The Manual of “Convex-Line Tactile Maze Tasks”

Created by office SASHIMA

1. Introduction

The maze task is important for young children because it helps them learn to recognize geometric shapes and form spatial images. In particular, blind infants and children have difficulty in recognizing space (Sato, 1988), and the experience with maze tasks is important because it is positioned as a basic readiness for reading tactile diagrams and graphs, and for the coordination of hand movements as a basis for Braille. However, while there are a variety of maze tasks commercially available for children without visual impairment, there are no tactile maze tasks that consist of a certain systematization.

Based on some basic experiments, the following factors were considered to have an influence on the task difficulty of the tactile maze task with convex tracing.

- Number of corners (assignments with more corners are more difficult than those with fewer corners)
- Number of intersections (:points on the path with branches leading to dead-end lines) (assignments with more selection points are more difficult than those with fewer selection points)
- Presence and absence of the way to dead-end (the path from the selection point to the dead-end of the maze assignment). (Assignments with the ways to dead-ends are more difficult than those without them)
- Distance between intersections (The shorter the distance between intersections, the more difficult the task.)

We have therefore created 78 different tasks and developed a set of teaching materials for the instructional phase of the “Convex Tracing Tactile Maze Task for Blind Infants and Toddlers,” which consists of five levels of difficulty.

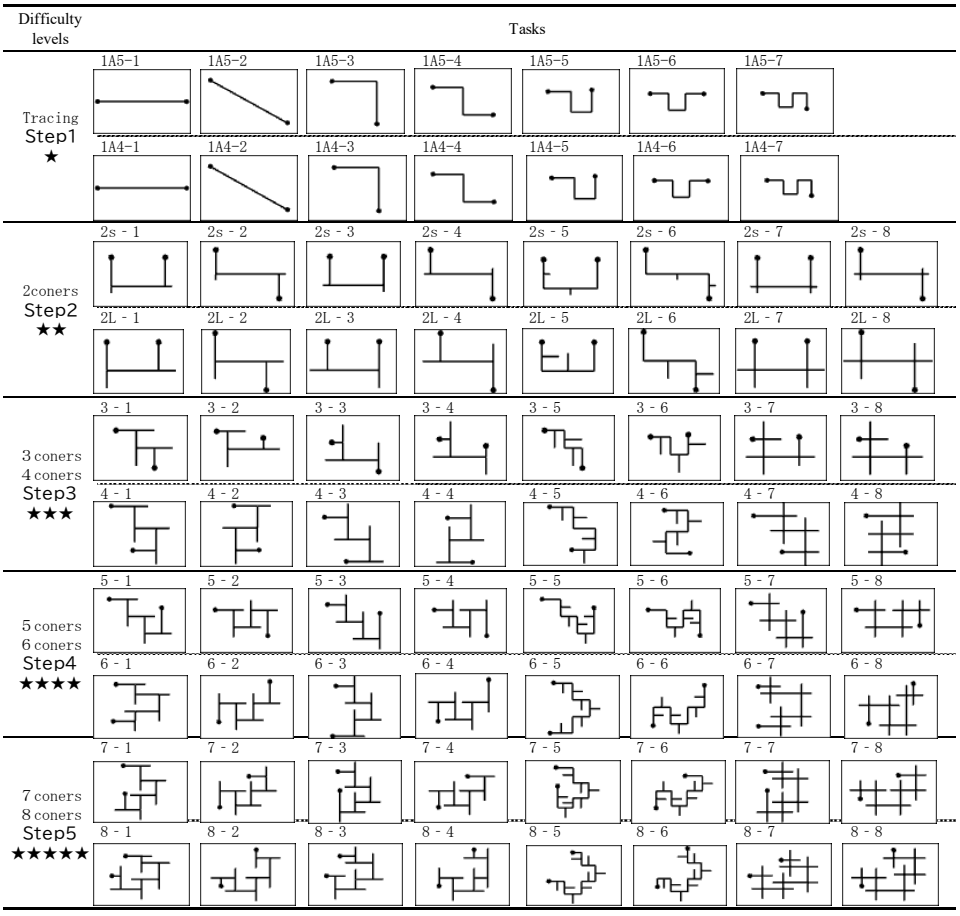
II. Convex Line Tracing Tactile Maze Task Instructional Materials

1. Characteristics of the tasks

Difficulty level	Title of the tasks		Number of selection points	Distance between selection points	number of coners	Sheet size ※	Number of tasks	
Step 1	Trace(A5)task Trace(A4)task	1A5-1、1A5-2… 1A4-1、1A4-2…	0		0～5 ※	A5 A4	7 7	Total:14
Step 2	2coners(2s)task 2coners(2L)task	2s-1、2s-2… 2L-1、2L-2…	2	short (1.5cm) long (4.0cm)	2	A5	8 8	Total:16
Step 3	3coners task 4coners task	3-1、3-2… 4-1、4-2…	3 4	4.0cm	3 4	A5 A4	8 8	Total:16
Step 4	5coners task 6coners task	5-1、5-2… 6-1、6-2…	5 6	4.0cm	5 6	A4	8 8	Total:16
Step 5	7coners task 8coners task	7-1、7-2… 8-1、8-2…	7 8	4.0cm	7 8	A4	8 8	Total:16
							Total	78

※The more turns there are, the more difficult the task becomes.
※Details for each sheet size are as follows : A4 (210×297mm)・A5 (148×210mm)

2. Contents of the tasks



III. Instruction Manual

1. Outline of the task

Students will trace the task from the starting point to the end point. Through the execution of the task, the students will acquire spatial images that will be the basis for reading tactile diagrams and learning Braille.

2. Target

Children with intellectual developmental level of approximately 5 to 8 years old.

3. points to consider in teaching

(1) Fixing teaching materials

・Prepare chairs and desks that are appropriate for the children and install non-slip sheets to prevent the materials from moving.

・If the assignment moves while the child is performing the task, the instructor should restrain the assignment to make it easier for the child to perform the task.

(2) How to introduce children to the convex line tracing tactile maze tasks

・When first introducing the task, place the task on the table, place the instructor's hand on the child's hand, move the child's hand to the starting point, and have the child check to see if there is a starting point.

・Ask the child to trace a line from the starting point and see if he/she can find an end point that is the same shape as the starting point.

・When the child continues to follow the line from the starting point to the end point and finds the end point, tell them that they have found it and that what they is touching now is the goal, and motivate them to stay motivated.

(3) Order of presentation of tasks

・The difficulty level of the task is increased according to the child.

・For tasks where the child stumbles, either lower the difficulty level by one level or present a task of the same difficulty level (the same difficulty level for STEPs 1, 2, 3, 4, 5, 6, 7, and 8) to encourage the formation of a spatial image, and then watch the child as he or she works on it again.

・The difficulty level of the material increases with each STEP, and even within a STEP, the difficulty level increases as the number at the end increases.

(4) Direction of presentation and task difficulty

・When children become accustomed to the task, they can try to tackle mazes of various shapes by not only placing the task horizontally but also vertically, or by changing the starting position from right to left or from bottom to top.

(5) How to talk to and guide the children to support their independent awareness

・If the child has difficulty completing the task alone (e.g., keeps getting lost, skips lines to get to the end point, etc.), the instructor should remind the child of the correct path, and the instructor should verbalize the child's hand movements to confirm and sympathize with the child in order for him or her to complete the task.

<For example>

・From where the child skipped, you guide the child's hand with your own and let him check the maze again.

・Verbalize the direction of the child's finger by saying,"You are going to XX now, aren't you?"

・By giving directions specifically, such as, "What if we take the road that leads to the right," you can make the children aware of paths they are not aware of.

(written by Tomoko TATESHITA)

(Translated by Sota SEBATA)

Reference:

Sato, Yasumasa (1988) Psychology in visual impairment. Gakugei-Tosyo.

You can download the data of "Convex-Line Tactile Maze Tasks" and this manual from QR or URL as follows:

URL: https://office-sashima.org/blind/lowvision-meiro/

Contact

Tsuyoshi SASHIMA (Ph.D.;Professor)

Institute of Human Sciences, University of Tsukuba, Japan

Email: sashima-t62@human.tsukuba.ac.jp

✓ Homepage: https://office-sashima.org

✓ Instagram: https://www.instagram.com/office_sashima/

✓ YouTube:https://www.youtube.com/channel/UCEwXSD0-Zf44wIkMFdE-Y2Q