Instruction Manual

MULTI-STEREO TESTS

MULTI-STEREO TESTS (5116)
Manual and Guide for Industrial Users

Instructions for Administration

The Multi-Stereo tests are given at the Far Point setting on the Keystone Occupational Visual Service and the Driver Vision Service. They Are Binocular (2-eyed) tests and, therefore, cannot be given to a person who has only one eye or has very little vision in one eye.

Card A – Instruction Card

This card is placed in the Telebinocular holder at the Far Point. Using a pointer, tell the subject, "This is a box 18 inches in depth. There are rods in the box at different distances from you. Look at Rods numbered 1 and 2. Is one of these rods closer to you or they the same distance from you?" If he/she hesitates, ask him/her, "If you reached out your hand to touch either number 1 or 2, which one would be closer to you?" This setting is very gross. Take a little time with the person who has difficulty with it in order to make certain he/she understands. If he/she reports accurately on pair 1and 2, **or even if he/she cannot**, go on to Rods 4 and 5, 7 and 8, 10 and 11. If all are reported correctly, go on to Card
S-1.

Note! IN a very few cases the individual may not report correctly on Rods 1 and 2, but is correct on the other three pairs. In these few cases, score him/her as passing Card A and go on to Card S-1.

Card S-1 45% to 70% Stereopsis

Say to the subject, "Here is another card similar to the one you have just seen. Look at Rods 1 and 2. Which is closer to you? Rods 2 and 3, 3 and 4, etc.?" Do not tell the subject he/she is right or wrong. If encouragement is necessary, simply say "OK" or "Now the next pair of numbers _ and _?" If the subject passes correctly at each level on Card S-1, change to Card S-2 and continue the test.

Scoring instructions

At most levels there are two trials of equal value. If an individual gets one right and one wrong at any level, go on to the next level. The last level where **both pairs** are correctly reported is the score.

Interpretation
See page 5 for data.

Standards for Industrial Screening
1. Passes A Card only: Poor Stereopsis – 25% or less.
2. Passes card S-1 only: Fair Stereopsis – 70%.
3. On Card S-2, passes 80% level: Good Stereopsis. (Pilots license requirement.)
4. Passes levels higher than 80% level: Excellent Stereopsis. (A large group of experienced truck drivers averaged 85%).

Discussion

With these tests you are measuring the ability of the employee to judge distance solely by the use of binocular (3-D) vision. It must be recognized that some individuals have depth perception or ability to judge distance in other ways. For example: A one-eyed person judges distance by size clues, placement clues, and by reference to other objects whose distance he/she knows.

However, most people who have two eyes rely on stereopsis for distance judgments. Stereopsis is accomplished by a triangulation process of the two eyes. It is especially valuable in judging the placement of two objects in a new or novel situation – such as one meets continually on the highway or those met by a crane man who must place his/her load accurately on different spots.

The Multi-Stereo Tests set gives the observer only stereopsis clues to placement. All other methods of judging distance are eliminated from the test.

Multi-Stereo Tests
Interpretation Chart and How to Use It

To use the following table consider this example: An individual tests at the 50 per cent level. This means that at 20 feet he/she can tell correctly which of two objects is closer if the difference is 3.6" or more. At 100 feet there must be 18" or more difference before he/she can accurately tell the placement. At 300 feet, there must be 4' 6" difference; at 600 feet a 9' difference; and at 1,000 feet, a 15' difference. These measurements refer only to distance judgments upon 3-D Vision (Stereopsis). Stereopsis becomes particularly important when quick and accurate distance judgments are necessary.

Interpretation Chart

% Score	20 Feet	100 Feet	300 Feet	600 Feet	1000 Feet
45	4"	20"	5'	10'0"	16' 8"
50	3.6"	18"	4. 6"	9' 0"	15' 0"
55	3.2"	16"	4. 0"	8' 0"	13' 4"
60	2.8"	14"	3' 6"	7' 0"	11' 8"
65	2.4"	12"	3' 0"	6' 0"	10' 0"
70	2.0"	10"	2' 6"	5' 0"	9' 4"
75	1.6"	8"	2' 0"	4' 0"	6' 8"
80	1.2"	6"	1' 6"	3' 0"	5' 0"
85	1.0"	5"	1' 3"	2' 6"	4' 2"
90	.8"	4"	1' 0"	2' 0"	3' 4"
95	.6"	3"	9"	1' 6"	2' 6"
100	.4"	2"	6"	1' 0"	1' 8"

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In using the tests in industry certain things should be kept in mind:

1. Is the employee a "new" or one who is now on the job?

If the task he/she has to perform demands good distance judgment for safety or production efficiency reasons, you will probably set a relatively high standard for new employees. However, in consider the accident or production rates of the employee in rendering a judgment.

2. What standards should be set?

This, too, is a matter of judgment. One method would be to test all employees engaged in a task demanding good stereopsis. Then, referring to production and accident record set a level you feel to be a minimum for that task.

For example, consideration of " over the road" truck drivers: A study showed that experienced truck drivers averaged 85 per cent on the test. This may show two things: (a) Truck drivers who had poor stereopsis have been eliminated; or (b) Experience on the job may assist in developing good stereopsis.

Let us say you are considering the employment of a driver who showed only 50 per cent on the test. Reference to the interpretation chart shows that at 600 feet he cannot judge distance accurately unless the objects have at least 9 feet difference. This means that at this distance he/she can't be certain of two approaching cars is ahead of the other unless the difference is gross. Would you wish to take a chance on this man as a "new" employee?
Since stereopsis is only one factor in safe driving, it is suggested that the supervisor or examiner who has charge of this employee's training be especially alert to note whether or not the employee has difficulty on the road in passing other vehicles and in judging distances in pulling up to the curb, or in backing up in close quarters.
Some persons with poor stereopsis have learned to compensate for their deficiencies. However, it is always appropriate to point out the deficiency to the employee.
Usually the individual who does not score well on these tests will show other visual malfunctioning on the standard Occupational or Driver Tests. Since the Multi-Stereo Tests are very critical tests, it is not recommended that employees be referred for professional attention or be denied jobs if their only poor scores are on this test. Still, these tests give the industrial screener an opportunity to measure stereopsis with greater accuracy than any other now available.