Children’s drawings of gods database: development, image processing, text mining

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PROJECT AND DATABASE
This project, in developmental psychology, collect children’s drawings. Children are asked to draw “god”.

Aim
• To understand children’s strategies in front of such a complex task (according to the context, the gender and the age of each children)
• To do cross-cultural comparisons

Database (Dandarova Robert Z. et al, in press)
• Available on ddd.unil.ch
• More than 6’500 drawings
• From 8 countries: Russia, Switzerland, Japan, Iran, Nepal, Netherland, Romania and United-States
• Metadata: usual, questionnaires, children’s descriptions of their drawings

DRAWING ANALYSES
Direct analyses
With image processing and computer vision
• Yellow detection

YELLOW COLOR INTENSITY (KONYUSHKOVA ET AL., 2016)

Result of the classification with decision tree learning of the yellow presence in the middle

Gravty analysis
• Palette extraction and analysis
• Complexity according to the number of corners

Annotation analyses
Visual annotations with Gauntlet (http://d2d.vital-it.ch) give the geometrical positions of each feature (Dessart et al., 2016)

• Centre of mass of “god” figures according to sex, age and context

DESCRIPTION ANALYSES
French descriptions in Switzerland (2009 – 2010)
Analyses of lemma and part-of-speech (PoS) tag relative frequency

<table>
<thead>
<tr>
<th>gender</th>
<th>age</th>
<th>context</th>
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<tbody>
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<td>boys</td>
<td>youngest</td>
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<td>6.7</td>
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<td>4.1</td>
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</tbody>
</table>

Proportion [%] of the ten most frequent lemmas by gender, age and context
• Same analyses were done with PoS, as well as the ratio between adjectives and nouns

NEXT STEPS
• Direct analyses on drawings, such as comparing the gravity of drawings of gods with the one of other drawings
• Annotation analysis in order to get the degree of anthropomorphism of the “god” figure according to a specific set of labels for instance
• Text analyses related to psychological research questions, such as the anthropomorphism and gender, with classification algorithms and text mining
• Processing of the data from the questionnaires
• Compare and combine the results obtained on the drawings with the ones obtained with the metadata (especially on text and questionnaires)

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DATA AND METADATA

Drawings

Metadata
• Usual

<table>
<thead>
<tr>
<th>place</th>
<th>year</th>
<th>age</th>
<th>sex</th>
<th>context</th>
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<tbody>
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<td>12 years and 7 months</td>
<td>Girl</td>
<td>Public</td>
</tr>
<tr>
<td>Japan</td>
<td>2003</td>
<td>10 years and 7 months</td>
<td>Girl</td>
<td>Religious</td>
</tr>
<tr>
<td>Russia</td>
<td>2012</td>
<td>12 years and 0 month</td>
<td>Boy</td>
<td>Public</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2016</td>
<td>13 years and 3 months</td>
<td>Boy</td>
<td>Religious</td>
</tr>
</tbody>
</table>

• Questionnaires
  • closed-ended
  • open-ended
  • and contingency questions

• Descriptions

REFERENCES

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