

Helping Autistic Young Adults Fight Privacy Violations: Designing a Gamified App

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This work was motivated by our observation in the preliminary work that the autistic adult's learning outcomes were unexpectedly improved when using Kahoot, a gamified quiz platform.

Research Questions

- How can we gamify a privacy education app in a way that appeals to autistic adults?
- What would the ideal artistic style of this app be?

Method

In December 2023, **participatory design** session was conducted with 3 young autistic adults

- Participants rated and voted on 7 mobile apps that represent 4 popular game genres world game genre, task game, learning game, decorating game)
- Participants ideated and sketched their ideal gameplay

In February 2024, we deployed a **survey** study with 6 autistic adults in Utah County to identify the artistic theme of the gameplay

- Participants were asked to choose their favorite style from 4 styles: cute, realistic, video game (pixelated), abstract
- Participants were given individual backgrounds and characters and were asked to choose if they liked or disliked them

Analysis:

- Comparing the number of participants who chose each style as their favorites
- Examining the like to dislike ratios and counts of each character and background

Results

| (voted apps are red) | Participant 1 | | Participant 2 | | Participant 3 | |
|----------------------|--|---|---|-------------------------------------|------------------------------|---|
| | Like | Dislike | Like | Dislike | Like | Dislike |
| Game 1 | Customized World | | Open World | Time consuming | Progression | Looks very boring |
| Game 2 | Great reward system | | Obtain money | | Saving money | I am not actually saving real money because I am not actually playing |
| Game 3 | Good way to earn money | | Obtain items and treats from points | Time consuming | Getting food and money | Not actually getting food and money |
| Game 4 | I am a visual learner so I like apps that use pictures | | Earn points and badges (Heard of this before) | Time consuming and competition | Improves my skills and brain | Looks very boring |
| Game 5 | it is rewarding to earn badges | | Earning badges, a potential learning app | Time consuming and competition | Helpful and productive | Too many words, So much to learn, Too long, Seems boring |
| Game 6 | I like controlling the sims | Some of the games are too creepy for me to handle | Creativity, earn money | Creepy (microphone needs to be off) | There is a cat | Looks very pointless |
| Game 7 | Those games are addictive | | Creativity, interior design | No money for self | Everything | Like all of it!!! |

Popular background styles

Video Game Style

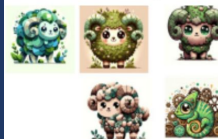


Realistic Style

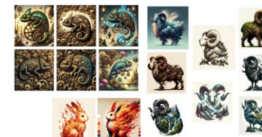


Popular character styles

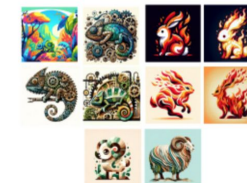
Cute Style



Realistic Style



Abstract Style



Preliminary Work

- 16 week classroom privacy education intervention with autistic adults (n=7)
- Higher score on gamified assessments than non-gamified/placebo assessments
- Students were receiving 100% correct answers on Kahoot in the last few classes

Discussion

Correspond to prior work:

- Participants dislike difficult and time-consuming gameplay
- Preferred apps with diverse visual designs and disliked apps that they found boring.
 - One participant described herself as "visual learner" and liked apps with diverse visual designs
 - Another participant disliked apps that look boring
- Participants preferred customizable and less complicated gameplay, which consistency with prior work in gamified privacy education

Conflict with prior work:

- Two participants expressed interests in open-world and customizable gameplay and mentioned that they played animal crossing, an open-world game
- One participant sketched a game in which players can "progress through an open world and earn points"
- Prior work found that open-world gameplay is not suitable for autistic individuals
- Participant did not like the competition in Learning Games, one of which uses a leaderboard, But prior work encouraged competition with leaderboards