



LECTURE FEB 5:

OUTCOME 1: BEHAVIOUR CHANGE

DESIGNING PERSUASIVE TECHNOLOGY

Motivation: [Self-Determination Theory on Wikipedia](#)

Design: Fogg, B.J.: [A Behavior Model for Persuasive Design](#). Persuasive'09, April 26-29, Claremont, California, USA.

Design: Harri Oinas-Kukkonen. [Behavior Change Support Systems: A Research Model and Agenda](#). Thomas Ploug, Per F. V. Hasle, Harri Oinas-Kukkonen (Eds.): Persuasive Technology, 5th International Conference, PERSUASIVE 2010, LNCS 6137, Springer 2010

Example of physical activity: Consolvo, S., Everitt, K., Smith, I., & Landay, J. A. [Design requirements for technologies that encourage physical activity](#). In proceedings of the Conference on Human Factors in Computing Systems (ACM SIGCHI) 457-466, (2006)

Example 2 with tailored feedback: Nathalie Colineau, Cecile Paris.: [Motivating reflection about health within the family: the use of goal setting and tailored feedback](#). UMUAI 21(4-5):341-376, 2011. (available within the university)

AREAS FOR BCSS (BEHAVIOUR CHANGE SUPPORT SYSTEMS)

- Smoking
- Drinking
- Obesity
- Diabetes
- Asthma
- Tinnitus
- Stress
- Anxiety
- Depression
- Complicated grief
- Insomnia
- Better sitting habits
- Healthier eating
- Greener energy behaviours
- Political debate
- ...

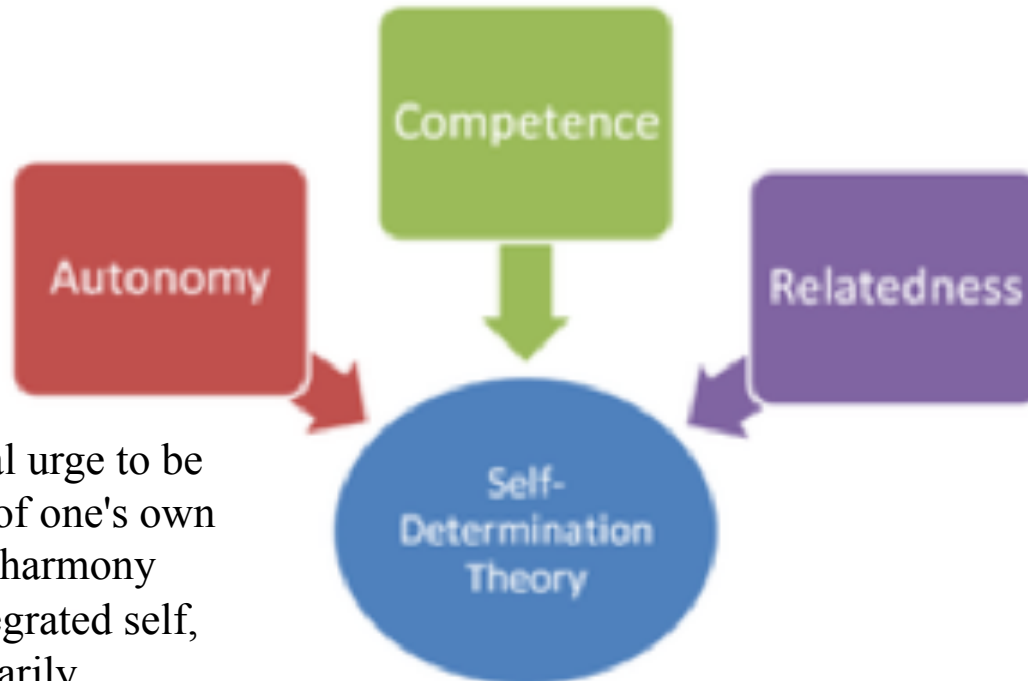
DEFINITION OF BCSS (BEHAVIOUR CHANGE SUPPORT SYSTEMS)

- ***"...is an information system designed to form, alter or reinforce attitudes, behaviours or an act of complying without using deception, coercion or inducements."***
- Persuasion relies on the user's voluntary participation in the persuasion process.
- Key software design requirement: BCSSs should always be transparent.

MOTIVATION

SELF-DETERMINATION THEORY: NEEDS

Refers to being effective in dealing with the environment in which a person finds oneself



Is the universal urge to be causal agents of one's own life and act in harmony with one's integrated self, but not necessarily independent from others

Is the universal want to interact, be connected to, and experience caring for others

SELF-DETERMINATION THEORY: MOTIVATION

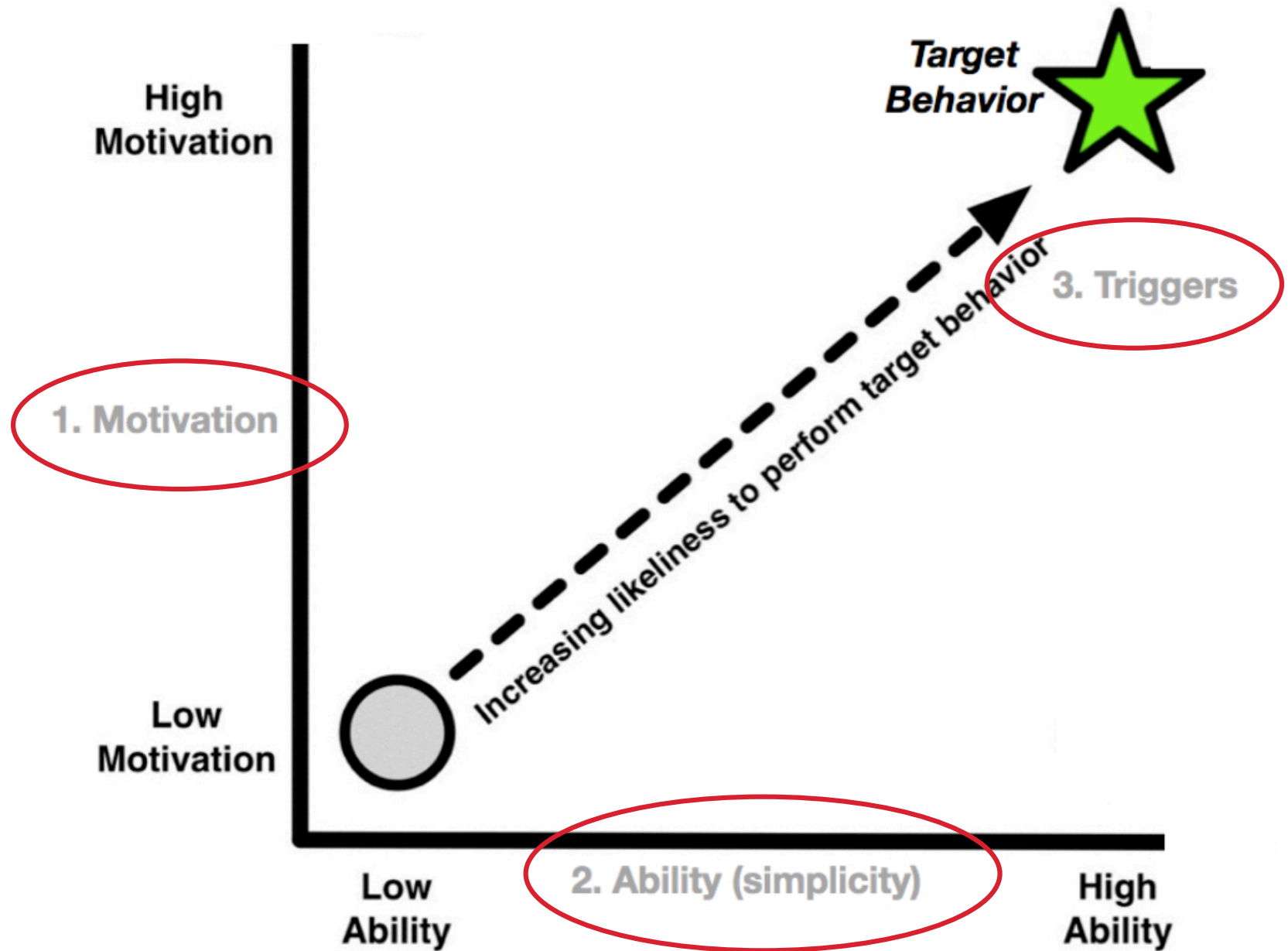
- Intrinsic motivation
 - Internal drives sprung from self (and the need for autonomy, competence, relatedness)
- Extrinsic motivation
 - Extrinsically motivated behaviours can be integrated into self (example: motivation to go to school)
 - Types:
 - Externally regulated behaviour (least autonomous, based on external reward or demand, external locus of control)
 - Introjected regulation of behaviour (internally driven but external locus of control, not perceived as part of self)
 - Regulation through identification (said action is accepted as personally important)
 - Integrated Regulation (regulations are fully assimilated with self so they are included in a person's self evaluations and beliefs on personal needs, but externally triggered)

USING TECHNOLOGY TO PROMOTE INTRINSIC MOTIVATION

- Navigability builds competence
- Interactivity builds relatedness
- Customization builds autonomy

Sundar et al. **Designing Motivational Technology for Inspiring Preventive Health Behaviours.**
INTERACT workshop 2011, Promoting and Supporting Healthy Living by Design.

A BEHAVIOR MODEL FOR PERSUASIVE DESIGN “FBM”



TRIGGERS AND TIMING

- Spark
 - Highlight fear or inspire hope to increase motivation
- Facilitator
 - Makes the behaviour easier to do, increase ability
- Signal
 - Serves as a reminder to those who have both motivation and ability

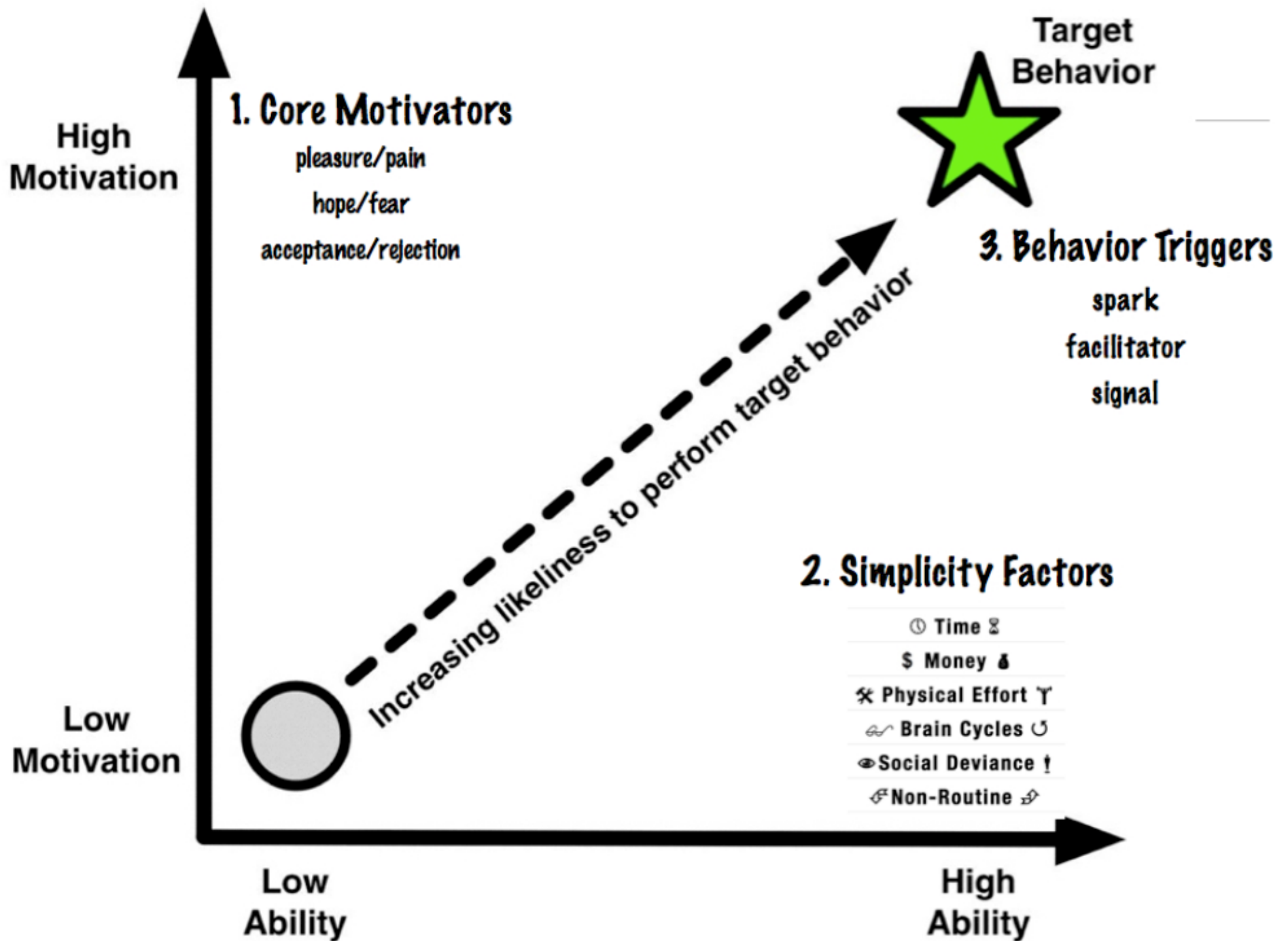


Figure 2: All three factors in the Fogg Behavior Model have subcomponents.

PREVENTION

- What about **inhibiting** behaviour through removing one of the factors or triggers...

SUMMARY

- Rapid spreading of persuasive technology
- Need for understanding mechanisms and effectiveness of persuasive agents
- Great potential for serving human wellbeing, e.g., health, sustainable social responsibility, empowerment
- Need for ethics and regulation, e.g., in commercial and ideological domains.

EXAMPLE 1: VIBRATING MACHINES – APP FOR SUPPORTING HEALTH DEVELOPED BY “END USERS”

- FBM: motivation, ability and triggers
 - (*ethics*) whether the potential evoking of fear of risks was motivated by the potential gains was extensively discussed
 - A worker may be motivated by the possibility to decrease pain, gain hope to improve their work environment so that they may be able to continue being a productive colleague in a collaborative work environment where work is heavily dependent on teamwork (social acceptance vs. potential rejection by their work community)
 - Simplicity was strived for in the design process, and the timing of the three (motivation, ability and trigger) was taken into consideration and accomplished in the health checkup situation.
- Functional Triad: concepts such as tailoring, intervening, self-monitoring, cause-and-effect were extensively used, and integrated in the design to different extent
 - (*tool perspective*) reduction, tunneling, tailoring, self-monitoring,
 - (*medium perspective*) cause-and-effect

EXAMPLE 2:

BEHAVIOUR CHANGE IN DEMENTIA DIAGNOSIS

- Increased use of validated assessment instruments (MMSE)
- Changed procedure:
 - Physician interviewed the patient, relatives and nurses/ care personnel to larger extent
 - Physician re-organised his assessment following the structure of the application
- Increased knowledge about borderline cases
- Unexpected use:
 - Physician showed the application's feedback to a worried patient (was not designed to suite this purpose)

Lindgren H. (2011) **Towards personalized decision support in the dementia domain based on clinical practice guidelines.**
User Modeling and User-Adapted Interaction 21(4):377-406.

ETHICAL ISSUES

- What if:
 - The application would tailor the feed-back to the physician based on the physician's performance over a set of patient cases?
 - Pattern recognition technology to detect faulty reasoning patterns
 - Case-Based Reasoning to provide suggestions of how physicians typically interpret a similar case
 - Benefits:
 - Patient would gain better treatment and care
 - Physician would gain new knowledge (empowerment)
 - Obstacle:
 - Physician targeted for detecting "misbehaviour"