

DETECTION OF MENTAL HEALTH THROUGH FACIAL EXPRESSIONS[#]

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The present study was designed to identify the mental state of psychotics, neurotics, and normalcy through facial expressions. Independent variable was facial expression shown in photographs. Dependent variable was the number of correct judgments made under three different conditions. Subjects (N = 30) were shown 15 photographs of psychotics, neurotics, and normal individuals in random order. To see the difference between the groups, t-test was applied. The number of correct judgments made by the subjects about the facial expressions under three different conditions were not significantly different. Facial expressions of a person, irrespective of whether he/she is normal or abnormal, therefore, may be an indicator of his mental health.

Face is an important nonverbal channel, particularly important for expressing emotions and attitudes towards other people. Facial expressions change rapidly and play an important role in social interaction.

The most specific and detailed information about the inner state and emotions is communication through facial expressions (Alice & Argyle, 1994, Ekman, Friesen, & Ellsworth, 1972, Izard, 1977, 1990, 1992). The face is key area for diagnosis because it has many muscles, detailed enervation of several sense organs, and high visibility. In modern times, facial features have proved useful in diagnosing genetic disorders. Research on communication via facial expression suggests that certain displays appear and are correctly recognized in widely different societies (Buck, 1988). Facial expressions are means of communication among different species. The facial nerve nucleus can be activated in following two ways:

1. When the organism is emotionally aroused there is activity in the hypothalamus and the limbic system in the lower brain,

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which influences the facial nerve nucleus via the extra-pyramidal tract.

2. When facial expression is posed a different route is involved. Impulses originate in the motor cortex, going directly to the brain stem and the facial nerve nucleus, via the pyramidal tract. The face is given space in the motor cortex, specially the lower face, hence we can make fine movements in speech (Rinn, 1984).

In normal interactions, facial expression is the combination of the operations of routes (1) and (2). It is partly spontaneous and partly posed and sometimes the result of a battle between the two for communication to occur, non-verbal behavior does not have to be intended as such. The intentions of the person may not always be clear. Non-verbal communication may take place even against the expressed intentions of the encoder (Jahangir, 1998). Since mental patients have little control over their emotions in general, they may have an uncommon pattern of facial expressions. Facial expression of schizophrenics tends to be blank. Electromyographic recording shows that there is more left-right asymmetry (Winkelmayer, Exline, Gottheil, & Paredes, 1978) suggesting a high degree of inhibition by the left hemisphere. Depressives, of course, have more depressed faces and produce a weaker smile than control subjects when asked to feel happy. It is also observed that they produced more extensive smiles after receiving ECT (i.e., electroshock therapy). Depressives usually tend to look downward and this gaze pattern is used by experts to identify them. Another dominant feature of depression is the depressed mood with corresponding countenance. The more neurotic, anxious, or disturbed people are, the less they smile and facially express (Trower, 1980). Some neurotic patients, but by no means all, avert gaze. The dominant feature of most neurotics is anxiety, often including social anxiety leading to inhibition of facial expression. Earlier studies clearly support that mental patients tend to smile, gesture and look less than normal individuals, and deviate in some more specific ways (Trower, 1980).

If a person is mentally disturbed, his facial expression also undergoes change. Whether this change is noticeably significant or not was the central issue in the present research. The major purpose of the present study was to identify, how accurately can people judge another persons mental state from his/her face. The interchange of verbal and nonverbal aspects of communication reveals how they may

be mutually supportive or antagonistic. In case of condition between these channels, the facial expression change from mild to moderate and moderate to severe of their children or students respectively. Before or during the onset of psychological attacks facial expression undergo changes which will mentally prepare the significant others. The scientific information will certainly help mental health professional in their coping strategies. In short, it has been hypothesized that mental health of a person can be detected from one's facial expressions.

METHOD

Participants

Thirty men and women postgraduate students of Psychology Department, University of Peshawar Pakistan, ranging in age from 21-23 years, were randomly selected. All the subjects included in this study were familiar with the psychological terms and conditions being used having considerably good mental health.

Material

Sixty randomly selected psychotics ($n = 20$), neurotics ($n = 20$), and normal ($n = 20$) were photographed. The normal students were selected by the researchers from the students of psychology department, clinical group. It was observed that these students neither had no previous history of suffering from any kind of psychological illness at the time of this study and were willing to be photographed for the purpose of this research. The students who opted for clinical psychology are usually allowed to take this subject after they are psychologically assessed. In the very beginning the diagnostic tests battery (the practical work which they are suppose to learn) is administered on each one of the them. In this way the researchers have fairly good picture of their mental health. The psychotics and neurotics were photographed from the inpatients of Psychiatric Ward of Hospitals at Peshawar, Pakistan.

These photographs which conveyed unselected spontaneous facial expressions were, then presented to volunteer judges for their assessment. Who were all clinical psychologists and were not familiar

with the persons shown in photographs. Only those photographs, for which judgment accuracy was 100% were included in this study. In this way, 15 photographs (stimulus presentation) which clearly showed psychotic, neurotic, and normal features were selected, yielding to five facial expressions in each following category:

- Five photographs indicating psychotic conditions.
- Five photographs indicating neurotic conditions.
- Five photographs indicating normal conditions.

Research Design and Procedure

Independent variable was facial expression shown in the photographs. Dependent variable was the number of correct judgment of the subjects under three different conditions namely psychotic, neurotic, and normal.

Within subject design was used. 15 previously selected photographs of facial expressions were shown to the subjects individually. Separate random order of presentation was created for each subject.

30 subjects responded to the question, 'What mental condition (i.e., normal, neurotic, or psychotic) the man in the photograph has? Altogether they made 450 responses to identify psychotics, neurotics, and normal.

The subjects indicated their responses to each photograph by attributing to one of the three conditions of mental health. Judgment was scored correct if the choice was in line with the facial expression shown in the photograph. For every correct response score of one point was given.

RESULTS

The obtained recognition score for psychotics, neurotics, and normal are given in the Table 1.

Table 1*Means and Percentages of Correct Judgment of Facial Expression*

Total No. of Stimuli Presented (N = 45)	Psychotic Stimulus Presented (N = 15)	Neurotic Stimulus Presented (N=15)	Normal Stimulus Presented (N= 15)
Correct Judgments	115	101	109
Mean score	3.8	3.3	3.6
Percentage	76.69%	67.3%	72.6%

In order to see the difference between the groups, *t*-test was also applied. The judgment accuracy in all three conditions was approximately the same. None of the group was significantly different from the others.

Difference between psychotic and neurotics ($t = 1.25, p >.05$), normals and psychotics ($t = 0.57, p >.05$); and neurotics and normals ($t = -.076, p >.05$), revealed non significant findings.

DISCUSSIONS

The present research provides clear evidence that facial expressions are a true index of inner feelings and mental state. Subjects' perception and judgment of facial expressions and the mental state of the patients under three different conditions were equally dependable. It was noted that the stimulus pictures i.e., facial expression shown to the subjects were judged with almost the same degree of confidence. When comparison of photographs showing special states of psychological conditions was made, judgments of subjects revealed non significant difference between psychotics, neurotics, and normal.

If the results do not show significant difference between the judgment and assessment of the subject about the facial expressions shown in the photographs it means that the normal are rated as normals with the same confidence as the psychotics and neurotics are rated. It is, therefore, concluded that facial expression may be an indicator of one's mental conditions.

In this study only photographs with spontaneous expression were shown and no other information about the faces shown in the photographs was given to the subject. Their judgments were entirely

based on the facial expressions and its impact on the perceiver. Since posed expressions are more asymmetric (Skinner & Mullen, 1991) and more discriminating than that of spontaneous expressions, our results support the hypothesis with confidence (Reuter-Lorenz & Davidson, 1981).

Summary

The present study was conducted to investigate the relationship between the facial expression and the mental state of psychotics, neurotics, and normal. The subjects were shown 15 photographs of normal, neurotics, and psychotics in random order. Within subject design was used under three different conditions was not found significantly different. This shows that the facial expression of a person irrespective of whether he/she is normal or abnormal is an indicator of his/her mental state.

To conclude it can be said that before or during the onset of psychological disorder, facial expressions undergo changes which will mentally prepare the significant others. The scientific information will also help the mental health professionals in their dealing with the psychological patients.

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