest could have been disaggregated by gender or by race. As I was taking each of the trainings, I found myself detecting the emotions of certain demographic groups more easily than others. Could this be a cultural or racial bias on my part or something else possibly present within a subgroup such as cultural display rules? Is there any gender bias? Am I better at recognizing emotional displays in women than in men? Is the opposite true? Without those data there is no way to know with any certainty the answers to any of the questions I just posed. The internal questions that could arise as a result as well as the implications in the field are very salient to anyone who plans on embarking on research using this framework. While I know that Ekman makes claims to the universality of emotional display, after taking these versions of the trainings, it was the first time I questioned that notion. The researcher in me wants to have definitive answers for these possible questions while the pragmatist recognizes that studying people, especially in volume, is not an exact science.

Interpretation is always subjective to what the emotion means for the interpreter. This factor (possibly) provides an automatic bias component, which may skew the analysis, because of the analyst's own view on what the expression is and what it means. In other words, it is possible that the analyst generates conceptual knowledge about an emotional stimulus through a different set of component strategies in different occasions. For instance, recognition of a fear expression may be done by linking the perception of the stimulus to the knowledge components of the concept of fear, or even the word fear to the

perception of what the emotional response represents or the stimulus triggered in the subject (Adolphs 2002). It is not an absolute that the emotion seen is what is being felt.

The Paul Ekman Group's trainings have become a part of my overall toolkit in my multi-method, multi-level research methodologies (Tobin and Ritchie 2012) in the study of teacher health and wellness. However, I do feel that one needs other data to corroborate his/her claims. Even with that caveat, the trainings are a powerful tool. As currently planned, much of my current and future research is situated in monitoring the emotional expression, health and wellness, and the mindfulness practices of pre- and in-service teachers. As stated earlier if used as part of a bricolage alongside tone of voice (prosody), body language (proxemics), and stimulated recall, this training can be a valuable part of the social scientists toolkit.

Additionally, I eagerly await the opportunity to experience the Paul Ekman Group's newest emotional skills training tool: the Responding Effectively to Emotional Expressions (RE3). This training claims to give the user skills and techniques in the appropriate response to emotional expression. Many interactions with learners (and in some cases advocates for those learners such as parents), regardless of age, require a response that is appropriate especially when the exchange is tense and/or difficult.

Finally, in my view, it is important to acknowledge that human beings are social creatures. As such we require and process verbal and non-verbal cues in order to ascertain context, content, and emotions in every interaction. We have gone from face-to-face interaction to voice-only telephone interaction to purely text-based interactions via text messages or emails. With every new method of communication more of the complete discourse and nuance is lost. We claim to want to retain connections to each other but increasingly we rely upon many technologies that impose distance for the sake of convenience. The time we can take to learn and appreciate how we express emotions dialogically and what meaning and purpose they have in a paradigmatic sense (Guba and Lincoln 1994) is time well spent.

One of the most thorough and influential descriptions of emotions is Charles Darwin's "The Expression of Emotions in Man and Animals" (1872). Darwin speaks of the emotional cues as important to survival. He also argues that animals interpret many of these cues as displayed in facial expression. This is the foundation that Ekman's research and the Paul Ekman Group's offerings are built upon. It is important to remember that you are 'coding' the face but you may not have the meaning behind expression. Expressions without context are, in my opinion, akin to taste without smell; there is only a part of the experience present. Additionally, the 'universality' of the framework is nice in the sense that it can be applied widely, but cannot be held as the sole means of understanding an event.

Educators and social science researchers should understand the context for using the knowledge gained from these very informative and educational offerings from the Paul Ekman Group. When applied in an education context this can be used as a powerful tool for self-reflective practice and self-study. As a test of this newfound knowledge, I looked back to archived video and noticed several interesting reactions in my own expressions to student interactions. In combination with some stimulated recall notes I was able to develop a richer understanding of my in-the-moment emotions.

Overall, I would classify the training as an excellent opportunity to examine and gain insights into an aspect of human behavior and experiences. I lean towards viewing it this way: Anyone can wield a sword or a scalpel; the important part is when to use the right tool in the right instance for the right reasons in the right way.

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