



THE 2022 TECHMED EVENT



Bridging Science and Design

Creating Games to Promote Mental Health and Behaviour Change in Youth

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**THE 2022
TECH-MED
EVENT**



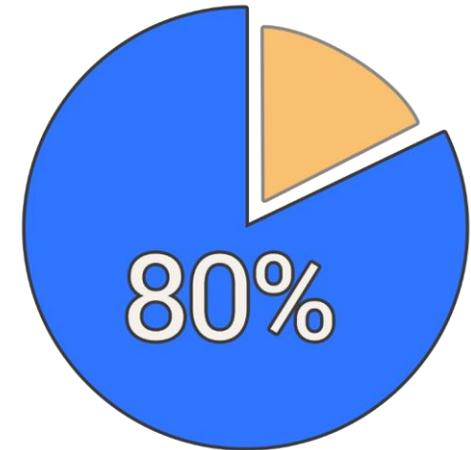
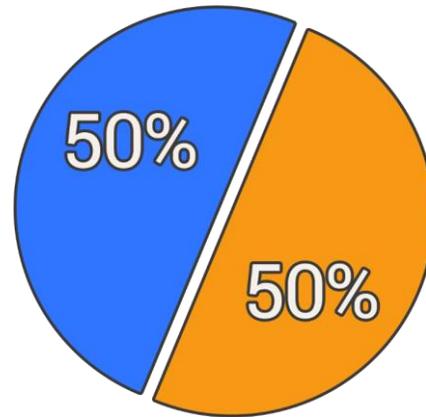
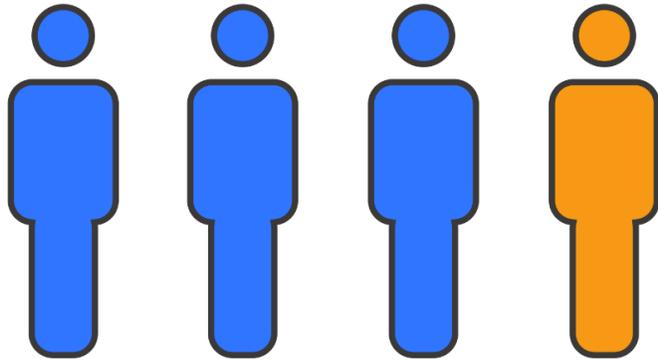
Who am I?

- Bachelor Pedagogical and Educational Sciences
- Research Master Behavioural Science
- PhD Developmental Psychopathology
- Postdoc GEMH Lab

Currently

- Assistant Professor Communication Science/HIB
- Co-Director GEMH Lab
- Chief Science Officer BIT Bridges

Mental and Emotional Problems in Youth



The Benefits of Playing Video Games

Isabela Granic, Adam Lobel, and Rutger C. M. E. Engels
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Video games are a ubiquitous part of almost all children's and adolescents' lives, with 97% playing for at least one hour per day in the United States. The vast majority of research by psychologists on the effects of "gaming" has been on its negative impact: the potential harm related to violence, addiction, and depression. We recognize the value of that research; however, we argue that a more balanced perspective is needed, one that considers not only the possible negative effects but also the benefits of playing these games. Considering these potential benefits is important, in part, because the nature of these games has changed dramatically in the last decade, becoming increasingly complex, diverse, realistic, and social in nature. A small but significant body of research has begun to emerge, mostly in the last five years, documenting these benefits. In this article, we summarize the research on the positive effects of playing video games, focusing on four main domains: cognitive, motivational, emotional, and social. By integrating insights from developmental, positive, and social psychology, as well as media psychology, we propose some candidate mechanisms by which playing video games may foster real-world psychosocial benefits. Our aim is to provide strong enough evidence and a theoretical rationale to inspire new programs of research on the largely unexplored mental health benefits of gaming. Finally, we end with a call to intervention researchers and practitioners to test the positive uses of video games, and we suggest several promising directions for doing so.

Keywords: video games, mental health, adolescents, social, motivation

The game of Chess is not merely a idle amusement. Several very valuable qualities of the mind, useful in the course of human life, are to be acquired or strengthened by it, so as to become habits, ready on all occasions . . . we learn by Chess the habit of not being discouraged by present bad appearances in the state of our affairs, the habit of hoping for a favourable change, and that of persevering in the search of resources.

—Benjamin Franklin, "The Morals of Chess"

Today, in the United States, 91% of children between the ages of 2 and 17 play video games (NPD Group, 2011), and a nationally representative study of U.S. teenagers found that up to 99% of boys and 94% of girls play these games (Lenhart et al., 2008). In the United States alone, video games brought in over \$25 billion in 2010, more than doubling Hollywood's 2010 box office sales of \$10.8 billion in the United States and Canada (Motion Picture Association of America, 2011). Against this backdrop of nearly ubiquitous play, the popular press regularly

pulses out urgent warnings against the perils of addiction to these games and their inevitable link to violence and aggression, especially in children and adolescents. Indeed, the vast majority of psychological research on the effects of "gaming" has been focused on its negative impact: the potential harm related to aggression, addiction, and depression (e.g., Anderson et al., 2010; Ferguson, 2013; Lemola et al., 2011). It is likely that this focus will not diminish in the near future, in part because of the enormous media attention garnered when mass killings (e.g., the Columbine High School slayings in 1999) are associated with youth who play violent video games (Ferguson, 2007). Most recently (December 2012), the revelation that the Sandy Hook Elementary School gunman played shooter games directly resulted in President Obama requesting Congress to allocate \$10 million for research on the effects of violent media, especially video games (Obama & Biden, 2013).

Decades of valuable research on the effects of violent video games on children's and adolescents' aggressive behavior already exists, and this is indeed an important body of work to consider. However, we argue that in order to understand the impact of video games on children's and adolescents' development, a more balanced perspective is needed, one that considers not only the possible negative effects but also the benefits of playing these games. Considering these potential benefits is important, in part, because the nature of these games has changed dramatically in the last decade, becoming increasingly complex, diverse, realistic and social in nature (Ferguson & Olson, 2013). A small but significant body of research has begun to emerge, mostly in the last five years, documenting these benefits. We propose that, taken together, these findings suggest that video games provide youth with immersive and compelling social, cognitive, and emotional experiences. Further, these experiences may have the potential to enhance mental health and well-being in children and adolescents.

In this article, we summarize the research on the benefits of playing video games, focusing on four main domains: cognitive (e.g., attention), motivational (e.g., resilience in the face of failure), emotional (e.g., mood management), and social (e.g., prosocial behavior) benefits. By

This article was published Online First December 2, 2013.
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Play is crucial for development

Developmental psychologists such as Piaget, Vygotsky, Dewey, Erikson, etc. put a lot of emphasis on play in their theories

Through play, children (and adults) learn to:

- Regulate their emotions
- Invent and try out alternative solutions
- Deal with unavoidable failure
- Persevere in the face of failure



Games are:

- Engaging
- Immersive
- Empowering
- Social
- Emotional



GEMH lab framework

Based on developmental
psychology, intervention design,
and design thinking



“Real science studies and makes accessible that knowledge which people at that period of history think important, and real art *transfers* this truth from the domain of knowledge to the domain of *feelings*.”

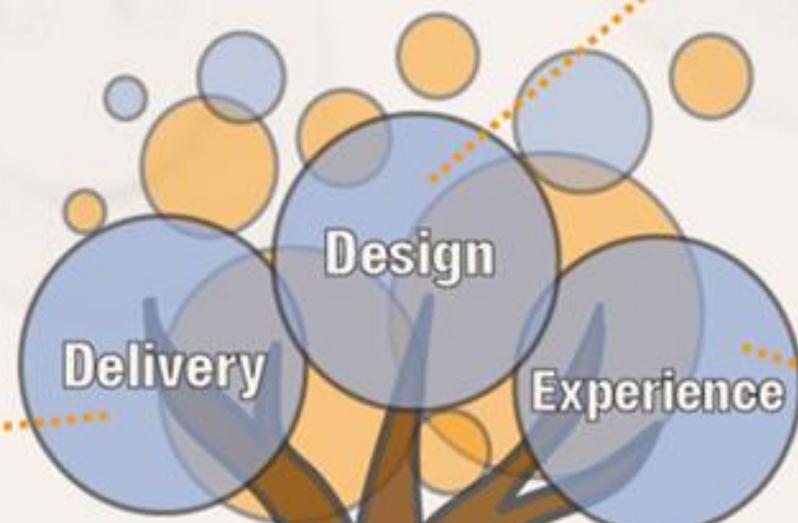
Leo Tolstoy



GEMH Lab Mission

Transforming how mental health interventions are designed, delivered and experienced

Multidisciplinary
Science-Art Balanced
Evidence Based, Iterative Testing
Stakeholder, Youth Informed



Pull (not push) model
Autonomy & Choice
Commercial & Accessible
Peer Sharing & Social Network

Relevant
Respected
Empowered
Inspired
Participatory
Social

Scientific Principles & Practice



For whom are we making our games and are they engaged by them?

**Co-design /
Co-creation**

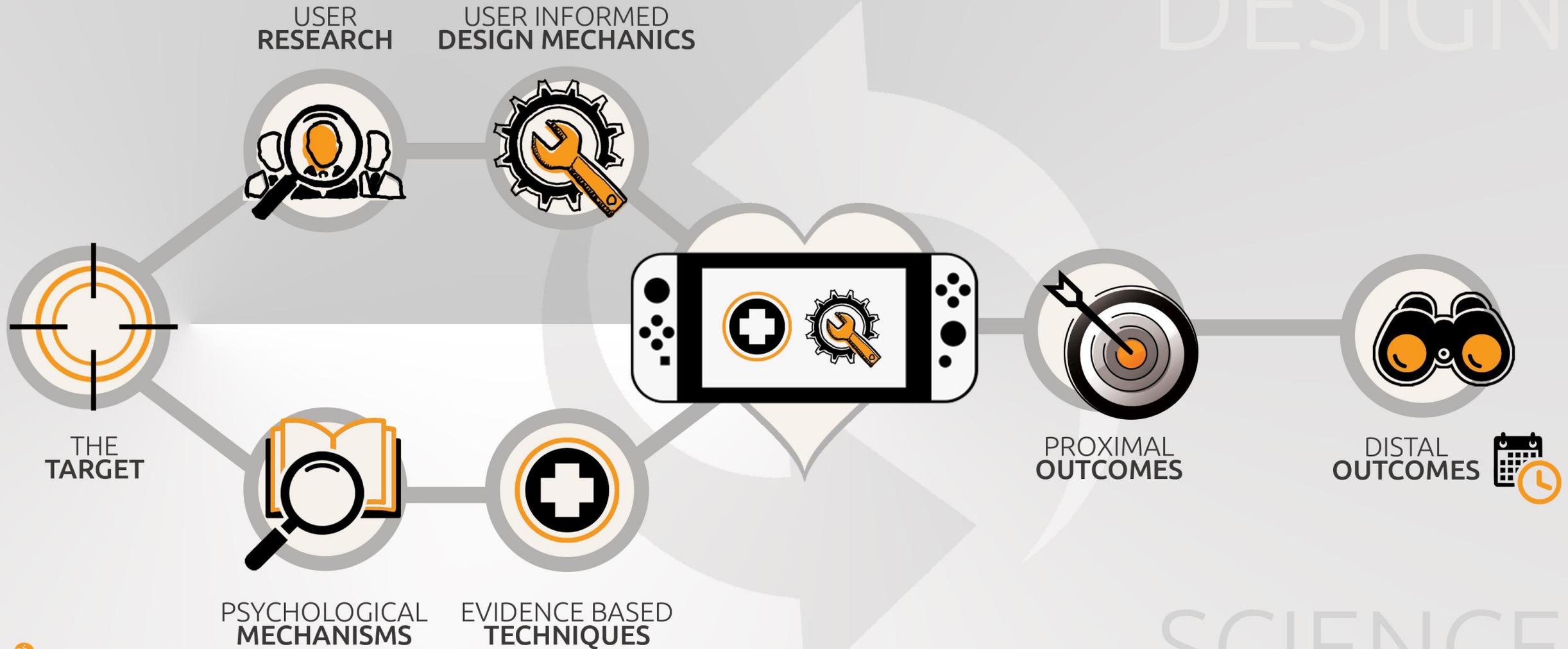




Interdisciplinary Science and Design Collaborators



Iterative science and design cycle





MINDLIGHT

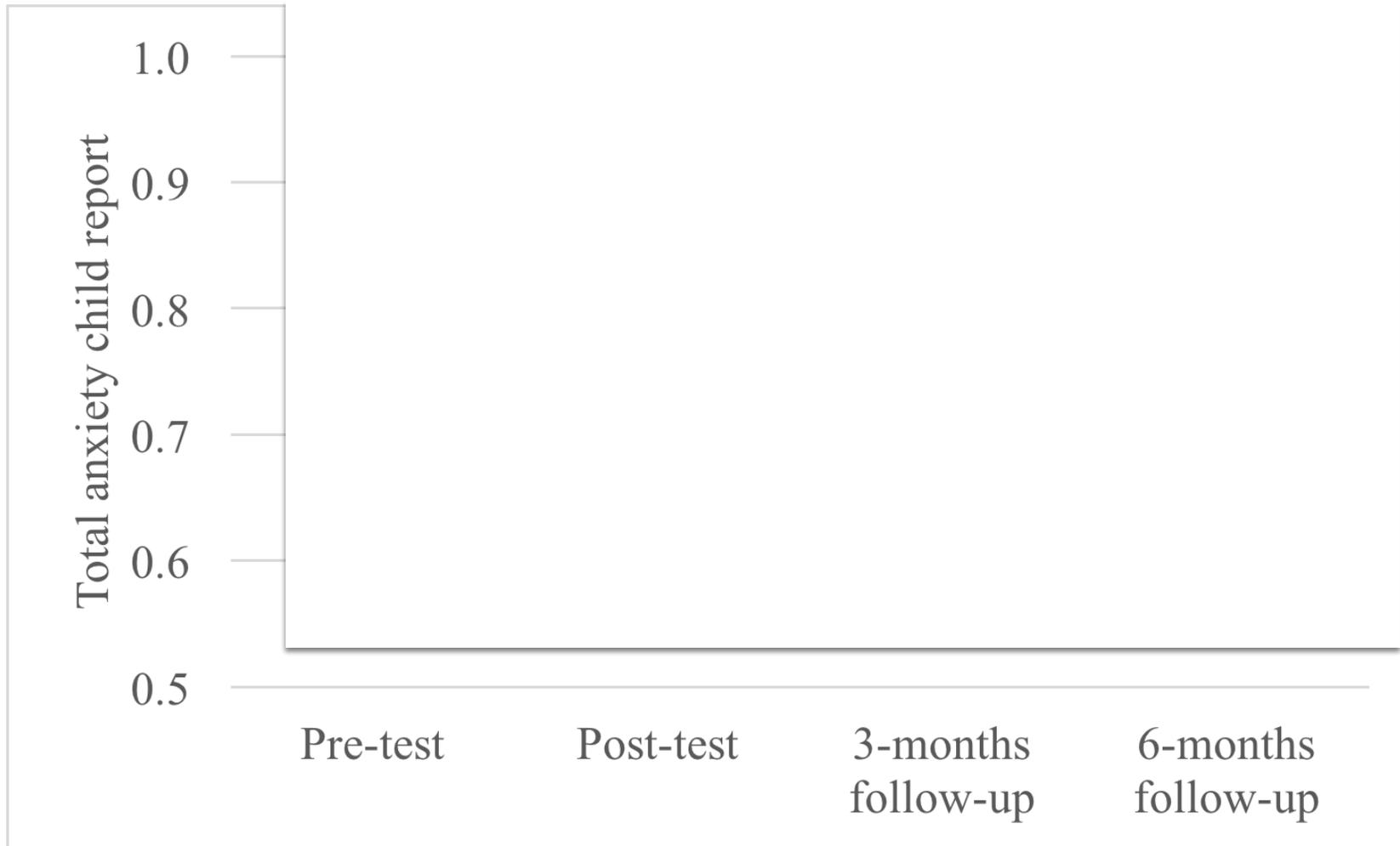


MindLight

Neurofeedback 3D video game to prevent and treat anxiety among children between 8 and 12 years of age through biofeedback and exposure



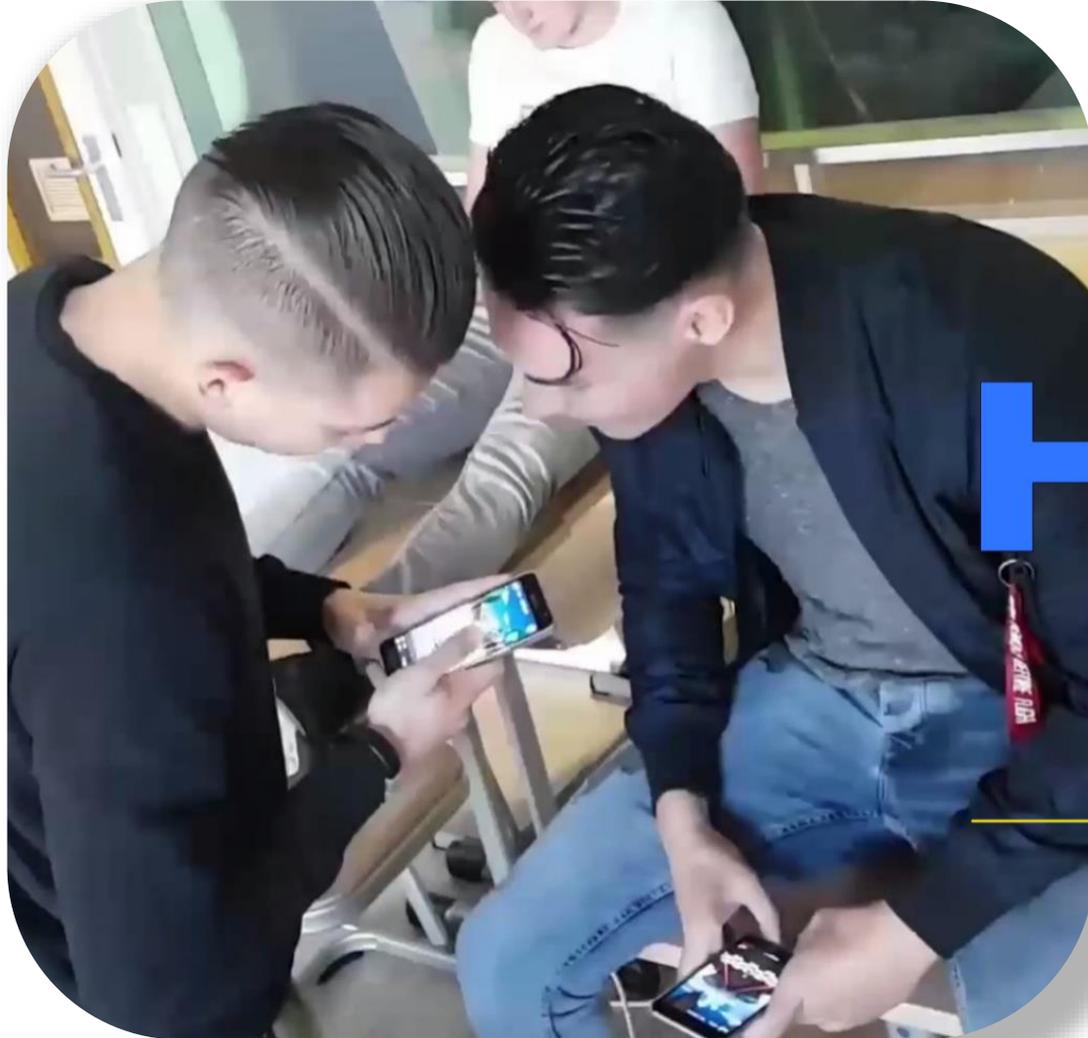
Mindlight: Outcomes & Transfer Prevention context



RCT
Non-inferiority Trial

Screening N > 1200
Selected N = 174



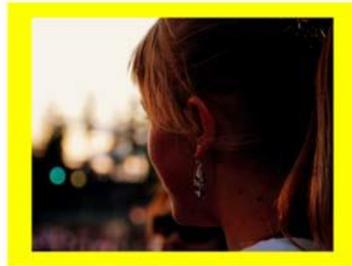


HIT -n- RUN

The logo for 'HIT-n-RUN' is positioned to the right of the photograph. It features the word 'HIT' in large, bold, blue capital letters. Below it, the word '-n-' is written in a smaller, black, lowercase font. To the right of '-n-' is a stylized white stick figure running to the right, with its arms and legs in motion. Below the entire graphic, the word 'RUN' is written in a large, yellow, cursive font. A horizontal yellow line is drawn under the 'RUN' text.

Scientific mechanisms of change

Impulse control training

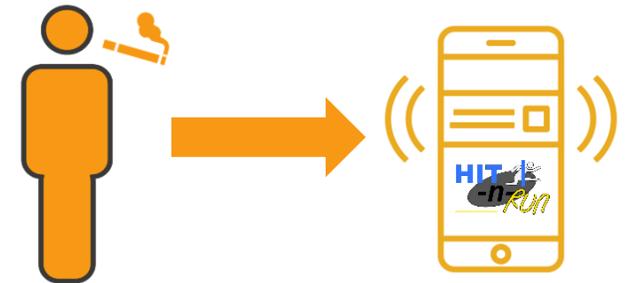


Individual approach

Create supportive network of peers



Just-in-time intervention



Take social/peer context into account

Youths' needs and wishes

XP +0%

00:00.79

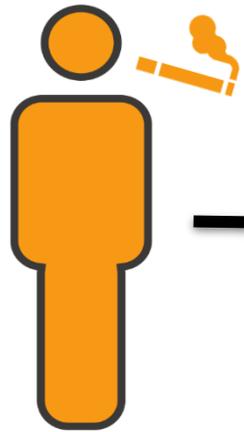


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Preview mode

Stage 3

x1
0

Study design

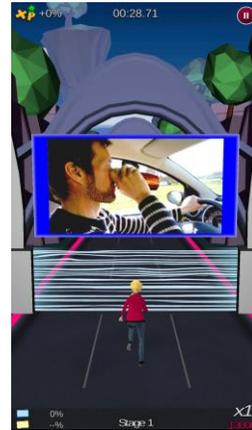


55% female

Average age 19

56% low education level

Pre-test



Intervention period
4 weeks



Post-test



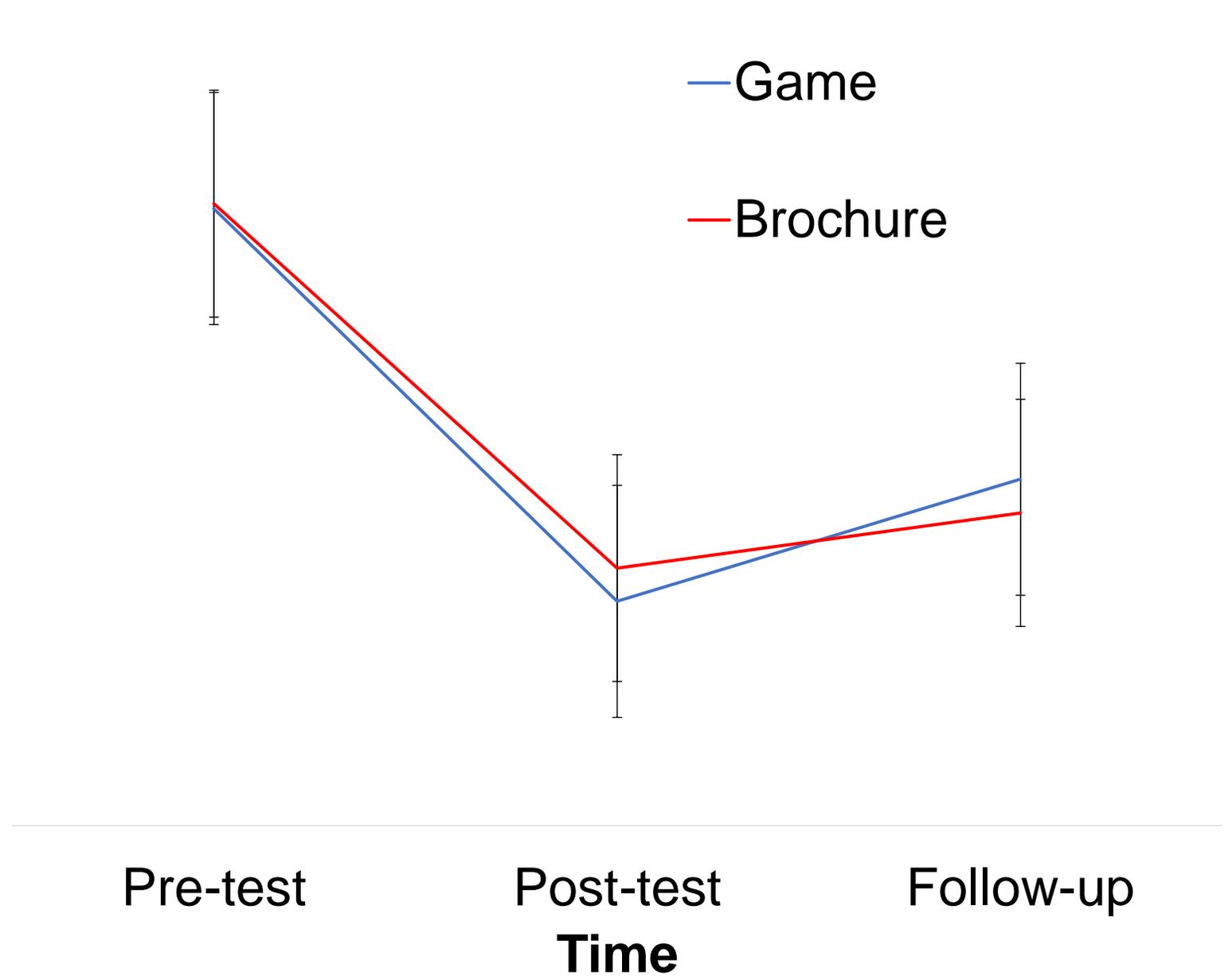
3 month follow-up



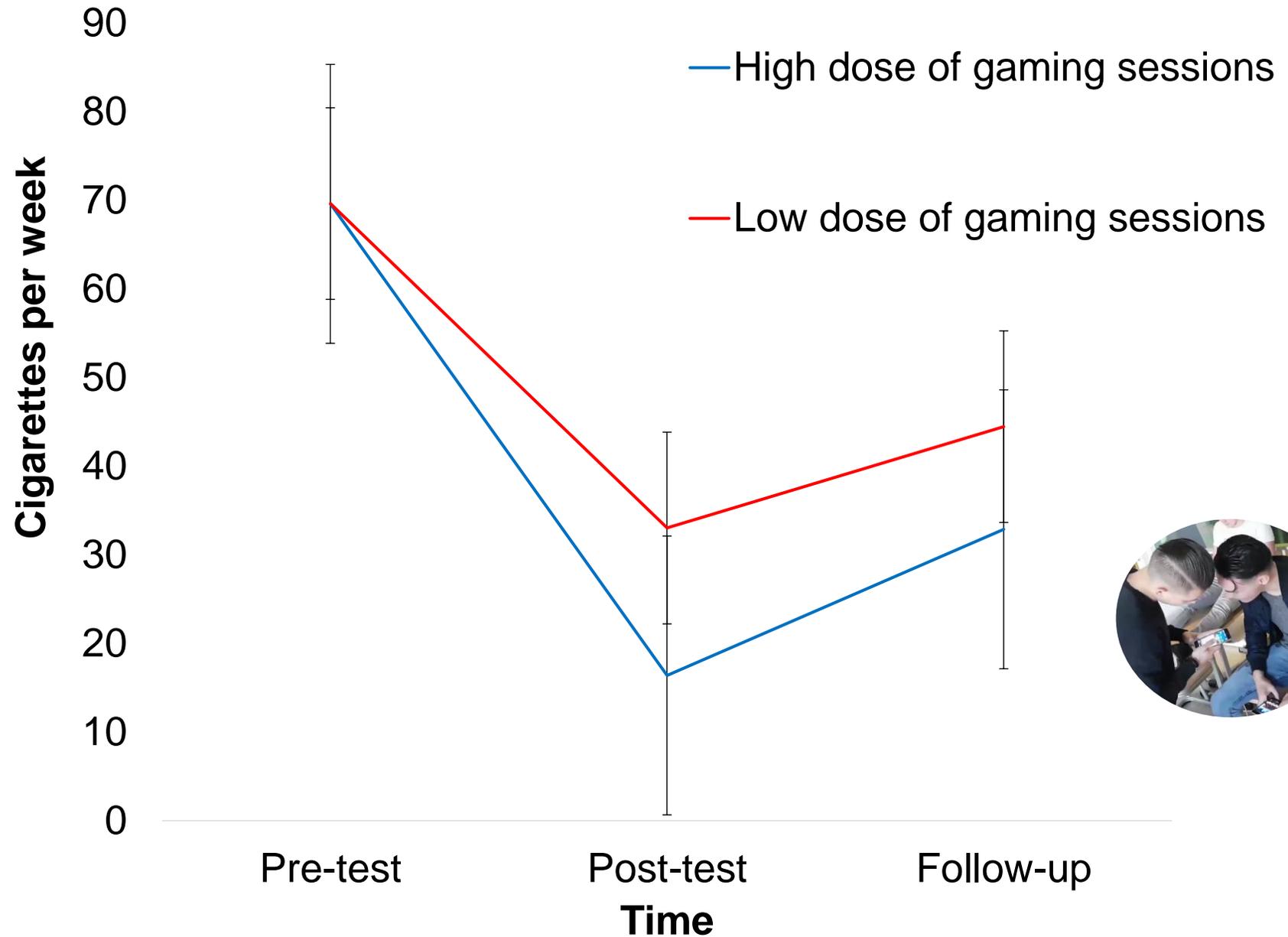
Scholten et al., 2019; *Developmental Psychopathology*

Number
of
cigarettes
per week

Cigarettes per week



Game group





PLUGINS



TEMPLATES

TOOLS

Human Factors 

"Maturity is achieved when a person accepts life as full of tension."
- Joshua L. Liebman

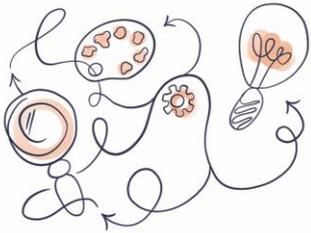
Value Balancing

What. Which values do you want to instill in the project that you're building and how do you balance different—sometimes contrasting—values? Reflecting on this will help make sure your project keeps going in the direction you envision.

When. To be used first in the Define Phase. Return to regularly throughout the Explore Phase.

How. Consider where you and your project fall on a continuum between different values. Examples of value continuums include *Flexibility vs. Rigor*, *Competition vs. Cooperation*, *Generalism vs. Specialism*, and *Structure vs. Chaos*.

BLOOMBOX
TOOLKIT FOR TRANSFORMATIVE TECH

Knowledge IP 

"Clarity affords focus."
- Thomas Leonard

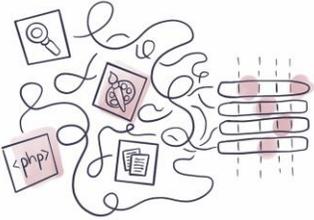
Science-to-Outcomes

What. The Science-to-Outcomes tool helps you clarify which scientific mechanisms, evidence based techniques, and design mechanics are required to reach your desired outcomes. Once these are defined, the process of iteration starts, and science and design will work in parallel towards an effective and engaging product.

When. To be used in the Define Phase.

How. Start by listing your desired outcomes (short and long term). Next, identify which psychological mechanisms can bring about each outcome. Last, implement engaging design principles to embody these mechanisms.

BLOOMBOX
TOOLKIT FOR TRANSFORMATIVE TECH

Action Based 

"Plans are nothing; planning is everything."
- Dwight D. Eisenhower

Interdisciplinary Planner

What. Many different professionals will be involved in your tech-for-wellbeing project, such as designers, developers, and stakeholders. The Interdisciplinary Planner helps keep everyone's journey and milestones clear and organized.

When. To be created in the Define Phase, and updated throughout the entire Project.

How. Start by defining important (external or internal) deadlines, which will inform your milestones. Then consider which expertises you will be needing in your team, and what team members' tasks will be.

BLOOMBOX
TOOLKIT FOR TRANSFORMATIVE TECH

BLOOMBOX
TOOLKIT FOR TRANSFORMATIVE TECH

Specialism and Structure vs. Chaos
Flexibility vs. Rigor
Competition vs. Cooperation
Generalism vs. Specialism

How: Consider where you and your project fall on a continuum between different values. Examples of value continuums include Flexibility vs. Rigor, Competition vs. Cooperation, Generalism vs. Specialism, and Structure vs. Chaos.

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BLOOMBOX
TOOLKIT FOR TRANSFORMATIVE TECH

mechanisms
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Thanks for listening!



www.gemhlab.com



@GEMH_Lab



GEMH sessions

Short documentary GEMH Lab:

<https://www.youtube.com/watch?v=nDBrm1qCIEU>



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