

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

DATA AND METADATA

Drawings



Metadata

- Usual

	Place	Year	Age	Sex	Context
1	Switzerland	2010	12 years and 7 months	Girl	Public
2	Japan	2003	10 years and 7 months	Girl	Religious
3	Russia	2012	12 years and 0 month	Boy	Public
4	Switzerland	2016	13 years and 3 months	Boy	Religious

Questionnaires

- closed-ended
- open-ended
- and contingency questions

1

C) Musulman G) Je ne sais pas
D) Bouddhiste H) Autres

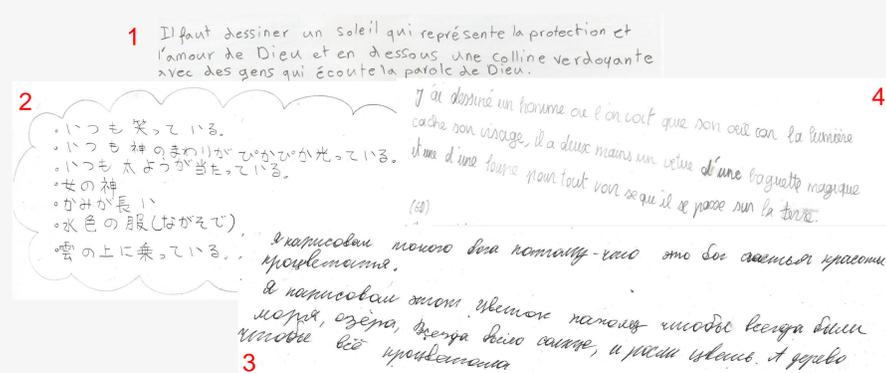
2 Est-ce que tu es déjà entré dans :

A) une l'église OUI / NON Si oui, quand la dernière fois ? Pour une occasion particulière ?
B) une mosquée OUI / NON je ne suis plus quand
C) un temple bouddhiste OUI / NON mais c'était pour la
D) un temple hindou OUI / NON messe du dimanche.
E) une synagogue OUI / NON
F) autres

3 Quand je te dis Dieu, est-ce que tu pourrais dessiner :

A) Jésus OUI / NON D) Allah OUI / NON

Descriptions



References

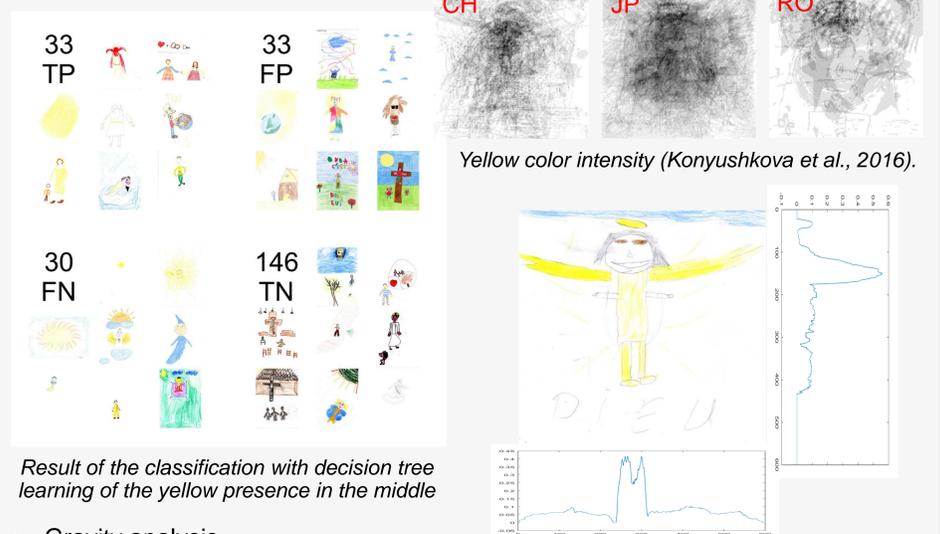
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- Dessart, G., Sankar, M., Chasapi, A., Bologna, G., Dandarova Robert, Z., & Brandt, P.-Y. (2016). A Web-based Tool Called Gauntlet: From Iterative Design To Interactive Drawings Annotation. In *Digital Humanities 2016: Conference Abstracts*. Jagiellonian University & Pedagogical University, Kraków, pp. 778-779.

DRAWING ANALYSES

Direct analyses

With image processing and computer vision

- Yellow detection



- Gravity analysis

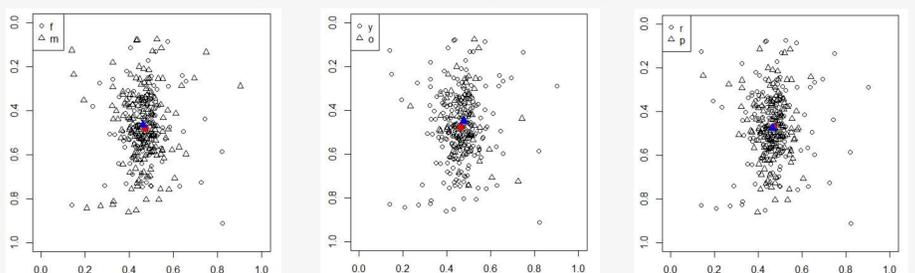
- Palette extraction and analysis

- 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



- Occupancy of the figures according to their type and the country

DESCRIPTION ANALYSES

French descriptions in Switzerland (2009 – 2010)

Analyses of lemma and part-of-speech (PoS) tag relative frequency

- Lemma

Gender		Age				Context	
girls	boys	youngest	oldest	religious	public		
7.1 un	7.6 un	8.2 un	6.0 le	5.7 un	7.6 un		
6.8 le	6.7 le	7.2 le	5.7 un	5.7 le	7.0 le		
4.1 avoir	3.8 et	4.2 du	4.1 être	4.5 être	3.9 et		
3.7 et	3.4 avoir	4.0 et	3.9 Dieu/dieu	4.1 Dieu/dieu	3.9 avoir		
3.6 il	3.4 du	3.8 avoir	3.7 avoir	3.4 avoir	3.8 du		
3.4 du	3.0 il	3.3 il	3.4 et	3.2 et	3.5 il		
3.4 être	2.7 de	2.6 faire	3.4 il	3.1 je	2.7 de		
2.9 je	2.4 Dieu/dieu	2.4 de	3.2 de	3.0 de	2.5 être		
2.7 de	2.2 faire	2.3 je	2.8 je	2.6 il	2.3 je		
2.5 Dieu/dieu	2.2 être	2.1 être	2.1 du	1.7 avec	2.2 faire		

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)