Exploring the LIFEisGAME Prototype: Touchscreen Version

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LIFEisGAME
a game about emotions

1. Aims

Computer training and multi-technology have been shown to be successful for teaching emotional skills to children with Autism Spectrum Disorders (ASD; Baron-Cohen et al., 1993; Tanaka et al., 2010). This study evaluated in a sample of children with ASD the LIFEisGAME prototype Touchscreen computer version, created by PIC Team, aiming:

- To assess the game modes: "Build the Face", "What a Feeling" and "Memory Game" of LIFEisGAME prototype Touchscreen version, evaluated in terms of motivation to play, behaviour, game usability, favourite character and emotion recognition abilities.
- To assess participant's technology usage and emotions understanding through a parents´ questionnaire.

2. Method

Participants: 10 children with a diagnose of Autism Spectrum Disorders. Ages varied from 7-13 years old (AV=8.5 SD=1.84), 90% male and 10% female.

Procedure: We video recorded each children during an open 15 minutes game session, and fulfilled a *Observation Game Session Worksheet.* Additionally we used a *Parents' Questionnaire,* and parents also signed a parental consent form. Three game modes were presented (Figures 1 to 5, Authorized photos of children): "Build the Face" (the player draws facial expressions on the avatar´s face according to instructions), "What a feeling" (the player is encouraged to identify a pre-selected expression in an avatar showing emotions in a dynamic random order) and "Memory Game" (pairing facial expressions of models). All game modes had a training and a challenge option with 3 levels: easy, medium and hard. The prototype game was presented on a Touchscreen computer (21 inches, 1080 resolution) in a quite setting, with controlled noise and light.

Figure 1* – Initial game interface

Figure 2 * – Game Mode "What a Feeling"

Figure 3 *– Game Mode "Memory Game" in

Figure 4 *–Game Mode "Build the Face"

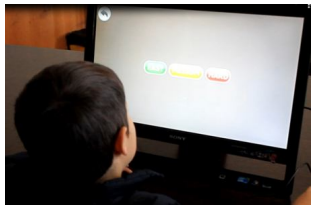


Figure 5 *– Level options

3. Results

Overall game play and characters: in terms of game play, the participants easily engaged in the game. The main character Néné was appealing, although there were some issues about the eyes being to big. Overall, the most selected character was the *Monkey*. Some excitement and stereotyped behaviours were observed during play. Participants enjoyed the prototype game, and all used the 15 minutes play time, but it still needs to be simplified because some game options were not clear. All cases had previous experience with computer games that facilitated the game-play.

Game Mode "Build the Face": 70% of children began exploring the avatar´s mouth area to create facial expressions - recalling to the *sketching technology.* Some studies showed that people with ASD spend more time looking at the mouth and less to the eyes when reading facial expressions (Klin et al., 2002; Neumann et al., 2006). Over 50% of children tried to draw expressions directly onto character's instead of using the canvas.

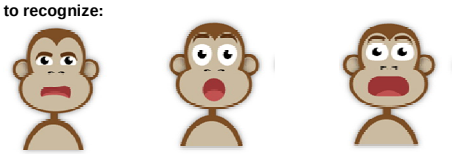
Game Mode "What a feeling": while playing, 60% of children imitated the avatar. The time waiting for facial expressions' changement during game leaded to frustration.

Game Mode "Memory Game": this was the game mode played for longer, and the game objective was quickly perceived. Children enjoyed being able to choose character (real faces, Néné or Monkey character).

Parents: suggested adding musical stimuli to the game to promote motivation and feedback perception, since computers were mainly used by the three participants at home to watch music videos and to play computer games rich in music, bright colours and action.
According to 60% of parents, the easier emotions to recognise by children are happy, sad and anger. This was also observed in the game.
According to 70% of parents the most difficult emotions to be expressed by children are disgust, surprise and fear. Baron-Cohen et al. (1993) point out that children with autism have a selective difficulty with recognizing emotions that involve states, such as surprise, but perform close to average with simple emotions such as happy and sad. The most selected character was the *Monkey*, as seen in our *Characters´ Preference Study*, children favor animal type like characters (cf. Poster 1).

Easier to recognize:

Most difficult to recognize:



4. Conclusions

Golan and collaborators (2009) believe that children with ASD need to be intrinsically motivated to ensure that they pay attention to social-emotional stimuli that are of little interest for them. Computers offer a consistent, stable and free of social pressure environment, that is very pleasing to children with ASD (Moore et al., 2000). In our study it was clear that the prototype game was stimulating and engaging to the participants. LIFEisGAME recalls to state-of-art technology to promote emotional understanding, bringing positive outcomes to children´s with ASD quality of living. Some suggestions to improve the prototype game are: offer verbal and visual instructions to better understand game objectives, add sound effects, review eyes 'size of main character. In the game mode "Build the face", make possible for child to draw directly onto character´s face. This computer game offers a training opportunity to practice important social skills in a fun and educative way. Although this is just a prototype it has the potential to help children with ASD to better communicate their emotions and to better understands others emotional states.

5. References

- Baron-Cohen, S., Spitz, A., & Cross, P. (1993). Can Children with autism recognize surprise ? *Cognition and Emotion, 21*, 37-46.
- Tanaka, J., Wolf, J., Klaiman, C., Koenig, K., Cockburn, J., Herlihy, L., Brown, C., Stahl, S., Kaise, M.D. & Schultz, R. (2010). Using Computerized Games to Teach Face Recognition Skills to Children with Autism Spectrum Disorder: The Let's Face It! Program. *Journal of Child Psychiatry and Psychology*, 2258, 1-12.