Beyond the novelty effect: The role of in-game challenges, rewards and choices for long-term motivation to improve obesity-related health behaviours in adolescents

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Difficult to engage adolescents in obesity preventing health behaviour

Smart phone technology shows promise for increasing knowledge and motivation to increase physical activity and healthy eating

Solutions are missing for overcoming the novelty effect to enable habit formation and thus long-lasting behaviour change

Pegaso Fit For Future: 17 partners, 6 countries, 4 intervention sites
Objectives

To explore Scottish adolescents’ perception of the usability and acceptability of a serious mobile game, wearable activity sensors and a smart phone eDiary application (app) for promoting physical activity and healthy eating.
Methods

- Development of interlinked technology system
- Design using the COM-B model of behaviour change
- Application of a user-centred approach for developing the technology
- 4 iterative stages
- 11 adolescents aged 13-16 years (6 boys, 5 girls)
- Prototype versions and mock-ups
- Semi-structured focus groups
Results

Choices

- Point acquisition
- Skill acquisition
- Changing story line
- Customising characters, zombies, environment
- Starting over

“If you had like different choices and every choice you make a different path or different storyline each time then you would maybe want to play it again and see what other storylines you get.”

“Like, you should be able to get options to choose, like, if you reset it you can choose another option and then it might end it in a completely different way.”

“I don’t know but if you see a survivor, right, you can choose to whether to save her or not.”

“If you say ‘no’ the first time, you might go back to see what happens if you say ‘yes’.”

“So that would encourage you to play again to see what the other storyline would be, depending on the choices you make.”

“If you feel like you are not going to do well with the game you can go back, right back to the start and to it again.”

“Say, if you actually ate a pizza you could reset it.”
**Game characters**

“You should get different characters which are specialised. Like one character is good in research and another character is good in combat. It’s like a team of avatars that you acquire as you go through the levels.”

“You could find a survivor and he can then join your team and they have different skill sets. One could be a medic who can heal you when you get hurt.”

“You could tab on the medic and you would get healed. And this would cost some of the experience points.”

“See, if a person in your team dies and he is a medic, he could turn into a medic zombie.”

“You could have your own version of the zombie but as team member.”

**Challenges**

“Do you get different weather? That would be pretty good, like you went outside it is raining.”

“Or like if it is raining, flooded or that there could be a swimmer zombie.”

“You know the runner zombie could trip up if it’s raining, they could trip over, slide on grass.”

“If you had snow or ice underneath, they could all slip.”

“I think that it would be more like variability, fun, difficult...”

“If it’s that challenging it would last longer.”

**Zombie types**

“Runner zombie could trip up if it’s raining, they could trip over, slide on grass.”

“If you had snow or ice underneath, they could all slip.”

“I think that it would be more like variability, fun, difficult...”

“If it’s that challenging it would last longer.”

**Game environment**
Results

Rewards

Exceeding behavioural goals

“Run a mile and get an extra wee energy bar.”
“Aye, yeah. You know how you get the sensors... you run a mile if that was your goal then you get energy. And if you exceed it you get to upgrade.”

Playing the game

“To keep people interested in this over time maybe the points you use to customise your character or zombie you get a daily log in so you get 1 point for every day you log in and use it.”
“So like, if you log in 10 days in a row you get 1 point on day one, 2 points on day 2 and so on...
“Or like if you got to ten days or something you might unlock another character or another set of skills.”
“So like, see if you are 4 days in and don’t log in on the 5th day but go in the next day you go back to 1 point.”
“So it is continuous and you keep people going back to it.”
Game as motivator to be physically activity

“I would play it like till the game ends, ‘cause like after that, if it does end you are probably not going to be motivated to go out running ‘cause there is nothing, you are not keeping anything alive in the game…”

“It might like set your mind to enjoy the exercise ‘cause you have done it for so long, so you just keep doing it.”

“Once the game is finished you can re-start it again with a reset button.”
Conclusions

- mHealth connecting in-game and real-life activities could increase physical activity and healthy eating in adolescents.

- To allow exposure to mechanisms of behaviour change for an adequate amount of time, the novelty effect of new technology needs to be sustained.

- Age-appropriate in-game choices, challenges, and rewards might trigger adolescents’ interests in the technology for longer.
Thank You!

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Integration of BCTs in a companion app to support and motivate teenagers in the adoption of healthy lifestyle behaviours