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A normative study on students selected at random on the H.M.H. prism rock test

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Abstract

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Degree Type

Thesis

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A NORMATIVE STUDY
ON STUDENTS SELECTED AT RANDOM
ON THE H.M.H. PRISM ROCK TEST

A Thesis
Presented to the Faculty
of
The College of Optometry
Pacific University
by
Herbert R. Berreth
Jack F. Smith

In Partial Fulfillment
Of the Requirement for the Degree
Doctor of Optometry
May, 1960

IN APPRECIATION

This thesis is dedicated to an educator
and an optometrist, HAROLD M. HAYNES,
for the help and guidance given during
this research. HRB, JFS

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This paper represents a normative study of the H. M. H. prism rock test. The H. M. H. test is a clinical reaction time test for measuring convergence and divergence performance.

EQUIPMENT

The equipment consisted of a Keystone Van Orden Flipper, one reduced snellen chart, and one pair of round, four diopter prisms. A stop watch was used to count the cycles for different units of time.

TESTING PROCEDURE

- 1) The shaft setting was placed at 16 inches.
- 2) The pupillary distance was set for 60 mm.
- 3) The test prisms were placed in the Van Orden Flipper in the up position.
- 4) The stimulus sequence was from plano to 8 base out and back to plano; and plano to 8 base in and back to plano.
- 5) The rock was maintained for 2 minutes.
- 6) The cycles, which consisted from the up position to the down position, and return to the up position, were counted and recorded after 30, 60, 90, and 120 seconds.
- 7) The test target was the bottom row of a reduced snellen, the 20/20 line.
- 8) The subject wore his distance Rx. and must have had the ability to fuse and maintain targets through prisms, also having 20/20 acuity @.U. at near.
- 9) Patient had the testing procedure demonstrated while the instructions were read. The procedure was demonstrated until the subject had a complete understanding of the test procedure.
- 10) Binocular control was determined objectively by observing the eye movements. The subject was also questioned during the instructions in respect to diplopic responses.
- 11) In respect to the order of stimulation, one subject would receive base in and then base out with his (her) successor obtaining the converse, i.e. base out and then base in.

INSTRUCTIONS

- 1) How many charts do you see?
- 2) Can you read all the letters in the bottom line?
- 3) Read all the letters aloud to me.
- 4) Flip the prisms into the down position.
- 5) How many charts do you see?
- 6) Did you see two before you saw one?
- 7) Can you read all the letters in the bottom line?
- 8) Read the letters aloud to me.
- 9) The purpose of this test is to see how many times a minute you can flip the lens in and out while reading all of the letters on the bottom line.
- 10) As soon after each flip as you see one chart and can read the bottom line flip the prisms again.
- 11) Do not flip the prisms until after you see only one target and can read each letter on the bottom line.
- 12) Begin from the up position.
- 13) Continue until we ask you to stop.
- 14) Do you understand the instructions?
- 15) Numbers 4 to 8 were repeated when the opposing prism rock was tested.

EXPERIMENTAL PROCEDURE

One hundred seven college students selected at random served as subjects.

RESULTS

There were 107 subjects given the test, with a total of 100 completing the two minute period. Of the 7 which failed, 4 could not fuse the base in at first stimulation. The other 3 were able to begin but could not maintain for two minutes, also failing the base in portion. Four of this 7 were males, and 3 were females. Of the 100 which completed the rock, 37 were females and 63 were males.

Table #1 displays the mode, mean, median, and the sigma in number of cycles for 30, 60, 90, and 120 seconds; also for the 1st and 2nd sixty seconds. This is for base out and base in respectively.

Graph #1 shows the reactions in cycles for the 1st and 2nd sixty seconds base out and base in. It also gives the calculated mean, median, and sigma's for the respective units.

Graph #2 gives the distribution of the reactions in cycles of the 1st sixty seconds as compared to the 2nd sixty seconds. An increase (plus) is shown to the left and a decrease (minus) is to the right. The calculated means are given, with both in plus, as are the sigma's. The base out and base in are shown.

Graph #3 displays the effect of practise by plotting the means of the individual 30 second units for the full two minutes. Base in and base out are both shown on a single graph.

RESULTS (Cont.)

Correlation #1 (Page 13) displays the distribution, the numerical values, and the calculated "r" for the 1st sixty seconds as compared to the second sixty seconds. This is for base out with the horizontal representing the second minute.

Page 14 is the base in presentation of the same material.

Page 15 is also a similar presentation, only this correlates the first minute base in to the first minute base out.

SUGGESTIONS FOR FURTHER STUDY

Several impressions for future study were suggested from observation of subjects. It did not appear that sex made a noticeable difference, unless it would be that more males placed in the limited reader classification.

It was interesting to note that both sexes generally commented upon the base out being "easier", although their facility may have been quite similar with either stimulus.

The myopic patient appeared a better performer than the emmetrope, or the hyperopic patient. It was also interesting to note that the subject who expressed good or excessive reading habits was more efficient than the limited reader.

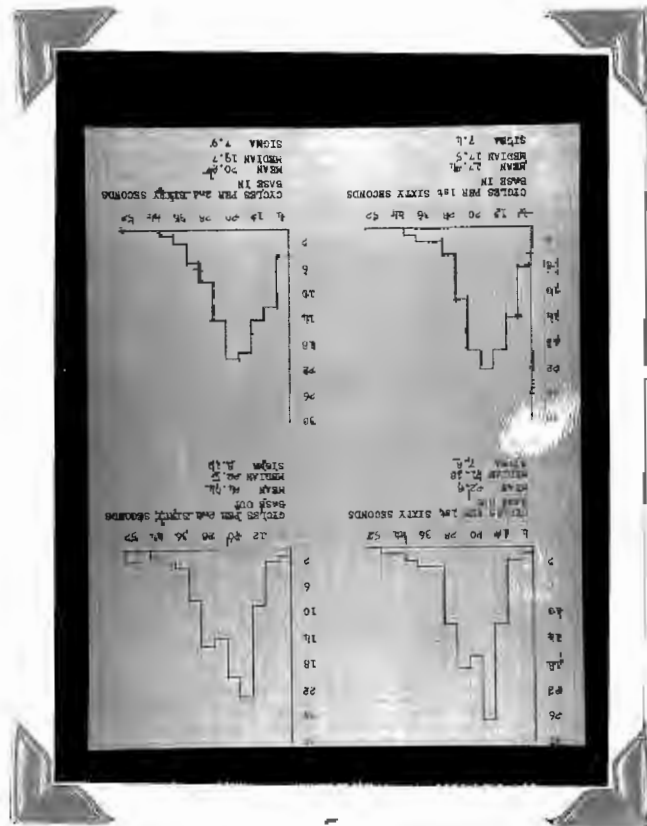
SUMMARY

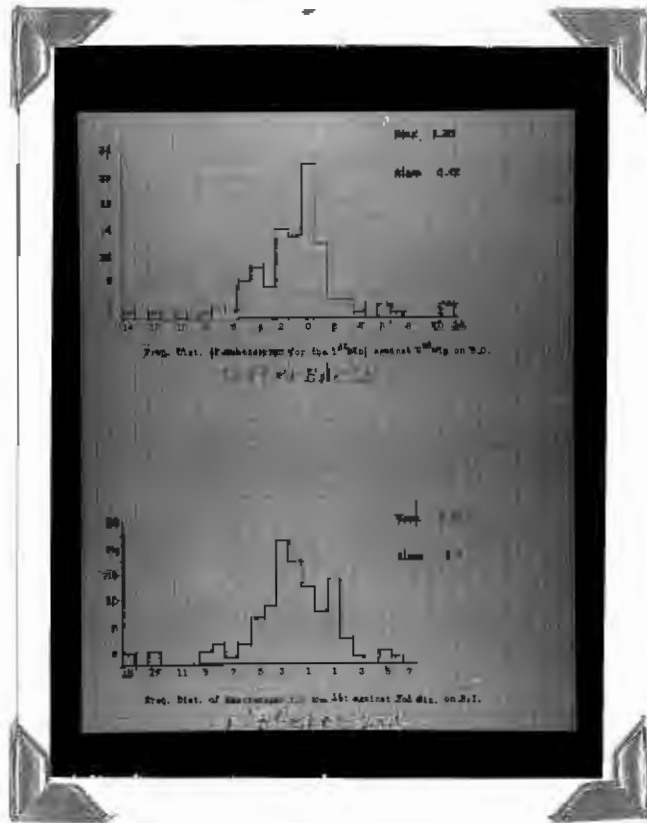
A sample of 107 college students selected at random were used to study their reactions to the H. M. H. prism rock test. A graphical and statistical analysis of the data is presented.

TABLE #1

	CYCLES	MODE	MEAN	MEDIAN	SIGMA
BASE OUT	1st 30 SECONDS	8.5	11.28	11.04	3.93
	2nd 30 SECONDS	10.5	11.50	10.96	4.14
	3rd 30 SECONDS	9.5	11.84	11.10	3.97
	4th 30 SECONDS	9.5	12.21	11.39	4.42
	1st 60 SECONDS	17.5	22.80	21.38	7.80
	2nd 60 SECONDS	17.5	24.04	22.50	8.19
BASE IN	1st 30 SECONDS	8.5	8.69	8.23	3.32
	2nd 30 SECONDS	10.5	9.35	9.39	4.05
	3rd 30 SECONDS	10.5	10.00	9.78	3.79
	4th 30 SECONDS	10.5	10.37	10.17	4.88
	1st 60 SECONDS	17.5	17.84	17.50	7.40
	2nd 60 SECONDS	21.5	20.27	19.70	7.90

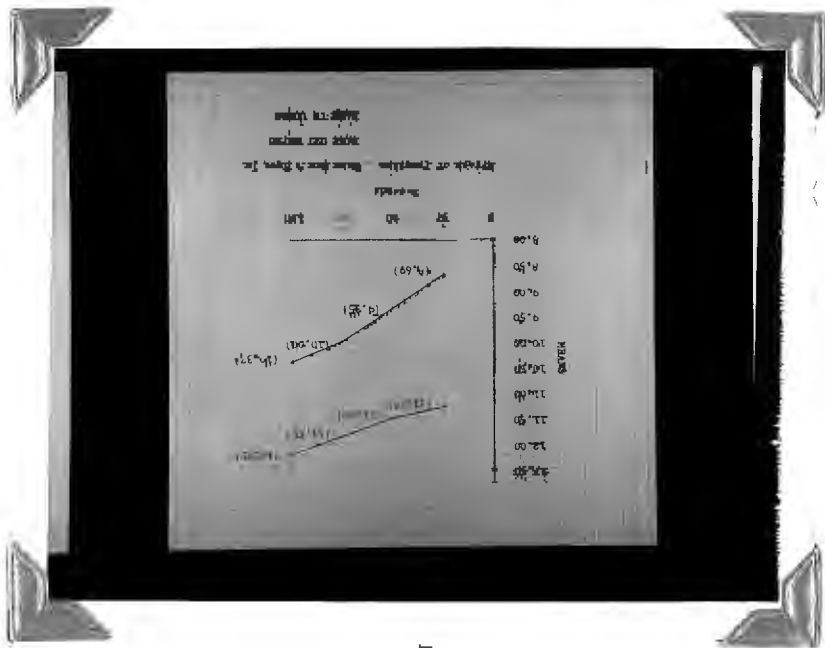
HISTOGRAM OF CYCLES PER 1st & 2nd SIXTY SECONDS
 BASE OUT AND BASE IN





- HISTOGRAM OF FREQUENCY DISTRIBUTION
- 1st MINUTE VERSUS 2nd MINUTE
- BASE OUT AND BASE IN

COMBINED BASE OUT AND BASE IN EFFECT OF PRACTISE



CORRELATION OF 1st MINUTE TO 2nd MINUTE BASE OUT

