

# Types of Rivers with Respect to Frame, Drawn by Turkish Students Based on Landscape Montage Technique

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**Keywords:** cross-cultural study, development, frame, landscape, Landscape Montage Technique, river, spatial schema, Turkish student

**Abstract:** We applied the Landscape Montage Technique (LMT) to 233 Turkish students ranging from kindergarten to university. The purpose of this paper is to clarify the developmental characteristics of types of rivers with respect to the frames in landscapes drawn by Turkish students based on LMT. We identified eight types of rivers with respect to the frames and found their developmental changes. Furthermore, compared with the results of the Japanese cases in our previous research, this paper's results basically show the same tendencies as the Japanese cases. We conclude that the developmental characteristics of types of rivers with respect to the frames probably concern universal and fundamental spatial schema that human beings have in their inner worlds and transcend cultural frameworks.

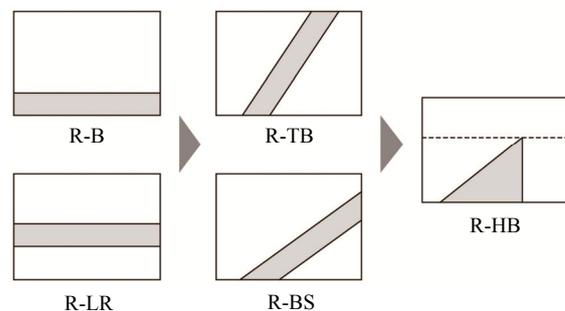
## 1. Background and Objective

We previously conducted developmental and pathological studies on *spatial schema* using the Architectural Space Montage Technique (ASMT) and the Landscape Montage Technique (LMT), hypothesizing that universal and fundamental principles can be found in human beings and in the compositions of living environments by children and schizophrenic patients (Okazaki, 1992; Okazaki & Ito, 1992; Okazaki, Nanba, & Yanagisawa, 1998; Okazaki, Ooi, Yamaguchi, & Urasaki, 1997; Okazaki, Yanagisawa, & Nanba, 1999; Yanagisawa, 2003; Yanagisawa & Okazaki, 2002, 2011a, 2011b; Yanagisawa, Okazaki, Kikuchi, & Nanba, 1999; Yanagisawa, Okazaki, & Takahashi, 2001).

LMT is an art therapy technique devised by Nakai (1970, 1971) based on sandplay therapy. The therapist draws a frame on a piece of paper and tells the participant to draw a landscape within it. The items to be drawn are said sequentially, and the participant draws only one landscape by adding the following items in the following order: river, mountain, rice field, road (large items), house, tree, person (medium-sized items), flower, animal, and stone (small items). After drawing them, anything else can be added. The participant then colors the landscape to finish the drawing.

Yanagisawa (2003) applied LMT to 1080 Japanese students ranging from kindergarten to university and focused on the *space enclosed by a frame*, which is one LMT feature, analyzed how a river is drawn with respect to the frame, and clarified the developmental characteristics of the spatial composition based on the types of rivers. The study clarified the following developmental changes that occur in the relationship between the frame and a river: *rivers that flow along the bottom of the frame with the limit of the lower side not shown* (R-B), which changes to *rivers that connect the left and right sides of the frame* (R-  
LR); then *rivers that connect the top and bottom sides of the frame* (R-TB) and *rivers that connect the bottom and either the left or right side of the frame* (R-BS), and later changes to *rivers that connect the horizon and the bottom side of the frame* (R-HB), which provide a perspective representation (Fig. 1).

A detailed discussion of the significance of analyzing how a river is drawn with respect to the frame can be found in Yanagisawa and Okazaki (2011a). Therefore, here we only provide the following brief summary of the significance. By analyzing how a river is drawn with respect to the frame, we can clarify the diverse structure that a *space enclosed by a frame* could have to which diverse *spatial schema* is related that human



R-B: River that flows along bottom of frame with limit of lower side not shown  
R-LR: River that connects left and right sides of frame  
R-TB: River that connects top and bottom sides of frame  
R-BS: River that connects bottom and either left or right side of frame  
R-HB: River that connects horizon and bottom side of frame

Fig. 1 Developmental changes of types of rivers drawn by Japanese (based on Yanagisawa, 2003)

beings have in their inner worlds to compose the world in which we live.

This study is an extension of our many previous studies. Here, we focused on a cultural perspective, which is a new perspective for us, and applied LMT to Turkish students ranging from kindergarten to university. Our goal is to clarify the developmental characteristics of types of rivers with respect to the frames in landscapes drawn by Turkish students based on LMT. This study reveals aspects of the characteristics of *spatial schema* that Turkish people have in their inner worlds.

**2. Literature Review**

A number of researches on LMT have been done in such fields as psychiatry and clinical psychology. Refer to Yanagisawa and Okazaki (2011a) for previous studies on schizophrenic patients.

Here are a few representative examples of the developmental studies on LMT. Yamanaka (1984) analyzed types of rivers in landscapes drawn by students ranging from kindergarten to junior high school. Hirota (1986) studied the developmental characteristic of each item of LMT and analyzed rivers. Kaito (1994) proceeded with a wide variety of LMT researches, such as quantitative researches and reading studies, and set “compositional stage” and “spatial stage” as development indexes. Based on landscapes drawn by elementary school and university students, Takaishi (1996) described the “types of composition” and their developmental changes and considered how they may be associated with the development of ego.

Previous researches related to culture include Kuwayama (1996), who reported works based on LMT done by Filipino women who married into the families of a rural area in Japan and showed that in the cases of those who adapted to Japanese culture well, the rivers and the mountains resembled those of Japan. However, the houses looked like those in the Philippines or stilt houses. Kaito (1996, p. 52) argued that many people in Korea felt uncomfortable with having a frame. Kaito (2009) also said, “LMT was introduced into countries such as Germany, America, Korea, and China. In the process, we came to understand that there were cultural differences, for example, ‘rice fields’ were hard to understand for Westerners” (p. 18).

Looking at the foregoing previous researches on LMT, none but us classified rivers with respect to the frame and applied LMT to Turkish people.

**3. Method**

**3.1. PARTICIPANTS**

We conducted our research on Turkish students ranging from kindergarten to university in Istanbul. Participants included 35 kindergartners (one class with four- to five-year olds and one class with five- to six-year olds), 92 elementary school students (one class per grade from first to fifth grades), 47 junior high school students (one class per grade from sixth to eighth grades), 16 high school students (volunteers from ninth to twelfth grades),

Table 1 Cases with each type of river and percentages for each grade

	K 4-5	K 5-6	1st graders	2nd graders	3rd graders	4th graders	5th graders	6th graders	7th graders	8th graders	9th-12th graders	Univ. students	Total
Scribble	3 3 (17.6)												3 3
Circle	8 11 (64.7)	3											8 11
Large square	1 1 (5.9)												1 1
R-B	1 1 (5.9)	3 9 (50.0)	1 3 (15.0)	2 6 (35.3)	2 2 (10.5)		1 1 (6.3)		3 3 (18.8)	1 2 (14.3)			13 27
R-LR	1 1 (5.9)	1 2 (11.1)	1 4 (20.0)	1 2 (11.8)	2 7 (36.8)	1 1 (5.0)	1 1 (6.3)	3 3 (17.6)		1 2 (14.3)		2 2 (4.7)	10 25
R-BC			1 1 (5.0)		1 1 (5.3)	2 2 (10.0)	2 2 (12.5)	1 1 (5.9)					1 1
R-TB			1 1 (5.0)	1 3 (17.6)	2 1 (5.3)	1 2 (10.0)	1 1 (6.3)	1 2 (11.8)	2 2 (12.5)	1 1 (7.1)	3 4 (25.0)	5 5 (11.6)	11 22
R-TS					1 1 (5.3)	2 3 (15.0)	1 1 (6.3)		1 1 (6.3)	1 1 (7.1)		1 1 (2.3)	1 1
R-BS			1 2 (10.0)	1 1 (5.9)	3 4 (21.1)	4 6 (30.0)	2 6 (37.5)	2 4 (23.5)	3 6 (37.5)	1 4 (28.6)	5 7 (43.8)	16 21 (48.8)	26 61
R-HS									1 1 (6.3)			1 1 (2.3)	1 1
R-HB							1 1 (6.3)			1 3 (21.4)	2 3 (18.8)	1 11 (25.6)	3 18
IR-B		1 1 (5.6)	1 2 (10.0)			1 1 (5.0)							2 4
IR		3 6 (33.3)	3 6 (30.0)	2 4 (23.5)	2 2 (10.5)	1 4 (20.0)	1 2 (12.5)	1 3 (17.6)	1 3 (17.6)		1 1 (6.3)		14 28
IR-M			1 1 (5.0)	1 1 (5.9)			1 1 (6.3)	3 4 (23.5)	1 3 (18.8)		1 1 (6.3)		9 11
Unspecified					1 1 (5.3)	1 1 (5.0)				1 1 (7.1)		1 1 (2.3)	1 1
Total	13 17	4 18	8 20	10 17	9 19	8 20	9 16	7 17	11 16	6 16	6 16	8 43	9 124

For each type of river under each grade, upper left box indicates cases by males, upper right box indicates cases by females, and total number of cases with each type of river is shown in the bottom box with percentage of total number of cases for each grade shown in parentheses.

- R-B: River that flows along bottom of frame with limit of lower side not shown
- R-LR: River that connects left and right sides of frame
- R-BC: River at bottom corner
- R-TB: River that connects top and bottom sides of frame
- R-TS: River that connects top and either left or right side of frame
- R-BS: River that connects bottom and either left or right side of frame
- R-HS: River that connects horizon and either left or right side of frame
- R-HB: River that connects horizon and bottom side of frame
- IR-B: Interrupted river that flows along bottom of frame with limit of lower side not shown
- IR: Interrupted river
- IR-M: Interrupted river that connects with a mountain

K 4-5: 4-5 year-old kindergartners  
 K 5-6: 5-6 year-old kindergartners

\* Captions show grade, gender in parentheses, and type of river. \*\* K 4-5: 4-5 year-old kindergartners \*\*\* K 5-6: 5-6 year-old kindergartners



Fig. 2 K 4-5 (m) Scribble



Fig. 3 K 4-5 (f) Circle



Fig. 16 7<sup>th</sup> grader (m) R-TB

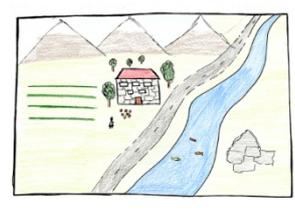


Fig. 17 Univ. student (f) R-TB



Fig. 4 K 4-5 (f) Large square



Fig. 5 K 5-6 (m) R-B



Fig. 18 5<sup>th</sup> grader (f) R-TB

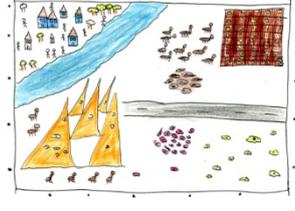


Fig. 19 4<sup>th</sup> grader (m) R-TS

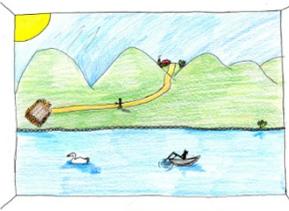


Fig. 6 8<sup>th</sup> grader (m) R-B



Fig. 7 1<sup>st</sup> grader (f) R-B



Fig. 20 Univ. student (f) R-BS



Fig. 21 Univ. student (f) R-BS

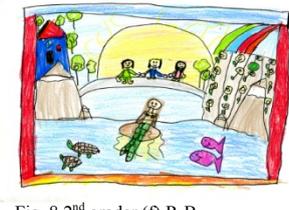


Fig. 8 2<sup>nd</sup> grader (f) R-B



Fig. 9 3<sup>rd</sup> grader (f) R-LR



Fig. 22 3<sup>rd</sup> grader (m) R-BS



Fig. 23 7<sup>th</sup> grader (f) R-HS

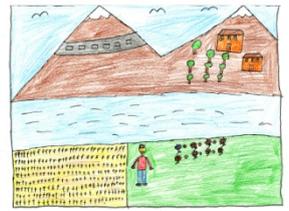


Fig. 10 6<sup>th</sup> grader (m) R-LR

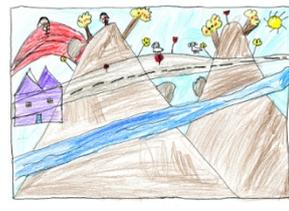


Fig. 11 2<sup>nd</sup> grader (f) R-LR

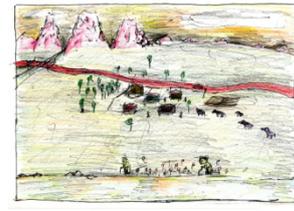


Fig. 24 Univ. student (m) R-HS

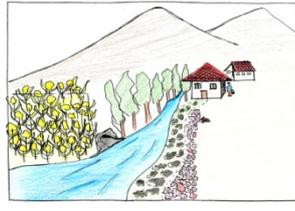


Fig. 25 Univ. student (f) R-HB



Fig. 12 Univ. student (f) R-LR

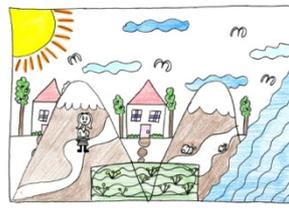


Fig. 13 5<sup>th</sup> grader (f) R-BC

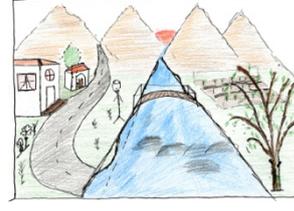


Fig. 26 Univ. student (f) R-HB



Fig. 27 4<sup>th</sup> grader (f) IR-B



Fig. 14 4<sup>th</sup> grader (f) R-BC

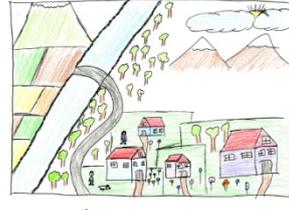


Fig. 15 9<sup>th</sup> grader (f) R-TB



Fig. 28 7<sup>th</sup> grader (m) IR-M



Fig. 29 2<sup>nd</sup> grader (f) IR

and 43 university students (undergraduates from 18 to 23). Table 1 shows a breakdown of the participants<sup>1</sup>.

### 3.2. IMPLEMENTATION METHOD

We conducted the research on the entire class of students during their normal class period time as a group. However, for the high school students, the research was not conducted on one particular class, but on a group who volunteered. Dündar, one of the authors, explained the LMT procedure in Turkish, while Yanagisawa and class teachers supported the process from the side.

B4-size paper, black felt pens, and colored pencils were used. For the kindergartners, the researcher preliminarily drew a frame on each piece of paper. For students ranging from elementary school to university, each participant drew a frame on a piece of paper based on an example shown by the researcher.

“Rice fields” were especially hard for the Turkish students to understand. In this case, we substituted “fields.” Sometimes the students asked if drawing a field of flowers was acceptable.

## 4. Results and Discussion

We analyzed how a river is drawn with respect to the frame and identified eight types of rivers (Table 1, from *river that flows along bottom of frame with limit of lower side not shown* (R-B) to *river that connects horizon and bottom side of frame* (R-HB)). Table 1 shows the number of cases with each type of river and their percentages for each grade. Besides these eight types, seven other types were identified and added (from *scribble* to *large square* and from *interrupted river that flows along bottom of frame with limit of lower side not shown* (IR-B) to *unspecified*). Below, each type of river is discussed. First, we discuss the rivers drawn by the 4-5 year-old kindergartners.

### 4.1. RIVERS DRAWN ESPECIALLY BY 4-5 YEAR-OLD KINDERGARTNERS

The 4-5 year-old kindergartners mainly drew three types of rivers: *scribble* (17.6%, Fig. 2), *circle* (64.7%, Fig. 3) and *large square* (5.9%, Fig. 4). The characteristics of *scribble*, *circle* and *square* are also often pointed out in the field of drawing development in children (see also Yanagisawa, 2003).

In each case where the type of a river was a *scribble*, a *circle* or a *large square*, almost all the items were depicted by geometric lines and had tenuous relationships. It was also often difficult to identify other items such as mountains and rice fields. When the type of a river was a *scribble*, other items were also scribbled by undifferentiated lines. Takaishi (1996) mentioned that “it is not until the *base line* [which represents the ground] appears that some composition becomes possible” (p. 244). However, in these cases, a *base line* was not found, which meant that these cases are expressions prior to the expression of a landscape composition. In these drawings, however, we sensed the children’s rich energy. Furthermore, occasionally it was only after the chaotic lines were colored that rivers could be identified. It was expected that they viewed rich landscapes even in these lines that were considered expressions before the composition.

### 4.2. RIVER THAT FLOWS ALONG BOTTOM OF FRAME WITH LIMIT OF LOWER SIDE NOT SHOWN (R-B)

This type was more common from kindergartners to 3<sup>rd</sup> graders and peaked in the 5-6 year-old kindergartners (50.0%, Fig. 5). This was the typical type drawn by many children. Most were

horizontal rivers. This type was also slightly more common in 7<sup>th</sup> and 8<sup>th</sup> graders (Fig. 6). There were also cases in which a landscape like the Bosphorus was drawn with land at either end of the R-B type river and a bridge or a road spanning them (Figs. 7 and 8).

### 4.3. RIVER THAT CONNECTS LEFT AND RIGHT SIDES OF FRAME (R-LR)

This type was more common from kindergartners to 3<sup>rd</sup> graders, same as the R-B type, and peaked in 3<sup>rd</sup> graders (36.8%, Fig. 9). This type was also slightly more common in 6<sup>th</sup> and 8<sup>th</sup> graders (Fig. 10). Diagonal rivers were also found (Fig. 11). There were also cases of university students who drew tapered rivers (Fig. 12).

### 4.4. RIVER AT BOTTOM CORNER (R-BC)

This type was found in students ranging from 1<sup>st</sup> to 6<sup>th</sup> graders; however, there was no remarkable peak. We generally considered that this type represented a river’s diagonal flow (Fig. 13). There was also the case in which this type represented a waterfall and a pond (Fig. 14).

### 4.5. RIVER THAT CONNECTS TOP AND BOTTOM SIDES OF FRAME (R-TB)

This type was found widely from 1<sup>st</sup> graders to university students and peaked in 9<sup>th</sup>-12<sup>th</sup> graders (25.0%, Fig. 15). A number of vertical rivers (Fig. 16) and tapered rivers were also found (Fig. 17). In drawings in which mountains were drawn at the bottom side of the frame, it was often confusing whether the area below the top side of the frame represented the sky or the ground (Fig. 18). However, drawings in which the river was diagonal or tapered and mountains were drawn at the top showed landscapes with a certain degree of integration that looked like a kind of bird’s eye view (Figs. 15 and 17).

### 4.6. RIVER THAT CONNECTS TOP AND EITHER LEFT OR RIGHT SIDE OF FRAME (R-TS)

This type was found widely from 3<sup>rd</sup> graders to university students; however, there was no remarkable peak. Many of the drawings were a kind of bird’s eye views (Fig. 19). Fig. 19 showed mountains like those in Cappadocia.

### 4.7. RIVER THAT CONNECTS BOTTOM AND EITHER LEFT OR RIGHT SIDE OF FRAME (R-BS)

This type appeared most frequently in the drawings by Turkish students. Also in Japan, this type appeared most frequently (Yanagisawa, 2003). It was found widely from 1<sup>st</sup> graders to university students and peaked in university students (48.8%, Fig. 20). Tapered rivers were also found (Fig. 21). In drawings in which mountains were drawn at the bottom side of the frame, it was often confusing whether the area below the top side of the frame represented the sky or the ground (Fig. 22). However, when mountains were drawn at the top, especially when the lower end of the mountains were drawn higher than the upper end of the river, the landscapes appeared to have a certain degree of integration that resembled a kind of bird’s eye view, with the horizon clearly shown or implied (Figs. 20 and 21).

### 4.8. RIVER THAT CONNECTS HORIZON<sup>2</sup> AND EITHER

## LEFT OR RIGHT SIDE OF FRAME (R-HS)

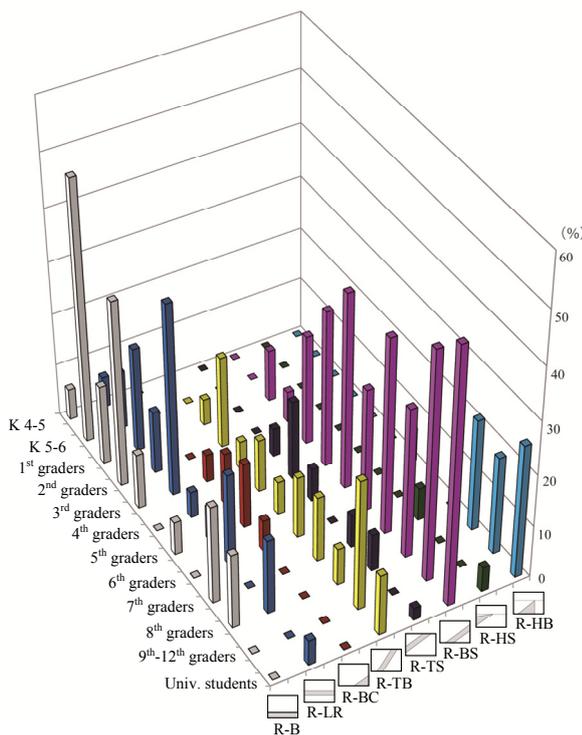
This type was found in just one 7<sup>th</sup> grader (Fig. 23) and two university students (Fig. 24), and appeared least frequently.

## 4.9. RIVER THAT CONNECTS HORIZON AND BOTTOM SIDE OF FRAME (R-HB)

This type was more common from 8<sup>th</sup> graders to university students and peaked in university students (25.6%, Figs. 25 and 26). The upper end of the river is not connected with the frame. A tapered river is drawn from a focal point in the picture and widened as it reached the bottom side of the frame. In most cases, mountains were drawn around the focal point and the landscape was structured at once. All of the items drawn in the distance or close up were interrelated by this river, which provided a perspective representation.

## 4.10. INTERRUPTED RIVER

We also identified three characteristic types of rivers that were interrupted: *interrupted rivers that flow along the bottom of the frame with the limit of the lower side not shown* (IR-B, Fig. 27), *interrupted rivers that connect with a mountain* (IR-M, Fig. 28), and *any other interrupted rivers* (IR, Fig. 29). In the IR type, we included not only interrupted rivers that were shaped like a rectangle but also round ones.



R-B: River that flows along bottom of frame with limit of lower side not shown  
 R-LR: River that connects left and right sides of frame  
 R-BC: River at bottom corner  
 R-TB: River that connects top and bottom sides of frame  
 R-TS: River that connects top and either left or right side of frame  
 R-BS: River that connects bottom and either left or right side of frame  
 R-HS: River that connects horizon and either left or right side of frame  
 R-HB: River that connects horizon and bottom side of frame

K 4-5: 4-5 year-old kindergartners  
 K 5-6: 5-6 year-old kindergartners

Fig. 30: Percentages of cases with each type of river for each grade

We don't know why the rivers were interrupted. Possible factors include the effects of not knowing what to draw next, Takaishi's indication that children tend to draw items separately for each instruction (Takahashi, 1996, p. 247), and the effects of conducting the research by group.

Additionally, for example, the appearance ratio of the IR type in Turkey (12.0%: 28 out of 233 cases) was more than twice that in Japan (5.0%: 54 out of 1080 cases, Yanagisawa, 2003). We cannot simply compare both percentages because the numbers of cases are very different. However, the fact that rivers are relatively uncommon in Istanbul might have influenced the appearance of rivers that were interrupted.

## 4.11. DEVELOPMENTAL CHANGES AND THE TYPES OF RIVERS DRAWN BY TURKISH STUDENTS

As mentioned above, we analyzed how a river is drawn with respect to the frame and identified eight types and abbreviated them as R-B, R-LR, R-BC, R-TB, R-TS, R-BS, R-HS, and R-HB. Fig. 30 indicates the percentages of cases with each type of river for each grade; refer to Table 1 for the specific figures. Fig. 30 shows the developmental changes where the relationship between a frame and a river begins with the R-B type and the R-LR type, changes to the R-TB type and the R-BS type, and eventually reaches the R-HB type, where the drawings feature more perspective views.

Compared with the results of Yanagisawa (2003), we found that these results basically show the same tendencies as the Japanese cases (Fig. 1). Therefore, the developmental characteristics of the types of rivers with respect to the frames are likely to concern universal and fundamental spatial schema in human beings that transcend cultural frameworks.

However, the total number of cases in this research was 233, while the total number of Japanese cases in Yanagisawa (2003) was 1080. By increasing the number of Turkish cases, more rigorous and detailed comparative studies can be conducted. However, that is a challenge for future researches.

## 5. Conclusion

We applied the Landscape Montage Technique to 233 Turkish students ranging from kindergarten to university and clarified the developmental characteristics of types of rivers with respect to the frames in these landscapes. We found the following:

1. We analyzed types of rivers with respect to the frames and identified eight types of rivers: 1) rivers that flow along the bottom of the frame with the limit of the lower side not shown (R-B), 2) rivers that connect the left and right sides of the frame (R-LR), 3) rivers at the bottom corner (R-BC), 4) rivers that connect the top and bottom sides of the frame (R-TB), 5) rivers that connect the top and either the left or right side of the frame (R-TS), 6) rivers that connect the bottom and either the left or right side of the frame (R-BS), 7) rivers that connect the horizon and either the left or right side of the frame (R-HS), and 8) rivers that connect the horizon and the bottom side of the frame (R-HB).
2. We found the developmental changes where the relationship between a frame and a river begins with the R-B type and the R-LR type, changes to the R-TB type and the R-BS type, and eventually reaches the R-HB type, where the drawings feature more perspective views.
3. Compared with the results of Yanagisawa (2003), we found that the results in the previous paragraph basically show the same tendencies as those of the Japanese cases. Therefore, the developmental characteristics of types of rivers with

respect to the frames are likely to concern universal and fundamental spatial schema in human beings that transcend cultural frameworks.

4. We identified three types of rivers mainly drawn by 4-5 year-old kindergartners: *scribble*, *circle*, and *large square*.
5. We also identified three characteristic types of rivers that were interrupted: *interrupted rivers that flow along the bottom of the frame with the limit of the lower side not shown* (IR-B), *interrupted rivers that connect with a mountain* (IR-M), and any other *interrupted rivers* (IR).

## Endnotes

1. The number of cases of high school students was too small. Therefore, in this paper we grouped them together as “9<sup>th</sup>-12<sup>th</sup> graders.” A future challenge remains to increase the number of cases of high school students.
2. In this paper, when a tapered river was drawn from a focal point in the picture, even if the horizon was not drawn clearly, we used the term “horizon.” Even though the horizon was not drawn clearly, some kind of spatial schema related to the horizon lay behind the tapered river that was drawn from the focal point in the picture, and we consider the horizon to be a part of the frame.

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