The Effect of Abstract Versus Concrete Labels on Children’s Relational Reasoning

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**Method**

**Participants:** 62 preschoolers (\textit{M} age = 4.4)

**Task:** After seeing three examples, solve and describe eight pattern abstraction tasks (recreate the relation in a pattern using novel materials)

- Concrete: Experimenter referred to color or shape of pattern elements ("red-red-blue-blue")
- Abstract: Experimenter used arbitrary, conventional naming system ("A-A-B-B")

**Results**

Children’s Descriptions

Many children used familiar, concrete labels. Children in the abstract condition also used the abstract labels (either correctly or incorrectly). See table below.

<table>
<thead>
<tr>
<th>Type of Label</th>
<th>Example (reference to ABBABB sequence)</th>
<th>% use across all eight trials</th>
<th>% children who used at least once</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>&quot;It goes A, B, A, B, A, B&quot;</td>
<td>0*</td>
<td>0*</td>
</tr>
<tr>
<td>Abstract</td>
<td>&quot;It goes A, B, A, B, A, B&quot;</td>
<td>55</td>
<td>77</td>
</tr>
<tr>
<td>Concrete</td>
<td>&quot;Red, blue, blue, red, blue, blue&quot;</td>
<td>75*</td>
<td>94*</td>
</tr>
<tr>
<td>Correct Concrete</td>
<td>&quot;Red triangles&quot;</td>
<td>20</td>
<td>41*</td>
</tr>
<tr>
<td>Vague Concrete</td>
<td>&quot;Red triangles&quot;</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>Random</td>
<td>&quot;Dinosaurs&quot;</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>No Response</td>
<td>&quot;I don’t know&quot;</td>
<td>4</td>
<td>19</td>
</tr>
</tbody>
</table>

**Implications**

- Minor differences in language input can impact how children reason (Gentner, 2003).
- Using letters to label patterns can be beneficial.
- Abstract language may provide one way to link concrete learning materials and the ideas they are intended to represent.

**References**