We focused on individual differences in children’s gestures on a pattern abstraction task and how they relate to patterning performance.

**Method**

**Participants:** 40 children (M age = 5.5 years; 58% female) participated in a one-on-one session in the lab.

**Task:** Children were first asked to solve and explain a single pattern abstraction item to assess their initial understanding. Children were then shown several examples of pattern abstraction tasks and asked to solve and explain 9 different items. We coded children’s gestures during their explanation of each of these 9 items. (Explanation Prompt: “How is your pattern like my pattern?”)

**Groups Objects**
- Uses a single gesture to reference two objects simultaneously that share a feature

**Points to Unit**
- Uses a gesture to explicitly reference a single unit (the part that repeats) within the pattern

**Points to Multiple Objects**
- Points to every object in the pattern one at a time

**Points to a Single Object**
- Points to a single object in the pattern

**No Gesture**
- Does not gesture to any pattern object

**Results**

**Baseline:** Only 35% of children solved the baseline item correctly, and 48% did not gesture during explanation.

**Target Problems:** Across 9 items, average score was 53% (SD = 35%) and gestures used during ~70% explanations.

**Correlations Between Frequency of Gesture Type and Percent Correct (controlling for age and baseline performance)**

<table>
<thead>
<tr>
<th>Gesture Type</th>
<th>r</th>
<th>p</th>
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<tbody>
<tr>
<td>Groups Objects</td>
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<td>.007</td>
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<tr>
<td>Points to Unit</td>
<td>.16</td>
<td>.329</td>
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<tr>
<td>Points to Multiple</td>
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<td>.083</td>
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<tr>
<td>Points to Single</td>
<td>-.07</td>
<td>.677</td>
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<tr>
<td>No Gesture</td>
<td>-.04</td>
<td>.810</td>
</tr>
</tbody>
</table>

**Conclusions**

Five-year-old children exhibited moderate abilities to abstract a repeating pattern. They varied in how they gestured toward their repeating patterns. The frequency of using a grouping gesture was positively related to performance. Grouping gestures may be an indicator of children’s attention to structure.

**Implications**

The results in this study suggest that gesture indeed plays a profound role in thinking and learning about patterns. Grouping gestures may align with cognitive representations that facilitate the recognition of structure in patterns. Future research should examine whether teaching children to gesture in this way facilitates their patterning performance.

**References**