THE UNIVERSITY OF DETROIT

A COMPARISON OF THE JUDGEMENTS MADE BY SCHIZOPHRENIC AND NORMAL SUBJECTS TO THE RUCKMICK PICTURES OF FACIAL EXPRESSIONS OF EMOTION

A THESIS

SUBMITTED TO THE GRADUATE FACULTY

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

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DETROIT, MICHIGAN

FEBRUARY, 1959

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THE PROBLEM

Introduction

The judgement of the facial expressions of emotion has been a fruitful topic for study for many years. Though often contradictory, many theories have arisen from the multitude of investigations that have been conducted; yet very little of what has been discovered is directly applicable to the field of abnormal psychology.

Two notable exceptions are the works by Arthur L. DiVittis[1] and Stuart Wilson.[2] In each of these studies, the perception of the emotions was linked to the subject's own emotional adjustments. From the definitions of schizophrenia by Taber and Drever this could be foreseen, at least theoretically. Drever defines schizophrenia as "a type of mental disorder.... characterized by dissociation, particularly between the intellectual processes and the affective, the latter being also to a great extent disorganized, with many varieties."[3] Taber states that "loss of emotions or emotions manifest as out of place" are symptoms of schizophrenia.[4] In a factorial analysis of forty abnormal symptoms, Thomas V. Moore found that they could be grouped into five factors, three of the five being

emotional.[5] Thus there seems to be a strong relationship between a disturbance of the emotions and schizophrenia.

In the judgement of emotional expressions, empathy plays a definite role. Kanner[6] notes that the empathy can go so far that sometimes the whole person is "visualized." That empathy was a factor was also noted by Coleman.[7] The need for research along the line of empathic reactions by schizophrenics was suggested by Southard.[8] Empathic ability would seem to be a prerequisite for any real judgement of the facial expressions of emotion. If the abnormal subjects project into the expressions their own emotions, their judgements will reflect these emotions. A study, therefore, seems advisable to determine whether such empathy exists on the part of schizophrenic subjects, and if so, to determine the forms of the emotions projected.

Emotion, as used in this thesis, is defined as "... a complex state of the organism, involving bodily changes of a widespread character... and, on the mental side, a state of excitement or perturbation, marked by strong feeling, and usually an impulse towards a definite form of behaviour."[9] The overt reactions are assumed to be outward responses in accord with the more immediate covert or inner mental and physiological responses. That the overt responses may be socialized to a degree is recognized and will be shown

later. Further, both pleasant and unpleasant emotions will be considered. Empathy as used here refers to the ability to sense or feel the apparent emotions of the observed person as if they were, in part, the observer's own.

Statement of the Problem

The apparent emotional flatness of the schizophrenic may be related to his perception of the environment. Whether the patient will project his flatness of emotional expression into his perception of others is yet to be seen. If he does project, then his own flatness of affect can be expected to be reflected in a tendency to make judgements of emotional expression in terms of the less intense emotions and feelings. This thesis will be an investigation of the differences between the judgements made by schizophrenic and normal subjects of pictures of facial expressions of emotion. To be determined is whether the schizophrenic patients, in their patterns of response, will show a statistically significant difference, in terms of reduced affect, from the responses of the normal control group.

The hypothesis to be tested is: "In judging the facial expressions of emotion on the Ruckmick Pictures, schizophrenic patients will choose, to a statistically significant degree, fewer of the more intense emotional

states to describe the pictures than will the control group of normal subjects."

The data in the study conducted by DiVittis[10] tended to show that the schizophrenic patient did respond with some flatness of emotional response as compared to the group of normal subjects used as controls. A group of college students was used as the normal control (age range: 17-23) for comparison with the schizophrenic subjects (age range: 17-72).[11] But as DiVittis stated: "It is quite obvious that there is a wide discrepancy in the age limits of the two groups, and, hence, that the group of normals is not a perfect control."[12] Further, "The obvious need would appear to be a study in which the control and experimental groups were more evenly matched for age, marital status, and background."[13]

The present study tried to meet these requirements of providing an adequate control group for the experimental group tested by DiVittis. Since it was found that age had a bearing on the selection of the descriptions of the facial expressions of emotion in the DiVittis study,[14] the ages of the controls match those of the experimental group to rule out any spurious, age-induced response variance in the samples. Further, the control group was selected from a population more nearly approaching that of the experimental

group in background than can be found in a limited selection of college students. The number of married individuals is also greater than the number found in the college population, and approaches the number in the experimental group. Within these limits, and the aforementioned framework of DiVittis' thesis, this thesis should help to determine the usefulness of the Ruckmick Pictures as a projective technique.

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CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The many studies which have been conducted regarding the judgement of the facial expressions of emotion have yielded little agreement in the conclusions reached. Part of the lack of agreement, at least, can be traced to the various theoretical positions that may be taken, with the consequence that the results of research may be viewed from many positions. However, when all the research is considered, and analyzed as a whole, certain similarities and patterns emerge. Even in theory there is a thread of agreement:

> ...Almost all writers stress (1) the biological inheritance of many facial expressions, (2) the previous serviceability or significance of these responses under primitive conditions, (3) the effect of irradiation of energy over a vast network of outlets, which include most neuromuscular mechanisms, glandular activities, and other physiological changes, and (4) the modifiability of these expressions through voluntary and social control.[1]

Setting aside theory, or independently of it, the majority of the peoples of the world judge the emotions of others, in part, from facial expressions. The various expressions and patterns of expression are usually taken for granted, whether they are dependable or not. According to Fields, "laboratory evidence has provided little support

for the popular belief that facial expression offers dependable clues to a person's feelings and emotions."[2] But Fridja stated that "interpretation is indeed possible," and "the idea of being able to get insight into someone's inner life, only by looking at his face, is no unreal one."[3] The errors made in judgements are not indicative of the contrary, it is argued, but rather of perceptual deficiencies of some kind.[4] Perhaps a more logical and tenable position is that taken by Ruckmick:

> Actually how dependable in specific instances this pattern is, is perhaps beside the point. At least a general biological and social significance can be made out. Even if in detail and in exceptional instances woefully mistaken inferences are sometimes drawn from facial expression and appearance, the average influence coming from the face of one individual to another is undeniably great.[5]

Thus, the direct observation of actual facial expressions has been, is, and probably will be a major means of communication among people.

Cultural and Innate Factors

Perhaps some of the disagreement in judging expressions stems from a variance in the cultural patterns and determinants. According to Klineberg, mannerisms and expressions of emotions are to a large degree culturally determined, learned, and socially accepted and interpreted.[6] He states that there is a "cultural conditioning of a physiological

response which is evidently universal, and which has a biological basis."[7] Landis goes even farther and indicates the effect of learning in his statements:

> Socially, the recognition of expressions of emotion is clearly of an acquired nature. This acquisition is of the nature of a language mechanism. That is, the recognition is learned just as verbal speech is learned. ...The expressions themselves, so far as the facial expression is concerned, are usually learned responses.[8]

Certain expressions of emotion seem to be innate, then, but cultural patterns and learning comprise a decided influence. According to Munn, "there are certain inborn expressions upon which the cultural and individual expressions are imposed."[9] Allport considers the facial expression itself as an "expressive abridgement" of an entire response, contracted from the infant's reaction to a situation.[10] Moore states that "emotional behavior becomes less chaotic with age 'and better directed towards the problem situation as well as more socially acceptable'"[11]

Hunt would not agree to inborn or innate reactions: "The classical facial expressions of emotion are not innate, but are cultural accretions learned by the organism in the course of his social experience."[12] Munn, however, gives adequate refutation of Hunt's view by pointing out that crying, weeping, smiling, and laughing are exhibited by infants without their having seen these

expressions in others.[13] Rudimentary as these expressions may be, they could well be the elements upon which the culture can impose the socially accepted modes of behavior and reaction. The ultimate expressions, after undergoing a degree of socialization, could be called learned.

Gardner Murphy and Lois Murphy stress the experiential aspects of the process: "the ability to interpret such expressions is in very large part based on experience rather than on 'original nature.'"[14] The case for the influence of the learning process is summed up very well by Gardner Murphy, Lois Murphy, and Theodore Newcomb in the statement that: "one learns <u>when</u> to be angry, <u>when</u> to be ashamed, and to some degree even <u>how</u> to be angry or ashamed."[15] Woodworth integrates several viewpoints with these words: "Each 'expression' is an integral part of the complex of neural, muscular, and glandular changes that constitute the emotion."[16] Further, the "basic unlearned patterns of facial expression" are used and modified in the process of maturation. "A native pattern develops to a certain level, and then it fails to develop further unless it is intergrated into learned behavior."[17] Learned and native patterns work together then, and in fact, to a degree, both the expressions themselves and their interpretation by others in a society seem to be learned,

granting some innate, perhaps primitive, reaction patterns that are modified by the individual himself.

Training

If, as assumed, the ability to judge the facial expressions of emotion is partly learned, then training should help improve an individual's accuracy in making judgements. This is, as expected, the case. For example, Allport reports that, in most instances, study in how to judge facial expressions improved scores, and training tended to equalize the abilities of the judges in any one group; in fact, those who were most proficient at first sometimes lost in ability; this loss was greater for the initially more proficient judges.[18]

Guilford found that training improved the accuracy of judgements by 51 percent with a negative correlation between initial ability and the amount of improvement.[19] Jenness found this same basic effect of training, but he suggested that the low amount of gain for the good judge is due to the low reliability of the test, rather than to a lack of actual learning, and that there is little doubt that facial expressions and the judgements of them are, in part, learned.[20]

With training, then, and with the effects of cultural influence, it could be argued that a nearly perfect degree

of accuracy in judging the facial expressions of emotion should result. And, since people live in a culture and are, in a sense, trained by the effect of everyday experience, this could, at least theoretically, result. But this is not the case. Individual differences, no matter what the cultural and social dictates may be, are great. This tends to negate the more or less automatic and "universal" tendency to comply, and makes the judging of emotional expressions far more complicated than would be the case if one merely had to recall what each expression is universally accepted as indicating. In judging the emotions of others, the person must rely on his own personal experience, self-knowledge, and attitudes to make the judgement, as will be shown later. This applies to the direct observation of facial expressions, but it applies equally well, and is more easily demonstrated, when applied to the judgements of photographs and drawings.

First Studies Using Photographs

Darwin was one of the very first to study the facial expressions of emotion using drawings and photographs; in fact, he took many of the photographs himself, showing them and many drawings to the people with whom he came in contact.[21] While the results were good, the method was

not applied again until 1914, when Antoinette Feleky used photographs for her study of the judgements of facial expressions. Langfeld and Allport worked with some of the Rudolph drawings of facial expressions (somewhat idealized drawings intended for use by artists). Photographs taken in their own laboratories were employed by Landis, Dunlap, and Ruckmick. Sherman used motion pictures, as did Landis.[22]

Darwin's and Feleky's photographs included portions of the person other than the face, and therefore had other cues for the judgements in addition to the face alone.[23] This, of course, presents another variable, and is undesirable in a study of the facial expressions of emotion per se.

Knowledge of the Situation and Suggestion

While there has been much controversy as to the accuracy of judgements of emotions from facial expressions, the fact remains that people do make judgements. Several factors that affect the accuracy of the judgements are worthy of consideration, such as the conditions under which the judgements are made and the conditions that evoked the initial emotional response. It has been mentioned above that in an everyday situation errors are likely to occur, but that the general impression or idea seems to "get

through."[24] In studies conducted in the laboratory under the artificial conditions of having the subject view just a picture of the face alone, Dusenbury and Knower[25] along with Langfeld[26] are among the few who would consider the judgments made of the facial expressions of emotion as reliable. Opposed to that view are Buzby,[27] Frois-Wittman,[28] Jenness,[29] Landis,[30] and Ruckmick,[31] all of whom reported the accuracy of judgements as below 50 percent. These low percentages are quite understandable when the circumstances are considered along with the differences in the individuals and the methods of judging correctness or incorrectness. It is fairly obvious that in everyday situations an individual has many cues to guide him when he makes a judgement of facial expressions. Vocalization is present in many instances, along with bodily posture and movements, as well as the stimulating situation.

In the laboratory, under controlled conditions, these cues are purposely excluded from consideration. Thus the chances of making a correct judgement are lessened. As Dusenbury and Knower indicated, the conditions under which the emotion is judged as well as the stimulus situation itself affect the judgements and their accuracy; in regard to the latter point, movies, in which there is action, are judged more accurately than still pictures.[32] Fernberger

also shows that movies are more accurately judged than still pictures, and greater accuracy is achieved if a knowledge of the situation precipitating the emotion is also incorporated in the testing situation.[33]

Ruckmick adds that the presence of the total situation, including posture, vocal expressions, and so on, affects the judgements by leading to a greater possibility of making correct judgements; movies, for instance, aid in lending a degree of realism, and therefore yield a better knowledge of the situation and approach duplication of everyday situations. This in turn aids the observer in making correct judgements.[34] As Goodenough and Tinker found, "both picture and situation influence the interpretation of the emotion."[35]

But Hunt states that seeing the whole situation does not always improve the accuracy of the judgements, at least when "conventional" expressions are used.[36] It would seem, then, to depend on the specific situation, the particular emotional expression used, and the way either or both are presented, as to which is more important in any one judgement that is made.

Jarden and Fernberger point out that correct suggestions increase correct judgements to a large degree.[37] Knowledge of the situation and suggestion, it may be noted,

are not the same; however, the suggestion that is present in the situation (since the situation itself is often suggestive of a name for the emotion) makes the similarity of result almost inevitable. Further, suggestion can be an inherent part of the testing situation. As Kanner reported, giving a short list of terms to the subject from which he is to choose the ones that are applicable to a specific set of pictures is, in itself, a suggestion; by supplying a long list to choose from, and having the subject judge more than ten pictures or so, most of the suggestion is negated, as are the probabilities that the subject will select the correct term by chance alone.[38] Landis, in commenting on the relationship between the emotional reaction and the situation says:

> As the experimental work stands at present it seems more probable that when an organism is in a situation which results in a disturbed or wrought-up condition, then the situation plus the reaction gives us a name or word which characterizes the whole as a specific emotion.[39]

This may be the case, but it certainly is not as clear-cut as that. To confuse the issue, as it were, Munn reports that some expressions are judged quite differently when the face is seen alone as compared to when the whole situation is seen; in some instances little agreement at all was present, and there seemed to be relatively little improvement when the whole person and situation were seen

as compared to viewing the face alone.[40]

It may well be, that, using a set of pictures which adequately portrays the intended emotions, judgements can be made with the same degree of accuracy, by most people, as would be the case if the whole situation were present in addition. It may also be, however, that knowing the situation merely helps to give the emotion the name that the actor or experimenter intended to be used.

Sometimes a false suggestion may be encountered, and in fact be created. In this case, as could be expected if suggestion influences the interpretation, the judgements are adversely affected. In fact, as Fernberger reported, the false suggestion is often accepted and used as a fact, and sometimes the predominant fact, by the observer.[41] The ability to judge the expression seemed to make no difference in the subject's suggestibility, and suggestibility does not indicate that one is a poor judge, according to a study by Langfeld.[42] Thus, suggestibility could be considered as being common to most people when they are judging the expressions. The total situation then is an important factor in the judgment of emotions.

The Effect of Moods

Part of the situation that most researchers overlook is the mood or state of mind of the observer, regardless

of any suggestion, situation, or type of stimulus. When Ruckmick conducted his study in 1921, he found that the mood of the observer, which sometimes varied from day to day, had an effect on the interpretation made. To study this effect, Ruckmick induced the mood changes at will by showing pictures of starving children, scolding the subject in front of others, and so on. These procedures produced a mood change in three of his four subjects, and did indeed color their judgements. The primary emotions were less affected under this form of suggestion than the more subtle emotions. The change was sometimes slight, such as changing "pain" to "agony," or "amazement" to "horror." But he noted that a change was definitely present.[43]

The Individual as a Variable

It is obvious that any study that purports to investigate the facial expression of emotion in and of itself, must exclude the influence of as many external and situation-induced stimuli as possible. For the most part this can be done. However, if Ruckmick's concept is accepted, i.e., that the individual's frame of mind is a part of the affecting situation, then it is also obvious that to exclude that variable is not wise; it would exclude the individual himself. Actually, as will be shown later, the subjects

have the ability to react to the emotional expressions, and in a sense they determine their judgements in terms of their own attitudes. This is essential to the present study, and must not be excluded from consideration. In most studies, since the object has been to control all variables not under study, the personality of the judge has been regarded as a disturbing variable introducing error; in this experiment, however, it is precisely the variable under study. The person must be included as a variable, and it can be shown that there are things other than pure learning, social forces, or blindly accepted suggestions at work within that individual at the time he makes his judgements.

Intellectual Aspects and Similar Factors

Gates showed that, with age, there is a gradual increase in "social perception" and "social intelligence," with a corresponding increase in the ability to judge the expressions of emotion correctly.[44] In a later study, it was found that children's scores had a coefficient of correlation of from .40 to .60 "with estimated social or emotional maturity."[45] Kellogg and Eagleson found, upon repeating Gates' experiment, that there was a very "rough" positive relationship between ability to judge facial expressions and general intelligence among the negro children

with whom they worked.[46] The "general intelligence" was not tested, but was estimated; Gates found no such relationship with white children. Kanner found little correlation between intelligence and the ability to judge expressions correctly, since no correlation of more than .21 was found in his study.[47] Weisgerber found that, among college students, accuracy in judging facial expressions is not positively correlated with the student's vocabulary. He states, further, that:

> The influence of intelligence is not great. Reading comprehension, mathematics, and age at the college level do not affect ability to judge correctly. Achievement in the mechanics of English and in effectiveness of expression shows promise of being a significant variable.[48]

The findings in Weisgerber's follow-up study show that accuracy in judging facial expressions of emotion is "...positively related to understanding of literary material." The zero-order correlation between these two variables was .333, significant at the 1 percent level. When linguistic ability and then reading comprehension were held constant, the partial correlations were .285 and .304 respectively, also significant at the 1 percent level. And, "as in an earlier study, accuracy was significantly related to knowledge of the mechanics of English expression."[49] However,

> ...while understanding of literature is related to the ability to judge emotional expressions, there

> are such pronounced variations in individual cases that we cannot predict a person's standing in one ability from a knowledge of his standing in the other.[50]

Stereotypy

The individual's development, along with the effects of acculturation and learning and his interpersonal relationships, tends to influence the judgements. Klineberg, as stated before, stresses the learning, cultural determination, and social acceptance of the facial expressions of emotion.[51]

But it could be argued that there have been few studies of true facial expression at all. In fact, Landis states that most studies of facial expressions

> are in no sense true studies of the expressions of emotion, but are investigations of the socialization of the perception of facial contortions. Their value lies in the fact that they show clearly that even the most conventionalized of social expressions is very poorly interpreted by the average observer.[52]

Landis maintains further that the expressions used voluntarily differ markedly from those of a person actually undergoing the emotional experience, and that there is very little agreement in the true expressions from one person to the next.[53] "When there is a real disturbance the facial patterns of reaction are usually not easily named since they do not correspond to expressions which we have seen where titles were attached."[54]

It was stated before that Moore agrees to the social

influences on emotional expression.[55] Gardner Murphy and Lois Murphy concur in this opinion.[56] Ruckmick phrases it this way:

> There can be little doubt that some of the fundamental emotional expressions of the face, like "anger," "physical pain," "fear," and "joy," have at least a stereotyped framework upon which we can rely for interpretation. When uninhibited they are common to the two sexes and to all peoples the world over. ...Then there is always with us the question of modification of expression with the sanctions and taboos of the local culture in addition to the general effect of voluntary control with age, except under the most unusual and infrequent conditions of life.[57]

It may be noted that Ruckmick does not exclude the effects of "voluntary control" from his consideration, an important factor in terms of individual differences.

Except for crying, weeping, smiling, and laughing, as exhibited by infants, Munn would tend to agree to some stereotypy of the expressions.[58] When Landis requested his subjects to duplicate the facial expressions they had used when responding with actual emotions, he found that they reproduced not the original expressions, but the "traditional" versions appertaining to the emotions formerly experienced.[59]

Whether the former were "real" or not is a moot point. With Landis' presence, and in a laboratory situation, the validity of the expressions, or the emotions themselves, could be doubted. As Woodworth stated, the subjects "were

for the most part psychologists going through unpleasant experiences in the presence of another psychologist and for his benefit."[60] In short, Landis himself may well have failed to elicit what he would consider true emotional responses and facial expressions of emotion.

Munn tried to get away from the posed expressions of the laboratory by using pictures from Life and Look magazines; he concluded that "the results suggest that spontaneously aroused emotional expressions may be interpreted with as much agreement as are the more conventional posed expressions used in previous research."[61] W. A. Hunt takes exception to the adequacy of this method, however, arguing that the photos used were such that they involved "social situations of a communicative type where conventionalized expressions would be expected."[62] It could also be argued that the pictures were chosen for those magazines in the first place because of their ease of interpretation. In addition, "one suspects that Munn, possessed of the known human ability to interpret conventionalized facial expressions, selected 'good' ones which his subjects would then be bound to recognize."[63]

Certainly there is some stereotypy in emotional expressions. Little would be gained, in fact, from trying to isolate those few times or cases where more primitive modes of expression prevailed, i.e., the more or less

illusory "natural" facial expressions of emotion. Since they are rarely encountered, their study would be relatively unfruitful. Even a child's weeping or smiling need not reflect any specific emotion. In addition, their emotions are grossly limited; at best the expressions can be described, but when a specific emotion is thought to bring forth a definite expression, certainty would be lacking. Perhaps the socialization, the stereotypy, the learning, etc., are the factors essential to the judgement of emotional expressions. As in any other means of communication, the forms such communication takes must be known and used. Otherwise there could be no agreement between people in regard to any but the most primitive emotions, speech, and gestures.

It would seem that the attempt to remove all artificiality would serve only to remove the entire topic from any useful consideration, save for the unusual or the peculiar. Certainly little of value to society as a whole would be learned. In short, the tools that a person uses in making judgements should not be excluded, as some experimenters would wish to do. The fact that social intelligence is correlated with "the ability to size up the mental reaction of an individual from his Facial Expression," as Thelma Hunt concluded,[64] still allows for the participation of the individual, and still allows adequate control

by him in the experimental, as well as everyday, situation. Some degree of stereotypy, social influence, etc., does not hinder the investigator from drawing conclusions about the individuals with whom he works; rather, they force him to consider the total individual, since these factors are certainly a part of the person.

If the individual were ignored, it might be concluded from much of the research that the subject is merely responding to a stereotyped stimulus in a stereotyped way. He has learned to respond in a certain culturally defined way, both in expressing the emotion and in making his judgement of it. But it is almost inconceivable that a subject would respond in such a mechanical way, without any personal involvement. It is doubtful that he seeks social sanction for his every emotional response. The fact that the subject, in judging the emotional expressions, displays empathy and participation is refutation of a purely socially oriented response. Individual differences, as mentioned previously, complement that refutation. Many researchers did, in their studies, note that empathy played an important and rather consistent role in the judging of the facial expressions of emotion. This aspect will now be discussed.

Individual and Group Differences

Coleman noted that there were great differences in the facial expressions of emotion from one individual to another when both were responding to similar emotional situations.[65] This variation in patterns of facial expressions between individuals, and the variations within the same individual were observed by Dunlap too.[66] The differences from individual to individual, however, were not well-enough integrated with personality to develop "character analysis" based on the "physical signs" as he had hoped.[67]

Dusenbury and Knower found significant group as well as individual differences in the ability to judge facial expressions.[68] Predictability for an individual, as stated before, would be nearly impossible; the differences from group to group would also make prediction difficult for any one group. Fields showed that this is because of individual differences and the various degrees of emotional adjustment that are reflected in the judgements.[69]

Empathy would also influence the particular individual's judgements, and Kanner noted that a great deal of empathy was used; that in fact sometimes the subjects "visualized" the whole person experiencing the emotion in order to make the judgements.[70] Coleman also noted empathy on the part of his subjects.[71]

Certainly the personal involvement can be seen in such cases, and it is unlikely that socialization and learning can account for such differences in behavior by themselves; in fact, they would tend to negate such differences. This points up the limits of the influence of those factors in determining an individual's responses. The importance of these same factors is seen, however, if they are viewed as a basis upon which the individual differences are imposed. The influences upon the affective experiences would seem to be limited to the manner of expression and its judgement, but not to the actual feeling tone behind the expression or the judgement of it.

Then too, as found by Langfeld, the very effect of learning and suggestibility varies greatly from one individual to the next.[72] This does not, of course, negate the fact that there is an effect of stereotypy. Munn pointed out that "some expressions were more prevalent in certain situations and emotions than in others."[73] But the subject, in a very real sense, projects himself into the picture when he makes a judgement, increasing the degree of personal involvement. This point is well stated by Woodworth: "'Reading the emotion from the face' amounts in large part to reading the emotion into the face."[74] Woodworth also shows that the overt signs of emotion are an adjustment to

a situation, and any form of expression can signify any emotion, depending partly on the inner state of the individual and partly on the external stimulus.[75] While this applies to the person experiencing the emotion, it seems likely to apply also the person judging the emotion.

Insight and Projection

Vernon states that insight and a knowledge of self help in making the judgements of others, and that judgments are not merely learned once and then recalled at a later date; rather, he asserts that there is a complex relationship that exists when one makes a judgement that cannot be totally explained even in terms "such as insight, intuition, social intelligence, social perception, etc."[76] Wedeck puts it very well when he states that in judging expressions, the judge must understand personality, and he understands it only "in terms of the judge's experience of himself."[77] He continues by indicating that this "psychological ability" could show factors in the subject's own personality, such as affectivity and emotionality. Thus, in assessing others, he is projecting himself, whether correctly or incorrectly.[78]

The point is well taken then that the subject projects himself, his feelings and emotions, in fact the degree of

those feelings and emotions, into the pictures and situations that he is judging. He is limited, in a sense, by the frame of reference of his own experience and affectivity. Langfeld found, from the introspections of his subjects, that there was an "empathic response of sympathetic imitation" of the expression depicted, so that, at least initially, the judgement of the emotion was "aroused" in the subject "by his own participation."[79] That the mood of the observer affected his judgements was, as stated before, found to be a fact by Ruckmick.[80] It is apparent that the judgements of the facial expressions are made, in large degree, in terms of the subject's own feelings and emotions. It might be noted, too, that the effects of socialization, learning, social modification, etc., tend mostly to be reflected in the accuracy of the judgements.

That these factors are incorporated in the individual's approach to the task of judging the expressions should aid him in making correct judgements; but their effect is manifested only along with and in terms of his own inner responsiveness, as well as his personal adjustment and affectivity. It has been suggested, then, that normal subjects respond in terms of themselves and factors inherent in themselves, as well as in terms of external

stimuli. Whether the individual who is not well-adjusted responds, or is capable of responding, in the same terms will be considered later. As a beginning to that topic, the paper by Fields will now be considered.

Fields' Study

Fields used the Ruckmick and Frois-Wittman pictures in his study, arranging them in matching pairs to avoid the problems involved when specific terminology must be used. The Bell Adjustment Inventory was administered to the subjects to measure their social and emotional adjustment. It should be pointed out that the inventory was not used to establish "normalcy." The criteria for normalcy were gainful employment, and the fact that the subjects were not in a mental hospital nor under the care of a psychologist or psychiatrist. Only seven of his 207 subjects were rejected, and these on the basis of a previous "nervous breakdown" or the failure to complete their records. His results show that at least seven of the twenty pairs of pictures were matched by every person.

The differences in judgements between the sexes was an insignificant variable: in fact, if a picture was difficult for one sex, it was also difficult for the other in most cases, with a correlation of .93 between the two sexes.

The correlation between social adjustment and accuracy in judging the expressions was .24, significant at the .01 level. The correlation between the ability to judge the expressions and emotional adjustment was .03 and insignificant. The better judges of emotion, he concluded, were better adjusted socially.[81]

The MMPI and Judgements of Expressions

In 1957 Stuart Wilson completed a study in which the raw scores obtained on the short group form of the MMPI were correlated with the categories of judged emotional expressions. The only correlation that deviated significantly from zero was between the Depression Scale of the MMPI and the Love-Happiness category of the facial expressions of emotion that were judged from the Ruckmick pictures. This correlation was .210 and significant at the five percent level. Therefore, there were found to be no significant relationships between those personality variables measured by the MMPI and the judgements of facial expressions of emotion, except the one mentioned above. It was concluded that predictions of personality traits cannot be made on the basis of the judgements of facial expressions of emotion. Not all possible correlations were made, however, but only those which Wilson felt held some promise of

showing a relationship. It is of note for the purposes of this thesis that the Schizophrenia Scale of the MMPI was positively but insignificantly correlated with the unpleasant emotions, emotions showing only interest, and those showing interest and surprise.[82]

Emotional Reactivity of Schizophrenics

Since schizophrenics are usually considered as being out of contact with reality and uncommunicative, they are generally regarded as poor subjects for any test. According to Bleuler, Hoch, and Noyes, whose works were cited by Maria Rickers-Ovsiankina,[83] schizophrenics are not readily accessible to environmental influences, and respond mainly to inner rather than external stimuli. However, in an experiment with 123 schizophrenic and 75 normal subjects, Rickers-Ovsiankina found this to be far from correct. The subjects, viewed via a one-way screen, were given the opportunity to manipulate and handle an attractive array of objects. It was discovered that, in their response to objects, the schizophrenics with a good prognosis are similar to the normal subjects. Those with an unfavorable prognosis tend to differ to a large degree from the pattern set by the normal subjects. The schizophrenics tended toward less directed activity than the normal subjects, with a more

superficial approach. It was concluded that, "on the whole, schizophrenics respond to environmental objects approximately to the same extent as normals." The differences in behavior were explained "in terms of the functional differences in the properties of the internal systems which correspond, dynamically, to the activities in question."[84]

Further, Frieda Fromm-Reichmann states that communication with schizophrenics is possible, can be "meaningful," and is "potentially understandable."[85] Sullivan, in an earlier paper, described as perhaps typical one patient who had "expressed by facial postures, by intonations, gross behavior, and word of mouth, well-nigh the gamut of human emotion."[86]

Sullivan maintains, however, that the schizophrenic can hide his feelings quite successfully from others, so that even with outward signs of total apathy, there is still affective experience. He maintains that it has never been shown that there can be "impulses without an affective side," nor "cognitive phenomena without a feeling tone." While facial expressions depict an affective state, empathy is a definite concomitant and implies a "sentiment of self."[87] Thus, the schizophrenic subject should respond in approximately the same terms and to the same degree as the normal subject; the differences should reflect the differences in

the inner states and should be qualitative rather than purely quantitative.

The DiVittis Study

DiVittis used a group of diagnosed schizophrenics as subjects for his thesis, "A Study of the Judgement of Facial Expressions of Emotion by Schizophrenic Patients."[88] The experimental group of subjects all had a reduced affectivity. DiVittis stated that:

> The criterion for the reduction of affective tone was the judgement of the interviewing psychiatrist. The basis for his judgement was the presence of the following symptoms: immobile facies, monotonous tone of voice, superficial reactions, retardation of motor activities, and delayed, and usually brief responses.[89]

Whereas there was some "urging" necessary to insure the completion of the task, the schizophrenics did respond adequately to the testing situation.[90] It seems obvious then that the schizophrenics were valid subjects for a test of the ability to judge facial expressions.

DiVittis found a significant difference between the schizophrenic group and the control group in terms of the choices of categories for their judgements of the emotional expressions. The schizophrenics chose the Interest-Surprise category to a significantly greater degree, statistically, than did the normal group. Further, under the assumption

that the chronic patients had a greater reduction of affect than the acute patients tested, the results suggested "that the trend toward the selection of the items in the Interest-Surprise grouping has a direct, linear relationship to the reduction of affect."[91]

> It was proved, therefore, that in all cases the subjects with reduced affect showed a tendency to make greater selections in the areas of less intense emotions and states of feelings, and that this tendency increased with the increase of the reduction of affect.[92]

DiVittis states, however, that the criterion for the reduction of affect was subjective; the opinion that the chronic patients showed a greater reduction of affect than the acute patients was "based on the observation of the experimenter during the test and the general opinion of the hospital staff." It was shown also that some of the difference between normal subjects and the schizophrenic subjects was due to age.[93] This could also have been a factor in the differences in the judgements of the chronic (older) schizophrenics as compared to the acute schizophrenics.

The Grouping of Terms

Perhaps an explanation is necessary to account for the "grouping" into categories of the many terms used to describe the pictures of the expressions of emotion as

used in this and the DiVittis theses. In 1938, Woodworth suggested that the errors made in judging facial expressions appeared worse than they actually were because of the neglect of the degree of error; he therefore constructed a rough scale based on grouping approximate synonyms into six main categories. Using this scale, he found that "the judgement is seldom displaced more than one step in this coarse scale, and if the steps are assumed to be equal, the correlation of pose and judgement is .92."[94] The six categories chosen were: 1. Love, mirth, happiness; 2. Surprise; 3. Fear, suffering; 4. Determination, anger; 5. Disgust; and 6. Contempt.[95]

Work with the scale showed that, with some adjustment of the steps in the scale, the various pictures could be logically arranged within the categories and given a scale value. The location on the scale of each picture of a known scale value could then be predicted, and "... the error of prediction could be made to approach the limits set by the accuracy of the original scale judgements."[96] This accuracy of the scale seems to be adequate justification for placing the various terms applied to the facial expressions of emotion into homogeneous groups. The errors that could be traced to a lack of understanding of the precise terminology used are also minimized by this

technique. Since many of the terms approximate others, this is a logical procedure. Further, the problem with which this thesis is concerned is not whether a subject will use the precise terminology expected by the experimenter; the preference for general categories is part of the problem, and the grouping of terms into categories aids in its solution.

Summary

In summary, it can be stated that, while no work has been done that is directly concerned with the topic of this thesis other than the theses of DiVittis and Wilson, there is a great deal of research that is tangential to it.

Whether accurately or not, people do judge emotions from facial expression. The culture and society in which the person lives influences his judgements and his display of facial expressions. But the individual's feelings, emotions, affectivity, and other aspects of his inner state are just as definitely an important part of the judgements made.

It could be stated that what a person feels is covert and relatively free from social influence, but how he shows the emotion is affected to a greater degree by his own particular cultural background. The judgement of emotions from facial expressions is learned to a degree, but the

individual differences affect the amount and form of that learning. It is evident that "social intelligence" plays a part in the ability to judge facial expressions, but it is also indicated that the person making the judgements projects himself into the situation presented, and, by means of empathy, identifies (correctly or incorrectly) with the person whose expression he is judging.

The mood as well as the state of mind of the observer is reflected in his judgements. While it can be argued that the facial expressions are artificial, it remains a fact that it is just those artificial expressions that are generally used and are available for observation. They are the expressions upon which a study of this kind must be based.

It is generally accepted that normal people are good subjects for the investigation of the judgements of the facial expressions of emotion, and most research has been concerned with this phase. However, it has been shown that schizophrenics are also communicative and responsive to the necessary degree to serve as subjects for the same type of study. Also, it was tentatively concluded by DiVittis, who used schizophrenics as his subjects, that their reduced affectivity was evident in selection of less intense emotional terms as compared to the normal subjects.

That the grouping of similar terms into broader categories is a valid procedure has been suggested.

This thesis is an attempt to investigate the facial expressions of emotion in a manner similar to that used by DiVittis, but without the shortcomings of the DiVittis thesis in regard to the selection of the control group and statistical procedures. It therefore provides an adequately matched control group for the experimental group of schizophrenics used in that study, as well as a reworked statistical evaluation whereby the data obtained from both studies is combined into a workable and integrated whole.

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CHAPTER III

THE EXPERIMENT

The Problem

This thesis, by providing a control group for the schizophrenic subjects previously tested by DiVittis,[1] will help to determine the efficacy of the Ruckmick pictures as a projective technique. The degree to which the schizophrenic subject projects his flatness of affect into the pictures, as contrasted with the more highly colored judgements of the normal subjects, will determine whether or not the hypothesis is to be accepted. The hypothesis to be tested is: "In judging the facial expressions of emotion on the Ruckmick pictures, schizophrenic patients will choose, to a statistically significant degree, fewer of the more intense emotional states to describe the pictures than will the control group of normal subjects."

As mentioned previously, there were shortcomings in the selection of the control group in the DiVittis study. This thesis attempts to meet the requirements outlined in Chapter I in regard to the control group, and uses the DiVittis study as its source for the data applicable to the experimental or schizophrenic group of subjects. The statistical treatment is revised, so as to establish clearer

relationships than formerly found.

Subjects

Two groups of subjects were used for this experiment, the experimental or schizophrenic group and the control or normal group. The experimental group was tested previously by Arthur L. DiVittis.[2] The subjects in that group were diagnosed as schizophrenic by a psychiatrist at the hospital, using the criteria mentioned in Chapter II of this thesis. The normal subjects were matched with the experimental subjects in terms of age and sex, and as far as practical, marital status. See Tables I and II for a comparison of the two groups, and pertinent data concerning both of them.

The control group was composed of forty-seven normal subjects obtained from several churches and from factory offices. They were normal according to Fields' criteria;[3] i.e., they were gainfully employed, not under a psychologist's or psychiatrist's care, not in an institution, and judged to be normal. The judgements of normalcy were made by the employer or personnel man, or by the psychologically trained minister who visited the homes of the subjects. Any history of mental illness or disturbance automatically excluded them from use as subjects. A post-test talk with the individual subjects allowed the experimenter to make

TABLE I

CHARACTERISTICS OF THE SAMPLES

Group	Male	Female	Age Range	Median Age	Modal Age	Mean Age	Married	Single	Other
Schizophrenic*	11	36	17-72	36	26	40.7	17	26	4
Normal	11	36	17-72	36	26	40.7	33	9	5

*Data pertaining to the Schizophrenic Group in this table is taken from the thesis of Arthur DiVittis.[4]

TABLE II

SCHIZOPHRENIC REACTION TYPES

Type**	N	Percent
Paranoid	17	36
Acute Undifferentiated	11	23
Hebephrenic	7	15
Chronic Undifferentiated	4	9
Simple	3	6
Other	5	11
Total Acute	30	64
Total Chronic	17	36

**Data in this table was taken from the thesis of Arthur DiVittis.[5]

further judgements of their normalcy, and if the subject was judged not normal, or admitted to a history of mental illness, his testing form was not used. While it may be argued that these procedures did not insure normalcy in the ideal sense, it is felt that for practical purposes the degree of normalcy was quite adequate. It must be remembered too, that the subjects were more or less typical of the general population which in itself deviates from any narrow norms. As Ferrari stated, "the perfectly equilibrated man is yet to be found."[6]

Material

The materials used consisted of a set of the thirty-two Ruckmick pictures of the facial expressions of emotion, showing only the face of an amateur actress who posed for them, and a testing blank with suggested descriptive terms to be used by the subjects in making their judgements. The pictures are three inches by two inches in size and are printed on three inch by five inch white cardboard. They are manufactured by C. H. Stoelting and Company. These pictures are used in this study for two reasons. First, the data in the DiVittis study was obtained with that set of pictures, and it is essential to use the same material with the control group. Secondly, the Ruckmick pictures seem well

suited for use with the broad categories of the Woodworth scale. The latter point would be adequate justification for choosing that set of pictures; the former makes it mandatory if the study is to achieve its purpose. Figure 1 is a copy of the answer or testing form, with the descriptive terms that were used. This form was developed and first used by Fr. Weisgerber at the University of Detroit. The basis for the selection of terms was that they included the terms that are correct, i.e., the names of emotions that the actress was portraying for the Ruckmick pictures, the terms that are most often used by subjects to describe the emotions portrayed, and synonyms that are likely to be used. They are amenable to placement in the broader categories such as used by DiVittis and as used in this thesis.

Procedure and Testing Situation

The instructions at the top of the testing form were read to the subjects in the schizophrenic group, with the provision that the experimenter would put down the answers given by the patient. This allowed for control of the testing situation. Terms were explained if necessary, after establishing rapport with the subjects. Each patient was tested individually in his own room at the hospital. All questions asked by the patient were answered. The pictures were

presented in numerical order, with no rest period. The patient chose the terms from the list of emotions found in Figure 1. No time limit was adhered to, though the subjects were urged to complete the judgement of each picture within the suggested one-minute limit.

The control group of normal subjects was tested in a large, unornamented room. The subjects sat at large desks, with no more than five persons at a desk. They were tested in groups of from three to ten. After rapport was established the purpose of the test was explained briefly. The experimenter read the instructions at the top of the testing form to the subjects. They then read the list of the emotions at the right side of the form. It was not necessary to answer any question, except in regard to the correct way to mark the forms. The pictures were divided in sets of two, with one subject starting with picture one and another with picture number seventeen. As each subject finished with a picture, he passed it on, face down, to the person next to him, until all thirty-two pictures had been viewed, and the judgements entered on the testing form. The experimenter proctored the test, but no attempt at copying was noticed. No time limit was enforced, and the subjects needed no urging to complete their judgements of each picture within the suggested one-minute time limit. After the test,

FIGURE I

Name_____ Date_____

First read through the list of emotions. Then take each picture in numerical order. Decide what emotion it seems to portray. In the column alongside the number of the picture write the code letter or letters of the emotion it portrays. Judge by your general impression or by the feeling the picture seems to communicate to you. Work quickly; do not spend more than one minute on any picture. When in doubt, choose the emotion that seems nearest to being correct. Add remarks, if you wish, in the space provided. Please do not omit any picture. Be sure to print or write the letters clearly.

Pict.	Emotion	Remarks
1		
2		
3		
4		
5		
6		
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9		
10		
11		
12		
13		
14		
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31		
32		

Age_____ Date of birth_____

Sex_____ College class_____

Race_____ Marital status_____

Nationality of descent_____

List of Emotions

A. Admiration
B. Adoration
C. Amusement
D. Anger
E. Anguish
F. Anxiety, hopeful
G. Appeal, wistful
H. Apprehension
I. Astonishment
J. Consternation
K. Contemplation
L. Contemptuous sneer
M. Curiosity
N. Defiance
O. Despair
P. Disappointment
Q. Distrust, critical
R. Distrust, resentful
S. Fear, maniacal
T. Fear, startled
U. Grief
V. Happiness
W. Hate
X. Haughtiness
Y. Horror
Z. Interest, cynical
AA. Interested attention
BB. Interested inquiry
CC. Interested observation
DD. Joy
EE. Love
FF. Mirth
GG. Pain, exhausting
HH. Pleading
II. Rage, vindictive
JJ. Reconciliation
KK. Resentment
LL. Rueful meditation
MM. Scorn
NN. Sorrow
OO. Suffering
PP. Sulkiness
QQ. Surprise
RR. Suspense, torturous
SS. Sympathy
TT. Terror
UU. Wonder

the forms were picked up, and any questions were answered that had occurred to the subjects. While talking with each subject after the test, the experimenter was enabled to make further judgements in regard to the normalcy of the subjects. This interview was not systematic in the strict sense, since it varied from subject to subject. However, the flexibility of the procedure was its forte, because it allowed the subject free expression, and the examiner could vary his approach to suit the subject.

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CHAPTER IV

RESULTS AND CONCLUSIONS

Presentation of Results

To facilitate statistical manipulation of the data, the forty-seven emotional terms used on the testing form were grouped into the following thirteen categories: Fear, Suffering, Sorrow, Anger, Hate, Contempt, Distrust, Hope, Sympathy, Love, Happiness, Interest, and Surprise, as shown in Table III. These categories were chosen, as DiVittis stated, on an *a priori* basis and on the basis of a similarity of distribution.[1] "This procedure... allowed the investigator to use larger figures, making the statistical results more meaningful."[2]

For similar reasons the thirteen categories were further reduced to six categories which approximated those of Woodworth, as described in Chapter II. These categories are: 1) Fear-Suffering-Sorrow; 2) Anger-Hate; 3) Contempt-Distrust; 4) Hope-Sympathy; 5) Love-Happiness; and 6) Interest-Surprise.[3]

One category used by DiVittis was "others," a category never used by the normal subjects; its purpose was to include those responses that were not included in the list

TABLE III

CATEGORIES OF EMOTIONAL TERMS

FEAR	HATE	LOVE
Fear, startled	Hate	Love
Fear, maniacal	Resentment	Adoration
Horror	Sulkiness	Admiration
Terror		Reconcilation
Suspense, torturous	CONTEMPT	
Consternation	Contemptuous sneer	HAPPINESS
Apprehension	Scorn	
	Haughtiness	Happiness
SUFFERING	Interest, cynical	Joy
		Mirth
Suffering	DISTRUST	Amusement
Pain, exhausting		
Anguish	Distrust, critical	INTEREST
	Distrust, resentful	
SORROW		Interested attention
	HOPE	Interested inquiry
Sorrow		Interested observation
Grief	Anxiety, hopeful	Curiosity
Rueful meditation	Appeal, wistful	Contemplation
Disappointment	Pleading	
Despair		SURPRISE
	SYMPATHY	
ANGER		Surprise
	Sympathy	Astonishment
Anger		Wonder
Rage, vindictive		
Defiance		

given the subject.[4] It does not enter into the present calculations.

A frequency table was made in which each of the subjects' selections was tabulated and placed in its appropriate group or category; this data is found in the appendices.

Statistical Interpretations

Both *t* and F tests were made to determine the levels of significance of the differences between the judgements made by the normals and the schizophrenics; both the differences between means and the differences between variances of the distributions were considered, therefore. The assumption of a normal curve in these distributions is not made, nor is it necessary[5] when *t* and F tests are used.

The formulae used were those for large uncorrelated samples with an equal number of subjects in both of the groups being compared. The indicated significance levels of F are one-half as great as those found in a table of F values because of the inherent characteristics of the formula used.[6] That is, it is a two-tailed formula in which there is no logical reason for selecting the numerator or denominator except that the larger number is arbitrarily placed above. A significance level of 5 percent is accorded a value of 10 percent, for instance, to avoid the chance of

of over-estimating the significance levels due to this "chance" placement of the numerator and denominator. The values of F are approximations because F-tables have large intervals between entries.

Table IV is a comparison of the judgements made in each of the thirteen main categories. It can be seen from an inspection of the means and the t's that the schizophrenic group both avoided making judgements in the "Distrust" category and emphasized the "Interest" and "Surprise" categories to a degree significant at the 0.1 percent level when compared to the judgements of the normals. The schizophrenics underemphasized the "Hope" and "Love" categories and overemphasized the category of "Happiness" to a degree significant at the 1 percent level; the category of "Contempt" was underemphasized to a degree significant at the 2 percent level.

It is also seen that there were five categories with significant differences of variance between the two groups. In each case the schizophrenic group shows a larger standard deviation and a correspondingly greater spread of scores within the categories as compared to the normals. The categories with significant differences as measured by the F-test are "Surprise," "Interest," "Happiness," "Sorrow," and "Hate." The first three are significant at

TABLE IV

A COMPARISON OF THE JUDGEMENTS OF SCHIZOPHRENICS AND NORMALS, MATCHED IN AGE AND SEX*

Schizophrenics N=47			Normals N=47			
Category	Mean	S. D.	Mean	S. D.	t	F
Fear	3.47	1.68	3.68	1.43	.6502	1.3952
Suffering	1.59	1.22	1.53	1.03	.2586	1.3845
Sorrow	3.40	2.09	3.40	1.50		1.8906 (4.00)
Anger	1.62	1.43	2.09	1.25	1.6906	1.3231
Hate	1.61	1.29	1.94	0.954	1.4103	1.8271 (5.00)
Contempt	2.91	1.79	3.81	1.59	2.5862 (2.00)	1.2485
Distrust	.66	.86	1.55	1.11	4.3415 (0.10)	1.6575 (10.00)
Hope	1.32	1.49	2.26	1.16	3.4182 (1.00)	1.6579 (10.00)
Sympathy	.28	.49	0.32	0.47	.3846	1.3125
Love	1.17	1.26	1.96	1.24	3.0620 (1.00)	1.0376
Happiness	5.11	2.22	3.91	1.07	3.3613 (1.00)	4.3167 (1.00)
Interest	4.40	2.47	2.77	1.53	3.8173 (0.10)	2.6177 (2.00)
Surprise	4.38	2.49	2.79	1.40	3.8313 (0.10)	3.1465 (1.00)
Other	.47	.94				

*Numbers in parentheses are the percent levels of significance. Significance levels of F are approximate. Data for Schizophrenic subjects taken from the thesis of Arthur L. DiVittis.[7]

the 1 or 2 percent level and the last two are significant at the 4 percent and 5 percent levels respectively.

Grouping the thirteen categories into the six broader categories, as shown in Table V, yields a very large difference between the means and also between the variances in every case except the "Love-Happiness" category which has an F that is significant at only the 10 percent level. The categories of "Fear-Suffering-Sorrow," "Anger-Hate," "Contempt-Distrust," and "Interest-Surprise" yield F ratios significant at the 2 percent level; in all cases the scores of the schizophrenics have the greater variation. The categories of "Contempt-Distrust" and "Interest-Surprise" yield t's that are significant at the 0.1 percent level, indicating that the schizophrenics made significantly fewer judgements in the "Contempt-Distrust" categories and significantly more judgements in the "Interest-Surprise" categories than the normals. The t's are significant at the 1 percent level for the categories of "Anger-Hate" and "Hope-Sympathy;" in both cases the schizophrenics made fewer judgements in these categories than did the normals.

A comparison of the thirty acute schizophrenics with the normals of the same ages and sexes yields results that are consistent with the findings for the total sample used.

TABLE V

A COMPARISON OF THE JUDGEMENTS OF SCHIZOPHRENICS AND NORMALS, MATCHED IN AGE AND SEX, WHEN JUDGEMENTS ARE GROUPED IN BROADER CATEGORIES.*

	Schizophrenics N=47		Normals N=47			
Category	Mean	S. D.	Mean	S. D.	t	F
Fear Suffering Sorrow	8.47	3.00	8.62	1.89	.2901	2.5235 (2.00)
Anger Hate	2.83	1.98	4.02	1.26	3.4795 (1.00)	2.6226 (2.00)
Contempt Distrust	3.57	2.13	5.36	1.91	4.2926 (0.10)	2.2496 (2.00)
Hope Sympathy	1.60	1.52	2.57	1.28	3.3448 (1.00)	1.4107
Love Happiness	6.28	2.24	5.87	1.67	1.0049	1.7938 (10.00)
Interest Surprise	8.79	3.77	5.55	2.28	5.0389 (0.10)	2.7415 (2.00)
Other	.47	.94				

*Numbers in parentheses are the percent levels of significance. Significance levels of F are approximate. Data for Schizophrenic subjects taken from the thesis of Arthur L. DiVittis.[8]

That is, as seen in Table VI, there is a significant difference between the judgements made by the acute schizophrenics and the normals. Thus, the variances of the acute schizophrenics exceeded those of the normals in all categories. The categories of "Fear-Suffering-Sorrow," "Interest-Surprise," "Anger-Hate," and "Love-Happiness" yielded F's that are significant, respectively, at the 1, 2, 3, and 4 percent levels. The acute schizophrenics chose the "Interest-Surprise" category to a significantly greater degree than did the normals, and they made significantly fewer judgements in the "Contempt-Distrust" category; both t's are at the 1 percent level of significance. The acute schizophrenics chose the category of "Anger-Hate" to a significantly lesser degree than the normals; the difference is significant at the 5 percent level.

A comparison of the chronic schizophrenics and the normals, presented in Table VII, indicates that the variances of the two groups differ only in the category of "Fear-Suffering-Sorrow." The chronic schizophrenics chose the "Interest-Surprise" category much more often than the normals as is indicated by a t-ratio that is significant at the 0.1 percent level. The categories of "Anger-Hate," "Contempt-Distrust," and "Hope-Sympathy" were selected much less frequently by the schizophrenics than by the

TABLE VI

A COMPARISON OF THE JUDGEMENTS OF ACUTE SCHIZOPHRENICS AND NORMAL SUBJECTS, MATCHED IN AGE AND SEX WHEN JUDGEMENTS ARE GROUPED IN BROADER CATEGORIES*

Acute Schizophrenics N=30			Normals N=30			
Category	Mean	S. D.	Mean	S. D.	t	F
Fear Suffering Sorrow	8.43	3.09	8.57	1.72	.217	3.2415 (1.00)
Anger Hate	3.27	2.09	4.22	1.34	2.096 (5.00)	2.4327 (3.00)
Contempt Distrust	4.03	2.05	5.83	1.79	3.622 (1.00)	1.3110
Hope Sympathy	1.77	1.60	2.37	1.20	1.645	1.7875
Love Happiness	6.30	2.34	5.70	1.53	1.175	2.3367 (4.00)
Interest Surprise	7.73	3.46	5.30	2.10	3.289 (1.00)	2.7146 (2.00)
Other	.47	.94				

*Numbers in parentheses are the percent levels of significance. Significance levels of F are approximate. Data for Schizophrenic subjects taken from the thesis of Arthur L. DiVittis.[9]

normals and the resulting t-ratio is significant at the 1 percent level.

The results of a comparison of the chronic schizophrenics with the acute schizophrenics are presented in Table VIII. The chronic schizophrenics made judgements in the "Interest-Surprise" category to a significantly greater degree than the acute schizophrenics; the acute schizophrenics made a significantly greater number of judgements than the chronic schizophrenics in the "Anger-Hate" category. Though the differences are significant at the 5 percent level, they are less than the differences between the normals and the schizophrenics.

Conclusions

Even a cursory inspection of the data obtained reveals that the schizophrenics chose the emotional terms in the "Interest" and "Surprise" categories, both singly and taken together, to a far greater degree than the normals. If the high significance levels of the t-ratios are considered, the hypothesis posited in Chapter I appears to be entirely acceptable because the schizophrenics did indeed show a strong preference for some of the less intense emotional terms as compared to the normals. Therefore, the efficacy of using the Ruckmick pictures as a projective technique

TABLE VII

A COMPARISON OF THE JUDGEMENTS OF CHRONIC SCHIZOPHRENICS AND NORMAL SUBJECTS, MATCHED IN AGE AND SEX, WHEN JUDGEMENTS ARE GROUPED IN BROADER CATEGORIES.*

Chronic Schizophrenics N=17			Normals N=17			
Category	Mean	S. D.	Mean	S. D.	t	F
Fear Suffering Sorrow	8.06	4.76	8.71	2.61	.494	3.3341 (3.00)
Anger Hate	2.06	1.51	3.65	1.28	3.311 (1.00)	1.3902
Contempt Distrust	2.76	1.47	4.53	1.82	3.121 (1.00)	1.5308
Hope Sympathy	1.29	1.32	2.94	1.35	3.605 (1.00)	1.0446
Love Happiness	6.24	2.03	6.18	1.85	.090	1.1981
Interest Surprise	10.65	3.57	6.00	2.50	4.401 (0.10)	2.0440
Other	.47	.94				

*Numbers in parentheses are the percent levels of significance. Significance levels of F are approximate. Data for Schizophrenic subjects taken from the thesis of Arthur L. DiVittis.[10]

TABLE VIII

A COMPARISON OF THE JUDGEMENTS OF ACUTE AND CHRONIC SCHIZOPHRENICS

Acute Schizophrenic N=30			Chronic Schizophrenics N=17		
Category	Mean	S. D.	Mean	S. D.	t
Fear Suffering Sorrow	8.43	3.09	8.06	4.76	.28
Anger Hate	3.27	2.09	2.06	1.51	2.26 (5.00)
Contempt Distrust	4.03	2.05	2.76	1.47	2.00
Hope Sympathy	1.77	1.60	1.29	1.32	1.10
Love Happiness	6.30	2.34	6.24	2.03	.09
Interest Surprise	7.73	3.46	10.65	3.57	2.65 (5.00)
Other	.47	.94			

*Numbers in parentheses are the percent levels of significance. Data for this chart taken from the thesis of Arthur L. DiVittis.[11]

and diagnostic tool is apparent.

Nonetheless, a word of caution is necessary. The high degree of variability in the judgements from individual to individual suggests that the test's application to a specific person might yield invalid scores. As with most tests, its main usefulness would come about if it were included in a test battery, not by itself.

It is of note that the categories that were under-emphasized by the schizophrenics were not those of the greatest emotional strength as may have been suspected. Interestingly enough, the greatest underemphasis was in the "Distrust" category, one that could be expected to be favored by the paranoid schizophrenics. The paranoids comprised a third of the schizophrenic group and was the largest group represented. In addition, the judgements made in the "Fear-Suffering-Sorrow" categories differed only in the way the scores were spread between these categories by each individual but not the total quantity of scores between the two groups, though one would suspect that life in a mental hospital would be at least somewhat unpleasant and that the patient would project his feelings accordingly.

The fact that the schizophrenics made selections in all the categories indicates that the "flatness of affect" of the schizophrenic is a useful concept only in terms of

how he acts, not in terms of how he feels. That he is capable of projecting the full gamut of emotions is apparent. It may be that the emphasis on the lesser emotions of "Surprise" and "Interest," and also "Happiness," reflects some sort of pretense, the intent being to portray a happy, contented individual who is affected to only a very limited degree by the environment.

The results indicate that the emotions projected by the schizophrenic are inappropriate, at least quantitatively, and probably qualitatively. This very inappropriateness of emotional expression has been used as a criterion for the diagnosis of schizophrenia in the past, but it was usually in regard to an actual, overt reaction. It now appears that the same inappropriate, flat responsiveness is projected onto the environment even though there may be no flatness in actual feeling.

From the foregoing, a picture of the schizophrenic world emerges. For the chronic schizophrenics the weak, inappropriate perception of the emotions is fairly complete (see Table VII); to him the world is relatively affectless, and his change from the normal to the schizophrenic way of thinking is fairly well established. He is fairly consistent with himself. Not so with the acute schizophrenic in whom this change is still taking place. He is unsettled,

and his reaction vacillates between deep emotion and an affectless state with corresponding perceptions of his world. It is probable that he is still fighting for contact with reality and normal reactions, a battle already given up by the chronic schizophrenic.

It was mentioned before that DiVittis found that the factor of age influenced the judgements to a degree.[12] In the present study, each subject was compared with another of his own age, yet the resulting significance levels are much higher. It is indicated, therefore, that there is a reduction of affect in older people commensurate with their increase in age and that this reduction is applicable to both normal people and schizophrenics; however, the reduction is much greater in the schizophrenics.

New Problems

Further research on the present topic needs to be done using a more varied group of people and a much larger sample, because this study used an admittedly small sample composed of a limited variety of people. One outgrowth of future research should be the establishment of age norms, since it has been demonstrated that age is a contributing factor in the judgements that are made.

An experimental design could be set up that would lend

itself to the statistical evaluation of item analysis, using a sample large enough to make the results statistically meaningful. In addition, item preference could be determined for each of the schizophrenic categories so that the test could serve not only to indicate a general schizophrenic disorder but also the particular type or types.

Correlational studies using other diagnostic aids to determine reduction of affect would also seem to be in order. Correlations with Rorschach determinants might be a good starting point for such a study.

Finally, a study could be conducted that would indicate the test's usefulness as a prognostic device; as a measure of affectivity or emotional reaction it might be useful in predicting the probabilities of discharge from the hospital, or accessibility to therapy.

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6. Ibid., p. 134.
7. Arthur L. DiVittis, op. cit., p. 26.
8. Ibid., p. 28
9. Ibid., p. 29.
10. Ibid., p. 31
11. Ibid., p. 32
12. Ibid., p. 34.

CHAPTER V

SUMMARY

1. Forty-seven subjects who were judged to be normal and whose ages and sex matched those of the schizophrenic subjects in the DiVittis study judged the emotions portrayed on the Ruckmick Pictures of emotional expression. Each subject chose the terms from a list of forty-seven. To facilitate computation and handling, these terms were grouped into thirteen categories.

2. The judgements of the schizophrenics and the normals were compared statistically. The results indicated that the schizophrenics had a pronounced preference for the less intense emotional terms as descriptions of the expressions.

3. The thirteen categories were then grouped together to form six broad categories that approximated the categories suggested by Woodworth. The subjects in the schizophrenic group were then divided in terms of the chronicity or acuteness of the illness and they were compared with the normals of matching ages and sex. It was found that both groups of schizophrenics made a significantly greater number of judgements in terms of the less intense emotional states than did the normals. Further, the chronic patients made

their judgements in terms of the less intense emotional states than did the acute schizophrenics. There is a reduction of affect with an increase in age, as DiVittis has shown.

4. The results strongly indicate that the hypothesis is acceptable. The hypothesis is: "In judging the facial expressions of emotion on the Ruckmick Pictures, schizophrenic patients will choose, to a statistically significant degree, fewer of the more intense emotional states to describe the pictures than will the control group of normal subjects." The findings also suggest that further research should be rewarding in terms of the refinement of the technique. The Ruckmick Pictures should prove to be a valuable addition to a battery of projective techniques.

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APPENDIX

(Data for schizophrenic subjects taken from the thesis of Arthur L. DiVittis, "A Study of the Judgement of Facial Expressions of Emotion by Schizophrenic Patients," Unpublished Master's Thesis, University of Detroit, 1957, 41-43.)

APPENDIX A

NUMBERS OF JUDGEMENTS IN EACH CATEGORY MADE BY EACH SCHIZOPHRENIC SUBJECT

	SUBJECTS													
Categories	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Fear	4	3	3	3	4	5	6	8	5	2	5	5	3	4
Suffering	2	4	1	2		1	1	4	2	1				2
Sorrow	3	3	5	5	1	5	4	4	2	2	2	2	3	2
Anger	1	2	2	4	4	5	3		2	4	1	3	3	2
Hate				1	1	4	2		2	1	2	2	1	2
Contempt	1	4	6	2	6	5	4	1	2	2	5	1	3	2
Distrust	1	1			2	1			1	1	1			1
Hope	3	2	3		3	4				1	2	2	1	6
Sympathy	1								2	2				
Love	2	3	5				2		2	3		1		1
Happiness	3	3		6	5	1	4	9	8	7	6	1	7	3
Interest	7	4	3	4	1		2	3	2	5	6	3	6	4
Surprise	4	3	4	4	5	1	4	1	1	1	2	12	2	3
Others				1				2	1				3	

APPENDIX A (Cont'd.)

Categories	SUBJECTS 15	16	17	18	19	20	21	22	23	24	25	26	27
Fear	8	4	3	4	3	2	3	2	3	3	4	4	2
Suffering	3			2	2	3	2	1	2	4	1		3
Sorrow	4	2	8	1	4	4	2	1	1	5	5	7	4
Anger	1	2		2	2	1	1	3					3
Hate	1	3			2		2	1	2				1
Contempt	3	2	1	7	3	2	3	6	2	1		1	3
Distrust	1			2	1		1					1	1
Hope	2	6	1	1	1		3		1	3	2		
Sympathy							1		1				1
Love		3		3		2	2	1		2	2		3
Happiness	5	2	7	4	7	7	6	8	10	6	6	7	7
Interest	2	4	4	2	4	7	3	7	3	6	7	9	1
Surprise	2	4	8	4	3		3	2	7	2	6	3	3
Others						2							

Categories	SUBJECTS 28	29	30	31	32	33	34	35	36	37	38	39	40
Fear	2	4	4	3	4	1	2		4	3	2	1	
Suffering		2	2	1	2	3	3	3	1	3	1	1	
Sorrow	4	5	9	3	8	1	2	3	6		7	2	4
Anger	4			1	4				1	2	4		1
Hate		3	1	1	2	1		1	2				2
Contempt	2	3	4	3	1	5		4			1	3	4
Distrust	1			1	1	1				2		4	3
Hope	1	3				1	1	2					
Sympathy									1			1	1
Love	1	1	1	1		3	1	1				2	
Happiness	6	5	2	5	4	4	3	8	6	4	4	5	3
Interest	8	3	4	6	1	5	12	5	6	9	5	3	7
Surprise	3	3	5	7	2	7	7	5	4	9	8	8	7
Others					3		1		1				

Categories	SUBJECTS 41	42	43	44	45	46	47	TOTAL	MEAN	S. D.
Fear	7	5	4	2	2	2	4	163	3.47	1.68
Suffering		1	2	1		3	3	75	1.59	1.22
Sorrow		2	4	4	1	3	2	160	3.40	2.09
Anger	1	1	1	3	1		1	76	1.62	1.43
Hate	1		4		2	6	1	57	1.61	1.29
Contempt	3	5	5	4	4	3	5	137	2.91	1.79
Distrust		1	1					31	.66	.86
Hope			2	1		1	1	62	1.32	1.49
Sympathy	1		1					13	.28	.49
Love	1	4		1	1			55	1.17	1.26
Happiness	6	4	4	6	5	2	9	240	5.11	2.22
Interest	3	5		3	7	4	2	207	4.40	2.47
Surprise	7	4	4	6	5	7	4	206	4.38	2.49
Others	2		1	4	1			22	.47	.94

APPENDIX B

NUMBERS OF JUDGEMENTS IN EACH CATEGORY MADE BY EACH NORMAL SUBJECT

	SUBJECTS													
Categories	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Fear	6	2	4	4	5	2	5	6	2	3	4	4	5	6
Suffering	4	2	2	1	2	2	1	3			1	2	1	1
Sorrow	4	3	6	2	2	2	4	3	5	4	5	1	4	4
Anger		2	3	1	3	2		3		2	3	3	3	2
Hate	2	1	2	1	1	3	2	2	2	3	4	1	1	2
Contempt	7	3	4	3	4	4	5	4	4	4	4	5	5	4
Distrust		3	3	2		2	3		1			2	2	2
Hope		3	2	3	1	2	2	2	2	2	2	2	2	1
Sympathy						1					1	1	1	
Love		3		2	3	2	1		3	3	1	3	2	2
Happiness	3	4	3	6	6	2	3	2	3	4	5	3	3	4
Interest	2	3	1	4	3	4	4	4	4	3	1	2	2	1
Surprise	4	3	2	3	2	4	2	3	6	4	1	3	1	3

Categories	SUBJECTS												
	15	16	17	18	19	20	21	22	23	24	25	26	27
Fear	3	5	3	4	5	3	3	6	3	1	2	3	3
Suffering	2		2	2	1		2	2	2		3	1	1
Sorrow	4	1	5	3	3	1	1	5	3	5	4	4	5
Anger	3	4		1	4	1	3	3	3	1	1	2	6
Hate	3	2	4	2	2	3	1	2	2	2	4	2	1
Contempt	4	5	1	3	3	3	2	3	1	1	3	4	4
Distrust	3	3	1	4	2	3	2	2	1	1	2	2	2
Hope		3	1	3	3	3	5	1	4	4	3	4	2
Sympathy								1	1	1	1		
Love	3	1	1	1	3	2	6	2	1	3	1	2	2
Happiness	1	5	5	6	4	4	4	3	4	6	4	3	4
Interest	4	1	3	1	1	6	1	1	4	3	3	4	
Surprise	2	2	6	2	1	3	2	1	3	4	1	1	2

Categories	SUBJECTS												
	28	29	30	31	32	33	34	35	36	37	38	39	40
Fear	4	2	3	3	5	4	3	6	5	3	3	3	2
Suffering	1	3	1	2	1	1	3	4	1	1	1		
Sorrow	2	5	2	2	2	2	4	2	4	3	6	6	7
Anger	2	1	2	4	1	2	1	4	2	2	3	2	2
Hate	1	1	2		3	1	1	2	2	1	3	2	1
Contempt	8	5	3	5	5	3	3	3	1	5	2	3	2
Distrust	1	1	1	3	3	3	2		2			1	
Hope	1	2	4	1	1	4	3	3	3	3	3	1	2
Sympathy		1	1	1		1							1
Love	2	2	2	1	1	3	3	2	2	4		4	1
Happiness	4	6	2	4	5	4	4	5	4	4	6	2	3
Interest	3		6	4	2	3	4		3	4	1	4	4
Surprise	3	3	3	2	3	1	1	1	3	2	4	4	7

Categories	SUBJECTS 41	42	43	44	45	46	47	TOTAL	MEAN	S. D.
Fear	6	3	4	5	2		5	173	3.68	1.43
Suffering	1	1	2	2	3	1	3	72	1.53	1.03
Sorrow	3	4	2	1	3	4	3	160	3.40	1.50
Anger	1	1	3	1	1	3	1	98	2.09	1.25
Hate	3	2	2	1	4	1	1	91	1.94	0.95
Contempt	4	4	3	8	5	7	3	179	3.81	1.59
Distrust		1	2	1		2	2	73	1.55	1.11
Hope	1	1	2	1	1	4	3	106	2.26	1.16
Sympathy			1		1			15	0.32	0.47
Love	2	4	2		2		2	92	1.96	1.24
Happiness	4	4	5	4	4	3	3	184	3.91	1.07
Interest	3	4	2	6	1	3	3	130	2.77	1.53
Surprise	4	3	2	2	5	4	3	131	2.79	1.40