AN EXPERIMENTAL STUDY OF THE PRODUCTION OF HUMOUR

A Thesis

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ABSTRACT OF THESIS

Experimental research relating humour to various personality characteristics has met with little success. Such studies have used the appreciation of humourous stimuli as the criterion for a sense of humour. The present study adopted a new approach in that it was directed towards the production of humour rather than appreciation. In addition to determining whether such a method was workable, the roles of intelligence and sex were investigated.

Forty high school students served as subjects for the research. These were selected on the basis of intelligence scores (SCAT), so that four groups resulted--a bright male group, a bright female group, a dull male group and a dull female group. These subjects were first required to produce humour by distorting the reflection of their own faces and were then asked to rate the humourous quality of the humourous production. Photographs were taken at four points during the production and the distortion calculated by means of a distortion index.

It was found that the production technique is a useful method of studying humour. Thresholds for the experience were determined by considering humour as a function of the distortion. It was also found that intelligence operated as a factor in humour production, the dull groups

showing a great deal of stereotypy in production while the bright group was extremely variable. Sex appeared to be a less important factor in the production of humour.

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CHAPTER I

THE INTRODUCTION AND THE PROBLEM

I. THE INTRODUCTION AND THE APPROACH

A sense of humour is possibly one of the most highly valued attributes an individual in our Western culture can possess. The social emphasis on this quality is apparent, not only in the vast sums of money which are spent to provide forms of humourous entertainment, but also in the emphasis on it for the development of a socially pleasing personality.

Psychologists have been interested in the sense of humour because it is a behavioural phenomenon. The fact that individuals possess this trait in varying degrees gives it practical application in personality study. However, its use as a diagnostic tool is hampered by the fact that too little is known at present about the nature, mechanisms and function of the phenomenon.

For the most part, humour has been considered as an internal appreciative experience and the sense of humour inferred from the frequency and extent of appreciation. This study, however, proposes the importance of the perceptual or creative aspect of humour and will focus on the area of humour production. The approach will be psychophysical inasmuch as attempts will be made to relate the

experience of humour to a physical continuum. An attempt will also be made to determine whether intelligence and sex are factors influencing humourous production. Since the approach and technique employed are relatively new and untested, the research will take the form of an exploratory study.

Definition of Humour

Because the common connotation of the term "humour" is not necessarily consistent with its psychological meaning, a specific definition is required. Drever has described it as a "complex situation which combines an element of the comic and a sympathetic appeal" (6). A humourous situation then, is similar to a comic one with one important addition--it must involve some emotional component. The ability to perceive and appreciate such a situation we refer to as a "sense of humour." To understand the process by which humourous appreciation occurs within an individual, however, the eclectic definition formulated by Sayons (41) will probably be most helpful. He states that it consists of the imaginal or emotional projection of the self upon a social scene in which affects are displaced. When these affects are subsequently actively re-structured by means of substitution or fusion, the whole spectacle can be slowly contemplated in perspective and followed with a tender mollifying smile.

II. VALIDATION FOR THE STUDY

In spite of a lengthy history of intellectual and scientific study (2, 19), progress in understanding humour has been slow. It is suggested that this may be partly due to the treatment of humour as an exclusively aesthetic problem. Accordingly, those who would study its relationship to other variables are confronted with the difficulty of measuring a value judgment in the absence of any external criterion but another's value judgment. Research has been carried out in which the sense of humour has been measured by the amount of appreciation, or by differential appreciation of certain kinds of humour-provoking stimuli. The contradictory findings emerging from this research appear to testify to the inadequacy of this approach.

The sense of humour refers to the ability to perceive and appreciate absurd or incongruous situations. While much attention has been paid to the appreciative element, little interest has been focused on the inventive perceptual or productive aspect. Clearly, the two factors appreciation and production cannot be too sharply separated since both are essential to the experience of humour. However, it is equally apparent that there is a difference between laughing at such a situation as a joke which has been contrived to include some inherent quality of humour,

and perceiving humour in situations which are not so designed but which require active participation on the part of the observer in recombining and restructuring the parts. It is this latter aspect of creative re-structuring that the major theoretical discussions stress (46, 2). Failure to verify these theories by research might have been due to utilising a purely appreciative approach to humour. Indeed, it is possible that the two aspects of humour, degree of appreciation and readiness to perceive humour, are dependent upon different factors. In dealing, in this research, with the production dimension, we hope to gain some new insight into this phenomenon of humour, and by following a psychophysical approach, try to escape the problem of dependency on aesthetic judgments.

III. THE STATEMENT OF THE PURPOSE

A. To study the process of humour production where the task is to make one's own face humourous. To establish the zone in which humour appears by determining the upper and lower thresholds of the experience, and to consider the characteristics of the physical stimuli which are functionally related to the thresholds and the zone for this particular situation.

B. To study the relationship of intelligence and sex to

humour production.

a. To determine whether there is any relationship between intelligence and/or sex and the manner in which humour is produced in the experimental situation.

b. To determine whether there is any relationship between intelligence and/or sex and the amount of enjoyment of one's own production of humour.

CHAPTER II

THE HISTORICAL BACKGROUND

I. GENERAL APPROACHES TO HUMOUR

The phenomenon of humour, including its external stimuli and internal mechanisms and conditions, has been the subject of considerable speculation and theorising within various fields (36). These theoretical contributions have prompted much experimental research, but the findings have failed to provide unqualified support for any single theory of humour.

Explanations of humour have emerged from varied lines of approach to the topic. The earliest theories, formulated by philosophers and philosopher-psychologists, were generally concerned with the stimuli for, and the mental conditions accompanying laughter. These have since been sub-divided into three classes of theories--cognitive, conative and affective (11, 15), which have stimulated much of the experimental research on humour within the psychological sphere. Interest in this sphere originated in the psychoanalytic school with Freud's Wit and its Relation to the Unconscious (17). Subsequently the dynamics of humour have been explained in analytic terms that have their own accompanying lines of research (3, 7, 14, 16, 48, 51). A phylogenetic approach has been

adopted by Rapp (38, 39) who attempts to explain humour and wit as arising originally from physical triumph. Various social approaches have also been utilised which maintain that humour is a form of communication and has some necessary social function (21, 23).

II. THE EXPERIMENTAL STUDY OF HUMOUR WITHIN PSYCHOLOGY

A. The Approaches

Experimental studies pertaining to humour may be divided as to approach into two major categories: (1) those which aim at relating humour to personality and (2) those that attempt to determine the physical factors which influence humourous appreciation. The first division includes not only those studies which seek to correlate personality traits with a sense of humour, but also those which seek to assess personality through the sense of humour. The second category subsumes those researches which deal mainly with the nature of the humour-provoking stimuli. These studies stress the quality and character of the physical stimulus and its relation to humourous appreciation, thus dealing mainly with the effectiveness of various modes of presentation and the analysis and categorization of jokes. While many studies straddle this division, including both approaches within a single study, it serves as a reference point within which

to fit our present knowledge of the phenomenon of humour.

Common to both approaches, however, is a single technique for assessing the sense of humour. This consists of measuring, by means of rating or ranking scales, the amount of humourous appreciation. The experimental findings are of limited value, however, because the validity of the assumption that the amount of appreciation is a good estimate of the degree of a sense of humour has not been proven.

B. Factors Influencing Humour

A summary of the results of past research pertinent to this thesis will deal mainly with those studies relating such factors as intelligence and sex to humour. More complete histories may be found by consulting Perl (1933) for earlier research and Flugel (1954) for rather complete coverage of the field (15, 34).

On a priori grounds it has been assumed that the degree of an individual's intellectual development will affect his ability to perceive and appreciate humourous situations. Although a considerable amount of research has been directed at checking this assumption, there is at present little empirical evidence to support this contention. Wells (49), Ommake (32) and Stump (45) failed to determine any significant differences in humourous appreciation based on differences in intelligence. Landis

and Ross (26) concluded that while intelligence may affect the manner in which jokes are classified, it is not related directly to the amount of appreciation. On the other hand, Redlich, Levine and Lohler (40) in a more recent study using clinical cases, stressed the finding that intelligence is an important factor in the ability to grasp the humourous situation. However, their findings are based on rather severely impaired cases and they qualify the results by including the importance of social and emotional intelligence as well. While some workers, for example, Mones (28), continue to support the importance of intelligence, it seems more valid to accept Flugel's suggestion that, while "intelligence may be of primary importance in the appreciation of humour, its operation may be masked by temperament, attitude or other orectic factors."

The results of studies investigating the role of sex differences in the appreciation of humour are little more clear-cut than those dealing with intelligence. Perl (35), Heim (24) and Ghosh (18) found no significant difference in appreciation, although Heim refused to accept the findings. Landis and Ross (26) found a significant difference between the average humour value assigned to jokes by men and women, with men rating higher, but suggested that this could be explained by the fact that the

jokes were originally chosen by men. There were also differences in the way each group evaluated jokes in the light of the manner of interpretation or categorical judgment assigned. Sex differences have been more pronounced in the type of humour appreciated as demonstrated by Wells (49), Omwake (33) and Eysenk (11), and particularly for jokes of a sexual nature. Wells found that while sex preferences for a given type of humour were slight during early life, they increased greatly with age. In summary, it appears that while differences may exist between the sexes with regard to the appreciation of certain types of humour, there is no evidence of overall differences in the ability to appreciate humourous situations.

Other factors which have been correlated with the sense of humour include age (31, 33, 37, 47, 49), nationality or race (9, 12, 24, 44), and personality traits (1, 30, 43, 45, 50) including extraversion-introversion (13, 25, 26). With the exception of a general agreement that changes occur in appreciation with age, results in the other areas have yielded conflicting results.

C. Criticism of the Method

The method of studying humour by appreciation appears to have contributed little systematic evidence to the understanding of the phenomenon with the exception of indicating vast individual differences in preferences. Lack of

agreement among research workers may in part be accounted for by the difficulty of controlling all significant factors. Cattell and Luborsky (4) list eight factors which they consider important in influencing results. These include such individual factors as social background, intelligence, mood and sentiments, as well as the physical factors of mode of presentation, novelty and form of the joke. The adequate control of some of these, in particular the individual factors, appears to be an almost impossible task.

The use of different measuring instruments may account in part for some of the discrepant results, although the rating scale has been employed in many studies. While rating has been shown to be superior to ranking for the study of humour (6), its effectiveness can be questioned not only in terms of the general criticisms inherent in the rating technique (20), but also in the light of possible discrepancies resulting from differences in the manner in which it is employed. Redlich, Levine and Lohler (40), when using a sorting system, found that the subjects' choices were not always consistent with free expression. Moreover, Wolff, Smith and Murrary (52), who used various methods to study the mirth response, determined that a rating made immediately after presentation of the joke was not identical with a reasoned or deliberated one made later.

The accurate gauging of the degree of appreciation thus appears to be a somewhat complex task, and the research worker must take into account not only the existence of a lag between the initial appearance of the joke and the judgment made of it, but the content of that interval.

It is apparent that the difficulties facing the experimenter in the sphere of humour appreciation are those inherent in any area of experimental aesthetics. The core of the problem has been summarised by Woodworth and Poffenberger (34):

> The methods used in this field are fundamentally the same as those used in psychophysics with two important modifications; first, there is no objectively determinable fact in aesthetics by reference to which the correctness of a judgment can be gauged, and second, it is usually if not always impracticable to require the subject to make repeated aesthetic comparisons of the two objects, because the memory of previous judgments would interfere with the spontaneity of the succeeding judgments, and because the aesthetic effect of an object evaporates or is even reversed with often repeated contemplation of it.

III. A NEW APPROACH

Eysenck (11) has suggested that there are two distinct factors involved in a sense of humour--appreciation and production. To date, the majority of studies have concerned themselves with appreciation, with rather limited

success. Possibly, therefore, a study of the ability to produce humour may be more effective in indicating the factors associated with this trait. Though a few studies have been completed which stress this aspect of humour (22, 31), factual evidence is too limited as yet to yield any specific contributions to our understanding of the nature of the phenomenon and its relation to human personality.

The study of humour through production has some additional methodological advantages. It reduces the complete dependency on an aesthetic rating because it provides other data. Certainly the production method cannot do away with a judgment altogether, since appreciation is involved in production. But by employing a psychophysical approach in the study of humour production, a continuum of objective and physical data can be obtained. Differences in the nature of the physical concommitants produced could then be considered in relation to any number of variables in order to determine what factors are maximally important to the sense of humour.

CHAPTER III

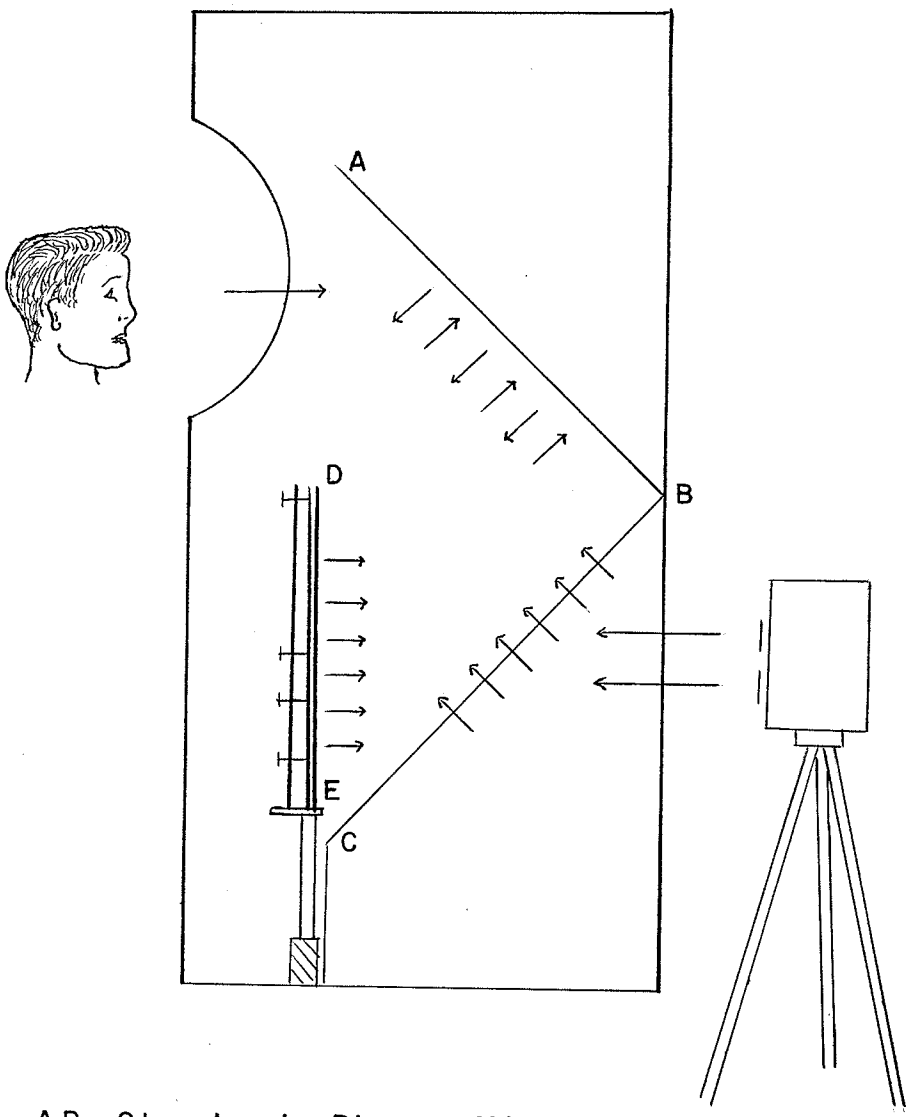
THE TESTING TECHNIQUES

I. The Distorting Mirror Apparatus

The distorting mirror apparatus, originally devised by Sayons and Brown at the University of Manitoba (42) for the purpose of investigating self-attitudes, has since been redesigned and was used in the present study for the purpose of testing humour production.

It consisted of two glass mirrors set at right angles to one another and opposite a reflecting metal plate. On the back of the metal plate a series of screws was fixed, which allowed this plate to be moved forwards and backwards within the area surrounding the screw. When the metal plate was set in a plane position, the reflection seen between the two glass mirrors was normal. Adjustment of the screws, however, caused changes or distortions in the reflection which were viewed through the lower one-way glass mirror and photographed for a permanent record of the specific distortion. (Details of construction may be found in Appendix A.)

The use of this apparatus as a technique for testing humour was based on the theoretical concept of humour as a special form of comedy in which affect is involved. If the affective ingredient can be satisfactorily displaced,



AB - Standard Plane Mirror

BC - One-way Mirror

DE - Metal Distorting Mirror

Figure 1. Side view of distorting mirror apparatus showing mirror arrangement.

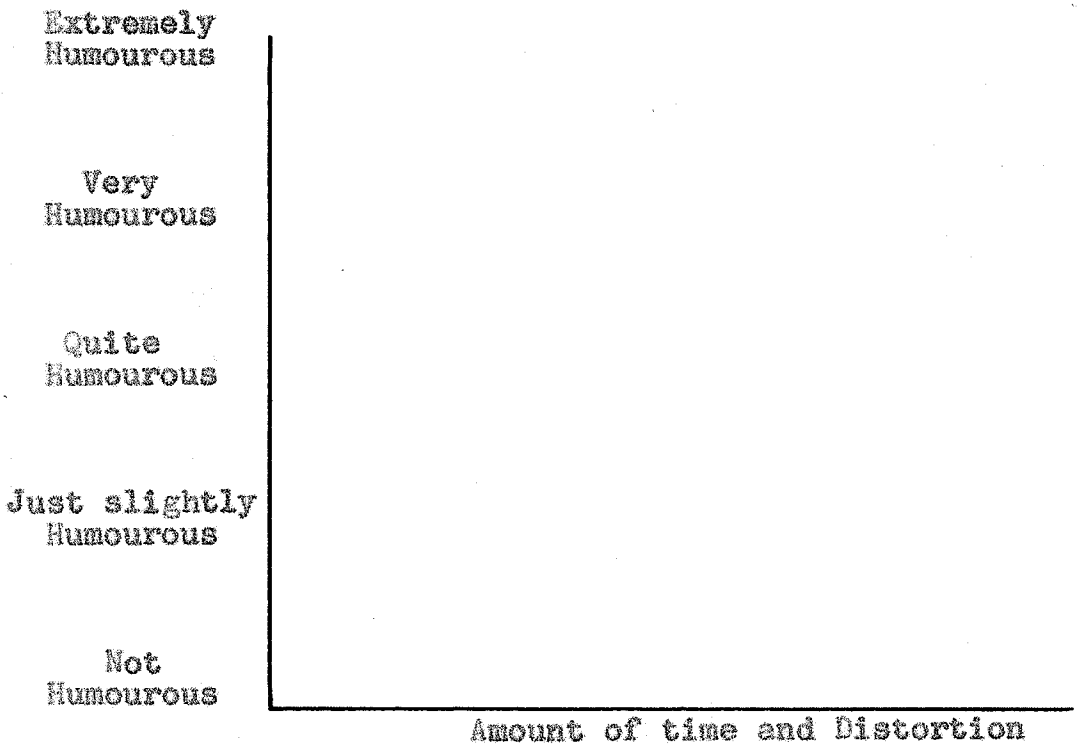
Figure 2. Photographs of the Distorting Mirror Apparatus.

humour will result. The situation occurring in the distortion of a face would be a comic one. When the face is one's own, however, the strong identification of face and self may lead to the arousal of emotion. If this emotion is not too strong and can be displaced, the situation becomes humourous. Several theorists stress the ability to laugh at oneself as the criterion of a well-developed sense of humour (2, 27, 46).

The subjects were assigned the task of making their own faces appear humourous to themselves by distorting the reflection. Photographs taken at specific points in the production were used to give an objective record of the humour-provoking stimuli at these points.

II. The Graphic Introspection

In order to obtain some measure of the degree of humour the individual was able to produce, as well as the manner in which the experience varied with the distortion, a two-dimensional graphic rating scale was employed. The ordinate values represented five qualitative degrees of humour from "not humourous" to "extremely humourous." The abscissa represented the total amount of adjusting performed, rather than simple distortion, since the freedom allowed the subject in his manipulations did not insure that the reflection was always progressively more distorted. An example of the graphic rating blank is shown in Figure 3.



1. Just beginning to be humourous
2. Most humourous
3. No longer humourous

Figure 3. Sample of the graphic introspection blank.

Two separate kinds of data were thus derived from this graph. The first was the measure of the individual's appreciation of his own production taken from his rating of the experience at the "most humourous" point. Secondly, the graph provided a simple means of describing the development of the humourous experince by co-relating degrees of humour with a changing visual stimulus. In addition, the subject was questioned following the graphic reting as to his impression of the face when it was "no longer humourous," and as to the amount of resemblance between the normal face and the "most humourous" and the "no longer humourous" faces, respectively.

CHAPTER IV

THE EXPERIMENTAL PROCEDURE

I. MATERIALS

In addition to the graphic rating blanks, this study employed the distorting mirror apparatus (as previously described), which was mounted in a box and placed on a table. A chin rest on the front of the box ensured a constant distance between the face of the subject and the mirrors. A lighting support was placed on each side of the box at a distance of approximately three feet from the subject, and each was equipped with a 500-watt reflector-type bulb. The use of a high stool allowed the subject to be seated comfortably throughout the testing period. A Rolleiflex camera was mounted on a tripod and placed behind the box so that it focused through the one-way mirror and on the metal plate. In this way it was possible to photograph exactly what the subject was seeing.

II. THE SUBJECTS

The group tested consisted of forty Grade XI high school students between the ages of sixteen and eighteen years. They were selected on the basis of the total scores from the Cooperative School and College Ability Test, or

SCAT, as it is better known, which had been administered the previous fall. Two distinct groups were selected. The first group consisted of ten males and ten females, groups A_1 and A_2 respectively, whose SCAT scores were above the 85th percentile. The second group consisted of nine males and eleven females, groups B_1 and B_2 respectively, whose SCAT scores fell below the 20th percentile. Groups A and B thus represented a high and low intelligence group where intelligence was defined as school learning ability measured from the SCAT test. The two groups included approximately equal numbers of males and females so that sex differences could also be studied.

III. THE PROCEDURE

A. The Humour Production Test

The subject was seated in front of the apparatus and shown how, by adjusting the screws, he could change the image of his face. He was then given a short practice trial in which to acquaint himself with the result of turning various screws and combinations of them. Following this the metal plate was readjusted to the normal position and the instructions were given.

> "You see that you can change the reflection of your face with this adjustable mirror. Your task will now be to distort the image of your face so that it appears humourous to you. You

Figure 4. Subject engaged in the task, showing a rear view of the Distorting Mirror and the lighting arrangement.

Figure 5. Side view of subject manipulating the Distorting Mirror.

> will start with your normal face and as soon as you are given the signal you may begin. During the process, though, there are some special distortions that I want you to show me.
>
> First, as you proceed to change the reflection from normal to humourous, I want you to watch carefully so that you can tell me when the face is just starting to become humourous. When you feel that it is just beginning to become humourous, I want you to stop turning and tell me.
>
> You will then continue distorting the reflection, this time watching to see where the face stops being humourous. When you feel that the reflection is no longer humourous, you will stop turning again and tell me.
>
> Lastly, I want you to adjust the mirror back to the place where the reflection appeared most humourous to you. This point will occur sometime before the second one as you are actually adjusting, but since you will not show it to me until last, you will have to pay careful attention so that you can locate it again."

The floodlights were then turned on and the normal face was photographed. The subject was instructed to begin, and at each point previously specified, he stopped and a photograph was taken. Four pictures of each subject were thus obtained: (1) the normal face, (2) the point at which the reflection was just beginning to become humourous, (3) the point at which the reflection had just ceased being humourous, and (4) the point at which the reflection was most humourous. (It was necessary to have this point located last, otherwise the subject would have had no frame of

reference within which to judge most humourous.)

B. The Graphic Introspection

After completing the humourous production, the subject was asked to describe the experience by means of a graphic rating scale. Instructions given to the subject were as follows:

> "Now I want you to try and describe your experience to me, but I want you to do this by means of a graph. This vertical line shows the degree or extent to which you thought the production was humourous. The horizontal line indicates the amount of adjusting and time required to reach the three points you have already indicated. I want you to show in your graph how humourous the production was and how much changing was necessary to attain the effect. The result will be some kind of curve. Its height at the peak will depend on how humourous you would rate the production at the most humourous point, and the steepness of the curve, on how much adjusting was required."

Additional aid was given here to some of the subjects who had difficulty in taking into account both dimensions, but on the whole the subjects managed this task quite readily. Following the graph's completion, the subject was questioned as to the experience. He was asked to describe the reflection after it had ceased to be humourous, in the hope that this might help clarify the nature of a humourous stimulus. He was also asked to indicate which of the two productions, "most humourous" or "no longer humourous," bore the closer resemblance to the normal face.

CHAPTER V

THE EXPERIMENTAL RESULTS

I. TREATMENT OF RAW DATA

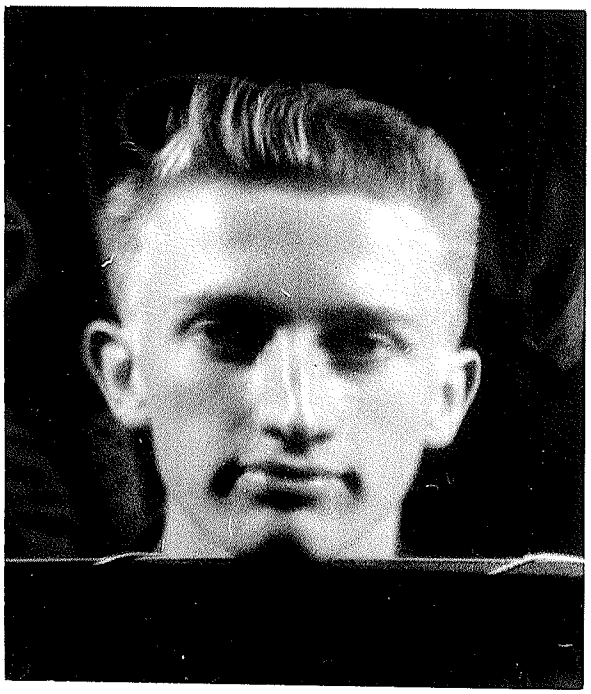
The raw data resulting from this investigation of humour consisted of two kinds. They were the photographs of the humourous productions and the graphic introspections.

A. Results from the Humour Production Test

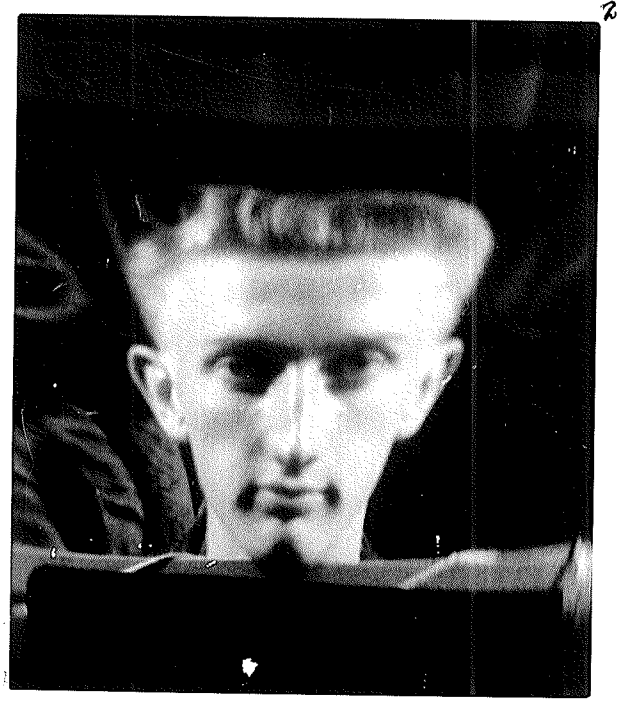
The results from the humourous production phase of the experiment consisted of four photographs of each subject: (1) the normal face, (2) the commencement of humour, (3) the point of maximum humour and (4) the cessation of humour. Before treatment, all photographs were enlarged by a constant amount so that they were large enough to handle easily. Four sample photographs are shown in Figure 6.

1. The Distortion Index

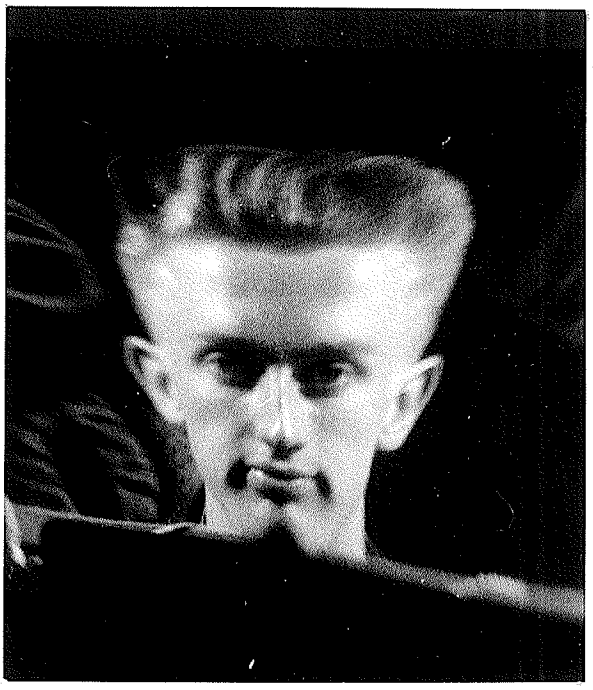
In order to find an objective means of determining how much alteration was necessary to produce the three experiential points, a distortion index was devised. For this purpose the normal face was first divided into four quadrants, vertically through the nose and centres of the



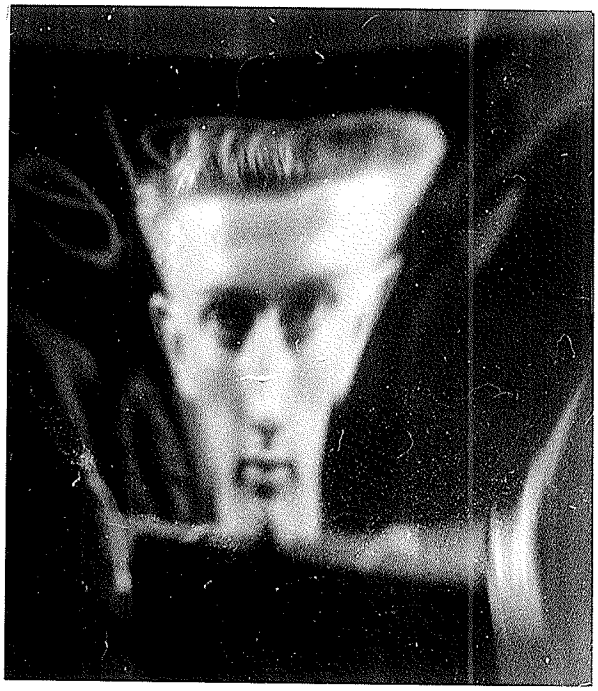
Normal Face



Commencement of Humour



Most Humourous



Cessation of Humour

Figure 6. An example of humour production.

chin and forehead, and horizontally through the eyes. The hair was included here also, since it forms a frame for the face and was often used in the production of humour. These quadrants, beginning with the upper right and proceeding clockwise, were numbered 1, 2, 3 and 4 consecutively. The area of each quadrant was then calculated by the use of a planimeter. Similar procedures were then followed with the other three faces of the series, in each case insuring that the same features were included in the distorted quadrants as in the normal. The index of distortion could then be calculated by determining the difference of the quadrant area of a distorted face from the same quadrant area of the normal face, comparing this with the normal quadrant as a ratio, and summing the ratios for the four quadrants. The formula for this distortion index is shown as follows:

$$D.I. = \frac{|N_1 - D_1|}{N_1} + \frac{|N_2 - D_2|}{N_2} + \frac{|N_3 - D_3|}{N_3} + \frac{|N_4 - D_4|}{N_4}$$

where N is the quadrant of the normal face indicated by the subscript and D is the same quadrant of the distorted face indicated by the subscript.

This area difference was treated as an absolute value with no consideration for sign. Dividing this difference

by the size of the normal area gave the proportion of distortion, a finding which was necessary for comparability of results since all faces were not initially the same size. This index thus represents an objective measure of the amount of alteration induced. Although this measure could serve only as a rather crude index of facial change, it was sufficient for the purpose, since the nature of the metal mirror was such that extremely fine changes were difficult to produce.

Distortion indices were computed for the three photographs which represented the experiential points the subjects had been asked to produce--the commencement of humour, the point of maximum humour and the cessation of humour. Distortion indices at these three points for the group of subjects are shown in Table VI, Appendix "B."

B. The Graphic Introspections

The graphic introspection which followed the humour production gave two kinds of results. The first was a subjective rating of the humour of the production, the second, a graphic description of the development of the humourous experience.

1. Subjects' Ratings

The subjects' ratings of their humourous productions were taken from the highest point of the curve, since the

lower threshold was given as "just slightly humourous" and the upper threshold as "not humourous." Weights were arbitrarily assigned to the rating scale from 0 to 4, for "not humourous" to "extremely humourous." The numerical values of the subjects' self-ratings of their productions at the most humourous point are shown in Table VII, Appendix "B."

2. The Curves of Humour

The development of the humourous experience was described graphically by means of the curves drawn by the subject. These curves could be classified into three types:

(1) Initial: this type of curve rose quickly to the peak and fell off very slowly thereafter.

(2) Medial: this curve reached the peak at a point intermediate between the commencement of distortion and the cessation of humour.

(3) Terminal: this curve reached the peak very slowly, but fell off very rapidly after doing so.

The types of curves drawn by each subject are shown in Table VIII, Appendix "B." Examples of each of the three types of curves are shown in Figure 7.

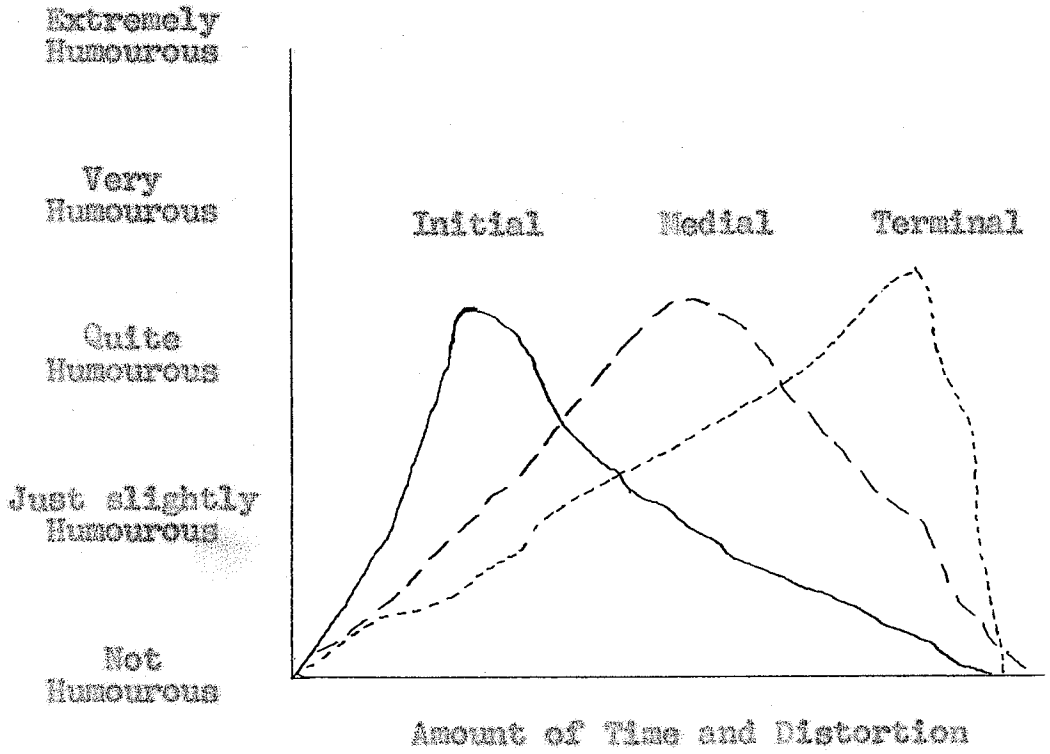


Figure 7. Examples of the three types of curves drawn by the subjects.

II. TREATMENT OF RESULTS

A. Humour Production Test

1. Group Results

Thresholds were determined for the three experiential points produced by the subjects by treating the development of the humourous experience as a function of the distortion. For this purpose the distortion indices computed for the three experiential points were used, since they showed the amount of distortion at these points. The amount of distortion, or the distortion index at the point where humour was just beginning was thus taken as the lower threshold, the distortion index at the most humourous point as the maximal point, and the index at the cessation of humour as the upper threshold. These three thresholds for the entire group of subjects are shown in Table I with accompanying fiducial limits calculated at the .05 level.

TABLE I

HUMOUR THRESHOLDS AS A FUNCTION OF THE DISTORTION INDEX

	Mean Distortion Index	S.D.	Fiducial Limits
Lower Threshold	1.118	.753	.877 - 1.359
Maximal Point	1.519	.947	1.217 - 1.821
Upper Threshold	.965	.808	.707 - 1.223

Some overlap is apparent in these thresholds, especially for the upper and lower. A test of the significance of the differences between these indices was computed, since they represent mean scores, and it was determined that the difference between the lower threshold and maximal point was significant, ($t = 2.09$, $p = .05$), as was the difference between this maximal point and the upper threshold, ($t = 2.62$, $p = .01$), but there was no significant difference between the upper and lower thresholds. The reason for this will be discussed later.

2. Intelligence Differences

Differences in the thresholds were compared for the two intelligence groups to determine whether the bright group differed from the dull group in the production of humour. No differences between mean distortion indices for the two thresholds or maximal point were found for the two groups. However, an F-test of the variances indicated that the two groups were different. Apparently, the bright group showed much more intravariability in the production of humour than the dull group. Table II shows the mean scores and variance differences between the bright and dull groups.

TABLE II

VARIANCE DIFFERENCES BETWEEN THE BRIGHT AND DULL GROUPS AT THE HUMOUR THRESHOLDS

	BRIGHTS		DULLS		
	Mean	S.D.	Mean	S.D.	F-ratio
Lower Threshold	1.159	.993	1.078	.197	5.038 **
Maximal Point	1.485	1.202	1.555	.662	3.29 *
Upper Threshold	1.086	.991	.844	.353	2.80 *

** Significant at the .01 level
* Significant at the .05 level

3. Sex Differences

The differences in threshold indices were also considered for the sex groups to determine whether sex was a factor in the production of humour. No differences between these means were found. However, the variances differed at the lower threshold where males were less consistent, and at the upper threshold where females were less consistent. Table III shows the means, standard deviations and F-ratios for the male and female groups.

TABLE III

VARIANCE DIFFERENCES BETWEEN THE MALE AND FEMALE GROUPS AT THE HUMOUR THRESHOLDS

	MALES		FEMALES		
	Mean	S.D.	Mean	S.D.	F-ratio
Lower Threshold	1.234	.881	1.014	.562	2.78 *
Maximal Point	1.675	1.01	1.379	.89	1.28
Upper Threshold	1.075	.604	.842	.984	2.64 *

* Significant at the .05 level

B. Graphic Introspection

1. Ratings

To determine whether the humourous productions were adjudged more humourous by certain groups, the significance of the difference between the mean humour ratings for the sex and intelligence groups was computed. In all cases there was no difference. No group tested rated this experience as significantly more or less humourous than any other group.

2. Type of Curve

Tables IVa and IVb show the number of subjects producing

the three types of curves in the intelligence and sex groups, respectively. These curves are graphic descriptions of the humour production experience and were classified as initial, medial or terminal on the basis of the relation of the peak to the rest of the curve. (See Figure 7.) For neither intelligence nor sex was there found to be any significant preference for any type of curve.

TABLE IVa

FREQUENCIES OF TYPE OF CURVE FOR BRIGHT AND DULL GROUPS

Type of Curve	No. of Brights	No. of Dulls	Totals
Terminal	9	11	20
Medial	9	4	13
Initial	2	5	7
	20	20	40

TABLE IVb

FREQUENCIES OF TYPE OF CURVE FOR MALE AND FEMALE GROUPS

Type of Curve	No. of Brights	No. of Dulls	Totals
Terminal	11	9	20
Medial	5	8	13
Initial	3	4	7
	19	21	40

The relationship between the type of curve and the height of the curve was examined. Here the interest was in determining whether different curves were associated with differing amounts of humour appreciation.

Table V below shows the frequencies for the humour ratings at the peaks of the three types of curves. No significant relationship was found between the type of curve and the height of the curve. ($\chi^2 = 6.41$.)

TABLE V

RELATIONSHIP BETWEEN TYPE AND HEIGHT OF CURVE

Rating at Peak	Type of Curve			Totals
	Initial	Medial	Terminal	
Just slightly humourous	1	2	1	4
Quite humourous	5	7	7	19
Very humourous	1	4	11	16
Extremely humourous	0	0	1	1
	7	13	20	40

CHAPTER VI

DISCUSSION OF THE RESULTS

I. DEFINITION OF THE HUMOUR ZONE

The results obtained from this experiment have succeeded in defining a zone of humour for this specific situation which is a function of an objective and physical continuum. Figure 8 shows graphically the humour continuum as a function of the distortion index.

It appears that humour emerges as the reflection of the face becomes somewhat unlike the individual, increases as the distortion increases, and then abates as the reflection returns to normal. The lower threshold, having the smallest standard deviation, shows the greatest consistency for the entire group of subjects, while the maximal point shows the least. Apparently the amount of alteration required for the maximal point is extremely variable, but generally it must be greater than for the initial appearance of humour. The overlap between the upper and lower threshold, as mentioned earlier, suggests that humour decreases as the reflection returns to normal. However, it was noted that some of the subjects increased the distortion rather than decreasing it to reach the upper threshold. The reliability of this threshold must be seriously questioned

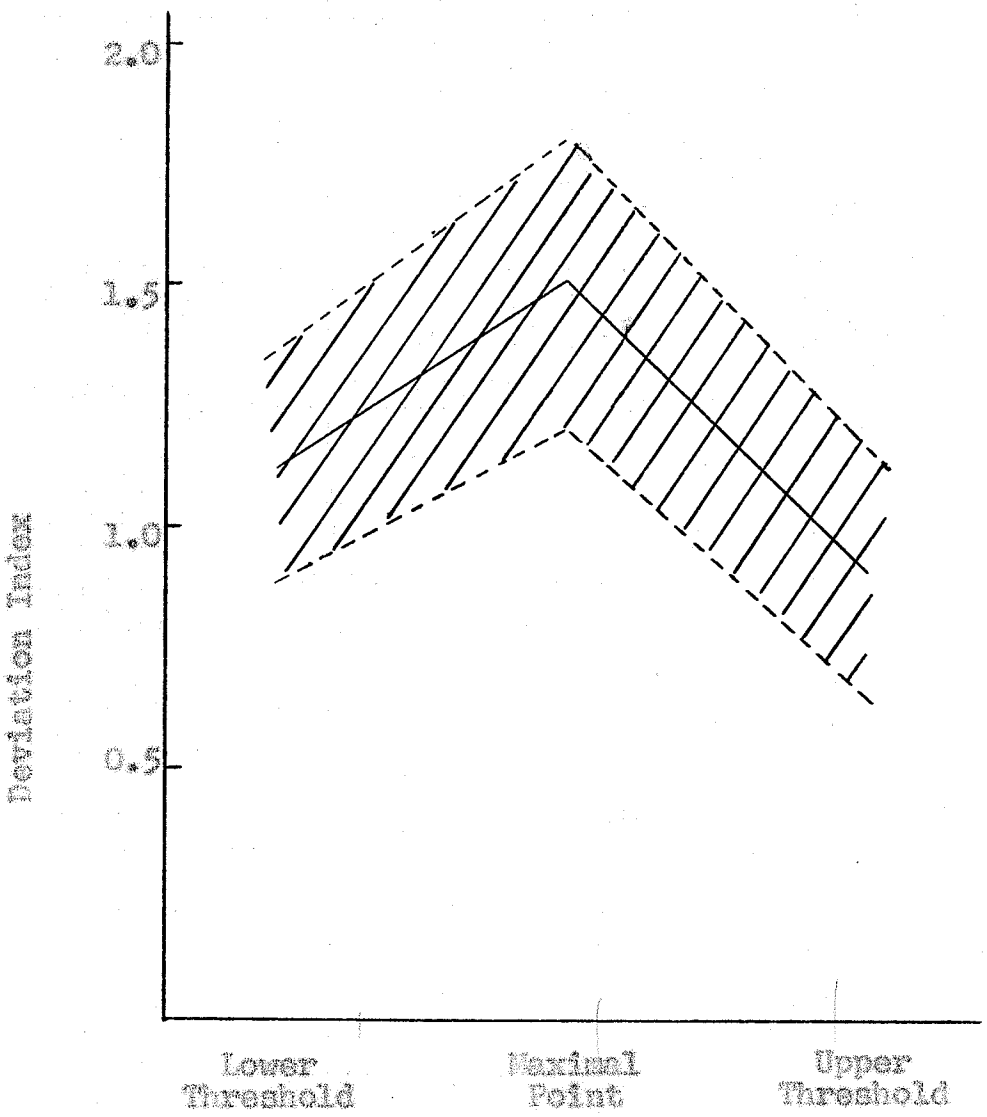


Figure 8. The Humour Continuum as a function of the distortion index. Shaded area shows fiducial limits for each threshold since variability was so great.

since the freedom allowed the subject in the experiment made it impossible to know the entire range of distortion that he experienced. If the subject did not increase the distortion after he reached the maximal point, but rather began to turn the mirror back to the normal position, it would have been impossible for him to experience a cessation of humour when the distortion of his reflection became too great. Consequently, it is unknown whether the upper threshold was merely a function of the apparatus and technique employed, or whether a reflection of the self is always humourous when it is sufficiently distorted, and loses its humourous appeal only when it begins to resemble the normal face too closely.

II. INTELLIGENCE, SEX AND HUMOUR PRODUCTION

1. Intelligence Differences

Differences between the bright and dull groups appeared in the production of humour. The bright group showed considerable variability with regard to the thresholds and maximal point, whereas the dull group tended to be more consistent. The findings of this study are thus congruent with suggestions from past research that intelligence is likely to influence the kind of humourous situation appreciated.

The most striking difference between the two groups

was in the handling of the upper threshold. The bright subjects reported more frequently that the reflection lost its humourous appeal when the distortion became so great that the image no longer resembled them. Dull subjects, on the other hand, were more inclined to find little resemblance between the most humourous production and their normal faces, and consequently, the image tended to lose its humourous quality only when it began resembling them too closely. Unfortunately, in many cases, the photographs and distortion indices failed to bear out this difference, possibly because the individual's concept of his own face differs from the objective appearance and thus, what to him is a gross change, is to an outside observer negligible.

It is evident that an understanding of the exact manner in which a group of high intelligence differs from one of low intelligence in the production of humour would require many more subjects and a more detailed study than the present one. All that can be stated now, is that the bright subjects are differentiable from dull subjects in their humour production.

2. Sex Differences

The sex differences in the production of humour are more difficult to interpret. Presumably males and females

can be differentiated at the lower and upper thresholds, the boys being more variable in the former, and the girls in the latter. At the maximal point, however, differences disappear and the subjects act as a homogeneous group.

Because intelligence is a factor influencing performance on this task, however, an investigation of the differences between the sexes for similar intelligence groups would be useful. Bright males and bright females were differentiable at the lower and upper thresholds ($F = 4.83$, $p = .05$; $F = 5.21$, $p = .05$, respectively.) At the lower threshold the difference was due to the large variance among the males. At the upper threshold, variance differences were due to the large spread among the females. In the dull group, males and females were differentiable only at the upper threshold ($F = 7.2$, $p = .01$) where males were less consistent than females. The results would tend to indicate, therefore, that males show somewhat more variability than females in their performance on this task. Intelligence, however, seems to be of greater importance than sex.

3. Appreciation of the Production

The results of the graphic ratings used in conjunction with the production of humour indicated that there were no significant differences in appreciation between intelligence

and sex groups. It appears then, in this situation at least, that sex and intelligence play no part in determining the amount of appreciation that will be accorded a humourous situation. This finding appears to be a typical result in appreciation studies, and in view of the recurrent failure to establish any relationship, suggests that there is none.

4. The Importance of Intelligence and Sex in Humour

The definition of a sense of humour that was employed in this study embodies the ability to produce, as well as to appreciate humour. By adopting the production approach it was possible to demonstrate differences between intelligence groups and, to a lesser extent, between sex groups. Where the appreciative aspect was concerned, however, differences appeared to be related to neither intelligence nor sex. Thus it is suggested that the two aspects of humour, production and appreciation, are dependent upon different factors.

CHAPTER VII

CONCLUSIONS

I. CONCLUSIONS OF THE STUDY

The results of this research indicate that humour can fruitfully be studied from the production dimension. They testify, moreover, to the value of a psychophysical approach. While the distorting mirror was able to reveal differences in humour production ability, there were problems inherent in the apparatus and in the way it was used, that made it impossible to define the zone of humour exactly.

The two variables, intelligence and sex, appeared to be related to humour production. The bright group was characterized by a much greater degree of variability in productions than that displayed by the dull group. The male group tended towards greater variability also, but the sex differences were less pronounced than those due to intelligence. Neither intelligence nor sex bore any relationship to the amount of appreciation the humourous productions received.

II. SUGGESTIONS FOR FURTHER STUDY

1. Modify the distorting mirror apparatus by employing a more flexible plastic mirror. Also, and probably more

important, design a method by which the distortion can occur in one direction only.

2. Attempt a new system for quantifying facial changes. The need for a more complex index which would consider radius differences and smaller areas, rests upon the fact that the face is a complex configuration, and the relationship among the parts, as well as the parts to the whole, an abstruse one.

3. Inquire further into how the productive aspect of humour is related to appreciation. The findings here suggest that while the preception and appreciation of a humourous situation are both necessary aspects of humour, they appear to depend on different factors. Possibly the failure to separate these two aspects of humour has obscured much of the problem in understanding the phenomenon.

4. Further study of the perceptual aspects of humour is necessary. The perception of a humourous situation is primary to the whole experience of humour but this seems to have been overlooked in the attempt to relate the degree of appreciation to various personality traits. Such studies could stress either the physical characteristics of a humourous situation or the relationship between the readiness to perceive a potentially humourous stimulus and personality factors.

III. SUMMARY

An investigation of humour was attempted from a production dimension employing a psychophysical approach for the purpose of determining whether humour could be related to any physical continuum and whether there was any relationship between humour production and the factors of intelligence and sex. The apparatus employed for this purpose included a distorting mirror in which the subject was required to make his own face appear humourous to him, and a graphic rating scale on which the subject was required to rate the humour of the experience and describe the experience graphically. The subjects consisted of 20 brights and 20 dulls, evenly divided as to sex, who were selected on the basis of percentile scores from the SCAT. Photographs of the subjects' productions on the distorting mirror were obtained and compared on the basis of the amount of distortion as determined from a distortion index. The graphic rating scales provided an index of the individual's appreciation of his own production as well as a graphic description of the development of the humourous experience.

Results

1. On the basis of the distortion indices, a humour zone was determined with an upper and lower threshold and a

maximal point.

2. The bright and dull groups were differentiable on the basis of their humourous productions. The dull group showed an internally consistent performance whereas the bright group showed marked individual differences in the amount of distortion.

3. There were no differences in the self-ratings of the humour production between the bright and dull, male and female groups.

4. The production of humour appeared to be a useful approach to the study of the sense of humour, especially when combined with a psychophysical technique.

5. Intelligence was found to be a factor in the production of humour but was unrelated to the appreciation of the production. Sex appeared to be a less important factor in the production of humour.

A P P E N D I C E S

APPENDIX A

THE CONSTRUCTION OF THE DISTORTING MIRROR APPARATUS

The distorting mirror was a sheet of ferrotype metal, 14" x 10", fixed to a metal frame by ten screw units which were soldered to it. The screw units were such that while the flat end was securely fastened to the metal sheet, the screw itself could turn in either direction, thus pulling in or pushing out the area of the sheet surrounding the screw. The position of the screws is shown in Figure 8.

This distorting mirror was set perpendicularly into a large wooden box, 20" x 40" x 16", so that the shiny side faced the inside of the box. Within the box two large mirrors, 20" x 16", were fixed at right angles to one another and at a 45° angle to the metal plate. The upper mirror was a plane glass mirror, the lower one a one-way mirror which allowed a view of the distorting mirror from an opening in the back of the box. The image seen by the subject was a reflection from the metal mirror. The camera, placed at the back of the box, was focused on the distorting mirror and thus photographed the reflection seen by the subject.

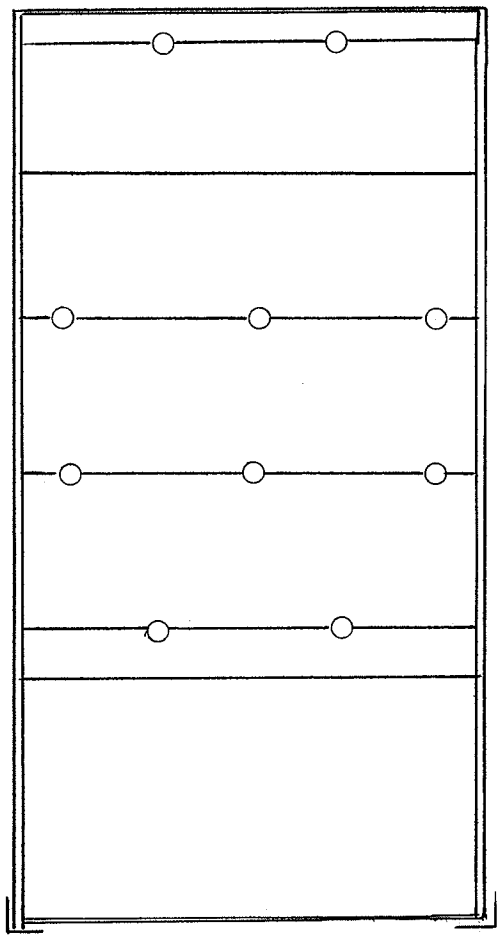


Figure 9. Position of Screw Units on Distorting Mirror.

A P P E N D I X "B"

TABLE VI

DISTORTION INDICES AT THE THREE EXPERIENTIAL POINTS

Subject		Commencement of Humour	Most Humourous Point	Cessation of Humour
Group A_1	1	.757	1.561	.484
	2	4.260	4.590	.698
	3	.607	.933	.704
	4	2.222	2.468	1.557
	5	.444	.934	.487
	6	.302	.509	1.872
	7	.300	.655	.181
	8	.393	.072	.375
	9	1.513	.977	1.436
	10	1.369	2.544	1.057
		$\bar{X}$ = 1.217	$\bar{X}$ = 1.524	$\bar{X}$ = .885
Group A_2	1	.211	.901	.367
	2	1.556	4.298	.332
	3	.476	1.130	1.422
	4	1.562	2.487	4.655
	5	.567	.937	.627
	6	.414	1.153	1.817
	7	1.210	1.021	.793
	8	2.665	.906	.535
	9	1.352	.823	.689
	10	1.010	.799	1.625
		$\bar{X}$ = 1.102	$\bar{X}$ = 1.445	$\bar{X}$ = 1.286
Group B_1	1	1.493	1.288	2.248
	2	1.317	1.381	1.220
	3	.310	2.498	1.208
	4	1.514	2.685	1.545
	5	1.291	1.956	.535
	6	1.447	1.627	1.867
	7	1.081	2.254	.400
	8	.792	1.358	1.673
	9	2.053	1.548	.873
		$\bar{X}$ = 1.271	$\bar{X}$ = 1.844	$\bar{X}$ = 1.285

TABLE VI (continued)

Subject		Commencement of Humour	Most Humourous Point	Cessation of Humour
Group B_2	1	1.314	1.142	.751
	2	.382	.423	.366
	3	.638	2.098	.450
	4	.836	1.411	.772
	5	1.203	1.652	.434
	6	.791	1.020	.287
	7	1.584	2.582	.331
	8	1.235	.852	.213
	9	.637	1.098	.506
	10	.703	.349	.296
	11	.948	.323	.906
		$\bar{X}$ = .929	$\bar{X}$ = 1.178	$\bar{X}$ = .483

TABLE VII

SELF-RATINGS OF HUMOUR OF PRODUCTIONS AT THE MOST HUMOUROUS POINT

Group A_1		Group A_2		Group B_1		Group B_2	
Subj.	Self rating	Subj.	Self rating	Subj.	Self rating	Subj.	Self rating
1	3.0	1	1.0	1	2.6	1	2.0
2	2.0	2	3.0	2	3.0	2	3.0
3	2.0	3	2.3	3	2.0	3	3.0
4	.5	4	3.0	4	1.0	4	2.6
5	2.0	5	3.0	5	4.0	5	3.0
6	2.5	6	2.0	6	3.0	6	2.0
7	2.0	7	2.0	7	2.0	7	2.0
8	3.0	8	3.0	8	3.0	8	2.0
9	2.0	9	3.0	9	2.0	9	2.5
10	3.0	10	1.3			10	2.0
						11	2.0
$\bar{X} = 2.2$		$\bar{X} = 2.4$		$\bar{X} = 2.5$		$\bar{X} = 2.4$	

TABLE VIII

TYPES OF CURVES DRAWN BY THE SUBJECTS

Group A_1		Group A_2		Group B_1		Group B_2	
Subj.	Type of Curve	Subj.	Type of Curve	Subj.	Type of Curve	Subj.	Type of Curve
1	Terminal	1	Initial	1	Terminal	1	Terminal
2	Initial	2	Medial	2	Terminal	2	Medial
3	Terminal	3	Medial	3	Initial	3	Terminal
4	Medial	4	Terminal	4	Terminal	4	Initial
5	Medial	5	Terminal	5	Terminal	5	Terminal
6	Medial	6	Terminal	6	Terminal	6	Medial
7	Medial	7	Terminal	7	Initial	7	Initial
8	Medial	8	Terminal	8	Terminal	8	Initial
9	Terminal	9	Medial	9	Terminal	9	Terminal
10	Terminal	10	Medial			10	Medial
						11	Medial

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