ROMANIAN JOURNAL OF PSYCHOLOGICAL STUDIES

HYPERION UNIVERSITY
www.hyperion.ro

DIFFERENCES IN FACIAL MICROEXPRESSION RECOGNITION BETWEEN STUDENTS WHO STUDY AT A TECHNIC PROFILE COLLEGE AND THOSE WHO STUDY AT A HUMMAN STUDIES PROFILE

MIHAI VALENTIN, CIOLACU* [a]
EMIL RAZVAN, GATEJ*[b]

[a, b] *Hyperion University, Faculty of Psychology and Educational Sciences*
Department of Psychology

Abstract

Today, in areas such as psychiatric, business, judiciary and even everyday life, may be noticed an increased attention to non-verbal communication. Emotion indicators (including facial expressions, microexpressions, facial mimicry and pantomime) help us to predict any masked intentions of our interlocutor. Given that verbal language is often used for deception, representing an effective way of manipulation, non-verbal language can reveal gaps between the words and the feelings of a person; those gaps are also known as lies. This paper will address microexpressions (extremely fast facial expressions which betrays one of the person's basic emotions (anger, sadness, disgust, fear, surprise, contempt, happiness) as microexpressions are one of the most studied indicators of concealed emotions. Although there is a varied, individual combinatorics of the seven basic emotions, microexpressions are almost universal. The ability of microexpressions recognition, as an interpersonal communication skill is an advantage for the ordinary individual and at the same time is a necessity in the domain of psychologists, clinicians, medicine practitioners and security.

Today, testing and training packages in microexpressions recognition are available for the interested public because of the work of scientific researchers like Paul Ekman or David Mtsumoto that developed with their teams autotraining and self-testing tools METT Advanced at http://www.paulekman.com) and Micro Expression Recognition Tool available as MIX at www.humintell.com)

Keywords*: microexpressions, facial expressions, METT*

* ***Mihai Valentin, Ciolacu***
ciolacu.mihai88@yahoo.com

1. THEORETICAL FRAMEWORK

Microexpressions study acquires relevance for psychology in the context of the importance of identifying the emotions that others manifest. There is a special interest in studying emotions because they are transient, involuntary, unconscious bio-psycho-social reactions (Matsumoto et al. 2013) and thus they are a major source of motivation and action onset by creating the momentum that causes behavior (Frijda, Kuipers & Ter Schure, 1989; Matsumoto, Hwang, & Frank, 2013; Tomkins, 1962, 1963). Emotions are expressed mainly through the face (Ospovat, 1995; Ekman 2003; Izard, 1994) and most people can accurately interpret these expressions when displayed prominently (Biehl et al.1997).

When these expressions are less visible - as in microexpressions - such signals can become very difficult to identify.

The idea of "microexpression" has its origin in Darwin's research (1872/1998) who suggested that facial expressions are part of an emotional response and that could be triggered by the force of nerve impulse and determined to transcend volitional control of the person (Ospovat, 1995). Later research confirmed that emotions can be triggered unintentionally - in the subcortical area of the brain - and also be controlled voluntarily (Miehlke, Fisch & Eneroth, 1973; Hurley et al., 2014). Expressing primary emotions, such as anger, contempt, disgust, fear, happiness, sadness and surprise can trigger the appearance of involuntary facial expressions and also unique physical and physiological changes in muscle tone, voice and brain activity (Christie and Friedman, 2004; Damasio et al., 2000; Ekman, Levenson & Friesen, 1983).

Microexpressions are actually a special case of basic facial expressions that express emotion, occurring faster and that have a fragmented display (Matsumoto, Yoo & Nakagawa, 2008; Porter and Ten Brinke, 2008). Haggard and Isaacs (1966) observed for the first time their existence studying clinical interviews. They argued that these fast expressions of emotion were caused by an unconscious repression of a conflict that could not be observed in real time.

2. OBJECTIVES AND HYPOTHESES

2.1. OBJECTIVES

The objective of this research is to determine whether there is a statistically significant difference between students from the Faculty of Psychology of the University of Bucharest and students from the Polytechnic University of Bucharest in the innate ability to recognize facial microexpressions.

2.2. HYPOTHESES

H1: Psychology students have a more developed innate capacity for recognizing facial microexpressions than the Polytechnic University students
H2: Polytechnic University students have a more developed innate capacity for recognizing facial microexpressions than Psychology students
H3: There are no statistically significant differences between Psychology students and the Polytechnic University students regarding the innate ability to recognize facial microexpressions

3. METHOD

3.1. PARTICIPANTS

Two samples of 30 subjects each:

One sample of first year students from the Faculty of Psychology aged 19 to 23 years, selected through proportional stratified sampling.

One sample of students from the Polytechnic University aged between 19 and 27 years, selected through conventional sampling.

3.2. INSTRUMENTS

More tests were created with the purpose of testing skills in microexpressions recognition. The first of these tests that used in a scientific framework coded expressions and speed played by the tahistoscop was JACART, Japanese and Caucasian Brief Affect Recognition Test (Matsumoto & Griffin, 2000). After analyzing and improving the information obtained, the JACART test was converted in Micro Expressions Training Tool (METTv1, Ekman, 2003) that provided a superior image quality in a digital format. METT's Variations were used in assessing microexpressions recognition in students (Hall and Matsumoto, 2004), employees or consultants in the trial period (Matsumoto and Hwang, 2011), specialists in detecting deception, and in individuals with schizophrenia. While people can easily categorize facial expressions when they are displayed for aproximatively10 seconds, most often resulting a recognition accuracy close to 90% (Biehl et al.1997; Ekman et al. 1988), the process of microexpressions recognition seems to be more difficult, ranging mostly from 45 to 59% accuracy for people without training or without deficiencies in perception (Hall and Matsumoto, 2004; Matsumoto and Hwang, 2011).

3.3. PROCEDURE

To test the microexpressions recognition ability a program called METT was used (Micro Expressions Training Tool), precisely the pre-test specifically included in this program. The test consists of the presentation of fourteen short films illustrating randomly, one by one, one of the microexpression corresponding to each of the basic emotions (sadness, anger, surprise, fear, disgust, contempt, happiness).

Subjects watched the videos one at a time, after each video choosing from a list of seven emotions, the emotion shown in the video. METT converts raw scores expressed bycorrect answers in standard scores (percentile). The test does not show a time limit, after each video there is some thinking time determined by each subject.

3.4. EXPERIMENTAL DESIGN

The independent variable: Faculty of provenance.

The dependent variable: scores obtained at the METT Pre-test.

4. RESULTS

4.1. FIGURES AND TABLES

We compared the averages obtained on the two samples tested with the METT Pre-Test. Comparisons were performed using the T-test-students for comparing the averages of the two independent samples. All processing was performed using SPSS 22 software options for Windows.

The obtained data indicated a statistically significant difference between the mean ($t = 3.20$, $p < 0.05$).

The sample of subjects consisting of students at the Faculty of Psychology has achieved higher scores ($m1 = 66.60$, A.S. = 14.71) than the sample of subjects consisting of students at the Polytechnic University ($m2$ 52.93, A.S. = 18.15).

The effect size calculated with the Cohen index indicates the presence of a large effect ($d = 0.82$), and the calculus with the omega square index indicates a medium effect ($w2 = 0.13$) very close to the valence of a large effect (0.14).

Table 1. Independent t – Samples test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower
scor_METT	Equal variances assumed	1,445	,234	3,204	58	,002	13,667	4,265	5,128
	Equal variances not assumed			3,204	55,614	,002	13,667	4,265	5,121

5. CONCLUSIONS

Through our study we were able to demonstrate that there are statistical signifficant differences in the recognition of facial microexpressions between psychology students and polytechnic students. Starting from this we can argue that people who attend a humanistic profile faculty would have more developed cortical region than those who attend a technical university.

As more research found there are innate predispositions that determine both the professional orientation towards a humanistic profile and superior skills in microexpressions recognition.

We believe that this skill is very important in the practice of all psychologists regardless of their specialization.

Limitation: Lack of representativeness: the sample of psychology students belong to the first year of studies, students from the Polytechnic are also from other years od studies. Testing different from one sample to another, from the point of view of the test conditions (time, environment, lighting).

We did not considered testing of the variable interest in studying the microexpressions recognition, we noticed in some cases a higher score associated with people who had knowledge about microexpressions study, even if they never took the test for micro expressions recognition.

The lack of written instruction, standardized; training was conducted personally.

REFERENCES

Biehl, M., Matsumoto, D., Ekman, P., Hearn, V., Heider, K., Kudoh, T. & Ton, V. (1997). Matsumoto and Ekman's Japanese and Caucasian Facial Expressions of Emotion (JACFEE): Reliability data and cross-national differences. *Journal of Nonverbal behavior, 21(1), 3-21.*

Christie, I. C. & Friedman, B. H. (2004). Autonomic specificity of discrete emotion and dimensions of affective space: A multivariate approach. *International Journal of Psychophysiology, 51(2), 143-153.*

Damasio, A. R., Grabowski, T. J., Bechara, A., Damasio, H., Ponto, L. L., Parvizi, J. & Hichwa, R. D. (2000). Subcortical and cortical brain activity during the feeling of self-generated emotions. *Nature neuroscience, 3(10), 1049-1056*.

Ekman, P. (2003). Darwin, deception, and facial expression. *Annals of the New York Academy of Sciences*, *1000*(1), 205-221.

Ekman, P. & Heider, K. G. (1988). The universality of a contempt expression: A replication. *Motivation and emotion*, *12*(3), 303-308.

Ekman, P., Levenson, R. W. & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotions. *Science, 221(4616), 1208-1210.*

Frijda, N. H., Kuipers, P. & Ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of personality and social psychology*, *57*(2), 212.

Haggard, E. A. & Isaacs, K. S. (1966). Micromomentary facial expressions as indicators of ego mechanisms in psychotherapy. In *Methods of research in psychotherapy* (pp. 154-165). Springer US.

Hall, J. A. & Matsumoto, D. (2004). Gender differences in judgments of multiple emotions from facial expressions. *Emotion*, *4*(2), 201.

Hurley, C. M., Anker, A. E., Frank, M. G., Matsumoto, D. & Hwang, H. C. (2014). Background factors predicting accuracy and improvement in micro expression recognition. *Motivation and Emotion, 38(5), 700-714*.

Izard, C. E. (1994). Innate and universal facial expressions: evidence from developmental and cross-cultural research. *Psychological bulletin*, *115*(2), 288-299.

Matsumoto, D. & Hwang, H. S. (2011). Evidence for training the ability to read microexpressions of emotion. *Motivation and Emotion, 35(2), 181-191*.

Matsumoto, D. Hwang, H. C. & Frank, M. G. (2013). Emotional language and political aggression. *Journal of Language and Social Psychology*, *32*(4), 452-468.

Matsumoto, D., Yoo, S. H. & Nakagawa, S. (2008). Culture, emotion regulation, and adjustment. *Journal of personality and social psychology*, *94*(6), 925.

Matsumoto, Y. & Griffin, M. J. (2000). Comparison of biodynamic responses in standing and seated human bodies. *Journal of Sound and Vibration, 238(4), 691-704.*

Miehlke, A., Fisch, U. & Eneroth, C. M. (1973). *Surgery of the facial nerve*. Philadelphia: Saunders.

Ospovat, D. (1995). *The development of Darwin's theory: Natural history, natural theology, and natural selection, 1838-1859*. Cambridge: University Press.

Porter, S. & Ten Brinke, L. (2008). Reading between the lies identifying concealed and falsified emotions in universal facial expressions. *Psychological Science, 19(5), 508-514.*

Tomkins, S. (1962). *Affect imagery consciousness: Volume I: The positive affects.* (Vol. 1). New York: Springer.

Tomkins, S. (1963). *Affect imagery consciousness: Volume II: The negative affects.* (Vol. 2). New York: Springer.