



Wellbeing Tech in HCI and CSCW

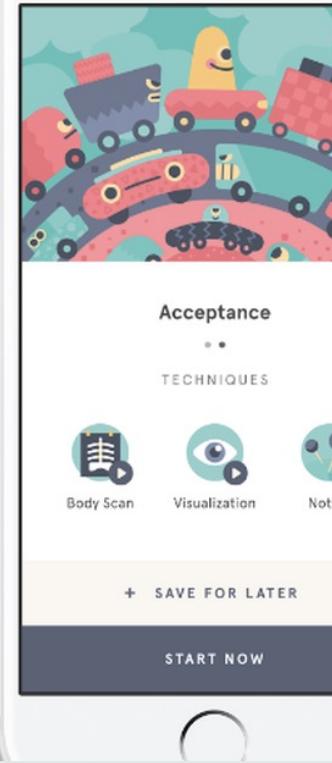
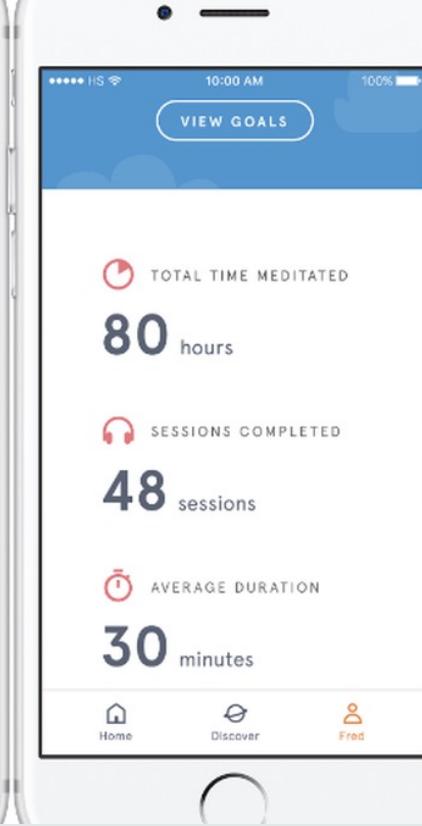
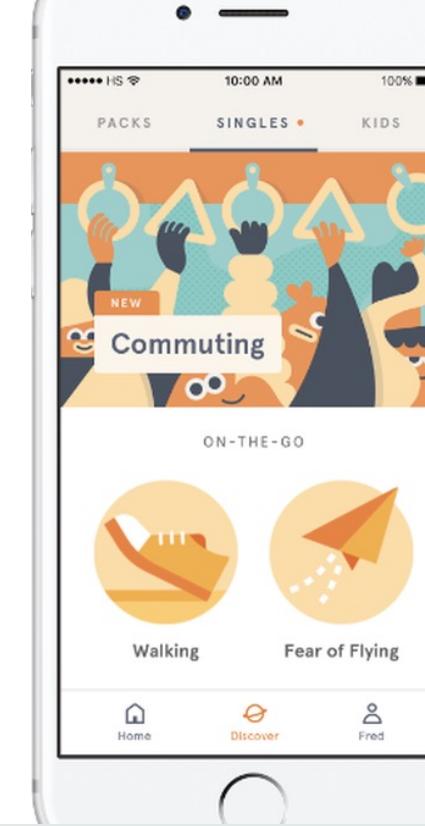
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RECAP

- + **CSCW** = Computer Supported Cooperative Work ≠
- + **HCI** = Human-Computer Interaction
- + But - overlaps!



What are Wellbeing Technologies?

- + Usually seen in Health domain:
- + **FitBit**, Smartphone **Fitness Trackers**, **Mindfulness** apps etc.

What do wellbeing technologies do?

- + **(Peters, Calvo & Ryan 2018)** Wellbeing technology is designed to help its users by promoting: “[positive] deliberate[], or inadvertent[] psychological wellbeing” (states of mind).

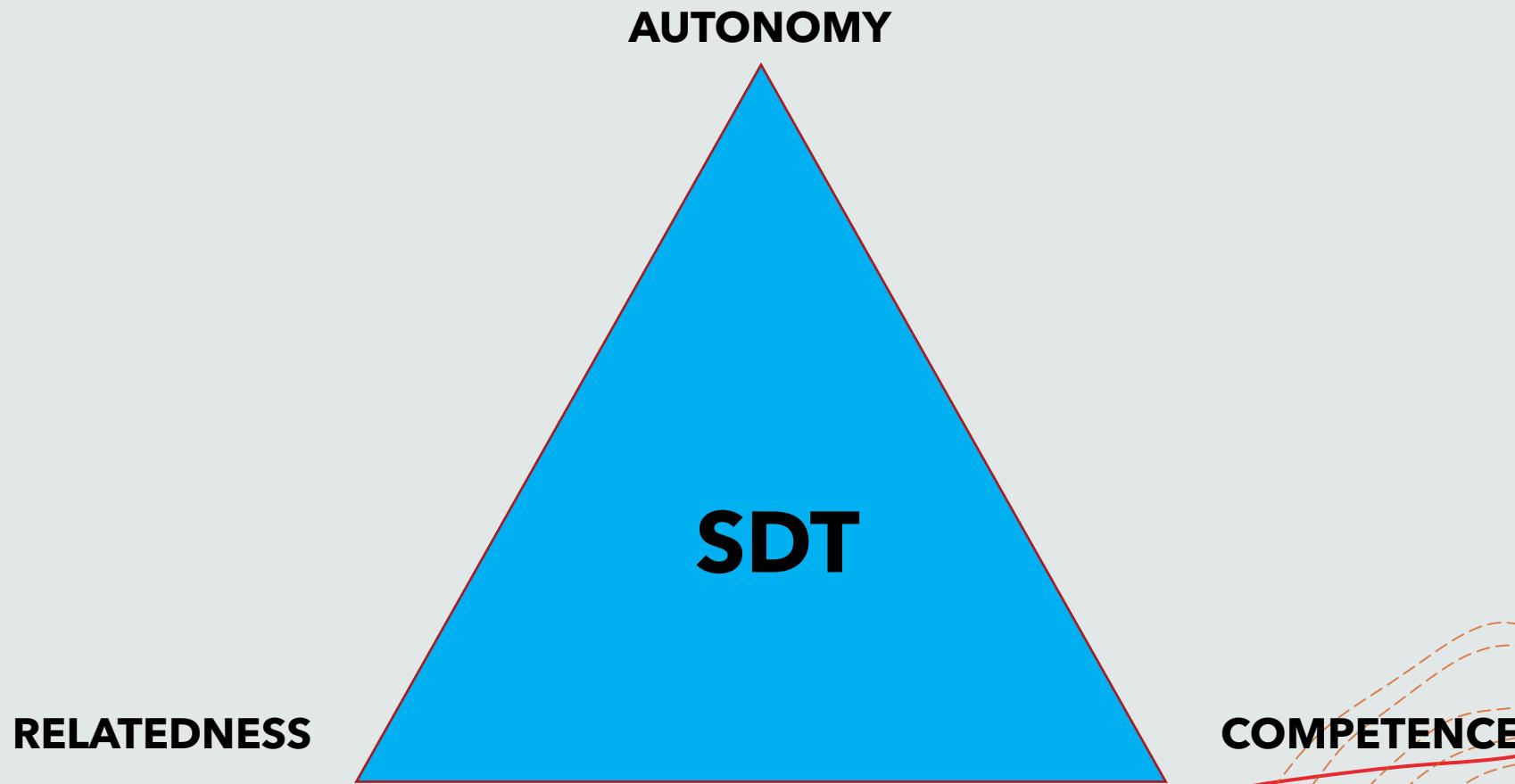
What do wellbeing technologies do?



- + Draws on “positive psychology”: framing thoughts to help people have:
 - + Better **quality of** experiences
 - + To help them positively **engage** with their own wellbeing
 - + For “**actualisation**”: making goals a reality.
 - + To help people feel more **connected to** their **own/others experiences**.

How does technology achieve this?

+ Draws on **Self-Determination Theory:**



How does technology achieve this?

- + Within **HCI**, there are many ways in which technologies have been used to help people improve or achieve these self-fulfilling needs.
- + One common use is through **behaviour change** and **persuasive technologies**.



Persuasive Tech & Behaviour Change

+ **B. J. Fogg**: "Using technology to deliberately influence a user to make a voluntary, lasting change to their attitudes and behaviour."

Persuasive Tech & Behaviour Change

+ BJ Fogg who had rich experiences in studying and creating persuasive had proposed these 8 step processes on how to creating a successful persuasive technology.

- 1. Target a simple behaviour**
- 2. Choose a receptive audience**
- 3. Decide how to prevent the behaviour**
- 4. Choose an appropriate technology**
- 5. Find relevant examples**
- 6. Imitate successful examples**
- 7. Test and iterate**
- 8. Expand on success**

Persuasive Tech & Behaviour Change

- + In essence, Fogg suggests here that people can achieve nearly any task if they are both **motivated** and **supported** to do so through the use of technology.
- + Think about running:
 - + You know the end goal - distance run
 - + You the reward - being healthier
 - + You may just need the motivation e.g. the ability to view/track your ability/progress.
 - + This acts as a reinforcing behaviour, encouraging you to sustain it.



Intrinsic vs. Extrinsic Motivation

- + To do any task though, people need **motivation**.
- + **Intrinsic** motivation = interest and enjoyment of a task, resulting in motivation.
- + **Extrinsic** motivation = your motivation being affected by external factors such as:
 - + Reward/Punishment
 - + Past success/Performance
 - + Beliefs/values
 - + Societal pressure

Think of it this way...

+ (Vygotsky, L. 1934). The Zone of Proximal Development suggests there are 3 main types of tasks that every person (learner) can do.

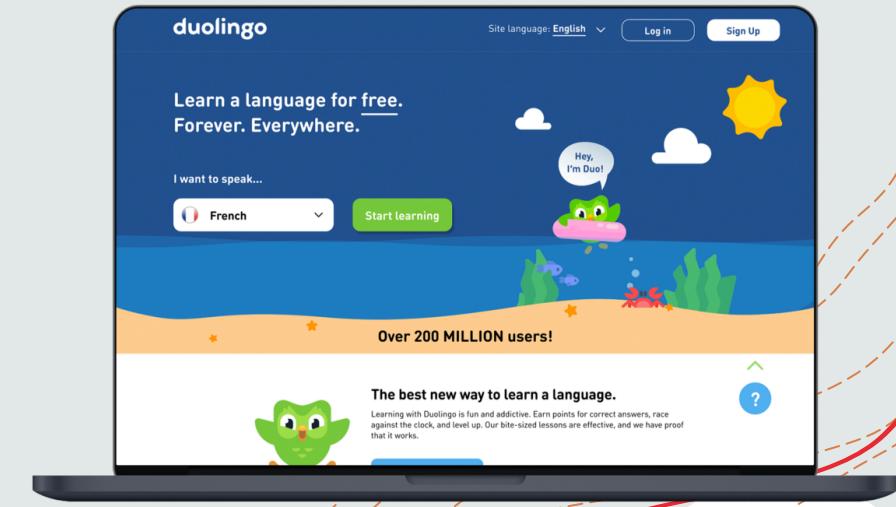
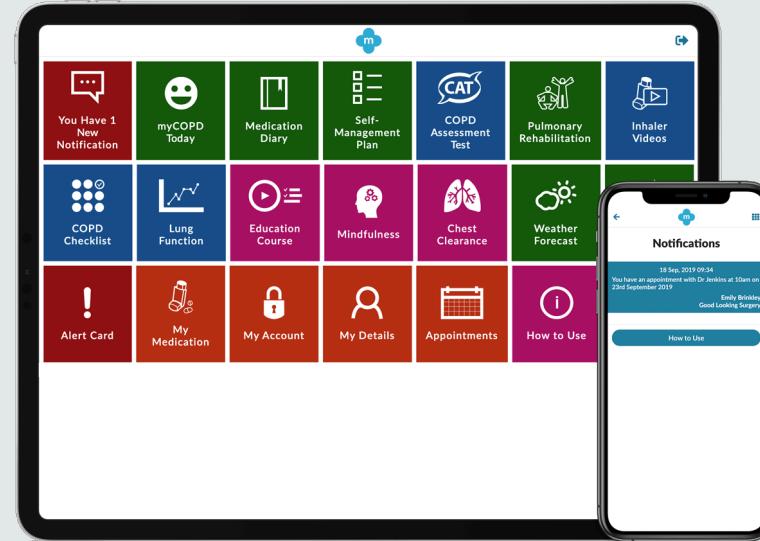
+ **Behaviour change technology**, tackles the second ring in this diagram - tasks people can do **with some assistance**.

ZONE OF PROXIMAL DEVELOPMENT



Design/Building Wellbeing Technology

- + So with this in mind, how can we go about **designing** and **building** these technologies?
- + Consider the following apps and services:



Design/Building Wellbeing Technology

+ **6 main stages** to designing wellbeing technologies
according to Peters et al.:

1. Adoption Process
2. Interface Design
3. Task Assistance
4. Behaviour Change
5. Lifestyle Intervention
6. Societal Impact

Stage 1: Adoption

- + How should the user engage with the app or service?
- + What action should they take?
- + **Consider:**
 - + Where do they purchase the device?
 - + Can anyone download the app? Is it cross platform?
 - + Do people need to pre-enrol onto e.g. the language course?

Stage 2: Interface

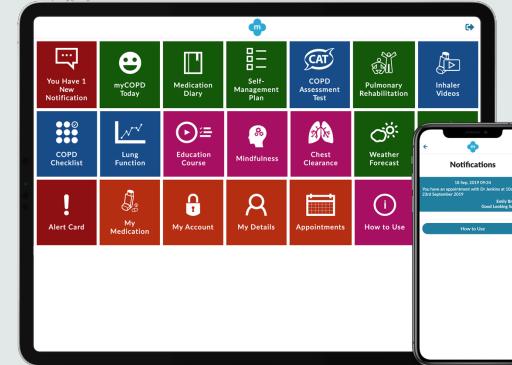
- + How do people use the interfaces of these devices and do they support wellbeing? How will they be **engaged**?
- + This is a primary concern of HCI and usability:
- + How is the interface **controlled** and **navigated**?
- + What ways is the information displayed? E.g. **scrolling**, **clicking**, **swiping**, **speaking** etc.
- + How does the device **look** and **feel**? Is it **accessibility-friendly**?

Stage 3: Tasks

+ What does the app or service do?



- Count steps
- Monitor heart rate
- Length of session
- Distance
- Performance



- Track symptoms
- Ask about mood
- Help you set goals



- Generate sentences
- Help you practice difficult words
- Speak out loud
- Repeat words

Stage 4: Behaviour

+ Most importantly, thinking about what we learned on behaviour change, what behaviours will these apps services support?

- + **Fitness app:** Physical exercise, endurance, stamina
- + **COPD tracker:** Asthma management, reporting to clinicians
- + **Language website:** Retention of new language/new words, curiosity

Stage 5: Lifestyle

- + What is the outcome of the intervention now that the behaviour has been changed?
- + What's different about the person's lifestyle overall?
 - + **Fitness app:** Increased regular exercise
 - + **COPD tracker:** Improved asthma control
 - + **Language website:** Ability to communicate in new language

Stage 6: Society

- + It's possible to see changes to societal wellbeing based on the outcome of these apps/services too:
 - + **Fitness app:** At population scale = better physical and mental health, not only from own exercise but seeing others benefit too.
 - + **COPD tracker:** Better population health, reduced fatalities.
 - + **Language website:** Removing stigma, reducing cultural barriers.

Oh, you want hard evidence, do you?!



In Context

- + We did some research!
- + Soubutts, E. Ayobi, A. McNaney, R. Cater, K. O'Kane, A.A. "Amazon Echo Show as a Multimodal Human–Human Care Support Tool within Self-Isolating Older UK Households" in Journal of Computer Support Cooperative Work. 2022.

What did we do?

- + We gave out **Alexa** devices (Amazon Echo Show 5) – an Alexa with a screen to **11 UK households**.
- + We designed and rolled out **Alexa skills** to help with people's wellbeing.
- + The **four skills** helped people to: manage their **shared care**, practice **upper body strength**, set **medical reminders** and sourced **positive news** for people's mental wellbeing.

Alexa Skills



Who did they go to?

- + Although these skills **did not change a specific behaviour** they leveraged the multimodal (screen and voice) features of the Echo Show to support **wellbeing activities in the home.**
- + They were used not only by individual older adults but also the people living round them, so that they could look after the older person's wellbeing too.

What does this tell us?

- + Making wellbeing technologies that are **human-centered** is an **iterative** and requires consideration of a **number of stages**.
- + It's best to draw on people's intrinsic as opposed to extrinsic motivations to achieve lasting positive change to wellbeing.
- + There is usually always a **societal impact** from any new wellbeing technology, whether this is from creating a new **trend** (e.g. Pokemon Go: lots of exercise, but lots of distraction) or encouraging **new ways of behaving** (e.g. other people seeing exercise and wanting to join in too).

Questions?

+ Email: e.soubutts@bristol.ac.uk

OR

+ Ask during the lab! ☺