Mission Improbable: Children’s Possibility Judgments of Improbable and Impossible Events Across Domains
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Introduction
• Children can distinguish possible events from impossible events by the age of 3 or 4. ¹, ²
• However, children may not judge improbable and impossible events as possible at the same rate across different domains (biological, psychological, and physical). ³, ⁴
• Hypotheses
  o Children will judge improbable events as more possible than impossible events.
  o Biological events will be judged as the most possible, followed by psychological events, and finally physical events as least possible.

Participants
• 85 children, ages 4.57- to 7.58-years-old (M = 6.17, SD = .75)
  • 4- to 5-years-old (n = 30)
  • 6- to 7-years-old (n = 35)
• Gender: 66.2% Female, 33.8% Male
• Race & Ethnicity: 38.5% White, 20.0% Hispanic/Latino, 15.4% Asian, 12.3% Black, 7.7% Other, 6.1% Decline to Answer

Procedure
• Children judged how possible 6 improbable and 6 impossible events were in 3 domains.
• Scale: -1 (Not possible), 0 (Don’t Know), +1 (Possible)

Improbable Events

<table>
<thead>
<tr>
<th>Domain</th>
<th>Mean (SD)</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>-.738 (.063)</td>
<td>A flower growing taller than an adult</td>
</tr>
<tr>
<td>Psychological</td>
<td>-.631 (.068)</td>
<td>Knowing if someone owns a pet dog just by looking at them</td>
</tr>
<tr>
<td>Physical</td>
<td>-.600 (.072)</td>
<td>A chair made of glass</td>
</tr>
</tbody>
</table>

Impossible Events

<table>
<thead>
<tr>
<th>Domain</th>
<th>Mean (SD)</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>-8.46 (.050)</td>
<td>A flower living without ever getting watered</td>
</tr>
<tr>
<td>Psychological</td>
<td>-.908 (.036)</td>
<td>Reading a closed book without open its covers</td>
</tr>
<tr>
<td>Physical</td>
<td>-.938 (.036)</td>
<td>A chair floating in the air</td>
</tr>
</tbody>
</table>

Results

EVENT TYPE X DOMAIN

<table>
<thead>
<tr>
<th>Domain</th>
<th>Biological</th>
<th>Psychological</th>
<th>Physical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Possible</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Possibility Frequencies by Age

Explanatory Analysis: Mean Frequencies of Events Judged Possibly by Age

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Events</td>
<td>4.032 (.400)</td>
</tr>
<tr>
<td>Impossible Events</td>
<td>-.622 (.060)</td>
</tr>
</tbody>
</table>

L-Score Fit

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Summary of Results & Discussion
• Children judged improbable events as more possible than impossible events. However, there were no differences across the three domains (biology, psychology, physics), and there was not an interaction between event type and domain.
• The contrast results indicate children’s mental representations of possibility develop similarly across domain. However, there is a lot of variability within event type which affects how well the theory fits.
• Exploratory analyses with age indicate children across age groups frequently judged possible events as possible. However, the mean frequency of events judged possible for the improbable and impossible events was low for children in both age groups, 4- to 5-years-old and 6- to 7-years-old.
• Future research should examine possibility judgments developmentally with younger ages and what explanations children give for why/why not an event could occur in real life.

References

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