SELF-MANAGEMENT: SELF-MONITORING AND COACHING

Part 1.

✔ Project Quantified self @Work

Part 2.

✔ Project Heartfailure (Twente Teach)
BACKGROUND

2008-2012: Nutrition and Diëtetics (Hanze University of Applied Sciences, Groningen)

2012-2014: Master Health Sciences, Prevention and Public Health (VU, Amsterdam)

October 2015-now:

• Lecturer Applied Psychology (Hanze University of Applied Sciences)

• PhD Student Quantified Self @Work (Hanze, Menzis and UT (Centre for eHealth & Wellbeing research))
PART 1. QUANTIFIED SELF @WORK

✔ Ageing population asks for **sustainable employability**

✔ 1/3 work-related absenteeism due to **workstress**

✔ **Stress management @Work**: Self-monitoring & Persuasive eCoaching
Self-monitoring:

“The practice of systematically recording information about one's diet, health, or activities, typically by means of a smartphone, so as to discover behavioral patterns that may then be adjusted to help improve one's physical or mental well-being.” (source: Oxford dictionary)

Persuasive eCoaching:

The use of technology during coaching to influence people’s attitude, behaviors and rituals.
SELF-MONITORING
COACHING: PERSUASIVE FEEDBACK..?

Perfect Week (Stand)
You reached your Stand goal every day last week. Go for it

Perfect Week (Exercise)
You reached your Exercise goal every day last week. Can
“I'm a little obsessed with it. I look at it all the time ... I'm always curious, like where I am at what point of the day.” (P30, 22 months) “I feel I find it hard not to wear it.” (P29, 18 months)

I do wear it and I do look at the numbers, but it doesn’t necessarily affect my feelings day to day that much at this point.” (P27, 3.5 years)

I manipulated it a little bit so that I could say, okay if a regular day of skiing, let's say, is 4000 points, I'm going to set my goal to maybe 4,300...

“I think the key motivation was to lose weight in the beginning. Now, as we move on, I think the greater motivation is competition with friends in terms of how many steps or how many active minutes in the FitBit world” (P19, 4.5 years)
The gap between recording information and changing behavior is substantial,".. “and while these devices are increasing in popularity, little evidence suggests that they are bridging that gap.”

data gathered by a wearable device must be presented back to the user “in a way that can be understood, that motivates action, and that sustains the motivation toward improved health.” This is not so easy.
WEARABLES @WORK; @ HOME

- Unobtrusive life-tracking 24h
- Context & lifestyle
- Just in time personalized feedback

- Empowerment
- Engagement

- How to frame and personalize feedback using data generated about activities, food, stress, sleep, ........
THEORY IS IMPORTANT

- More (explicit) use of theory increased effectiveness
- More behavior change techniques increased effectiveness

Goal setting  Provide feedback  Problem solving  Reinforcement  Rewards  Self-monitoring
COACHING TO CHANGE BEHAVIORS

- Use rules to reduce the opportunity to engage in the behaviour
- Increase knowledge or understanding
- Use communication to induce positive or negative feelings to stimulate action
- Create an expectation of reward
- Create an expectation of punishment or cost
- Increase means or reduce barriers to increase capability (beyond education or training) or opportunity (beyond environmental restructuring)
- Impart skills
- Coercion
- Incentivisation
- Persuasion
- Motivation
- Opportunity
- Capability
- Motivation
- Physical
- Social
- Psychological
- Automatic
- Reflective
- Environmental restructuring
- Enablement
- Modelling
- Education
- Restrictions

Change the physical or social context
Provide an example for people to aspire to or emulate
PERSUASIVE COACHING STRATEGIES

• Empathy triggers (engagement, affection)
• Flow triggers (user-experience)
• Capability triggers (task supports)
• Dialogue triggers (reflection, communication)
• Social triggers (resilience, empowerment)

• What triggers matter most? For whom?
• What are the long term effects? For whom?
SELF-MONITORING AND PERSUASIVE ECOACHING: OPPORTUNITIES AND CHALLENGES

Opportunities
- Scalability
- Sustainability
- Just-in-time personalized feedback
- Objective insight into lifestyle pattern

Challenges
- Privacy
- Trust
- Ethics
WORKSTRESS

- Workload
- Time pressure
- Recipient contact
- Physical environment
- Shift work

- Feedback
- Rewards
- Job control
- Participation
- Job security
- Supervisor support

Source: Schaufeli and Bakker (2004)
MEASURING WORKSTRESS

Physical measurement:

Experienced stress:
Based on self-monitoring data to:

✓ Identify what (situations) *causes* stress

✓ Identify what the person *needs* from the coaching system
Coaching strategies:

Emotional coping:
- Relaxation
- Seeking social support

Problem focused coping
- Time management
- Change work situation

Cognitive therapy
1. CONTEXTUAL INQUERY

Goal of contextual inquiry: Learn more about the context and identify key stakeholders

Context: Scoping review

Key stakeholders: Online survey to identify key stakeholders
SCOPING REVIEW – WHAT IS IT AND WHY THIS METHODOLOGY?

What is a scoping review?

<table>
<thead>
<tr>
<th>Systematic review</th>
<th>Scoping review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrow research question</td>
<td>More broad</td>
</tr>
<tr>
<td>Studies are identified in advance</td>
<td>Studies are identified also during the process</td>
</tr>
<tr>
<td>Mainly focus on RCT</td>
<td>More study designs can be included</td>
</tr>
</tbody>
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Why use this methodology?

✓ Technology is evolving rapidly
✓ Including study designs besides RCT fits with the aim
SCOPING REVIEW

Aim:

 ✓ To identify key components
 ✓ To inform future design

Key components of interest:

 ✓ Self-tracking components
 ✓ Persuasive eCoaching components (using the persuasive system design model by Oinas-Kukkonen and Harjumaa (2009))
 ✓ Other intervention components
SCOPING REVIEW ANALYSIS

Qualitative approach because:

✓ More about the processes (HOW and WHY):

*How and why can components contribute to effectiveness?*
additional sessions focusing on the target behavior, under the assumption that this was needed to help them get started on goal-setting program.

1.1. Intervention design

The knowledge ("Artificial Intelligence") in the system is encoded using two fundamentally different representations: declarative facts about the world and procedures the agent can follow during its dialog with users.

Declarative facts are themselves represented in two fundamentally different ways: epistemological knowledge about the kinds of things in the world that the agent can reason about – represented in the ontology (using OWL [22]) – and specific facts about the specific behavior change theories and techniques the agent can use, and about a particular user the agent is talking to (using RDF [23]). The ontology encodes dictionary-like knowledge, such as the fact that the “Actions” the agent can take can be either “Therapeutic Actions” or “Non-therapeutic Actions” (such as saying “Hello!” to the user), and that the Therapeutic Actions available to the agent include “Therapeutic Dialog Actions” (talk therapy) and “Homework Actions” (homework assignments the user is asked to do outside of the agent counseling sessions). Examples of specific facts would be that asking the user to “Try looking for information about exercise in newspapers and magazines.” is an example of a Homework Action for physical activity promotion, that this action is appropriate for users in the contemplation stage of change, and that the specific user the agent is talking to right now is in contemplation.

Procedural knowledge is encoded in a hierarchical task decomposition language (CEA-2018 [24]), that is based on a theory of the structure of dialog [25]. CEA2018 represents agent goals, and actions that the agent and the user can take during a given dialog, and various relationships that hold among these entities. For example, initial goals of the agent may be to hold a 98% of the recipes, and 14% of the agent utterances, representing 22% re-use by source lines of code. The second system was built in 9% of the calendar time and 4% of the person-hours required to develop the initial exercise promotion system [1].

1.2. Evaluation study

In the rest of this paper, we describe the results of a randomized pilot study designed to provide preliminary evaluation of three...
SCOPING REVIEW – Analysis

Document filters:
No active filter - use 33 Primary Documents in query

20 Quotations found for query:
"persuasive eCoaching: rewards"

Codes: [persuasive eCoaching: rewards - Family: persuasive eCoaching]
No memos

uploading their pedometer steps to Microsoft HealthVault: $5 for month 1, $10 for month 2 and 3, $20 for month 4.

Codes: [persuasive eCoaching: rewards - Family: persuasive eCoaching]
No memos

Al participants received encouraging feedback and one point worth $1 for accomplishing each step goal.

P17: Steinberg 2012.pdf - 17:37 [Participants with at least 3 d..] (3:4704-3:5127) (Super)
Codes: [persuasive eCoaching: rewards - Family: persuasive eCoaching] [persuasive eCoaching2: rewards - Family: Persuasive eCoaching in evaluation studies] [self-tracking: summary data - Family: self-tracking]
No memos

Participants with at least 3 days of self-monitoring data received a weekly email with personalized feedback that included a summary of goal attainment and a graph of progress over the previous week. For participants with low adherence (3 or fewer tests in 1 week), the email did not include a summary, but rather acted as a prompt to improve adherence (eg, "We only received 2 text messages from you this week.")
SCOPING REVIEW – Results

Self-monitoring and effect on health outcomes:

- Valid wearables
- Requesting more effort not necessary negative

Persuasive eCoaching and effect on health outcomes:

- Reduction: Short term goals
- Personalization: Self-tracking data as input for goal-setting
- Reminders: Not on behavior change but input self-tracking data into the system
2. VALUE SPECIFICATION

Goal of value specification: Identify needs and wishes from end-users and stakeholders

Interviews with:

- Employees
- HR managers

Persona

Naam: Miriam  
Leeftijd: 42 jaar  
Beroep: Beleidsadviseur

Miriam is 42 jaar en werkt vier dagen in de week als adviseur bij een commercieel bedrijf/overheidsinstelling. Haar werkdag bestaat voornamelijk uit het lezen van documenten en het schrijven van adviesrapporten. De meeste tijd spendeert zij achter de computer in een zogeheten “kantoor tuin”. Ze moet geconcentreerd…..
2. VALUE SPECIFICATION

Focus group with:
- Employees
- HR managers
- Employers
- Representative councils within organisations
- Company doctor
- Business analyst
- Productowner (Menzis)
3. Design

Values $\rightarrow$ requirements $\rightarrow$ prototype

Expressed value is translated into a specific design element

Prototype $\rightarrow$ usability $\rightarrow$ adjust design
4. OPERATIONALIZATION
5. SUMMATIVE EVALUATION
Interesting project?

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