A Pilot Study of the Montessori Cylinder Block Test

as a Screening Test Material

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(Received June 7, 1991)

Abstract

The purpose of this paper is to examine the linearity and the change of the time outputting or insetting cylinders from or into a block and chronological age. Concretely, what is the strongest linearity and the most changeful of the following three sorts of time?
1. The time outputting all cylinders from a block.
2. The time insetting all cylinders into a block. These cylinders were put in order before insetting.
3. The time insetting all cylinders into a block. These cylinders were put at random before insetting.

In this paper I use the data which appeared in Otoda's paper (1978). Subjects are twenty-eight normal children, from two years to five years seven months old.

In order to examine the linearity I calculate the Pearson's moment correlation coefficient. In order to examine the change I calculate the regression coefficient.

In conclusion, the linearity of the time insetting all cylinders which were put at random into a block is the strongest, and its rate of change is the hardest.

When the Montessori cylinder block is used as a screening test material for child psychological development, the time insetting all cylinders which were put at random into a block is most useful.

Key words : BLOCK, CYLINDER, DEVELOPMENT, MONTESSORI, SCREENING

The Montessori cylinder block is an educational tool used in the Montessori method. It is a sort of visual sensory educational tool. A photograph of it is shown in Figure 1. The sort of the cylinder blocks which are shown in Figure 1 is B type (Iwata 1984).

This paper is a pilot study to examine the Montessori cylinder block test, to determine whether it can be used as a screening test material for child psychological development.

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The purpose of this paper is to examine the linearity and the change of the time outputting or insetting cylinders from or into a block and chronological age. Concretely, what is the strongest linearity and the most changeful of the following three sorts of time?

1. The time outputting all cylinders from a block.
2. The time insetting all cylinders into a block. These cylinders were put in order before insetting.
3. The time insetting all cylinders into a block. These cylinders were put at random before insetting.

**Method**

In this paper I use the data which appeared in Otoda’s paper (1978). Subjects are twenty-eight normal children, from two years to five years seven months old. These data were gathered by using the B type Montessori cylinder block.

In order to examine the linearity I calculate the Pearson’s moment correlation coefficient (Hoel 1971a). This coefficient shows the linearity of two variables, the time outputting or insetting cylinders from or into a block and chronological age.

In order to examine the change I calculate the regression coefficient (Hoel 1971b). This coefficient shows the rate of change of the time outputting or insetting cylinders from or into a block.
A Pilot Study of the Montessori Cylinder Block Test

Result

Figure 2, Figure 3, Figure 4 show the following four points.
1. The scattergram.
2. The regression line.
3. The Pearson's moment correlation coefficient.
4. The regression coefficient.

Figure 2 shows these four points at the time outputting all cylinders from a block.
Figure 3 shows these four points at the time insetting all cylinders into a block. These cylinders were put in order before insetting.
Figure 4 shows these four points at the time insetting all cylinders into a block. These cylinders were put at random before insetting.

![Figure 2](image1)
![Figure 3](image2)

**Figure 2** The time outputting all cylinders from a block.

**Figure 3** The time insetting all cylinders which were put in order into a block.
The Pearson's moment correlation coefficient of the time outputting all cylinders from a block and the time insetting all cylinders which were put at random into a block is the highest. The linearity of the time outputting all cylinders from a block and the time insetting all cylinders which were put at random into a block is the strongest.

The regression coefficient of the time insetting all cylinders which were put at random into a block is the highest. The rate of change of the time insetting all cylinders which were put at random into a block is the hardest.

In conclusion the linearity of the time insetting all cylinders which were put at random into a block is the strongest, and its rate of change is the hardest.

When the Montessori cylinder block is used as a screening test material for child psychological development, the time insetting all cylinders which were put at random into a block is most useful.

The Japanese edition of this paper is submitted to “Shoni Hoken Kenkyu (The Journal of Child Health)” which is published by the Japanese Society of Child Health.

The author wishes to thank Mr. Kenneth R. Eineke for checking English sentences of this paper.
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