

Exploring the LIFEisGAME Prototype: Ipad Version

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LIFEisGAME
a game about emotions

1. Aims

Children with Autism Spectrum Disorder (ASD) are likely to attend to faces and are impaired in face discrimination tasks when compare with typically developed children (Behrmann et al., 2006; Wallace, Coleman & Bailey, 2008). Technology has been playing a more active part in promoting facial recognition and helping individuals with ASD to understand emotions (Hopkins et al., 2011). This study evaluated in a sample of children with ASD the LIFEisGAME prototype Ipad version, created by PIC Team, aiming:

- To evaluate the LIFEisGAME prototype Ipad version in terms of motivation to play, behaviour, game usability and emotion recognition abilities.
- To collect therapist's suggestions for game improvement.
- To assess participant's technology usage and emotions understanding through a parents' questionnaire.

2. Method

Participants: 11 children with a diagnose of Autism Spectrum Disorders. Ages varied from 5-15 years old (AV=9.27 SD=2.97), 91% male and 9% female, 82% verbal and 18% non-verbal.

Procedure: We video recorded each children during an open 15 minutes game session, and fulfilled the *Observation Game Session Worksheet*. Additionally we used a *Parents' Questionnaire*, and collected parental consent forms for each participant. Therapists' opinions (n=8) about the game were given during an unstructured interview. All therapists (4 occupational therapists, 3 speech and language therapists and 1 special education teacher) work with children with ASD. Five game modes were presented (Figures 1 to 5): "Build the Face" (the player draws facial expressions on the avatar's face according to instructions), "Memory Game" (pairing facial expressions of models), "Recon Mee-Match" (matching facial expressions of characters), "Recon Mee-Free" (the player associates a thought, for example, seeing a ghost, to a facial expression) and "Sketch Me" (the player can use the facial expressions drawn and make a film). The prototype game was presented on an Ipad 4 (9.7 inches, 2.048x1.536 resolution) in a quiet setting, with controlled noise and light.

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Figure 1 -- Game Mode "Recon Mee-Match"



Figure 2 -- Game Mode "Recon Mee-Free"



Figure 3 -- Game Mode "Sketch Me"

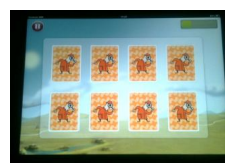


Figure 4 -- Game Mode "Memory Game"



Figure 5 -- Game Mode "Build the Face"

3. Results

Overall game play: It was very intuitive to start and navigate the game, even for children that never used an Ipad before. Previous experience with computer games facilitated game-play. All participants enjoyed the prototype game and used the 15 minutes play time. Some excitement and stereotyped behaviours were observed. **Therapists' Opinions:** Therapist referred that the main character's face had a strange eye size but enjoyed the cartoonish format and said that was very appealing. Main suggestions to the game were: add instructions (e.g. video instructions), possibility to choose emotions to work with and difficulty levels. About the feedback, it needs to be immediately after action and it would be good to have sound effects. Consider to ask just once which city the child is playing from. Therapists also underline the importance of validating all characters' facial expressions and paying attention to symbols used in the game (e.g. play button, pause button) as these need to be clear in meaning. The prototype was considered to be fun and with lots of potential.

Game Mode "Build the Face": children were more efficient sketching emotions directly onto character's face than using a canvas (cf. Poster 2 - touchscreen version). It would be good to have instructions of how to play this game mode and feedback about if the drawing of the facial expression was right or wrong.

Game Mode "Memory Game": this was the game mode played for longer. The game objective was quickly perceived. It was suggested to add difficulty levels, remove name of emotions in cards and offer possibility to choose which emotions to play with.

Game Mode "Recon Mee-Match": children needed some help to understand game objectives, but after some explanations easily understood how to play. It would be good to increase visual clues in this game mode and sounds for right and wrong answers.

Game Mode "Recon Mee-Free": not all children were able to play this game mode because demands the ability to put ourselves in the place of others, to think what others are thinking. Children with ASD struggle with this, as showed in the studies of Theory of Mind (Baron-Cohen et al., 1985). This is a good way to practice these social deficits.

Game Mode "Sketch a Face": this game mode was very funny for children, they enjoyed seeing facial expressions changing. It is important to have this kind of dynamic input because facial expressions are not static.

Parents suggested adding musical stimuli to the game to promote motivation and feedback perception, since computers were mainly used by the participants at home to watch music videos and to play computer games rich in music, bright colours and action. 73% of the children prefer the computer and 45% of children use it *almost every day*. Parents results show that 73% of participants express emotions *sometimes*. About 82% can express happiness, 73% sadness and 54% anger. Only 45% is able to express fear, 27% disgust and 18% surprise. Regarding emotional recognition, only 45% of participants *always* recognize emotions. Parents results show that 82% of participants can recognize sadness, 64% happiness and 54% anger but only 36% recognizes surprise and 9% disgust and same percentage for fear.

4. Conclusions

In this study it was clear that the Ipad was stimulating and engaging to the participants. Parents and therapists offered some suggestions to improve the game. Main recommendations were to add verbal and visual instructions to better understand game objectives, offer choice of difficulty levels and emotions to work with and add sound effects to feedback. Multisensory interactions, controlled and structured environments, use of multilevel interactive functions, and the ability to individualize instruction and tasks, are some of the features that motivate children with ASD to work and learn with computers (Hopkins et al., 2011). This Serious Game hopes to use the motivational aspects of the computer to enhance the learning of emotions, with a positive effect to the social lives of children with autism.

5. References

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