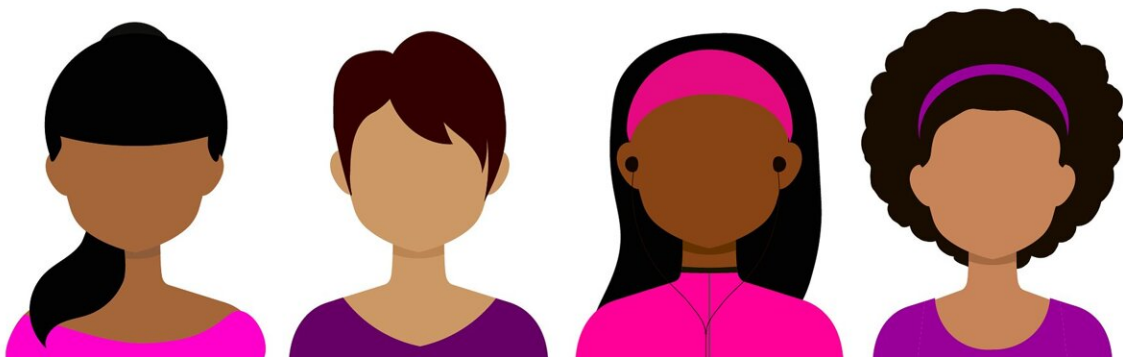


Systematic review on using virtual representations in mHealth application interventions for behavior change

August 18 2022



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Trainee Health Psychologist Lauren Taylor, Ph.D. has been focusing on using digital images on mobile health applications to promote lifestyle behaviors and evaluating their potential with a multidisciplinary team at the University of Surrey and City University, including Dr. Bridget

Dibb, Dr. Aliya Amirova, Ayan Ahmed, Louisa Zhang and Dr. Hannah Randaldi.

Many mobile health application interventions include virtual representations of the self (e.g., avatars) to initiate behavior change. This systematic review aimed to determine: (i) which virtual representations are effective in mHealth application interventions, and (ii) whether any studies implemented specific mechanisms (psychological causes of change) and behavior change techniques (BCTs) to influence positive behavior change.

Approach and challenges

Following PRISMA guidelines, a narrative systematic review of empirical studies was conducted using ten different databases prior to December 2021. This included any articles published on the topic of virtual representation mHealth app interventions that addressed any health behaviors.

In the beginning stages of this review, Dr. Taylor attended an open research course at the University of Surrey to learn about open research, and how she could disseminate the findings to a network of researchers. Throughout the review, a research team was formed to ensure that the findings for this review had multiple inputs from more than one member, and that the contributions were not limited to one researcher alone. All the researchers also registered for an ORCID ID to ensure that her work was accurately identified with each of them.

To promote the collaboration, the data from this review is accessible in an open repository (Github), and therefore publicly available. This is beneficial in demonstrating the integrity of the research by allowing others to verify and validate the study. In addition, if the data is reused by others, this could be used as evidence of impact, and chances of

engagement with future research studies. However, there are limited opportunities to promote the benefits of sharing data in repositories for easy access, storage, and preservation.

In addition, this review is beneficial in maintaining scholarly communication within this area of research, in increasing knowledge creation around mHealth and virtual representation research as it includes a pre-registered protocol on PROSPERO and has been published in a peer-reviewed open access journal that has been newly established and follow FAIR principles for sharing data. However, there is a lack of guidance around preferred formats to present research content and data fairly.

The outcome

Out of 2,579 original hits, five eligible studies (total participants = 509), with low to moderate quality were included. Results showed that customizable virtual representation mHealth interventions were effective in encouraging behavior change and app adherence. These interventions included mechanisms such as motivation, feedback, self-image, and BCTs such as goal setting, and self-monitoring.

The current evidence suggests that virtual representations in mHealth app interventions may positively influence health behavior change. However, there is limited evidence available to determine whether these influences are the result of the virtual representations themselves or the intervention design.

The main learnings from conducting this review in an open research format were the importance of increasing accessibility and impact of research using open software tools and establishing a pre-print protocol to speed the delivery of the research topic area. Publishing the article in *Cogent Psychology*, an open research journal, was also beneficial in

increasing the recognition for the work and public and scholarly transparency.

More information: Lauren Taylor et al, Using virtual representations in mHealth application interventions for health-related behaviour change: A systematic review, *Cogent Psychology* (2022). [DOI: 10.1080/23311908.2022.2069906](https://doi.org/10.1080/23311908.2022.2069906)

Provided by University of Surrey

Citation: Systematic review on using virtual representations in mHealth application interventions for behavior change (2022, August 18) retrieved 12 May 2024 from <https://medicalxpress.com/news/2022-08-systematic-virtual-representations-mhealth-application.html>

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