

TABLE 1

PROBABILITIES OF MOVING TO EACH AREA FOR ALL LEVELS OF D

Level of Distortion (Bits/Dot)	Area				
	1	2	3	4	5
1	.88	.1	.015	.004	.001
2	.75	.15	.05	.03	.02
3	.59	.20	.16	.03	.02
4	.36	.48	.06	.05	.05
5	.2	.3	.4	.05	.05
6	0	.4	.32	.15	.13
7.7	0	.24	.16	.3	.3
8.6	Equally Probable Adjacent 400 Cells				
9.7	Equally Probable any of 900 Cells				

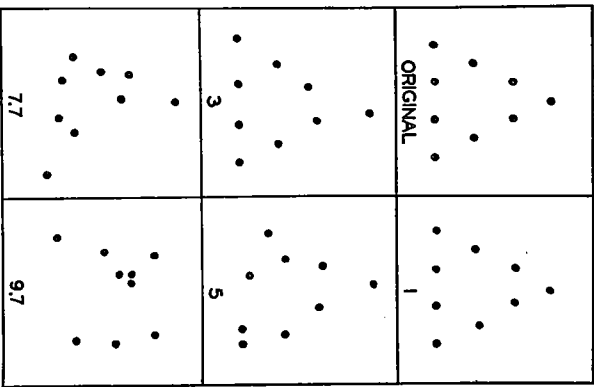


Fig. 1. Original and five levels of distortion for set of triangles.

Five areas were designated consisting of the central position (zero), Positions 1-8, Positions 9-24, Positions 25-99, and Positions 100-399. For each level of distortion a probability was assigned to any given dot moving to any of the five areas. Within an area all of the cells were equally likely. The probabilities were assigned in such a way that the total uncertainty of each dot conformed to the nine levels discussed above. For example, the 1 bit/dot distortion had probabilities of .88 of staying in place (Area 1), .10 of moving to Area 2, .015 for Area 3, .004 for Area 4, and .001 for Area 5.

The probability values for all levels of distortion are shown in Table 1. The values are selected to obtain the overall levels of distortion discussed above. In addition, the probability of moving to a cell declines as the distance of the cell from the dot's original position increases. The only exception to this is in the 6- and 7.7-bit levels for which the probability of not moving at all is zero. This property guarantees that the average distance moved per dot in-

creases with level. The actual distance moved of each dot for every level of distortion was calculated for all sets and the means are shown as the last column of Table 1. The values are in units of 1/20 of an inch which represents the grain used for these patterns. The logarithm of the average distance between dots is a linear function of the level of distortion. The 1-bit level point lies off this linear trend, having slightly too little distortion. The 9.7-bit distortion was unrelated to the original, since any dot had an equal probability of being in any of the 900 cells of the original matrix.

Eighteen sets of triangles, each containing a random sample of the rule for all levels of distortion, were made. For the other patterns 6 sets were made each consisting of five levels of distortion. Once the basic pattern was produced, the dots were transferred to ditto and reproduced.⁵

Procedure.—The two conditions involving triangles alone were run first. In the simultaneous exposure condition the 10 patterns of each set were presented in random order on facing pages of a notebook with the original in the upper left-hand corner of each double page. The S was given a score sheet which had lines for rating 12 sets of patterns. For each set the 4-bit distortion

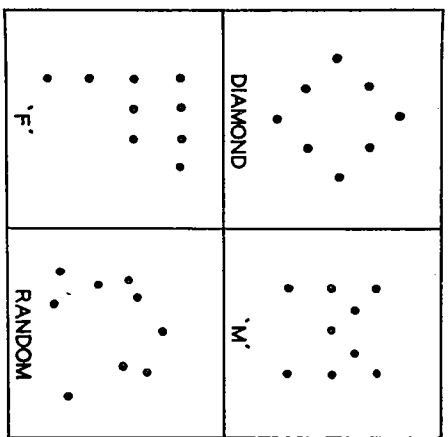


Fig. 2. Original patterns of Diamond, M, F, and Random.

⁵ One of the 7.7-bit distortions was constructed with eight rather than nine dots. The data obtained from the ratings of that pattern do not seem to differ in any important way and no correction was made for this.

served as the modulus and had the number 30 already filled in. The Ss were instructed to give each of the patterns a number which represented its distance from the original in similarity of shape or form. If a pattern appeared twice as similar to the original as the pattern already designated as 30, S was told to call it 15; if twice as distant it was to be called 60. The Ss were told that any numbers at all could be used, but that they should use the 30 relation as a guide. Each S worked individually through 12 sets. The 18 sets were arbitrarily broken into three groups of 6 sets and each of the Ss was assigned two of these groups such that there were 16 ratings of every set.

In the sequential procedure each of the 180 patterns was mounted on 5 x 7 in. cards and all except the 18 originals were placed in a notebook. Three of the 4-bit distortions were designated as moduli and given a value of 30. One-third of the Ss rated the patterns using each modulus. During the ratings Ss were allowed to keep a card with the original and their modulus in front of them. They were instructed to rate each card in the same way as described above, going on immediately to the next card and not returning to any prior ratings. Prior to running each S, all the cards were reshuffled so that each S had a new random order.

Thirty new Ss were used to rate all five figures. The Ss received instructions similar to those given in the previous experiment. Each S rated all 150 individual patterns divided into five groups of 30 according to the form of the original. Each group contained 6 sets with five levels of distortion per set. The order of the patterns was governed by three random 5 x 5 Latin squares with two Ss assigned randomly to

each row. Each Latin square one of three distortions of modulus (30). For each type order of the stimuli was in each S. The name of each pattern (etc.) was printed on the or could see during the rating.

Results

The basic results of this graph are shown in this graph the median distance from the original function of the level of the two different psychoniques. The standard deviation for the simultaneous

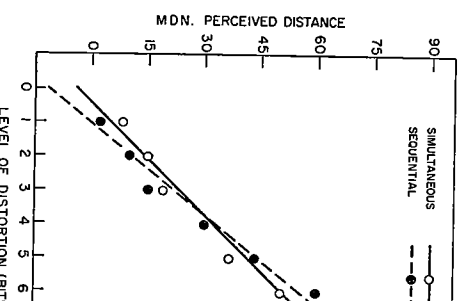


Fig. 3. Median magnitude of function of degree of distortion.