Project LIFEisGAME: Characters Preferences and Characters´ Empirical Validation

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LIFEisGAME
a game about emotions

1. Aims

People with Autism Spectrum Disorders (ASD) are less likely to attend to faces and are impaired in face discrimination tasks. Technology plays an active part in helping these individuals to understand emotions and recognize facial expressions, trying to ameliorate their social interactions (Baron-Cohen et al., 2004; Kuusikko et al., 2009). During LIFEisGAME prototype's development, empirical tests were conducted using Ekman´s six basic emotions applied to children without ASD due the difficulty of these children to identify emotions. The studies aimed to:

Study 1: To identify appealing characteristics of characters, verify preferred type of character and get a hierarchy of preferences.
Study 2: To validate the facial expressions of happiness, sadness, anger, disgust , surprise, fear and neutral (no emotion) of the LIFEisGAME character "Monkey".
Study 3: To validate children and adults models of Radboud Database (Langner et al., 2010) for the Portuguese Population.

2. Method

### Study 1 – Characters´ Preferences

Participants: Random sample of 383 children -(Porto and V.N.Gaia EB 1 schools); ages between 7-13 (M=10.1, SD=1.65); 50% male; 50% female; 2ºyear -13%, 3º year-16%, 4ºyear-8%, 5ºyear- 29% and 6ºyear-33% .

Instruments: Sociodemographic questionnaire; characters´questionnaire.

Stimuli: 36 Power Point (PPT) slides with images of different characters according to **format** (photorealistic, 2D simple cartoon, 3D complex cartoon), **type** (adult, child or animal) and **familiarity** (known or unknown)

Procedure: Inter-judge stimuli selection. Data collected in 2011, during school time, school and parental consent; self-administered (confidential and anonymous) characters´ preference questionnaire .

Data Analysis: SPSS-17 for descriptive analysis and Chi-square test .

Qual o boneco que preferes?
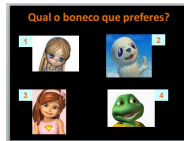
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### Study 2 – "Monkey" Facial Expressions Validation

Participants : Random sample of 102 children -(Porto, EB 1 Cabanas´ school); ages between 6 -10 (M=8,57, SD=0,939); 40% male; 60% female; 2ºyear - 21%, 3º year-24%, 4ºyear-55%.

Instruments: Sociodemographic questionnaire and facial expressions questionnaire

Stímuli: 12 PPT slides of character "Monkey" facial expressions (6 basic emotions)

Procedure: PPT random presentation of 6 basic emotions (twice per emotion). Data collected in 2012, during school time, after school and parental consent. Self-administered (confidential and anonymous) Monkey´s facial expressions questionnaire.

Data Analysis: SPSS-17 for descriptive and frequency analysis.

NORMAL   HAPPINESS   SADNESS   ANGER
FEAR   SURPRISE   DISGUST
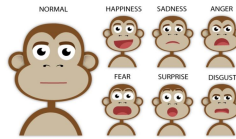
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Study 3- Portuguese Validation of Radboud Database

Participants: Random sample of 410 children -(Porto and V.N.Gaia EB 1 and EB 2/3 schools); ages between 6-14 (M=10.21, SD=1.698); 50% male; 50% female; 2ºyear -13%, 3º year-16%, 4ºyear-7%, 5ºyear- 32% and 6ºyear-32% .

Instruments: Sociodemographic questionnaire and facial expressions questionnaire

Stimuli: 12 photos of children and 12 adults from Radbound Database presented in a PPT format expressing the 6 basic emotions.

Procedure: Inter-judge stimuli selection of best 2 models (children-male and female; adult-male and female). Data collected in 2012/2013, during school time, after school and parental consent. Self-administered (confidential and anonymous) facial expressions questionnaire.

Data Analysis: SPSS-17 for descriptive and frequency analysis.

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3. Results

	Characters	Results (%)	Image
Type	Photorealistic (animal, child, adult)	Animal (54.4%)	
	2D Simple Cartoon (animal, child, adult)	Animal (61.8%)	
	3D Complex Cartoon (animal, child and adult)	Animal (61.5%)	
Format	3D Complex Cartoon vs. Photorealistic (children)	Photorealistic (36.6%)	
	3D Complex Cartoon vs. Photorealistic (adults)	3D Complex (52.9%)	
	3D Complex Cartoon vs. Photorealistic (animals)	Photorealistic (45.8%)	
Familiarity	Known Vs. Unknown (male children)	Known (48.3%)	
	Known Vs. Unknown (female children)	Known (48.0%)	
	Known Vs. Unknown (adults)	Known (39.9%)	
	Known Vs. Unknown (animals)	Known (69.1%)	

Facial Expressions	Results (%)	Image	Best Recognized
Happiness	99%		
Neutral	91%		
Sadness	85%		
Anger	83%		
Disgust	80%		
Surprise	78%		
Fear	68%		Worst Recognised

Facial Expressions	Results (%)	Best Model Children (male/female)	Results (%)	Best Model Adults (male/female)
Happiness	99.7%		100%	
Sadness	92.6%		90.6%	
Anger	86.5%		91.2%	
Disgust	89.9%		83.1%	
Surprise	94.5%		96.8%	
Fear	87.6%		83.7%	

*Note: Red frame for the best models of female and male child and adult

4. Conclusions

Study 1: children prefer type animal characters (e.g. dogs) and almost always photorealistic. Mass-media impacts onto children 'preferences because in all categories the "known characters" by movies or cartoon series (e.g. ratatouille) are always chosen above all others. Results also show that the most selected characters are female and have "babyface" characteristics (round face, big eyes, small nose), this is true even for animals. These findings are consistent with the studies of Langner et al. (2010) that argue that important aspects of face processing are symmetry, distinction between female and male and "babyface" traits. We also think is important to have in our game photorealistic characters because children with ASD need more verbal and contextual clues to recognize emotions (Kuusikko et al., 2009).

Study 2: we achieved validation of the character "Monkey", all facial expressions were recognised by the majority of children. It is important to validate characters used in the game as these will work as best models for players.

Study 3: validation of human faces used in the game is crucial to avoid misreadings. Children recognize best the pictures of other children, suggesting that in the game we must include pictures of children and adult to allow generalization. Additionally, having a validated database for the Portuguese population increases characters 'scientific richness and can be a useful resource for other studies.

5. References

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