

Gamification of Health

TIE-40306 – Lecture 9

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Agenda

- Health & Well-being, Improvement of Health, and Games in Health
- Serious Games, Gamification, and their use in health
- Research on Gamification of Health

What is health?



Health

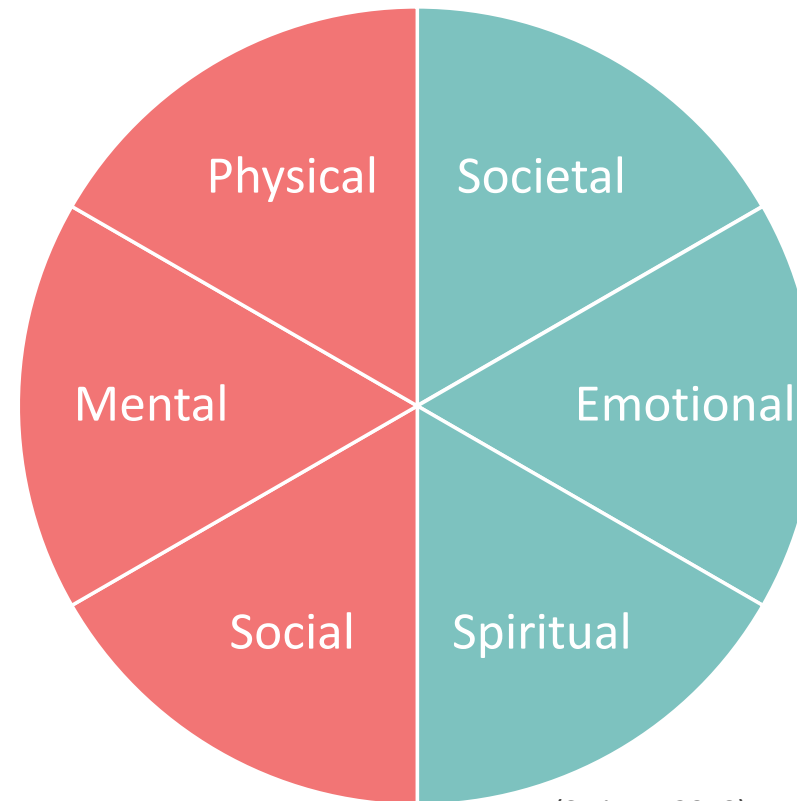
“Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”

- (WHO, 2006)

Health

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(Scriven, 2010)

Well-being



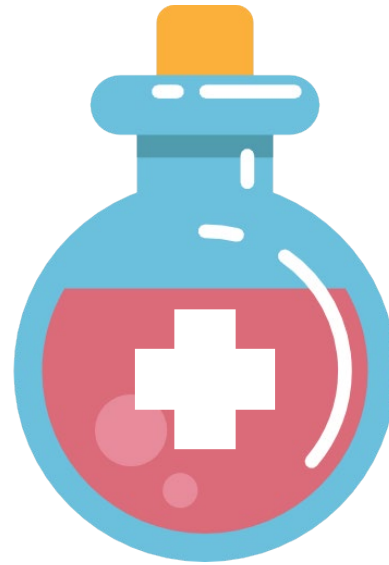
- Well-being is a practice that derives from the wellness mindset.
- It is about choosing to *prosper* and grow.
- It owes much to the school of thought known as *eudaimonia**

**LIVE LONG
& PROSPER**

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* Greek word for flourishing or happiness.

Health Improvement & Maintenance



“Health improvement is the enhancement of individual control over health and improvement of self-health” - WHO, 1986

Theories and models in health behaviors, education, and promotion

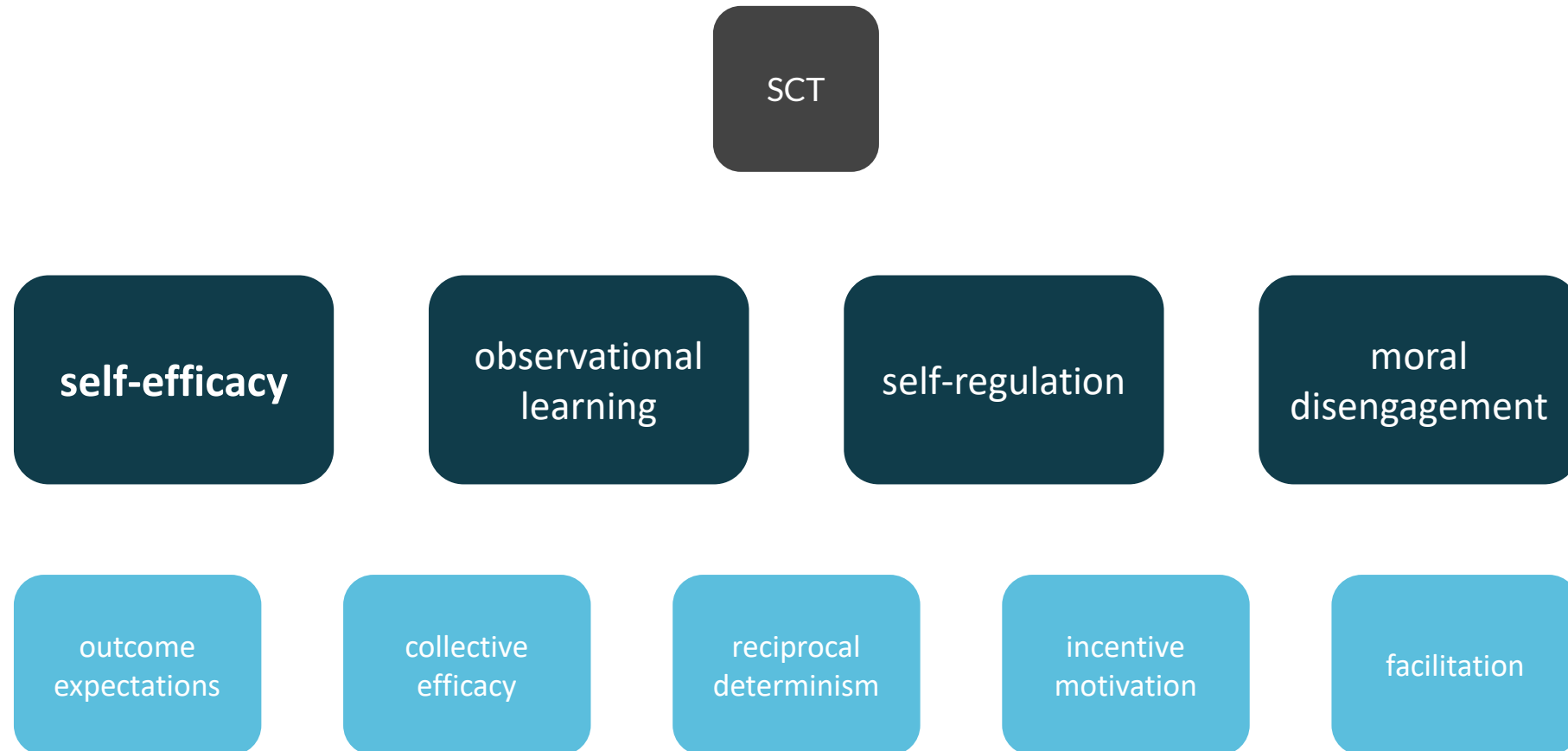
- **Self-Determination Theory**
- **Social Cognitive Theory**
- **Inoculation Theory**
- **Elaboration Likelihood Model**
- **Self-Modelling Theory**
- **Self-Care Deficit Nursing Theory**
- **Transition Theory**
- **Health Belief Model**
- **Theory of Planned Behavior**
- **Theory of Reasoned Action**
- The Transtheoretical Model
- Social Support and Social Networks,
- Social Marketing
- Diffusion of Innovations
- Stress and Coping
- Ecological Model/Social Ecology

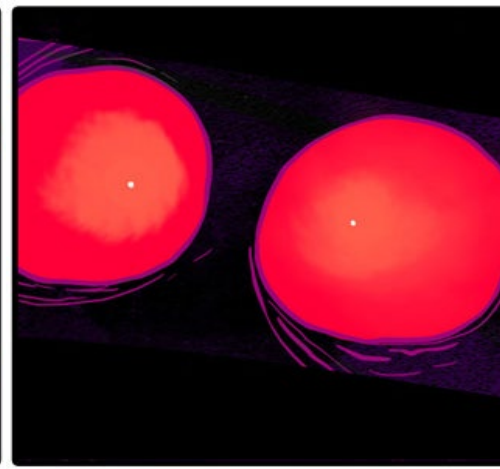
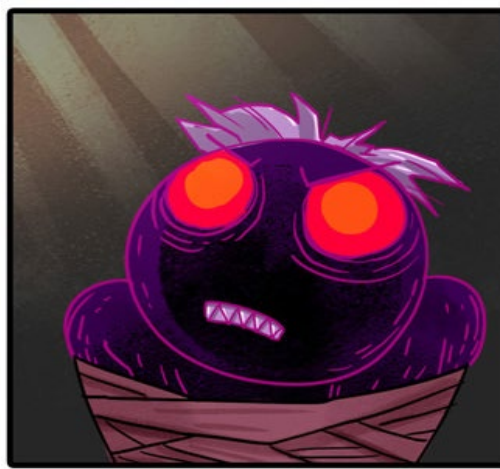
- Theories and models that used in health games the most
- Theories and models that used in health games seldomly
- Theories that used in health education and behaviors



Social Cognitive Theory

(Bandura, 1977)





Serious Games, Gamification, and their position in Health





What is Serious Games?



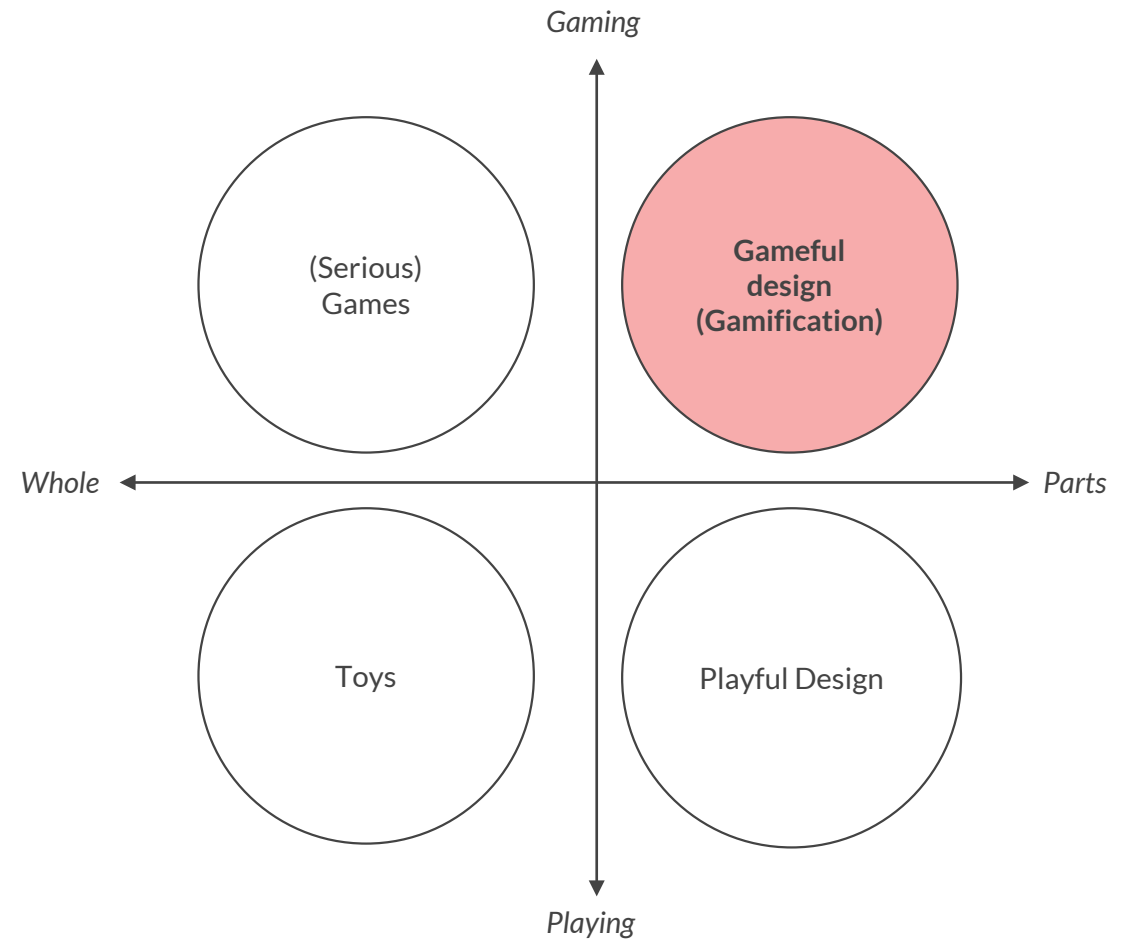
*“All entertainment games, which can be reapplied for a different mission other than entertainment or any computerized game whose main mission is not entertainment.”
(Sawyer, 2007)*

Let's Discuss Serious Games!

Can we differentiate serious games from gamification?

Common attempts to position gamification and serious games

	Game Thinking	Game Elements	Game Play	Just for Fun
Game Inspired Design				
Gamification				
Simulation / Serious Games				
Game				



<https://www.gamified.uk/gamification-framework/differences-between-gamification-and-games/>

"Gamification" between game and play, whole and parts (Deterdind, S., et al. 2011)



Game Inspired Design + Game Thinking
or
Playful Design



Toys

Gamification and Serious Games – Which is what?

Both :

- for purpose(s) before entertainment (yet they still can be)
 - use game elements
 - adopt same theories
- aim to change user behavior



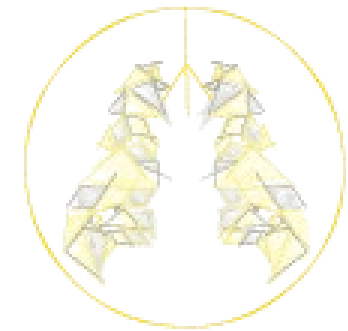
Serious Games Taxonomy

		GENRES						
		Games for Health	Adver-games	Games for Training	Games for Education or Edutainment	Games for Science and Research	Production	Games as Work
DOMAINS	Government & NGO	Public Health Education & Mass Casualty Response	Political Games	Employee Training	Inform Public	Data collection / Planning	Strategic & Policy Planning	Public Diplomacy Opinion Research
	Defense	Rehabilitation & Wellness	Recruitment & Propaganda	Soldier/Support Training	School / House Education	War-games / planning	War planning & weapons research	Command & Control
	Healthcare	Cyber therapy / Exergaming	Public Health Policy & Social Awareness Campaigns	Training Games for Health Professionals	Games for Health Education and Disease Management	Visualization & Epidemiology	Biotech manufacturing / design	Public Health Response Planning & Logistics
	Marketing & Communication	Advertising Treatment	Advertising marketing with games, product placement	Product Use	Product Information	Opinion Research	Machinima	Opinion Research
	Education	Inform about diseases/risks	Social Issue Games	Train teachers / Train workforce skills	Learning	Computer Science & Recruitment	Documentary (?)	Teaching Distance Learning
	Corporate	Employee Health Information & Wellness	Customer Education & Awareness	Employee Training	Continuing Education & Certification	Advertising / visualization	Strategic Planning	Command / Control
	Industry	Occupational Safety	Sales / Recruitment	Employee Training	Workforce Education	Process Optimization Simulation	Nano / Biotech Design	Command / Control

(Sawyer & Smith, 2008)

Serious Games + Health = **HEALTH GAMES**

Use of Serious Games in Health Context

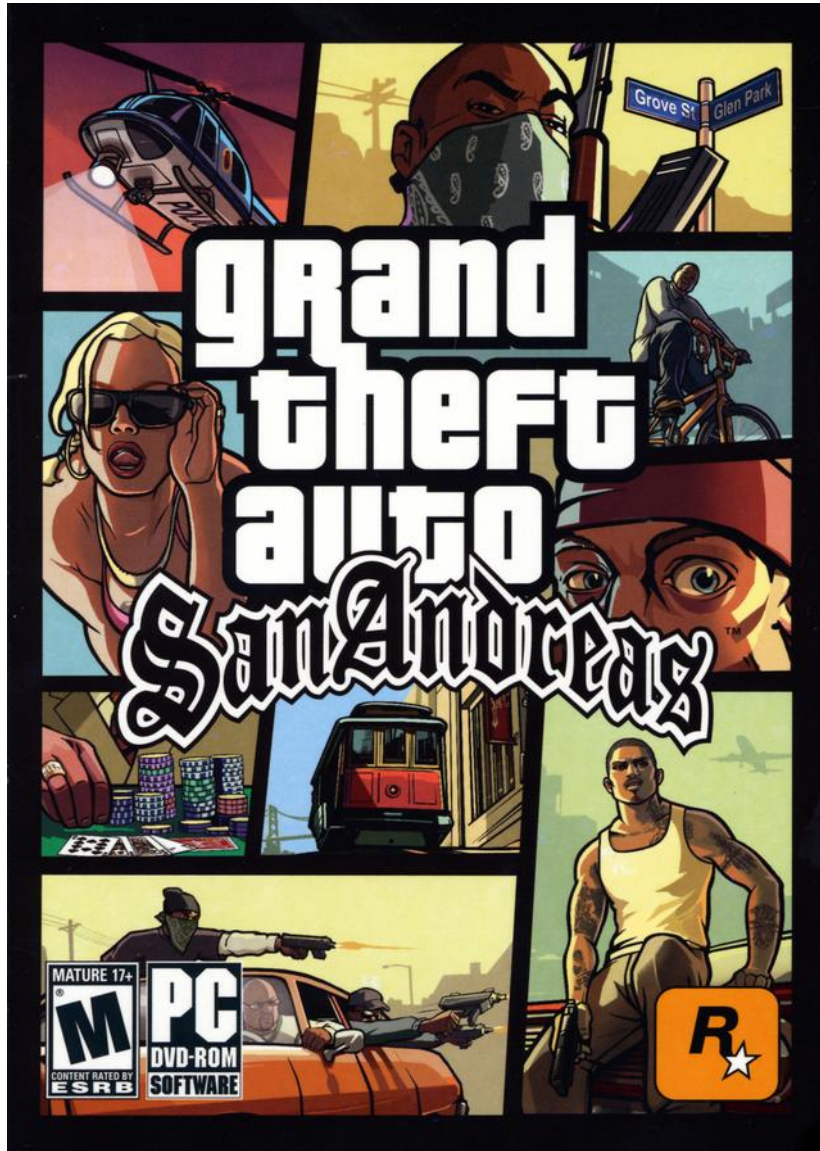


Asthma Command

THE
ASTHMA FILES



Can it be the other way around?



Let's Discuss Gamification!

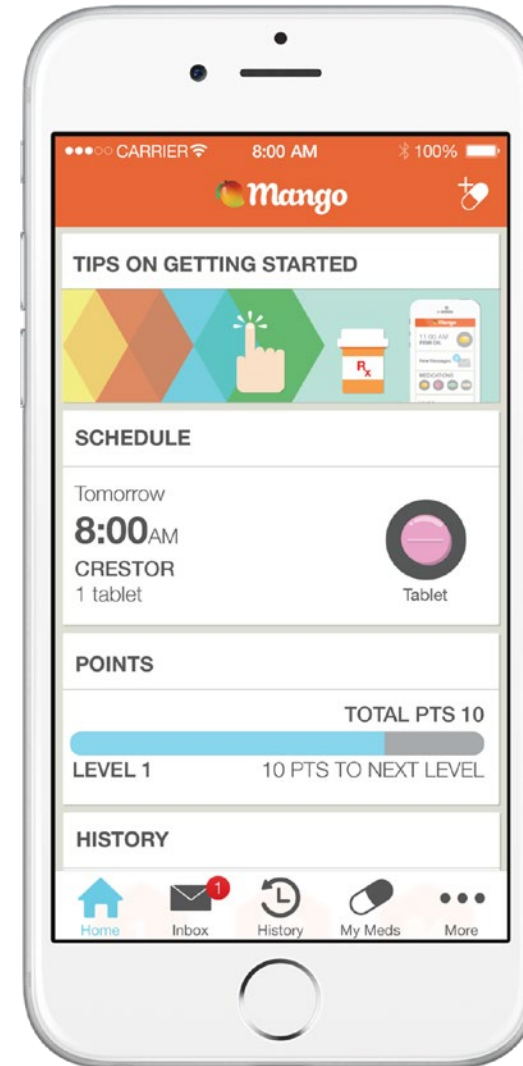
Have you ever used any **gamified health application**? If so tell us about **your experiences**? What **elements** you liked most and why?

Medicine Management

Mango Health

<https://www.mangohealth.com/>

- record a medication list and receive **reminders**
- summaries of their medication use **progress**
- **guidance** on how to identify and manage drug interactions
- **points system** that enters users in a weekly raffle for prizes
- No social or professional medical support



Diabetes Management



MySugr

<https://mysugr.com/>

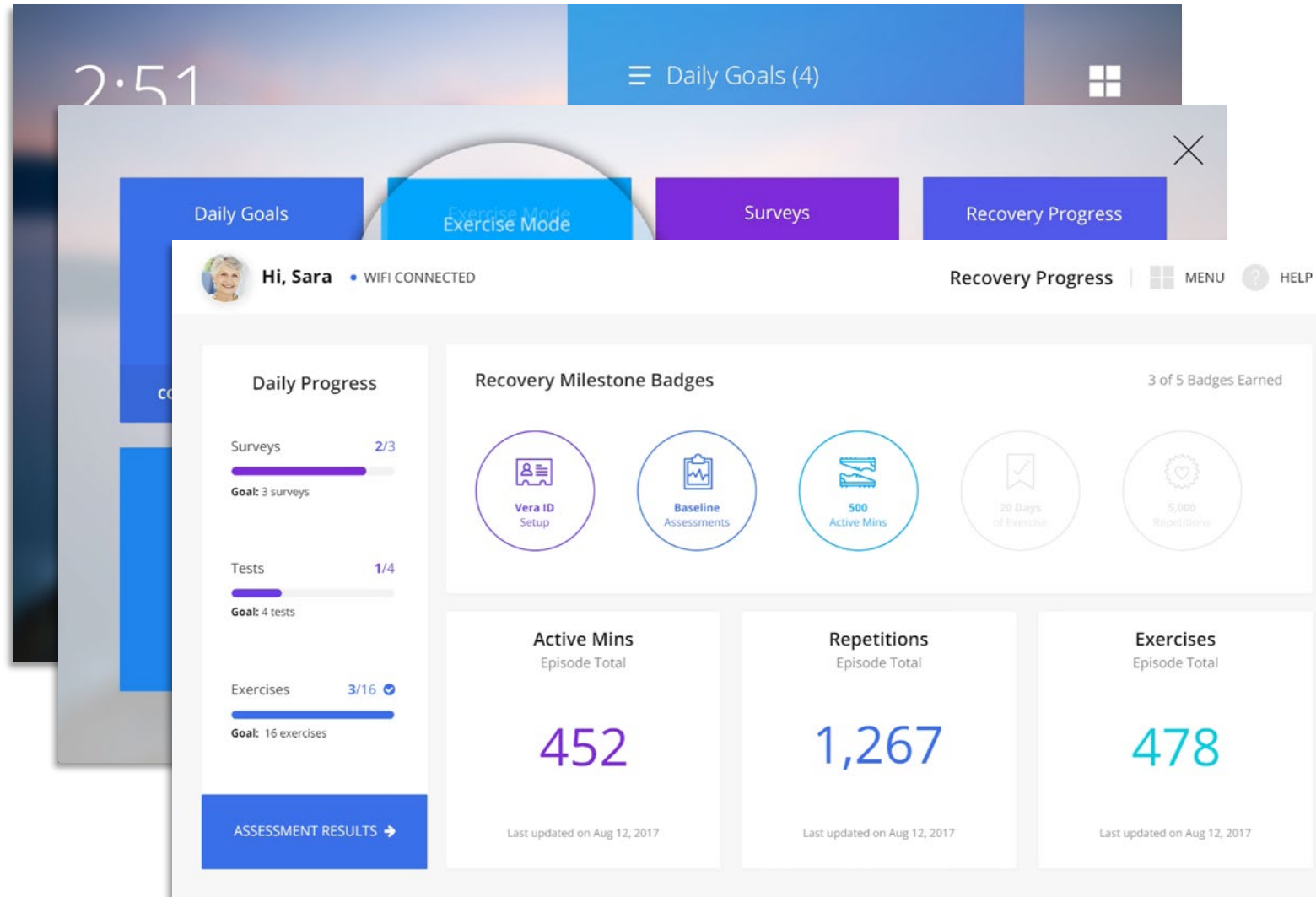
- **Guidance** with a monster companion
- Tracking by Accu-check device, through food photos, manual entries
- **Feedback** and **reminders** according to status quo

Recovery Management

ReflexionHealth – VERAHome

<http://reflexionhealth.com/theverasystem>

- **Guidance** through actual health professionals and **videos**
- **Goal** settings
- **Feedback** and **reminders** according to status quo
- **Social** support via friends, family and personal health professionals
- **Badges** for rewarding positive behavior

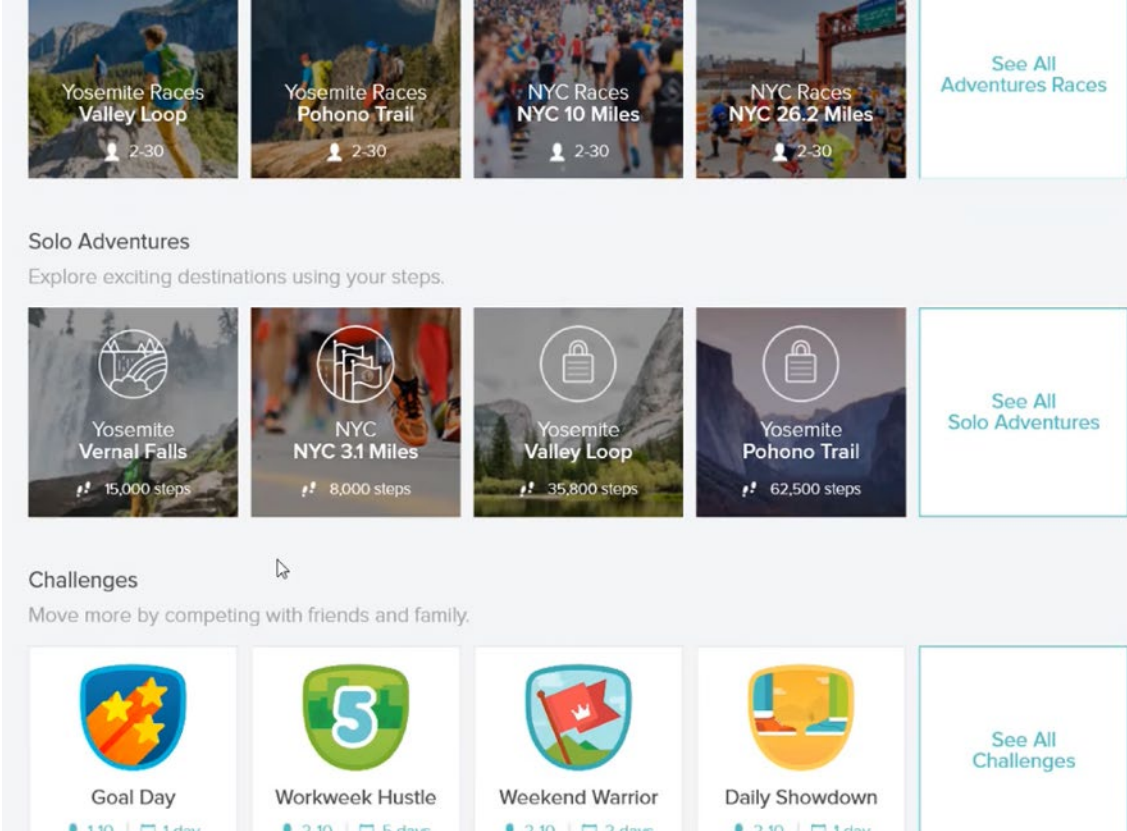


Physical Activity, Exercise, & Fitness

Fitbit

<https://www.fitbit.com/app>

- **Tracking** by sports tracker
- **Feedback** according to status quo
- **Challenges** according to personal preferences
- **Goal settings** for achievements
- **Social support** through online groups
- Detailed **progress** indicators according to physical activity, exercise, and fitness practices
- **Reminders** and notifications
- **Leaderboards** for competitive motivation

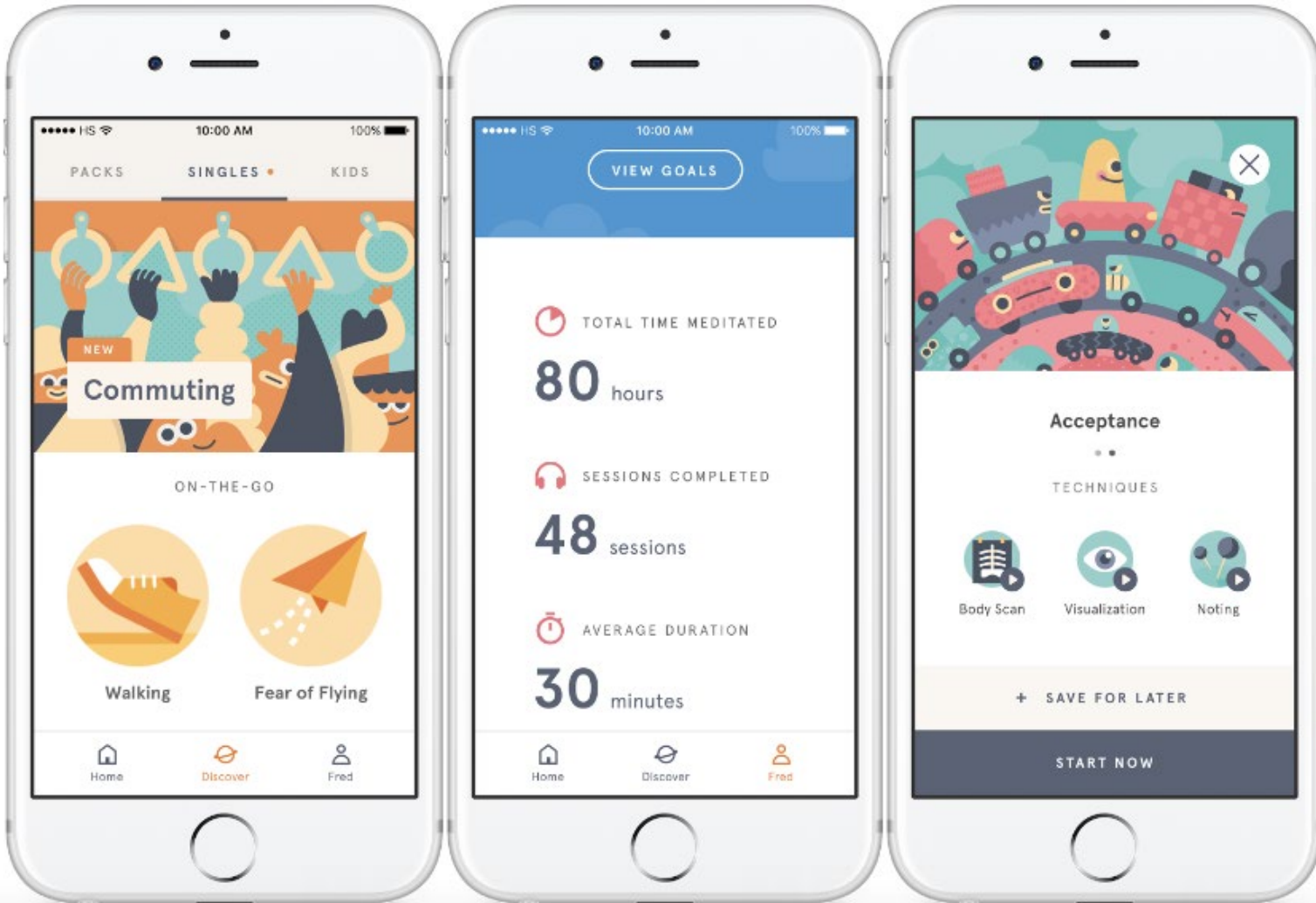


The screenshot displays the Fitbit app interface with three main sections: "Adventures Races", "Solo Adventures", and "Challenges".

- Adventures Races:** Features four race options, each with a "2-30" duration icon and a "See All Adventures Races" link.
 - Yosemite Races Valley Loop
 - Yosemite Races Pohono Trail
 - NYC Races NYC 10 Miles
 - NYC Races NYC 26.2 Miles
- Solo Adventures:** Features four solo adventure options, each with a step count and a "See All Solo Adventures" link.
 - Yosemite Vernal Falls (15,000 steps)
 - NYC NYC 3.1 Miles (8,000 steps)
 - Yosemite Valley Loop (35,800 steps)
 - Yosemite Pohono Trail (62,500 steps)
- Challenges:** Features four challenge options, each with a duration and a "See All Challenges" link.
 - Goal Day (1-10 | 1 day)
 - Workweek Hustle (2-10 | 5 days)
 - Weekend Warrior (2-10 | 2 days)
 - Daily Showdown (2-10 | 1 day)



Guided Meditation



Headspace

<https://www.headspace.com/>

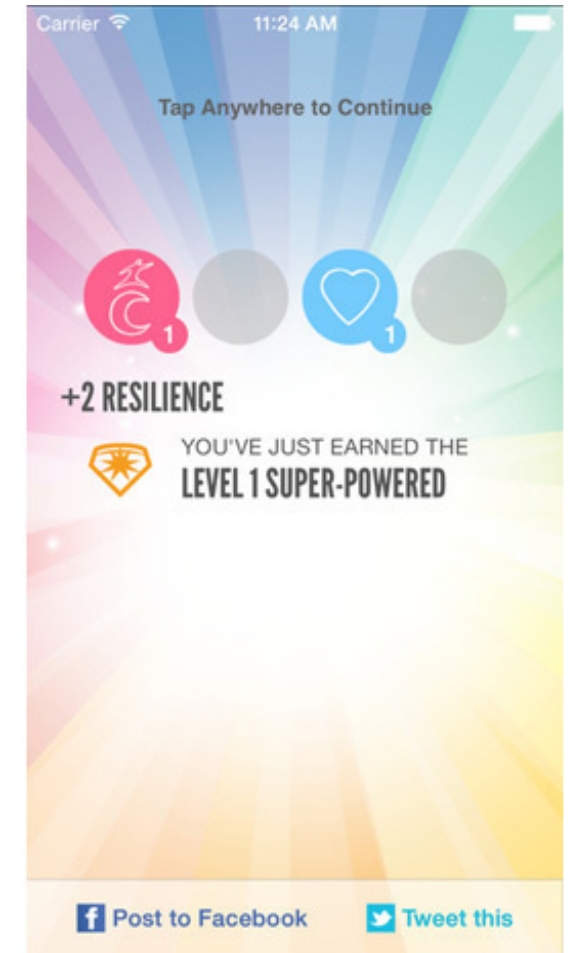
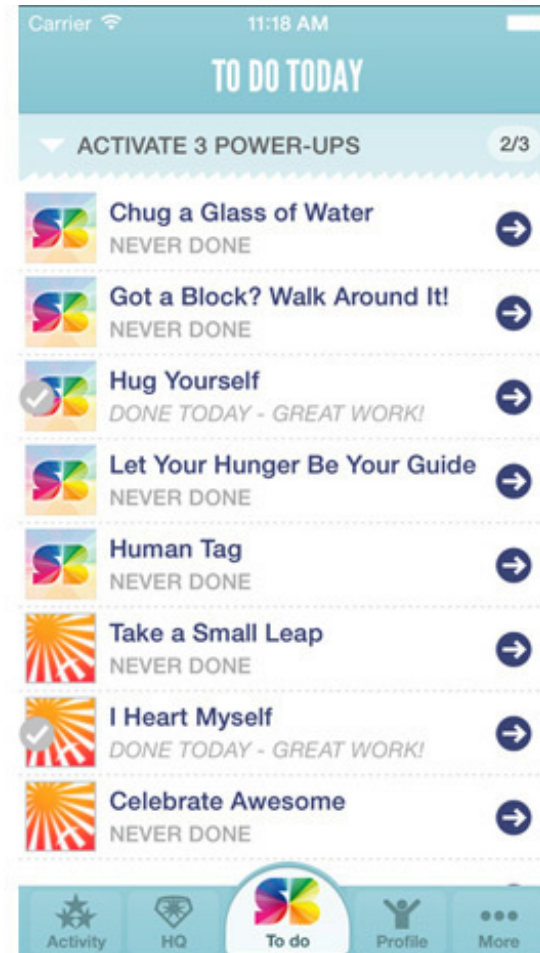
- Statistics on **progress** & run streak
- Friends feature for **social** support among friends
- **Levels** for learning and progressing
- Reminders and notifications
- **Targets** and **goals** to achieve
- **Badges** for rewarding the use continuity
- **Guidance** through companions

Quality of Life Improvement

Super Better

<https://www.youtube.com/watch?v=lfBpsV1Hwqs>

<https://www.superbetter.com/>



Gamification of Health Research Examples



The Effect of Social Support Features and Gamification on a Web-Based Intervention for Rheumatoid Arthritis Patients: Randomized Controlled Trial

Ahmed Allam, PhD, Zlatina Kostova, PhD, [...], and Peter Johannes Schulz, PhD

- 157 patients of Rheumatoid arthritis, with the average age of 58
- Intervention through a web service called ONESELF with social features and game mechanics
- Social support + gamification showed increase in **physical activity**
- Decrease in the **use of health services** when there is social support and gamification
- Increase in **empowerment** when had access to social support or gamification
- Gamification increased the **use of service** when compared to the service without gamification

Gamification of Health Research Examples



Design of an mHealth App for the Self-management of Adolescent Type 1 Diabetes: A Pilot Study

Joseph A Cafazzo, PEng, MHSc, PhD, Mark Casselman, MSc, [...], and Mark R Palmert, MD, PhD

- 20 adolescents (N) with Type-I diabetes, with the average age of 15
- A diabetes management mobile app called “bant” (ios) + LifeScan glucometer has been used for the **12-week** study. The app has been design and developed with an iterative, user-centered approach
- Daily average frequency of blood glucose measurement increased by 50%
- 88% satisfaction indicating continue of use

Tutkimustuloksia

Computers in Human Behavior 50 (2015) 333–347



Contents lists available at [ScienceDirect](#)

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh



“Working out for likes”: An empirical study on social influence in exercise gamification

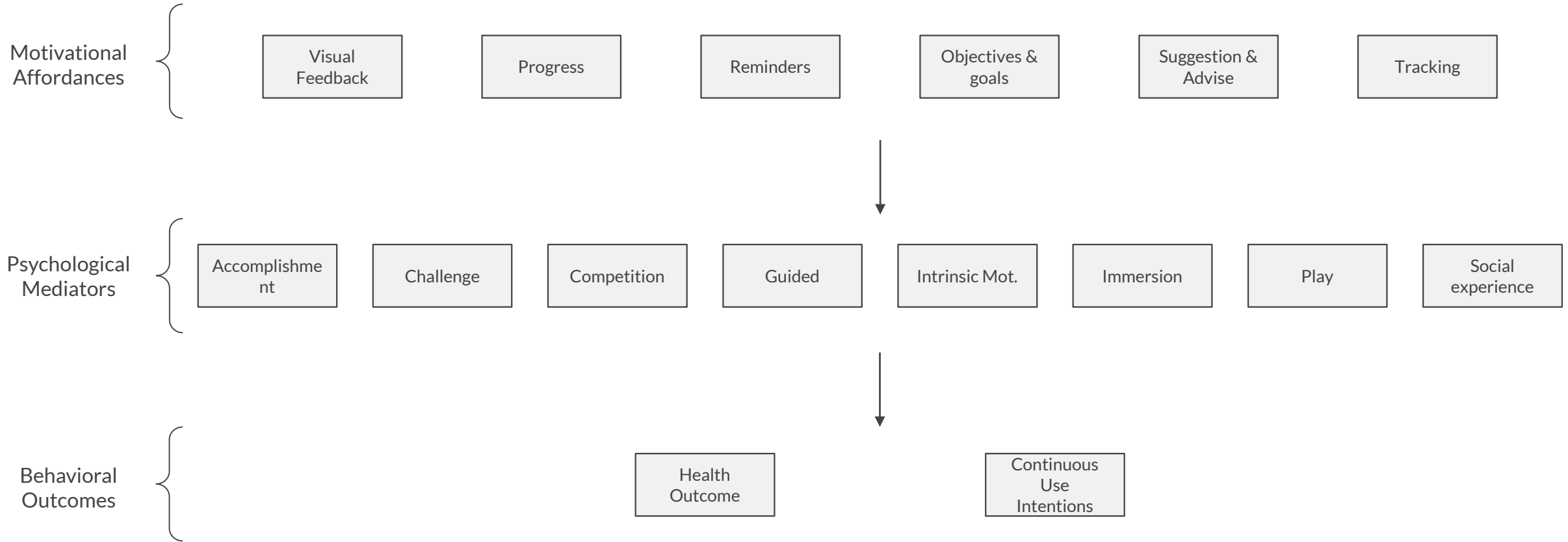
Juho Hamari, Jonna Koivisto*

Game Research Lab, School of Information Sciences, FIN-33014 University of Tampere, Finland



- 200 users of a sports application with the average age of 29
- Research has been done as a questionnaire regarding the use of Fitocracy application for its social elements
- Results show that the recognition, having mutual benefits and the social impact increase the willingness to **use the app further and continue to do sports**

My Research



Reading Recommendations

- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual review of psychology*, 52(1), 141-166.
- Hamari, J., Hassan, L., & Dias, A. (2018). Gamification, quantified-self or social networking? Matching users' goals with motivational technology. *User Modeling and User-Adapted Interaction*, 28(1), 35-74.
- Lister, C., West, J. H., Cannon, B., Sax, T., & Brodegard, D. (2014). Just a fad? Gamification in health and fitness apps. *JMIR serious games*, 2(2).
- Hamari, J., & Koivisto, J. (2015). "Working out for likes": An empirical study on social influence in exercise gamification. *Computers in Human Behavior*, 50, 333-347.
- **Suits, B. (2014). *The Grasshopper: Games, Life and Utopia*. Broadview Press.**



Gamification Group

GL! HF! ... GG!