Research-based Patterning Skills (15 min.)

Notes:

- Avoid term “shapes” since it emphasizes shape over color, and use generic term “blocks” (except on abstract color-to-shape item, when ok to say shape).

- After each item, be sure to write down child’s responses (e.g., AABAAB). On Copy, Extend, and Memory items, pay attention to mapping from model pattern to child’s pattern. For example, if the model pattern is square, triangle, triangle, and the child puts down triangle, square, square, square, you would record this as BAA (square is A, triangle is B).

- When you think a child is done with each item, ask, “Ready for the next one?” and move on.

- If a child is off-task (e.g. playing with blocks, building a tower, etc.), prompt up to twice by repeating the last line of your instructions (“Make the same kind of pattern here,” or “Finish the pattern here the way I would.”) If off-task behavior continues, write down what he is doing and say, “Ready for the next one?”

[show child racetrack drawing] This is our racecar on a racetrack. We want to get to the finish line. After answering a few questions, we’ll get move our racecar along the track. Let’s get started and we can move our racecar in a little bit.

[For the rest of the session, remember to move racecar ~4 times during each task. – 12 times during session in order to reach finish line at the end.]

Today we’re going to play some games with patterns, okay? I just want to see if you can help me solve some pattern puzzles I brought with me. Let’s try one.

1. COPY AABB
   Place pattern 1 (trapezoid, trapezoid, rhombus, rhombus) in front of the child. Place the source set of 5 trapezoids and 5 rhombuses in a container closer to your side of the table. Say:
   
   **I made a pattern with these blocks.** [Gesture to model pattern from child’s left to child’s right.] Please make the same kind of pattern here. [Gesture in front of the child approximately 5-6 inches below the model pattern.] You won’t need to use all the blocks. [Push container with pattern pieces toward child so he can reach.]

   If the child attempts to make the pattern directly above or below your pattern, gesture again and remind them:
   
   **Make your pattern down here.**

   If child seems confused about what to do with extra blocks:
   
   **Remember, you won’t need to use all the blocks.**

   If the child stops before finishing the first unit of the pattern, say:
   
   **Can you keep going?**
(Say only once. If child stops again before finishing first unit, say: Ready for the next one?)

Scoring: 1 if child completed at least 1 full unit with no errors anywhere in the pattern. Can start with trapezoid or rhombus and orientation of blocks does not matter (e.g., rhom, trap, trap, rhom, rhom is correct – first item does not have to be beginning of pattern unit).

[This scoring is repeated for all items except Memory ABB and Smallest Tower]

Ready for the next one?

Thanks for working so hard on this. Are you ready for another one now? [Prompts after each item can be ad-libbed; do not give direct feedback such as “good job!”]

2. EXTEND ABB

Place pattern 2 (rhombus, triangle, triangle) in front of the child. Place the source set of 5 rhombuses and 5 triangles in a container closer to your side of the table. Say:

I made a pattern with these blocks. [Gesture to model pattern.] Finish my pattern here the way I would. [Gesture to right of pattern.] You won’t need to use all the blocks. [Push container with pattern pieces toward child so he can reach.]

If child attempts to make the pattern directly above or below your pattern, gesture again and remind them:

Make your pattern over here.

If child seems confused about what to do with extra blocks:

Remember, you won’t need to use all the blocks.

If the child stops before finishing the first unit of the pattern, say:

Can you keep going?

(Say only once. If child stops again before finishing first unit, say: Ready for the next one?)

Scoring: Same as copy, but for extend items, must start with rhombus.

3. EXTEND AABB

Place pattern 3 (triangle, triangle, trapezoid, trapezoid) in front of the child. Place the source set of 5 triangles and 5 trapezoids in a container closer to your side of the table. Say:

I made a pattern with these blocks. [Gesture to model pattern.] Finish the pattern here the way I would. [Gesture to right of pattern. Push container with pattern pieces toward child so he can reach.]
If child attempts to make the pattern directly above or below your pattern, gesture again and remind them:

**Make your pattern over here.**

If child seems confused about what to do with extra blocks:

**Remember, you won’t need to use all the blocks.**

If the child stops before finishing the first unit of the pattern, say:

**Can you keep going?**

(Say only once. If child stops again before finishing first unit, say: **Ready for the next one?**)  

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**4. ABSTRACT TO SHAPE AABB**

Place pattern 4 (green cube, green cube, purple cube, purple cube) in front of the child. Place the source set of 5 neutral stars and 5 neutral triangles in a container closer to your side of the table. Say:

**I made a pattern with these blocks. [Gesture to model pattern.] Use some of these shapes to make the same kind of pattern here. [Gesture 5-6 inches below model pattern. Push container with pattern pieces toward child so he can reach.]**

If the child tries to make the pattern directly above or below your pattern, move the beginning of their pattern to 5-6 inches below the model pattern and remind them:

**Make your pattern down here.**

If the child stops before finishing the first unit of the pattern, say:

**Can you keep going?**

(Say only once. If child stops again before finishing first unit, say: **Ready for the next one?**)  

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**5. ABSTRACT TO COLOR ABB**

Place pattern 5 (hexagon, triangle, triangle) in front of the child. Place the source set of 5 red cubes and 5 blue cubes in a container closer to your side of the table. Say:

**I made a pattern with these blocks. [Gesture to model pattern.] Please make the same kind of pattern here, using these cubes. [Gesture 5-6 inches below model pattern. Push container with pattern pieces toward child so he can reach.]**

If the child tries to make the pattern directly above or below your pattern, move the beginning of their pattern to 5-6 inches below the model pattern and remind them:

**Make your pattern down here.**

If the child stops before finishing the first unit of the pattern, say:

**Can you keep going?**

(Say only once. If child stops again before finishing first unit, say: **Ready for the next one?**)
6. ABSTRACT TO COLOR AABB
Place pattern 6 (square, square, triangle, triangle) in front of the child. Place the source set of 5 yellow cubes and 5 blue cubes in a container closer to your side of the table. Say:

I made a pattern with these blocks. [Gesture to model pattern.] Please make the same kind of pattern here, using these cubes. [Gesture 5-6 inches below model pattern. Push container with pattern pieces toward child so he can reach.]

If the child tries to make the pattern directly above or below your pattern, move the beginning of their pattern to 5-6 inches below the model pattern and remind them:

Make your pattern down here.
If the child stops before finishing the first unit of the pattern, say:

Can you keep going?
(Say only once. If child stops again before finishing first unit, say: Ready for the next one?)

7. ABSTRACT TO COLOR AAB
Place pattern 7 (square, square, rhombus) in front of the child. Place the source set of 5 red and 5 yellow cubes in a container closer to your side of the table. Say:

I made a pattern with these blocks. [Gesture to model pattern.] Please make the same kind of pattern here, using these cubes. [Gesture 5-6 inches below model pattern. Push container with pattern pieces toward child so he can reach.]

If the child tries to make the pattern directly above or below your pattern, move the beginning of their pattern to 5-6 inches below the model pattern and remind them:

Make your pattern down here.
If the child stops before finishing the first unit of the pattern, say:

Can you keep going?
(Say only once. If child stops again before finishing first unit, say: Ready for the next one?)

8. MEMORY ABB
Say:

We are going to play a memory game, so try to remember the pattern exactly like you see it, with the same number of blocks in the same places as mine. You’ll use these blocks [Place the source set of 3 triangles and 3 squares in a container closer to your side of the table].
When I take away the pattern, I want you to use these blocks [point to container] to make the same pattern as mine, with the same number of blocks in the same places as mine.

I’m going to show you my pattern now and I want you to look at it really carefully. [Place practice pattern (triangle, square, triangle, square) in front of the child. Let them look for 5 seconds. If child isn’t looking, prompt them to look. After 5 seconds, push container with pattern pieces toward child so he can reach.]

If child seems confused about what to do, repeat Make the same pattern as mine.

Do not give feedback on child’s performance on practice item. Clear away practice pattern and blocks. Say:

Are you ready for another memory game? Try to remember the pattern exactly like you see it, with the same number of blocks in the same places as mine. You’ll use these blocks [Place the source set of 5 hexagons and 6 trapezoids squares in a container closer to your side of the table]. When I take away the pattern, I want you to use these blocks [point to container] to make the same pattern as mine, with the same number of blocks in the same places as mine.

[Place pattern 8 (hexagon, trapezoid, trapezoid) in front of the child. Let them look for 5 seconds. If child isn’t looking, prompt them to look. After 5 seconds, push container with pattern pieces toward child so he can reach.]

Scoring: 1 point if child completes EXACTLY 2 full units of the pattern, as in model. Must be ABB pattern, but still correct if reverse the blocks (i.e., trapezoid, hexagon, hexagon is ok too).

9. SMALLEST TOWER AAB
Show the child 3 small towers (AB, AB, AB, each green, white, with green on the bottom). Say:

Look at my small towers. They each go “green, white; green, white; green, white.” I can put them together to make a big tower with a green-white pattern. [Put towers together as you say this.]

Clear away the green-white tower. Place 4 red and 4 blue unconnected cubes in a container closer to your side of the table. Say:

What is the smallest tower you could make and still keep the same pattern as this? [Show the child an AABAAB (red, red, blue) tower as you say this.]
Show me with these cubes. [Push container with pattern pieces toward child so he can reach.]

Do not let the child build on top of your tower.

If the child tries to make a tower as tall or taller than yours, say (first time only):

Your tower should be smaller than mine. What is the smallest tower you could make and still keep the same pattern as this? [Gesture to model tower.]

Scoring: 1 if the child built a red, red, blue tower using three cubes only.

Thanks for working so hard! Let’s do another activity.