

1964

## Study of the Frequency of Color Blindness Among Mentally Retarded Children in the Counties of Buena Vista, Cherokee, Ida and Sac.

Terry L. Penniman  
*Crestland Community School*

*Let us know how access to this document benefits you*

Copyright ©1964 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

---

### Recommended Citation

Penniman, Terry L. (1964) "Study of the Frequency of Color Blindness Among Mentally Retarded Children in the Counties of Buena Vista, Cherokee, Ida and Sac.," *Proceedings of the Iowa Academy of Science*, 71(1), 418-420.

Available at: <https://scholarworks.uni.edu/pias/vol71/iss1/61>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

## Study of the Frequency of Color Blindness Among Mentally Retarded Children in the Counties of Buena Vista, Cherokee, Ida and Sac.

TERRY L. PENNIMAN<sup>1</sup>

*Abstract.* The study has shown that there is an appreciably greater frequency of defective color vision among the mentally retarded children in the counties specified than that found in normal children.

The general objective of this study was to determine the frequency of color blindness among mentally retarded children in an area of northwest Iowa.<sup>2</sup> The subjects were children in fifteen special education classes for the mentally retarded. The Hardy-Rand-Ritter Pseudoisochromatic plates for detecting, classifying, and estimating the degree of defective color vision were used in this study. The author in all cases did the examining.<sup>3</sup>

The teachers of the special classes prepared the children for the arrival of the examiner so they would not be anxious about taking the color vision examination.

Each child was tested individually. The examiner explained the examination to the subject. The first four plates were demonstration plates. They were not scored. The actual testing began with the screening plates 1-6). Turning to plate 1, the examiner asked first "How many symbols do you see here?"<sup>4</sup> Then, "What are they?" Then, "Where are they?" It was important to obtain an immediate response to the number and position of the symbols seen by the subject. If the subject's responses to the screening plates were all correct there was no need to continue the testing. If the subject made any wrong responses in the screening plates, the subject was given plates (7-20). The record sheets were scored and diagnosed according to the instructions given in the test manual.

Of the one hundred forty-six mentally retarded children tested

---

<sup>1</sup> The author was formerly a student at Buena Vista College and is teaching Educably Mentally Retarded Children for Crestland Community School.

<sup>2</sup> Color vision testing for this study was initiated in the four counties of Buena Vista, Cherokee, Ida and Sac, in Northwest Iowa, at the suggestion of Darrell Minifie and Bernard Farestad, and was conducted in cooperation with the Special Education Department of this four county area. Dr. Minifie agreed to let the author, who was at the time a student, conduct the study, collect the data and report the findings.

<sup>3</sup> The examiner contacted each of the fifteen Special Education classes listed below in their respective counties: Buena Vista County (Storm Lake—3 classes; Newell, Fairview); Ida County (Ida Grove—2 classes, Battle Creek); Sac County (Sac City, Lake View, Odebolt); Cherokee County (Cherokee, Marcus, Larrabee, Quimby).

<sup>4</sup> The word *symbols* was in some cases incomprehensible to the subject. In such cases, the examiner explained that the term meant or excluded it.

in the study sixteen were diagnosed as having defective color vision- ranging in degree from unclassified to mild, medium or strong. There were 83 boys tested, 12 of whom had defective color vision; and 64 girls, 4 of whom had defective color vision. The IQ's of the children with defective color vision ranged from 30 to 78, the average being 52. The IQ's were obtained from tests administered by psychologists certified by the Iowa State Department of Public Instruction.

Table I

Number of Children Tested	146	no. with DVC*	16	10.9%
Number of Boys Tested	83	no. with DVC	12	14.4%
Number of Girls Tested	63	no. with DVC	4	6.3%

\*DVC=Defective Color Vision.

It is important to remember that the children tested were mentally handicapped. Therefore, the procedure of the examination was too complicated for some of the children to comprehend. In such cases, the examiner, using demonstration plates, explained to the child that he was only interested in knowing if the child saw colored symbols on the pages of the examination. The examiner used a paint brush to trace the symbols ( $\Delta$ , O, or X), showing the child what he was supposed to do when he saw one or more symbols on a page. The brush was handed to the child. He was then asked to trace only the colored symbols on the demonstration plates. If the child obviously did not comprehend the procedure, the examiner explained, and in some cases, re-explained the procedure until the child understood what was expected of him. Under no circumstances was the actual testing begun until the child understood the procedure. It was important for the examiner to refrain from provoking anxiety in the child, which could have made accurate testing difficult. In only one instance was the examiner unable to explain the testing procedure. The examiner did not include this child's examination in the study.

In some cases, the examiner deemed it necessary to retest a child as many as three times in order to obtain an accurate diagnosis. Any child whose responses indicated color defective vision, was retested. The examiner felt that this was necessary to validate and support his first diagnosis. When a child was retested, the test manual was inverted 90 or a 180 degrees so as to make the plates seem to be completely different. In some instances, the plates were administered in reverse order as well as being inverted.

The examiner kept records of the more interesting anomalies throughout the study. Two brothers attending the same special class were found to have defective color vision to almost the same extent. Both had five correct responses in the protan col-

umn. One had no correct responses in the deutan column, the other had only one. There was a five point difference between the IQ's of the two siblings.

In another instance, the examiner tested five children from the same family (4 boys, and 1 girl). Three of the boys were diagnosed as having defective color vision. The breakdown of their examination record sheets follows.

Table II.

	Protan Column	Deutan Column	Tritan Column	Tetartan Column	IQ Level
Child A	0	3	0	2	60
Child B	0	8	4	4	61
Child C	0	6	4	4	63

Only the correct responses are listed above.

The three of the five siblings (see Table I) that were diagnosed as having defective color vision, had brown eyes. The other two, who had normal color vision, had blue eyes. There were other instances where siblings who were in Special Classes differed in that one of them had defective color vision while the other did not.

## Adaptation as Related to the Introversion-Extroversion Dimension<sup>1</sup>

EARL D. SCOTT AND DAVID WILKINSON

*Abstract.* Thirteen young adult men were given a test for introversion-extroversion. They were then tested to determine the number of presentations of a noxious stimulus which was required for adaption to the stimulus to take place, as measured by the galvanic skin response. It was found that extroverts adapted with significantly fewer stimulus presentations than did introverts. The results were related to Eysenck's theory concerning the introversion-extroversion dimension and conditionability.

Pavlov's (1927) theory of cortical functioning emphasized two basic cortical processes, excitation and inhibition. In his work with dogs, he noted that some animals were easily conditioned while others were extremely difficult to condition. He postulated that this was due to a difference in the balance of excitatory and inhibitory potentials in different animals. In some dogs where the excitatory potential was dominant over inhibitory potential, the conditioned response was easily established, but difficult to extinguish, while in those animals in which the inhibitory

<sup>1</sup> This is a report of a part of the research supported by the U.S. Public Health Service, National Institute of Mental Health, Grant # MH 06956-01, 1962