Get (Com)Passionate for Wellbeing: Designing a Virtual Reality Wellbeing Intervention for Emerging Adults with Chronic Medical Conditions

Denise Quesnel
dquesnel@sfu.ca

Bernhard E. Riecke
ber1@sfu.ca

School of Interactive Arts & Technology, Simon Fraser University, Surrey, BC, Canada

SFU SIMON FRASER UNIVERSITY ENGAGING THE WORLD

SCHOOL OF INTERACTIVE ARTS + TECHNOLOGY

iSPACE iSpaceLab.com

1. Motivation

Emerging adults with chronic health conditions (EA-CHCs) are at risk of deteriorating quality of life outcomes and are a vulnerable group facing unsurmountable adversity and obstacles to mental health supports[1]. While technology has explored in many scenarios as a solution for disease management, struggles remain with sustainable implementation and 'optimization' of therapeutic outcomes for this population[2].

Top: An immersant soars above Earth in ***Awedessey***.
Bottom: Animal companionship in ***Awedessey***.

2. Proposed Solution

We will use our Virtual Reality Intervention (VRI) research and design framework[3] to build upon ***Awedessey*** (our publicly exhibited and tested VRI for transformative emotions and social connection[4]) into a VRI for, and with EA-CHC end user co-designers. While there is no panacea intervention, we will merge transformative VRI design, compassion training, and peer support – principles with extensive therapeutic evidence – into a single intervention. To deepen therapeutic outcomes, the VRI can be implemented within, and adjacent to conventional psychoeducational programs and services, and in end-users homes.

3. Prior Work

Awedessey[4] was initially designed by iSpace Lab at Simon Fraser University and Charité — Universitätsmedizin Berlin for an 8-month long study on mitigation of psychological stressors astronauts may experience on long-duration exploratory space missions. Goals were:

- *Countering feelings of isolation*
- *Evoking connection to self, humanity, nature, and Earth*
- *Facilitating awe and wonder*
- *Prompting introspection, meditation, and relaxation*

In keeping a Loving-Kindness Meditation within a transformative experience design framework[3], ***Awedessey*** expanded to the general public in Vancouver, Berlin, and Moscow with minimal design changes. Positive feedback and insights emphasized potential benefits for young people with chronic mental and physical health conditions. However, optimal therapeutic outcomes through ***Awedessey*** will require collaborative VRI design and decision-making with EA-CHCs, because when they aren't involved in the design process, digital interventions often result in ineffectiveness, lack of fit, and disengagement[13] for young people.

4. Key Opportunities

VRIs and compassionate abilities show therapeutic potential for young people with chronic health conditions:

1 *Beneficial skills can turn into enduring behaviours*[5]
Positive emotions, and compassion, coping, mindfulness, & resilience (adaptive psychological resources and skills) that extend into everyday life can be cultivated in VR.

2 Multisensory immersion[6] combined with gamification and exercises like compassionate mind training may optimize therapeutic outcomes via replay value, motivation, personalization, and social participation.

3 *VRIs prevail over some psychological interventions*[7]
Physical safety needs can be met in VRIs while enabling meaningful peer support instrumental to treatment adherence and quality of life.

4 VRIs can be effective brief interventions and with their portability may be ideal for EA-CHCs who have a high treatment burden.

5 Youth hesitant to pursue or have barriers to therapeutic interventions may enthusiastically engage with a VRI; they routinely uses technology for self-efficacy, which destigmatizes use of psychological supports[8].

6 *Training compassion (directed inwards,outwards, & recieved) has purpose*
Compassion, coping, resilience and mindfulness skills help mitigate self-criticism, isolation, and distress EA-CHCs often experience[9,10].

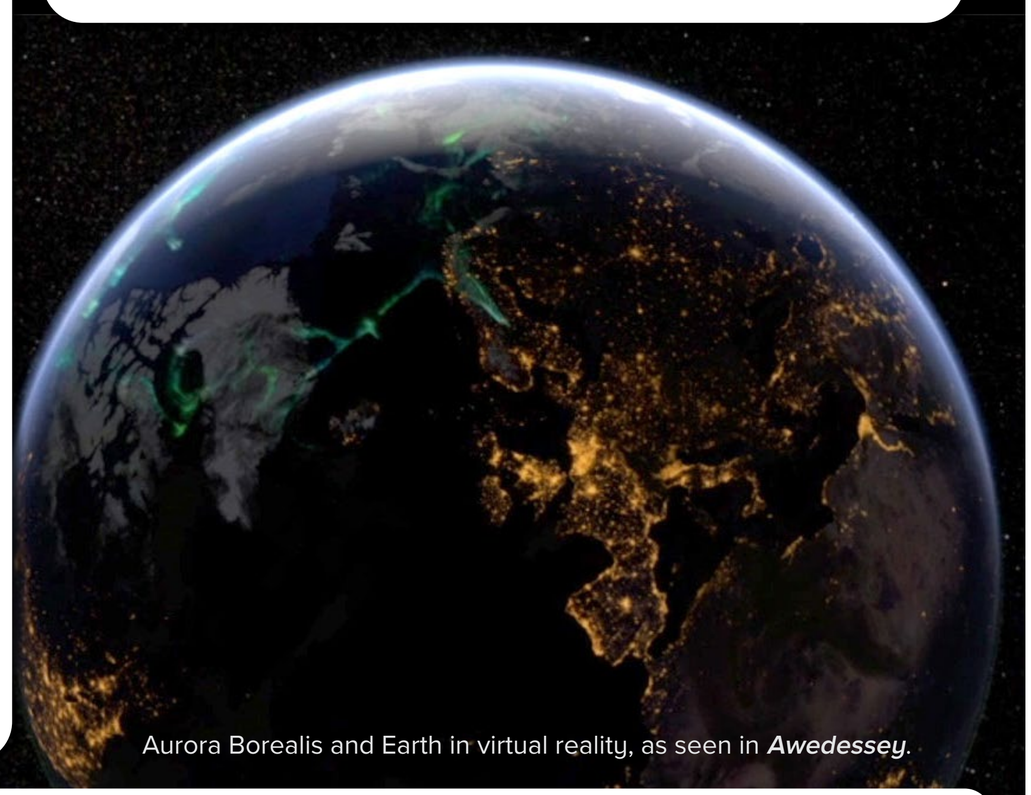
7 *... and are associated with positive outcomes*
In formative years, development of beneficial habits & attitudes (seeking social support, treatment adherence, & health- promoting behaviours) may have life-long positive impacts[11,12].

5. Next Steps

We will create and evaluate the VRI through robust participatory and rapid design methodology to avoid technological obsolescence[2], and:

1. Sustain project feasibility by building upon our VRI framework and template (***Awedessey***)[3,4];
2. Ensure impact and relevance to EA-CHCs*, with strategic implementation achieved through co-design methods (hands-on testing, co-design sessions, interviews, and contextual evaluations);

*six EA-CHCs aged 16-25 (end users) and four stakeholders (healthcare professionals and therapists) will be recruited via BC Children's Hospital (BCCH) Centre for Mindfulness, disease-specific paediatric & adult clinics in Lower Mainland of Vancouver, BC.



Aurora Borealis and Earth in virtual reality, as seen in ***Awedessey***.

REFERENCES

1. Ferro, MA. Major depressive disorder, suicidal behaviour, bipolar disorder, and generalised anxiety disorder among emerging adults with and without chronic health conditions. *Epidemiol. Psychiatr. Sci.* 25, 462–474 (2016).
2. Mohr, DC., Lyon, AR., Lattie, EG., Reddy, M. & Schueller, SM. Accelerating Digital Mental Health Research From Early Design and Creation to Successful Implementation and Sustainment. *J. Med. Internet Res.* 19, e7725 (2017).
3. Stepanova, ER., Friedl-Werner, A., Miller, N., Desnoyers-Stewart, J., Adhikari, A., Riecke, BE. & Stahn, AC. A Neurophenomenological Approach to Better Understand the Effects of Eliciting Positive Experiences in Virtual Reality. (2022). from <https://tinyurl.com/36bknxrp>
4. Miller, N., Stepanova, ER., Desnoyers, J., Adhikari, A., Kitson, A., Pennefather, P., Quesnel, D., Brauns, K., Friedl-Werner , A., Stahn, A., Riecke, BE., Awedyssey: Design Tensions in Eliciting Self-transcendent Emotions in Virtual Reality to Support Mental Well-being and Connection. *Proceedings of the 2023 ACM Designing Interactive Systems Conference*, 189–211 (2023).
5. Wienrich, C., Döllinger, N. & Hein, R. Behavioral Framework of Immersive Technologies (BehaveFIT): How and Why Virtual Reality can Support Behavioral Change Processes. *Front. Virtual Real.* 2, (2021).
6. Falconer, CJ., Rovira, A., King, J. A., Gilbert, P., Antley, A., Fearon, P., Ralph, N., Slater, M. & Brewin, CR. Embodying self-compassion within virtual reality and its effects on patients with depression. *BJPsych Open* 2, 74–80 (2016).
7. Guan, H., Xu, Y. & Zhao, D. Application of Virtual Reality Technology in Clinical Practice, Teaching, and Research in Complementary and Alternative Medicine. *Evid. Based Complement. Alternat. Med.* e1373170 (2022).
8. Wagener, N., Duong, TD., Schöning, J., Rogers, Y. & Niess, J. The Role of Mobile and Virtual Reality Applications to Support Well-Being: An Expert View and Systematic App Review. in *Hum.-Comput. Interact. – INTERACT 2021*, 262–283 (2021).
9. Gilbert, P. The origins and nature of compassion focused therapy. *Br. J. Clin. Psychol.* 53, 6–41 (2014).
10. Egan, SJ., Rees, CS., Delalande, J., Greene, D., Fitzallen, G., Brown, S., Webb, M. & Finlay-Jones, A. A Review of Self-Compassion as an Active Ingredient in the Prevention and Treatment of Anxiety and Depression in Young People. *Adm. Policy Ment. Health Ment. Health Serv. Res.* (2021).
11. Austin, J., Drossaert, CHC., Schroevers, MJ., Sanderman, R., Kirby, JN. & Bohlmeijer, ET. Compassion-based interventions for people with long-term physical conditions: a mixed methods systematic review. *Psychol. Health* 36, 16–42 (2021).
12. Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M. & Kuo, A. in *Handb. Life Course Health Dev.* (eds. Halfon, N., Forrest, C. B., Lerner, R. M. & Faustman, E. M.) 123–143 (2018).
13. Psihogios, A. M., Lane-Fall, M. B. & Graham, A. K. Adolescents Are Still Waiting on a Digital Health Revolution: Accelerating Research-to-Practice Translation Through Design for Implementation. *JAMA Pediatr.* 176, 545–546 (2022).