Psychological Mechanisms of Youth Engagement in a Family-Centric School Health Intervention: Self-Efficacy, Self-Perception, and Digital Tool Acceptance in a Multi-Site Cluster RCT

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Background

Psychological processes such as self-efficacy, self-perception, and trust in intervention tools are thought to shape how children engage with healthy lifestyle programmes in school settings.

Childhood obesity is a complex, multi-factorial public health issue, and BIO-STREAMS was initiated to develop scalable, digitally supported interventions for young populations across Europe.

Objectives

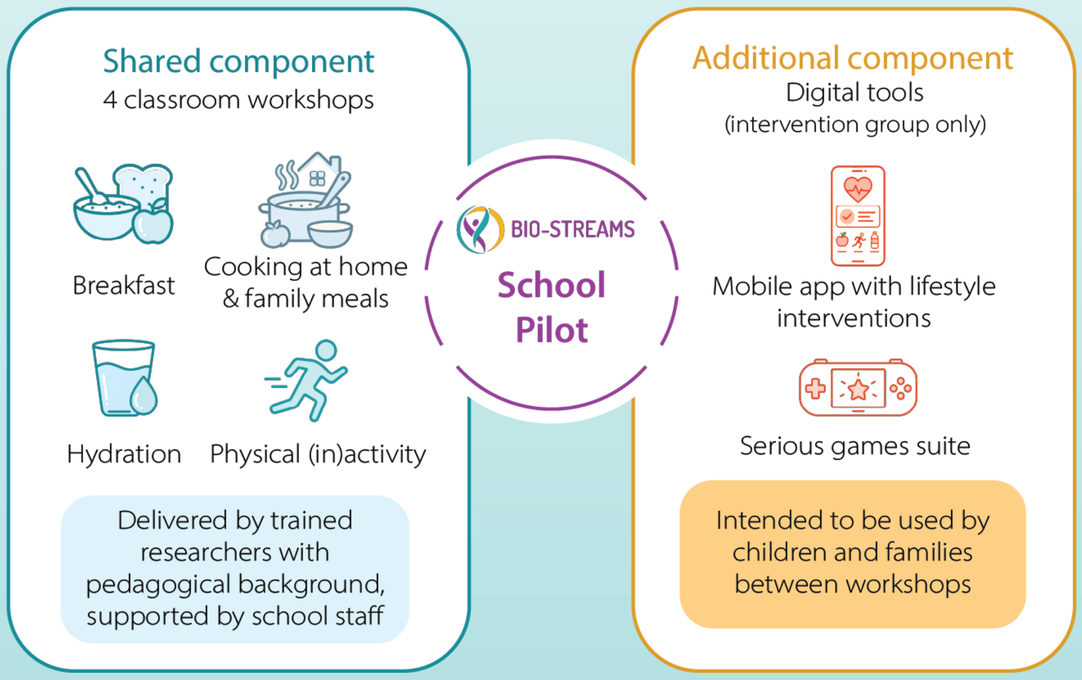
- To implement the BIO-STREAMS school pilot intervention as a multi-site cluster randomized controlled trial in five European countries (Netherlands, Portugal, Greece, Slovenia, Denmark).
- To examine how self-efficacy, self-perception, and trust/acceptance of a digital tool relate to children's engagement with healthy lifestyle behaviours in a family-centric school context.

Study design and participants

- *Design*: Multi-site cluster RCT, school level randomization.
- *Sites*: the Netherlands, Portugal, Greece, Slovenia, Denmark (5 pilot sites).
- *Participants*: ~2000 children, 9–14 years, school-based recruitment.
- *Assessment points*: Baseline and 6-month follow-up.



Intervention components



Outcomes and measurements

Planned self-reported outcomes (all participants) include:

- lifestyle habits (diet (KIDMED 2.0 questionnaire[1]) and physical activity (Self-Administered Physical Activity Checklist (SAPAC) questionnaire[2]),
- food/nutrition literacy (Food and Nutrition Literacy (FNLIT) questionnaire[3]),
- self-efficacy (constructed based on previous questionnaires for evaluating self-efficacy in children[4]),
- self-perception (Self-Perception Profile for Children questionnaire[5]),
- body weight and height.

Intervention-group participants additionally complete evaluations of:

- usability (two different versions of the System Usability Scale (SUS)[6]) and user experience of the digital tools (User Experience Questionnaire - Short Version (UEQ-S)[7]),
- trust and acceptance of the mobile app and games (questionnaire based on the extended unified theory of acceptance and use of technology 2 (expanded) model (UTAUT2)[8]).

Quality assurance: Common methodological framework across all five sites.

Lifestyle, eating habits topics can cause emotional distress and trigger trauma or problematic behaviour.
The BIO-STREAMS workshops pre-mediate this challenge by:

- cautious preparation,
- trauma-informed design.

MEDViEW: value-sensitive co-creation and capacity-building approaches – translating health data and research evidence into citizen-facing tools and practice.

A Multi-Pillar Framework to address childhood obesity by building on an EU biobank, micro-moments and mobile recommendation systems.

BIO-STREAMS medview

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University of Maribor

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