

STAR Project 2023/2024

Gemmo

<image>

Collective creativity; Outlining a co-design process for the development of physical activity promotion initiatives for Autistic adults

ROYAL

COLLEGE

N IRFI AND

OF SURGEONS

Ollscoil Chathair Bhaile Átha Cliath

Dublin City University

UNIVERSITY OF

OLLSCOIL LUIMNIGH

Gary Rodgers, Prof Mary Rose Sweeney, Prof Anthony Staines, Dr Natalia Morgulec-Adamowicz, Anna Ogonowska-Słodownik, Dr Debbie Van Biesen and Dr Sean Healy



 Autistic students at higher education institutions have reported feelings of isolation, depression, and disengagement - all contribute to mental health disparities.
 (Sweeney et al, 2018, Jackson et al, 2017; McMorris et al., 2019) Mental Health Issues in Post-Secondary Students with Autism Spectrum Disorder: Experiences in Accessing Services Carly A. McMorris¹ • Jessica Baraskewich¹ • Megan A. Ames² • Komal T. Shaikh³ Busisiwe L Ncube³ • James M. Bebko³ Published online: 19 September 2018 © Springer Sdence+Business Media, LLC, part of Springer Nature 2018

Background (continued)

- Higher prevalence of physical health conditions
- Autistic college students are significantly less physically active than neurotypical peers
 (McLeod et al., 2021)

 Autistic college students are more likely to consider 'dropping out' of higher education because of health disparities and isolation

(Cage & Howes, 2020)

 Physical activity interventions, including those incorporating digital technologies, have been shown to improve mental health
 (Shahane et al. 2023)





- Significant increase in the number of autistic youths enrolling in higher education in Ireland
 (Bell et al, 2018)
- Therefore, it is critical to address the issues surrounding mental and physical health disparities

Research Aim:

This study aims to co-design and explore the usability and feasibility of a digital technology to promote physical activity amongst autistic college students.



Phase 1: Empathise

A population centred phase where valuable insight into a population's preferences and needs is gained.

Methods:

- To empathize with participants, semistructured interviews were held with 7 autistic college students (M=4, F=3)
- Interviews were recorded, transcribed verbatim, and analysed via Reflexive Thematic Analysis.

(Braun et al. 2023)





Phase 2: Define



During this phase, information obtained during the empathising phase is organised and used to define problems centred around the population.

Findings from interviews
 highlight multifaceted needs,
 preferences and barriers faced
 by autistic college students.



 Those mentioned related to multiple or all themes that emerged during analysis.

Interview Themes and Quotes

Mental Hurdles Race

The Psychological Starting Blocks

Achieving Routine Pace

Motivation to Move

Self-consciousness and Anxiety

"It's all about setting expectations in that sense and it's setting them very early on." *Jenny*

"I don't really like my body that much". I never wear shorts, for example, because I don't know. I don't like my legs."

Cian



Autism Active-Tech

Artificial Intelligence Chatbot Digital Tech for Social Support Autism-attuned Activity Apps

Interview

Themes

Supportive Spaces

The People

The Environment

"If you make an AI specifically for fitness and personal training, if you if they could have it where it can do exactly what it needs to be done, then I feel like it could be taken to a higher place." **Bart**

"I don't mind going alone, but I often prefer going with friends."

Sasha

Phase 3: Ideate

In this phase, innovative solutions to the defined problems are created.

 A WhatsApp group intervention and the use of Fitness wearables were considered.

 The idea of creating a purposebuilt AI chatbot for promoting physical activity was brought to the prototype phase.



LET'S TALK

Phase 4: Prototype



In this phase, stronger ideas from phase 3 are developed upon to identify if they are a good solutions.

Ideas are investigated and then accepted, improved or rejected based on the users' experiences.

- Experts in relevant fields and autistic college students served to prototype an early version of an AI chatbot developed with partners Gemmo AI.
- Chatbot conversation flow and functions were discussed.



Final Prototype Features

Two Main Functions:

1. Mental Contrasting with Implementation Intentions (MCII) through a personalised WOOP activity.

2. Semi scripted Education on physical activity.



Hello there! **Solution** I have some functions that could be helpful for you to increase your physical activity. Would you like information about physical activity or would you like to complete an activity called WOOP with me to help get you started?



August 20



Gary Rodgers

/clear

User successfully deleted, now you can /start a new chat! 12:29 PM



Gary Rodgers

/start

Hello there! VI have some functions that could be helpful for you to increase your physical activity. Would you like to hear some useful information about physical activity? Or perhaps you would you like to hear about and complete an activity called WOOP with me to help you set physical activity goals and motivate you?

Woop activity p please pal P u a w e v d h i k q S a $\widehat{}$ $\langle \times \rangle$ b z C n × v m . 123 ہے -----

Wish Outcome Obstacles Plan

In Scientific Literature:

Mental Contrasting with Implementation Intentions (Oettingen et al., 2010)

Next Steps

Planned Testing Methods:

Usability Testing:

- Chatbot Usability Questionnaire.
- Content analysis of conversations with the chatbot.

Feasibility Testing:

 Semi Structured Interviews post one-off chatbot conversation

Phase 5: Testing

In this phase, solutions are tested to derive a deeper understanding of the solution and its users.

What is being Tested:

- Chatbot feasibility and usability for autistic college student users.
- User attitudes towards the chatbot.

Email:rodgers.gary@ul.ie

Let The Interrogation Commence!

0 40 50 50 50 50 50 50 50 0

References:

- Bell, S., Devecchi, C., McGuckin, C., & Shevlin, M. (2018). Making the transition to post-secondary education: Opportunities and challenges experienced by students with ASD in the Republic of Ireland. In Coleman, M.R., & Shevlin, M. (Eds.) Postsecondary Educational Opportunities for Students with Special Education Needs. (Chapter 5)
- 2. Braun, V., Clarke, V., Hayfield, N., Davey, L., & Jenkinson, E. (2023). Doing reflexive thematic analysis. Supporting Research in Counselling and Psychotherapy, 19–38.
- 3. Cage, E., & Howes, J. (2020). Dropping out and moving on: A qualitative study of Autistic people's experiences of University. Autism, 24(7), 1664–1675. https://doi.org/10.1177/1362361320918750
- Jackson, S. L., Hart, L., Brown, J. T., & Volkmar, F. R. (2017). Brief report: Selfreported academic, social, and mental health experiences of post-secondary students with autism spectrum disorder. Journal of Autism and Developmental Disorders, 48(3), 643–650. https://doi.org/10.1007/s10803-017-3315-x
- 5. McLeod, J. D., Hawbaker, A., & Meanwell, E. (2021). The health of college students on the autism spectrum as compared to their neurotypical peers. Autism, 25(3), 719–730. <u>https://doi.org/10.1177/1362361320926070</u>
- 6. McMorris, C. A., Baraskewich, J., Ames, M. A., Shaikh, K. T., Ncube, B. L., & Bebko, J. M. (2019). Mental health issues in post-secondary students with autism spectrum disorder: Experiences in accessing services. International Journal of Mental Health and Addiction, 17(3), 585–595.
- 7. Oettingen, G., & Gollwitzer, P. M. (2010). Strategies of setting and implementing goals: Mental contrasting and implementation intentions.
- 8. Plattner, H., Meinel, C., & Leifer, L. (Eds.). (2012). Design thinking research: Measuring performance in context. Springer Science & Business Media.
- 9. Shahane, V., Kilyk, A., & Srinivasan, S. M. (2023). Effects of physical activity and exercise-based interventions in young adults with autism spectrum disorder: A systematic review. Autism, 28(2), 276–300.
- 10. Sweeney, M. R., Teresa, B., Katie, Q., & Adam, H. (2018). Living with Autism as a university student at Dublin City University: developing an Autism friendly university.