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Semiannual Progress Report September 1, 1967 - February 29, 1968
Perceptual Processes
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1. Research initiated before September 1, 1967 and reported in previous progress reports.

A. Intermodality Pattern Perception

N68-86994

1. Handel, S. and Buffardi, L. Using Several Modalities to Perceive one Temporal Pattern.

This study has been submitted for publication. A shortened version was presented at the Southwestern Psychological Association Convention, April, 1968.

2. Handel, S. and Buffardi, L. Pattern Perception: Integrating Information from Two Modalities.

This research project has been replicated. The analyses have been completed and the manuscript is being prepared. A paper, based on this research, will be read at the Midwestern Psychological Association Convention, May, 1968.

3. Lewis, W.E. The Effect of Practice on the Perception of Temporal Patterns.

The object of this study was to determine the effect of practice on the perceptual ability of various modalities. The major results were:

a. Practice eliminated any differences found between modalities with untrained subjects.

b. Practiced subjects were able to organize patterns in many more ways than were unpracticed subjects.

4 pages
None Code
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c. The effects of practice are not specific to the particular conditions. Novel patterns were identified as quickly as the patterns which appeared often. In addition, subjects were able to identify patterns at higher rates of presentation (11 elements / sec.) than unpracticed subjects although they were not trained at these rapid rates of presentation.

This study was conducted by Mr. W.E. Lewis and is his Master's Thesis. It will be presented at the Rocky Mountain Psychological Association Convention, May, 1968.

4. Penick, B. The Effect of Stimulation of one Modality on Pattern Perception through a Second Modality.

The objective of this study was to measure the masking effect of one modality on pattern perception through a second modality. We hoped to use this work to understand some of the relations between modalities.

The results are complicated and surprising. The most important result is that presentation of the irrelevant modality improved performance through the relevant modality instead of degrading performance as expected. A "general arousal" explanation seems likely, but many of the results are not accounted for by this explanation. Additional results are:

a. The effect on performance of a temporally contiguous irrelevant modality is not the same as the effect of a temporally non-contiguous irrelevant modality.

b. The effect on performance of an irrelevant modality is not a simple function of the difficulty of perception through that modality.

This study was conducted by Mr. B. Penick and is his Master's Thesis. He is currently preparing a manuscript for publication.

B. Free Classification of Multidimensional Stimuli

1. Handel, S. and Preusser, D. The Effect of Sequential Order and Spatial Arrangement on the Free Classification of Multidimensional Stimuli.

The analysis of this study has been completed and a manuscript based on the results is being prepared. A version of the research will be read at the Midwestern Psychological Association Convention, May, 1968.

2. Preusser, D. Hierarchical and Categorical Classification.

This study has been completed and the results demonstrate an overwhelming preference for hierarchical classification.

This study was conducted by Mr. D. Preusser and is his Master's Thesis.

2. Research Initiated After September 1, 1967 and not Previously Reported.

A. Handel, S. Dimensional or Distance Classification.

The aim of this study is to determine when an object is perceived as a whole unit and when an object is perceived as an aggregate of dimensions. When objects are perceived as wholes, classification of objects into groups would be based on the perceived similarity between stimuli. However, when an object is perceived as an aggregate of dimensions, the classification of objects into groups would be based on the dimensions of the stimuli. To distinguish between these methods of classification, and therefore to distinguish between the modes of perception, we could construct a single stimulus set in which dimensional organization would lead to one result and distance organization would lead to a different result. For example, suppose we had a set of three

line stimuli varying only in length and orientation. The three stimuli — (a) 13 mm., 15°, (b) 13 mm., 75°, (c) 12 mm., 70°— were chosen because the perceived distances were $D_{bc} < D_{ab} \leq D_{ac}$. When placing these three stimuli into two groups, Ss using dimensional organization would place (a) and (b) in one group but Ss using distance organization would place (b) and (c) in one group. This was the procedure used in this experiment.

We used several different kinds of dimensions to try to determine the combinations of dimensions which are seen as a unitary whole. The experiment has been completed and we are presently analyzing the data.

2. Handel, S. <u>The Free Classification of Continuous Dimensions</u>.

Previous work on the free classification of stimuli has used stimuli which seem categorical in nature. For example, a typical set of stimuli might consist of two red chips, two green chips, two blue chips, and two yellow chips. The subjects have very little difficulty classifying these stimuli since the stimuli are categories themselves. However, no research has investigated the classification of dimensions which are continuous so that categories or groups cannot be formed easily. We are using two continuous dimensions, white to black and a series of hues, to study how a continuum is broken up into groups.

We have practically completed running the experiment.

Stephen Handel
May 3, 1968