AN EXPERIMENTAL STUDY ON THE INTERPRETATIONS OF FACIAL EXPRESSIONS

Prof. MÜMTAZ TURHAN

THE PROBLEM

This paper includes a brief summary of a study originally published in 1941 in Istanbul in Turkish and some recent additional control experiments *. These experiments were conducted between 1938 and 1960. The Investigation concerned factors contributing to the interpretation and understanding of facial expressions and the role of the situation in this process were there is no actual.

Although the interpretation of facial expressions is usually associated with emotional situations, its connection with the most important problems of psychology, such as the general recognition of mental states, attaching meaning to behaviour and understanding of others, is obvious. It was not this importance, but the great attraction and interest value of the subject which popularized it and eventually sent it into obscurity in such imaginative and artificial systems like physiognomy. The transition into a systematic and experimental investigation of this problem, which has been popular since the days of the Old Greeks, was achieved after a long and painful struggle. In the meantime, the philosophers too tried to fill the gap with some theories such as Analogy and Einfuhlung.

At the turning point of the development of this problem Darwin's influence was a great, deep and continuous contribution towards starting a systematic investigation, but it was not as fruitful as has been thought. Because, until the twenties of this century, his ideas and authority on this subject were the only dictum, progress towards a different direction and meaning were prevented. Darwin, who studied the nature of facial expressions, attributed the ability to interpret facial expressions to a

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*) See Turhan, M., Psychol. Abstr., 1944, 18, 1391.

partly learned and inherited instinct, and as proof, he gave the example of the reactions of his own child. The child could, when four months old, understand a smile and derive pleasure from it. When the child was six months old, his nurse pretended to cry and immediately the child's face assumed a melancholy expression, despite the fact that he had never been in contact with other children or seen an adult cry.

Piderit maintained that facial expressions are common to all nations and are clearly and easily comprehended and that children, when only one year old, could grasp whether their mothers were sad or distressed.

When we come to consider more recent workers, we find **A. Feleky** to be the first who was disappointed with the results of her experiments. In the short article which she published in 1914, she obtained results which can only be considered as negative. Her aim was not so much a study of the reading of facial expressions, as an effort to obtain photographs which would show the emotions most correctly, and she lays the blame for the negative results obtained on the ignorance of this field by the subjects.

After Feleky, mention may be made of Langfeld (1917). Similarly, **F. H. Allport,** using photographs previously used by Langefeld, showed them as lantern slides to various **classes** of students. The results obtained by Allport, were somewhat similar to those obtained by Langfeld. The correct judgements obtained from various subjects came to about 45% to 50%.

In the same way, **Ruckmick,** had one of his students act the various emotions, and showing the 34 photographs to different subjects, asked them to describe them in their introspection. The results obtained were to a large extent the same as Langfelds.

By disregarding the negative results obtained by the above authors, **Boring** and **Titchener** still followed **Piderit's** path. In his work previously, **Piderit,** after stating that any facial expression can be constructed with a mathematical exactitude, put forward the concept of a «geometry of expression». According to this concept, it is possible to construct any facial expression by making the various changes in the mouth, eyes, brows, and nose. Thus **Boring** and **Titchener,** by following this procedure and in accordance with his principle, created a model by means of which they claim it possible to demonstrate 360 different facial expressions.

Fernberger, in the four papers which he published at various intervals, repeated **Busby's** experiments and, having obtained the same results, he investigated the influence of positive suggestion, of analysis, (describing to the students beforehand the expressions corresponding to the various emotions) and of negative suggestions on the judgements of the subjects. Actually, to some extent both positive and negative suggestions, and to a greater extent, analysis, were found to increase the number of correct judgements.

The studies of **Gates** may be considered exceptional, when compared with these described hitherto, in that, positive results were obtained by him. In these studies, **Gates** considered the ability to describe the facial expressions as a criterion of «social intelligence», and shows the six photographs used by **Ruckmick,** first to adults, and then to a group of children between the ages of 3 and 14. In testing adult subjects, he found the correct results to be between 84% and 98%. He used this as a measure of comparison when testing the conclusions of children.

I believe **C. Landis** deserves special mention, in view of the methods he used, the care which he took, the wide field of subjects he examined, and the interesting results he obtained. His last two published articles merit special attention. **C. Landis,** first brought about particular situations, and then photographed the various emotions inspired in the subjects by them. From these photographs, he chose a series (of 42 photographs) which he showed to university students and collected their judgements. The results obtained were the most negative, in percentage, of all those mentioned up to now. The other results will be mentioned in due course.

Mandel - Sherman opened a new line of approach by taking moving pictures of children only a few days old, instead of adults, and thus showing not only their reactions but their reactions with and without the presence of the stimulus - situation, and this had a great influence on the judgements of the observers.

This historical survey may be concluded by mentioning. **Leo. Kanner.** By enlarging the instructions given to the subjects, **Kanner,** also using Feleky's photographs, showed it was possible to obtain better results. Besides this, he also investigated the correlation between intelligence and the ability to describe facial expressions and similar problems.

Among the most recent woks, there can be mentioned the papers of **Frijda,** who believes he has had positive results in this respect, and **Ciine,** who in a very interesting way proves the influence of social context on the perception of faces, and the papers of **Schlosberg,** who following **Woodworth,** tries in a gallant way still to turn the negative results, mentioned obave, to positives by evaluating in a different way.

METHOD, MATERIALS AND EXPERIMENTS:
FIRST SERIES OF EXPERIMENTS

The first part of the experiments which have been carried out will be described briefly since they are, in principle, similar to those of the workers already described. When these experiments were made, the only works in English with which I was familiar were, with the exception of **Charles Bell's** and **Darwin's** works and literature in German and French, those of **Feleky,** and **Landis'** first paper mentioned in the 1929 edition of **Woodworth's** «Psychology».

The materials used for these experiments were obtained from the photographs in the third volume of **Dumas'** Textbook and from **Krnchenberg's** «Der Gesichtsausdruk des Menschen» (1920). To obtain the necessary photographs and films for the experiment, the following conditions have to be satisfied.

I. Photographs or films have to be taken in a natural social situation, along with the stimulus, recording the introspection of the subject without his knowledge of the process.

II. If the stimulus situation, which is expected to evoke the desired emotion, is to be recorded in the laboratory artificially, then it would be necessary to record the expression of only one emotion at each session, and if the photographing had to continue throughout the same day it would then be advisable to use a different subject for each type of emotion. When it is desired to obtain a pure expression (not necessarily a specific one) connected with a certain mental state, before starting the experiment, it would be necessary for the subject to be in a normal, natural state, i.e. free from the effects of an earlier emotional state. Since it was difficult for us to fulfill these requirements, it was thought better to use the existing material. In any case, the aim of these experiments was to repeat the previous ones made in this field by different workers.

The photographs taken from **Kruckenberg** included, practically every emotion imaginable. All these photographs, over 100 in number, were shown to 10 subjects with the following instructions; «After carefully

observing the emotions and feelings expressed in the photographs to be shown to you now, state your judgement without long thought.»

When the judgements obtained in this manner were examined, I found that none of the conclusions arrived at by the subjects agreed with the expressions which any of the photographs were meant to exception of the photographs showing «joy,» (and even these were described by similar feelings such as «laughter», «happiness», «gladness», «merriness», etc.) in only two of the photographs did the correct judgements exceed 50%.

When the judgements from a photograph did sometimes exceed 50%, this was, with the exception of two photographs, either an opposite emotion to that expressed in the photography or belonged to a different emotion altogether. For instance, a photograph which showed surprise was judged to the extent of 70% as «fear» (including «horror») while only 15% judged it as «surprise», or else its complete opposite. In this way only two of the photographs obtained more than 50% correct judgements.

Of the 55 photographs taken from **Krukenberg** only 4 are shown here. The first photograph on the top left is one of the photographs taken by Krukenberg himself. The 12 year old girl is grightened by a bycycle pump bursting behind her; the photograph was taken just at this moment. Although the photograph was meant to express «fear», of the 16 judgements given by the ten subjects, 4 were «gladness», 3 «laughter», 4 «pleasure», 3 joyfulness», and 2 were of the form either «laughing» or «crying».

Of the second photograph from the top, although it represented a meaningless grimace, the 12 judgements included the following; 3 of them «boredom», «making faces», «vainness», saying, «what shall I do now?», «the spoken word has left a negative impression», «he has come in contact with something he dislikes», «he is not pleased», saying, «has it really happened?». The lower left photograph represents a purely mechanical facial expression (due to itching of the nose); the judgements of this were as follows: twice «he is thinking», twice «attention», thrice, «he is looking at something in front of him», «he is busy with something which gives him pleasure», «he is remembering things he has done», «he is playing a musical instrument by hand and singing», «he is annoyed», «he is angry», «he is listening to something». The expression as-

sumed by a stutterer when speaking is represented in the fourth photograph, on which the following judgements were given; twice «boredom», thrice «bodily pain», twice «attention», twice, «he has not understood something», «anger», «fear», «surprise», «he has seen something».

Summarizing the results of the experiments of the first part, the following points may be brought out :

1.   Any facial expression when shown separately in itself cannot be definitely and clearly interpreted. A photograph representing any particular emotion is mistaken for other similar emotions: (for instance, «joy», «gladness4, «happiness», «laughter», «merriness», enjoyment etc. cannot be distinguished). In fact sometimes emotions which are the opposite or far removed from the original are mistaken one for the other; in this way, «laughter» is taken for «crying»; and «anger», «fear» and «surprise» for each other.

2.   The facial expressions described in this manner have several meanings, namely, a certain facial expression is amenable to various interpretations at once; it is not confined to a single interpretation.

3.   Most of the subjects, when judging an expression, always had in mind a situation.

How is the failure to interpret facial expressions from single photographs to be explained? What is the reason for this incorrect and incomplete judgement?

Darwin, who was the first to carry out an experiment of the type described above, was the first to give an answer to this question: according to him, these photographs can not be correctly interpreted because they do not really show the emotion which they are desired to show. Following **Darwin, Feleky** repeated the experiments by taking the photographs himself, so that no doubt could be placed on their correctness, and this led her on to find the cause in the subjects. «It must be kept in mind that a part in the variation in the judgements of the same photograph is due to ignorance of the meanings of real facial expressions and to ignorance of the accepted terms used.»

Other workers either laid the blame, like **Darwin,** on the badness of the photographs, or like Feleky, considered the cause to be the lack of ability and the ignorance of the subjects. It is also pointed out that the expression shown on a photograph is static as against the dynami cnature

of facial expressions. I think the most plausible reasons have been covered by the explanations.

When the answers as given above pose a problem in themselves, it appears that the solution of the main question is well nigh impossible. For, when the criterion of correctness or incorrectness of an expression depends on the ability to interpret of the person judging it, when we have no other standard, it is not possible to know whether to lay the blame on the photograph or on the one judging it; unless **one** of them is accepted without doubt as subject to no error, or established as near certainty as possible.

Thus with this in view, **C. Landis,** by bringing about truly objective situations, attempted to excite his subjects and photographed them.

Despite the violent swearing by the subjects in certain scenes and their throwing of some of the furniture at the experimenter, even though there was little doubt of their emotions, there was uncertainty about their expressions. In spite of this, **Landis** made those subjects, whose emotions were well expressed, repeat the expressions by inducing them to remember some of the same situations, and photographed them again.

Although there was a difference between these two kinds of expressions, the latter gave better results from the point of view of interpretation.

As has already been mentioned **M. Sherman,** besides taking moving pictures of the expressions, actually showed the reactions of the subjects directly to the observers. In this experiment too, there was little difference between the interpretations of photograph, film or direct observation. It was only the knowledge of the stimulus situation which had a positive influence. Sherman may be criticised for having used babies only few days old as his subjects of observation, whose expressions are not differentiated.

It is not only because of the fruitless speculations to which they lead, but also from consideration of the direction which the experiments now follow that we think it not worth while to delay over these points. In studying the possiblity of improving the ability of the subjects to interpret, F. H. Allport, after stating that this is possible to a certain extent, mentions that besides artistic ability, interest, being a member

of a large family, etc., the situation is also a factor. In his latest papers, C. Landis subscribes to the same view, namely that the situation is a factor in the interpretation of expressions. (Jour. of Gen. Psychol., 1929, Vol. II.)

In fact, the second part of the experiments, which are to be described now, show that the situation is not only a factor but is the main factor in the interpretation of facial expressions. For this reason we thought of producins expressions within situations, and having them judged in this context, in order to examine the role played bylthe situation. Since it was practically impossible to bring about and record a normal situation in the laboratory, I attempted to solve the problem in as simple a manner as possible. Since the influence of the situation, and the effect observed, is so evident, even these simple experiments are sufficient to demonstrate the point.

EXPERIMENTAL MATERIAL AND PRELIMINARY EXPERIMENTS.

With this in view it had been thought of making use of films comprising different scenes and showing a single situation. When it was found **impossible** to obtain a continuous film, containing clear and different situations, it was tried to get hold of film scenes depicting clear situations. It is possible to obtain photographs of such scenes from the English magazines, «Picture Show» and «Picturegoer». In these periodicals the photographs depict the scenes of situations farly fully, and are described quite well.

In order to find out whether the photographs obtained from these periodicals, about 60 in number, did or did not depict a situation, I showed them to various subjects and requested them to describe the situation represented in the photograph and to interpret the facial expressions of the persons in the scene. As a result of this preliminary experiments it was selected * ten of the photographs: these ten photographs depicted the following ten situations :

Figure (22) **A** man is introducing his new wife to his old wife.

» (23) **A** father and mother pose with their child born ten hours ago.

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*) In selecting these photographs another point kept in mind, was that they should represent as many important emotions as possible.

»   (24) A gangster who has returned home from a crime, finding
             his wife and his daughter with a police cadet, thinks that
             the latter is there to arrest him. At this moment his wife
             is telling him that their daughter is engaged to the cadet.

»   (25) A man is teaching his wife billiards.

»   (26) An actor about to go on the stage for the first time is
             unable to put on his tie from excitement: a fellow actress
             is giving him a hand.

»   (27) A sculptor making love to his model is caught suddenly
             by his wife.

»   (28) A young woman is caught in a mountain cottage with a
             man; she is obliged to marry him against her will.

»   (29) A man is ill; he is about to die; his wife is nearby.

»   (30) There is a quarrel between the man and his son, and his
             mother is intervening.

»   (31) The servant of a Hungarian lord is elected to parliament
             as a representative of the opposition party; the lord is
             sneering at this, at which his daughter (who is in love
             with the servant) becomes angry.

THE MAIN EXPERIMENT.

These ten photographs were shown to the ten subjects in the follo-
wing way. In each photograph the **situation** was exposed to a different
degree, first it was covered so that only the face of one person in the
photograph remained visible, and in this way it was shown to the sub-
ject who was asked to observe the emotion implied by the facial expres-
sion, and to describe it without long delay. When the facial expression
of this person had been described, the expressions of the other persons
in the photograph were shown simillarly and described in turn, until
the whole situation was exposed. The point of this preliminary method
was to hide the aim of the experiment from the subject and so to elimi-
nate the influence of suggestion. We shall see the important role of this
when we come to examine the attitude of the subjects. But against these
advantages there was the great disadvantage of decreasing the imme-
diate influence of the situation, hence we were obliged to discontinue
it. Again for this reason it has not been recorded in the tables the jud-
gements by the subjects of the facial expressions of the other persons

in the photograph. The only judgements included in the tables were those given when the situation was excluded and when the situation had been completely exposed. Despite this elimination, it is still not possible to include here an abstract of the tables of all experiments; hence only a few representative figures will have to suffice. In addition to these I give the versatim report ot reactions (exact protocol) to several photographs in order to give an idea of the progresse of the experiments. I include below the original protocols of the first photograph shown to three people used as subjects in these experiments. The subjects taking part in these experiments, as in the previous ones, were university students, mostly studying psychology, between the ages of 19 and 22.

First subject : Medical student; Figure (22);   Date of experiment: 5.1.1939. (The first woman on the left is shown.) His comments were as follows : «She is speaking to a man, is being invited by someone, perhaps to a dance; nevertheless she is **indecisive**, is deciding whether to accept or not, is in a somewhat difficult position, **indecisive»** (the photograph is then fully exposed) and the subject says, while laughing, «Oh, it's quite the opposite». The man has been frightened, is surprised; is irresolute and does not know what to do or say»; of the one in the middle), «the woman is proud and also surprised»; (of the one on the left, first shown) «this woman **has decided** to do something definite, or she is glad at the success of the thing she has done, and is watching attentively.»

Experimenter — «They are newly wed; he is introducing his wife». **Subject** — «In that case the man is thoughtfully watching, and does not know what to say under the circumstances. His new wife is pleased and proud and is closely watching the other woman, who appears to despise her; nevertheless she is pleased too.»

Experimenter — «She is his former wife.»

Subject — «Yes, the man is in a difficult position. The new wife shows pride and contempt; the former wife's expression includes a little sorrow and pain although she appears pleased.»

The following points stand out in there experiments:

1. The interpretation of an isolated facial expression alters immediately the situation is made visual. We see here a complete transformation: (where previously the expression was judged as «indecisive»,

it is now stated that» it is definite.) This alteration in the expressions continues throughout as the situation is being completed. In this connection verbal instruction has a similar affect to visual exposition. (We see this from the change of the judgements of the three subjects concerning the above photograph.)

2. There is a tendency on the part of the subject to fit his original judgement into the new situation, (e.g. having judged it as «glad» in the first instance, he then preserves this by saying that with «gladness» there is some «sorrow and pain»).

Two more protocols, again about Fig. 22 are included which contain practically the same points.

Subject: Student of Philology. Date of experiment: 13. 12. 1938. (of the first woman on the left) «There is a little gladness and a little surprise on her face.» (The photograph is fully exposed); «she has a somewhat reluctant appearance, shyness. I can observe surprise in the man the one on the right.» (of the second woman in the middle)» a certain attentiveness, and some amazement.»

Exp. — «This is his new wife; he is introducing her to his former wife.»

Subj. — «Oh, now it's completely changed. I don't see much difference in the middle woman. The man has a hesitant and frightened aspect; and is worried. There is some pretence on the part of the woman on the left», (the former wife).
Third Protocol

Subject: Student of Psychology. Date: 31. 12. 1938.

(Again of the first person from the left). «She is watching someone with **amusement**. Or she has seen someone she had never seen before; or else is looking at someone she is meeting for the first time. The lines on her face indicate that she has met someone or is pointing at someone.» (The photograph is exposed.) «Well, that is just it; she is at a meeting, she is holding a friend's hand and asking how she is. The man does not know the woman and is therefore asking what is happening. The first woman is looking at the other woman's dress and closely watching her friend. The other (the second woman) is **natural** and is only looking at her face.»

Exp. «This woman (the first woman) is the man's first wife, and he is introducing her to his new wife.»

Subj. — «This woman, (the first woman) in a mocking mood, wants to ask sarcastically, is this her? The new wife is a little **proud**. The man is in the position of studying the situation.»

It sometimes happens that some similar or somewhat dissimilar expressions can fit into a certain situation. Of the various judgements given prior to the exposing of the situation, one or two which fit the situation determine the judgement when the situation is exposed.

But even here it is evident that the situation has a determining influence. As opposed to this, it sometimes happens that a single expression can fit into several situations; in this case the expression remains fixed despite the change of situation. Nevertheless these do not constitute an exception to, but are a special case of, the fundamental rule. In order to demonstrate both these and the influence of the situation, not only on the facial expressions but also on the posture of the body, and on the gestures, the protocols corresponding to two other photographs are given below.

Name subject: Student of Philology; Fig. (25); Date of Expt : 7.1.1939. (The lower part of the photograph is hidden.) «They are both gay, are watching something nice and following it with interest. This may be a child, baby or a lovely animal.» (The photograph is completely exposed). The subject, saying «aha» and laughing at length, says «it has altered tremandously», and continues to laugh. «Yes, the man is teaching the girl a game.»

It is clear that although the subject admits the tremendous alteration, this alteration belongs to the situation he had in mind and not to the facial expression.

The protocol by the same subject of Figure (26) is given below.
(The woman's face only is to be seen.) «She is laughing about something; she is not very merry; it is not a natural laugh. There is something in front of her, in which she is interested.» (The man's face only is to be seen). «Is he ill? He may be lying down. The expression on his face is not likely to be laughter; he is thinking of something; perhaps he is not much interested in what is being said.» (The photograph is completely exposed. The subject laughs again.) «It is obvious that the man is annoyed».

Since the initially judged expression by the subject can fit into this situation, he sticks to his original judgement.

Subject : Student of Philosophy; Fig. (25); Date: 4.1.1939.

(Only the faces of the persons are seen in the photograph.) «They are both looking at something and laughing. A child they are fond of is standing in front of them.» (The photograph is uncovered.) «They have been playing billiards.»

Again the same subject. Figure: (26).

(The woman's face only is shown.) «The woman looks at something and is laughing, is showing affection for something.» (The man's face only is shown.) «The woman has recounted something and is laughing, the man, saying «Is that so?» and nodding his head, laughs and says, «It isn't so but let it be so.» (The photograph is completely exposed). «Aha, I should have expected this, the woman is tying his necktie, and he is pleased.»

Although it is felt desirable to give some of the data included in the tables of these experimental results, the impossibility of summarizing them here in any way makes it necessary to regard three figures as sufficient. One of these figures is the number of judgements given by the subject before the situation became known; the second is the number when the situation became known; and the third is the relation of the change of the judgements between the two positions.

The number of judgements given by the ten subjects about the first person shown in each of the covered photographs was **281**. The number of judgements given by the same ten subjects about the same person in each of the completely exposed photographs was **141**, which is practically half the previous number. This ratio is high because of the inclusion of three photographs in which the number of judgements given in the two cases was very close. If these three were excluded the ratio would be nearer 30 to 40%. The third figure is the percentage alteration of the judgements in the two cases, and is 84%.

CHECK EXPERIMENT (EXPERIMENTUM CRUCIS).

The main object of this experiment, which was carried out to give greater confidence in the results of the experimental findings, was to

investigate the influence of situation under more rigid conditions of control: I wished to find to what extent situation could alter an expression which was not a result of that situation. The result obtained in this manner from this experiment was to be used as a measure of the influence of situation. It is to be recalled that in the experiments described in the first part, expressions of emotions somewhat similar to each other, or dissimilar emotions, such as «fear» and «anger» or «surprise», were mistaken one for the other.

It would have been sufficient for our purpose to find whether a situation did or did not make an expression which did not belond to it, change to one which fitted that situation: that is, for example by putting an expression from a situation depicting «fear» into a situation representing «surprise» or «anger». But if an expression which does not show much of an emotion is placed in one of the emotional situations named above and the positive result be obtained, a more exacting condition would no doubt be created regarding the influence of the situation.

With this in view, I obtained two different photographs of a person, one emotional, the other with a fairly normal expression. Thus the face in normal picture was isolated by photography and by the same means transposed to replace the face in the emotional picture. The proportion of change was over 90%.

This experiment was repeated under more rigid and difficult conditions with the introduction of a film. In order to have the film as close to natural and normal life as possible it was thought best to have it represent a scene from the daily life of a family. One afternoon, while the whole family are having tea happily together the butler brings in some fruit in an antique bowl that has a great ancestral value for the family. When placing it on the table he suddenly drops and breaks it. The whole family become angry with the butler; the master fires him immediately. Then the eldest daughter takes a piece of the broken bowl from the floor and looks at it with great pity. The whole family undergoes a state of sorrow at what they have lost and the associated memories it evokes. In the fourth scene, the butler comes back and asks for his salary. They refuse to pay it. Then he suddenly produces a gun from his pocket and begins to threaten the family. This short film, thus, represents four basic emotions, namely «joy», «anger» followed by «sorrow» and «fear».

The actual film was made in a film studio in Istanbul, acted by two professional and three amateur actors representing the family of five with two daughters and a son.

While the scene was being acted, every actor had to portray both the emotion connected with the particular scene along with two other different emotions. So that, in every scene there were 10 different emotions or psychological states along with the main emotion connected with that scene. When a new scene began all the actors started to act the emotion proper to that scene first and then 20-30 seconds later only one of the members began to undergo a different emotion for a period of 10 seconds, at the end of which time while he reverted back to portraying the main emotion, the subject next to him started a different one for the same length of 10 seconds, etc. In this way, during a period of 2 to 2½ minutes 10 different emotions along with the main one were represented. These emotions were «joy», «anger», «sorrow», «fear», «surprise», «anxiety», «hatred», «pain», «contempt», «disgust», «distain».

This film was shown to three different groups of university students. The first and second group of subjects were initially given information concerning the film and were told that they would be seeing four scenes of different emotions. At the end of the first scene, the film was stopped and they were given the following instructions. They were asked whether they had seen any other emotion represented in this scene along with the main emotion, «joy», if so, to write down what they were. After answers had been collected, the second scene was shown, followed by the same instructions to the subjects, and so on with the third and fourth scenes.

The third control group was not given any information or instructions about the film. At the end of the first scene, the subjects were asked whether the scene had been convincingly acted or not; when their answere to this question had been collected they were then asked whether they have seen any other additional different facial expressions; if so, to write down what they were. The same procedure was repeated with the rest of the rest of the scenes. The statistical results concerning these three groups of subjects are shown below:

GROUP I

The Mean, Standard Deviation, and Probability of the judgements for each scene.

1. Scene : Joy N (number of subjects) : 59.

$\Sigma fx = 104$ $M = 1.76$ $\sigma = .953$
R o—4. $\sigma M = .122$
$t = 14.19$
$p < .001$

2. Scene : Anger. $N = 60$

$\Sigma fx = 84$ $M = 1.40$ $\sigma = .916$
R o—4. $\sigma M = .118$
$t = 11.86$
$p < .001$

3. Scene : Sorrow. $N = 58$

$\Sigma fx = 113$ $M = 1.95$ $\sigma = 1.204$
R o—4. $\sigma M = .158$
$t = 12.34$
$p < .001$

4. Scene : Fear. $N = 59$

$\Sigma fx = 94$ $M = 1.59$ $\sigma = 1.149$
R o—4. $\sigma M = .149$
$t = 10.67$
$p < .001$

GROUP II

1. Scene : Joy. $N = 43$

$\Sigma fx = 40$ $M = .93$ $\sigma = .975$
R o—4. $\sigma M = .148$
$t = 6.28$
$p < .001$

2. Scene : Anger. $N = 43$
$\Sigma fx = 34$ $M = .79$ $\sigma = .764$
R o—2 $\sigma M = .116$
$t = 6.81$
$p < .001$

3. Scene : Sorrow.   N = 42.

$\Sigma fx = 44$ M = 1.05 $\sigma = 1.170$
R   o—4 $\sigma M = .180$
t= 5.83
p < .001

4. Scene : Fear.   N = 41.

$\Sigma fx = 26$ M = .63 $\sigma = .852$
R   o—3 $\sigma M = .133$
t = 4.73
p < .001

GROUP III.

1. Scene : Joy.   N = 26.

$\Sigma fx = 27$ M = 1.04 $\sigma = .847$
R   o—3 $\sigma M = .153$
t = 7.38
p < .001

2. Scene : Anger.   N = 30.

$\Sigma fx = 34$ M = 1.13 $\sigma = .850$
R   o—3 $\sigma M = .153$
t = 7.38
p < .001

3. Scene : Sorrow.   N = 29.

$\Sigma fx = 28$ M = .96 $\sigma = .967$
R   o—3 $\sigma M = .179$
t = 5.36
p < .001

4. Scene : Fear.   N = 29.

$\Sigma fx = 44$ M = 1.52 $\sigma = 1.122$
R   o—4 $\sigma M = .208$
t = 7.30
p < 001

From these results it can be seen that the mean in every group could not even reach two (it was 1.995 with the first group in the "sorrow" scene). This means that, in every scene, out of the different emotional expressions, on the average only about two could be perceived. The rest of the eight expressions were either absorbed with the emotion proper to that scene or were interpreted with a subtle change which fitted that scene.

We believe that this experiment dispels any doubt concerning the influence of situation on the interpretation of facial expressions.

RESULTS

When the results obtained from these experiments were collected the following points became established.

1. Facial expressions which are seperated from the situation and shown in an isolated form can not be clearly and definitely interpreted. There is either a confusion of similar or even dissimilar expression occur. But by making such an expression fit itself through selection and differentation to the situation interpretation is made possible. This influence of the situation continues until it is definitely completed.

2. The situation influences the interpretation not only of facial expressions but also bodily posture and gesture.

3. In judging facial axpressions most of the subjects have in mind one or more situations. If one of their judgements accords with the exposed situation it remains unchanged. But even here the situation plays a selective and determining part by distinguishing one or two from out of the numerous judgements.

It can thus be concluded that in the interpretation of facial expressions the principle part is played by the situation and not by the facial expressions. Therefore, an expression which has been isolated from its situation can not be correctly interpreted.

Besides these experimentally proved and established results, several others present themselves which I can do not more than point out. During these experiments, and also in experiments which have not been described here, some observations were made. Some of the subjects looked puzzled after having described the facial expression of some person,

and when they were asked the reason for this, or even before they were asked, they stated that they had seen the person in some film or other, and that the face appeared familiar to them; and when the situation had been exposed they exclaimed, «Yes, I remember how; I saw it in a certain film.»

This is a situation which no doubt often happens in almost everyone's daily life. When we meet in the street, or elsewhere, a person who works in a shop, cafe or restaurant which we have only been to once or twice by chance, we fail to recognize the person until we meet him again by chance where he works or if we remember in which the place he works. I give another example of this case concerning a different field altogether. I take my example from the experiment carried out for a different purpose, by two English phoneticians. While these two phoneticians were travelling in London the following idea occured to them : using the correct stress and intonation, what are the minimum clues necessary for an English man to understand a sentence? A little later one of them is asked something, and he says, «to ko ro» his questioner understands him, and says, «thank you». The second phonetician in his turn asks someone working at a place they happen to be «to' 'mo 'kre» and get the reply, «Yes, sir». It would be interesting to know how many readers, have understood these sentences, it is unlikely that many can do so. The first was said in a bus in reply to the conductor for the fare, the complete sentence being, «Tottenham Court Road». The second sentence was asked of the guard in an underground station when going to Notting Hill, and when completed should read, «Are you stopping at Mornington Crescent?». It is certain that the sitiation greatly influenced the comprehension of these sentences. We do not wish to say anything very dogmatic about recognition here, but it seems to us, in order to be able to recognize things or persons with whom we are not well acquainted in various situations, it is necessarry to see them again in the position or situation in which we first perceived them *..

CONCLUSION

Under these circumstances, there does not seem to be much meaning in the study of facial expressions when isolated from the situation

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*) This has been meanwhile experimentally proved by one of my Co-wor kers in the recognition of faces : S. Özbaydar. The role of situation in recognition of faces, unpublished Ph. D. Thesis University of Istanbul.

either through photographs or through films. In reality, in order to study facial expressions in an appropriate way, we must present them with the stimulus, and interpret them according to the situation within which they have occurred. To accomplish this it is necessarry to photograph the face of the person, whose facial expression it is desired to record, with the stimulus situation, and without the knowledge of the person concerned. Even then it is not possible to tell that the inner experience and the facial expression are in accordance of adequate. To record inner experience would not gives us a criterion. In cases of definite failure (i. e. in cases where, in spite of all the fullfilled requirements, facial expressions are not correctly interpreted,) there is no way out than to accept the discordance between facial expressions and emotions as Darwin did, or to conclude the subjects as ignorant and unintelligent as Feleky did.

This dilemma is due to the erroneous and prejudiced assumptions of the experimenters and to their depriving themselves of such a unique and important criterion as situation. A facial expression, and generally any psychic deaction, is made as a result of a stimulus occurring in a situation and within that situation. Therefore, the facial expression that is to be interpreted forms the part of a whole, in most complicated cases, between one or more human beings and the sociopsychological relationships that they form, or by some other stimulus or from objects within the enviroment and especially from knowledge about the situation.

That is, expression is not independent of a stimulus - situation inspite of having been provoked by it. So, isolating expresion from the situation and presenting it to the observer make him to attach a meaning to the absent situation by filling the gap of the situation, and things happening within this situation through this single clue. Thus the experiments conducted under these conditions about facial expressions become nothing but guess-work. In reality, we, in daily life, try to guess the reasons for a man's emotional changes, when we have no clue as to their reasons, by trying to find the possible situations that may arouse such facial expressions. When we are aware of the situation, we are so certain of the emotional content of a person in that situation that we only start to observe his facial expressions when he attempts to hide then. Thus facial expressions are a clue, to and a natural manifestation of situations. What is important for us is not the look of the facial expres-

sions but the adequateness of the reactions of the person to that situation.

The following scene that has been observed in London during the second World war is worth mentioning because it illustrates our points. The author of this paper came to the gate of Kensington Park opening on to Bayswater Road, at the subway station of Queensway opposite this gate, a group of 40 - 50 people were coming out. Just at that moment an urgent air-raid alarm was given. A great majority of the people all of a sudden started to run towards the park, paying no attention either to the traffic lights or to the cars whose drivers were as panicky as they were. They were all acting as dangerously as they possibly could. The most reasonable step would have been to go quickly into the shelter of the underground station. But the sudden impact of the alarm as soon as they came out of the station caused them to panic. What were their facial expressions? Youngsters were giggling, some of the elderly people were shouting, but they all had the expression of a normal person trying to catch a train.

It would be impossible to force a subject to believe that there was an expression of fear on their faces of a photograph without a clue to the situation. Similarly, it is also necessary to have information about the situation in order to interpret the real meaning behind a smile; whether it means, not a sign of happiness, but of anger, or shyness, or embarrassment, and (in some cultures) sorrow.

Lastly, we could ask the question whether knowledge about the situation would always inevitably lead to the right interpretation?

As in every perceptual, understanding and learning process, so also in this case, it is connected with the amount of knowledge about the situation, the ability to understand and conceive. For this reason and erroneous understanding or knowldege of a situation ends in wrong interpretations of expressions. Such exprinces are common in daily life. **Marcel Proust** gives a very good example of this while interpreting the look in the eyes of a young girl in his novel **«Albertine Disparue»**, how it changes from one situation into the other, or to be more correct, how it changes when he learns about the real situation.

All these experiments, and observations, force us to accept a new theory and method, where situation is essential for the interpretation of facial expressions. Not only expressions but the investigation of all behaviour will depend on such an approach.

SUMMARY

Ten pictures representing a definite and clear scene were selected from normal films to be used in the investigation of the factors contributing to the interpretation of facial expressions, and the role of the situation in this process. In these pictures, the main character was first presented to the subjects isolated from the situation, and then within the situation, with additional information to ten subjects, and they were asked to interpret their facial expressions in both cases. In these experiments, it was found that an expression isolated from the situation was interpreted differently from the same expression within the situation. According to the results of this experiment, it was found that the situation halved the number of judgements about an expression compared with the number of judgements given in isolated situations. It also concentrated the responses, among many possibilities, on the one that fitted the situation most, and in many cases changed it. The influence of situation was also important on gestures and postures.

In the check experiment a normal face was interchanged with an angry one in an «anger» situation in the picture, and this face was interpreted by the majority as showing anger or some related emotions.

This experiment was repeated under more rigid conditons with a film. A group of five acted scenes of «joy», «anger», «sorrow» and «fear» and each actor for ten seconds acted two other emotions in each scene. Thus in every emotion al scene, ten other emotions were represented. This film was shown to three groups of university students, and they were asked whether they observed other emotions besides the main one, and if so, their names and numbers. As a result it was seen not more than two emotions could be perceived in each scene on the average.

This indicates the distinctness of the influence of the situation. It implies the necessity of a new approach and method where situation is taken as a basis in the investigations of facial expressions.

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HABERLER

1958'de Cambridge Üniversitesi Newnham Kolleji Research Fellow-ship'liğini kazanmış olan Doçent Dr. Beğlân Toğrol, iki sene müddetle Cambridge Üniversitesi Psikoloji Laboratuarı'nda araştırmalar yaptıktan sonra 1960 ders yılı başında Tecrübî Psikoloji Kürsüsü'ndeki vazifesine dönmüştür. Dr. Toğrol, araştırma neticelerini British Experimental Psychology Society'nin Haziran 1960 toplantısında ve Ağustos 1960'da Bonn'da toplanan XVI ncı Beynelmilel Psikoloji Kongresinde birer tebliğ halinde vermiştir.

1958 - 59 ders yılında Kansas State College'inden Prof. Dr. H. B. Reed, Tecrübî Psikoloji Kürsüsüne Misafir Prof. olarak gelmiş ve burada üç yıl ders verdikten sonra, 1960 - 61 ders yılının sonunda memleketi olan Birleşik Amerika'ya dönmüştür. Prof. Reed Öğrenme Psikolojisi, Ferdî Farklar Psikolojisi, Klinik Psikolojisi mevzularında ders vermiştir.

Prof. Dr. Mümtaz Turhan, Avrupa Kültür Federasyonunun 17 - 19 Haziran 1961 tarihleri arasında Londra'da açtığı bir seminere davet edilmiş, dönüşünde Heidelberg Üniversitesinde bir konferans vermiştir.

Prof. Dr. Mümtaz Turhan, 14 - 21 Ekim 1961 tarihleri arasında, Selanik ve Atina'da toplanan Göçmen Problemlerini Tetkik Kongresi'ne memleketimizi temsilen iştirak etmiştir.

İstanbul Amerikan Kolejleri Psikoloji Profesörü Dr. Haines 1961 - 62 ders yılında Sosyal Psikoloji derslerini vermek üzere Tecrübî Psikoloji Kürsüsünde görevlendirilmiştir.

1961 - 62 ders yılından itibaren Edebiyat Fakültesinin kabul edilen yeni yönetmeliği mucibince, Psikoloji, bir bölüm haline gelmiştir. Böylece, Psikoloji Bölümü aşağıdaki sertifikaları vermektedir:

1 — Umumî Psikoloji Sertifikası,
2 — Tecrübî Psikoloji Sertifikası,
3 — Sosyal Psikoloji Sertifikası.

Psikoloji Bölümüne 1961 - 62 ders yılında 100 kadar yeni öğrenci kaydolmuş ve Bölümümüze devam eden öğrenci sayısı 200'e yaklaşmıştır.