Intelligent Behavior Change Support through Virtual Health Agents

Julienka Mollee

VU University Amsterdam

Introduction

- PhD candidate in Agent Systems Research group at VU University Amsterdam

- Research project: Active2Gether
  - Collaboration of Agent Systems Research group with EMGO+ institute for health and care research

Introduction

- Active2Gether:
  - Encourage young adults to adopt active lifestyle
    - Using mobile technology and information about physical / social context
    - Focus on subbehaviors:
      active transport, stair walking, sports



Introduction

- Active2Gether:
  - Virtual health *coach* for active lifestyle

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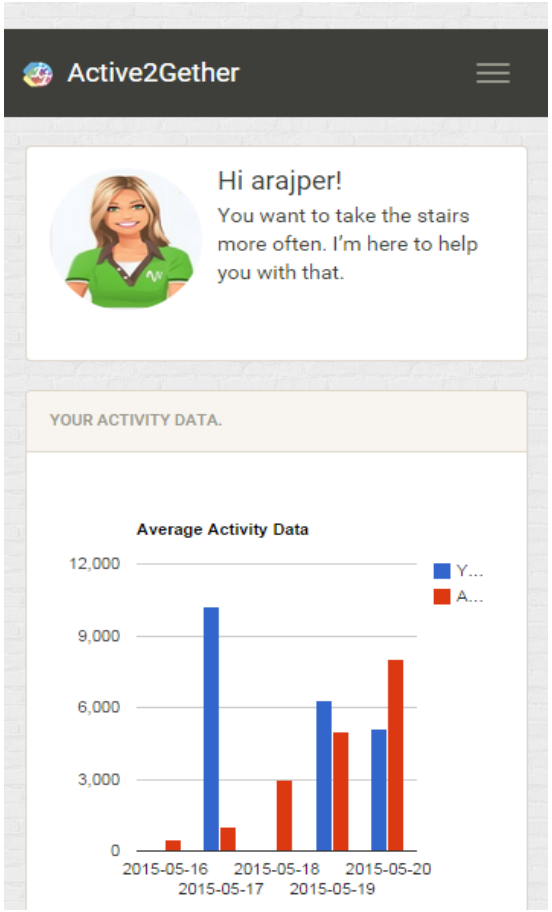
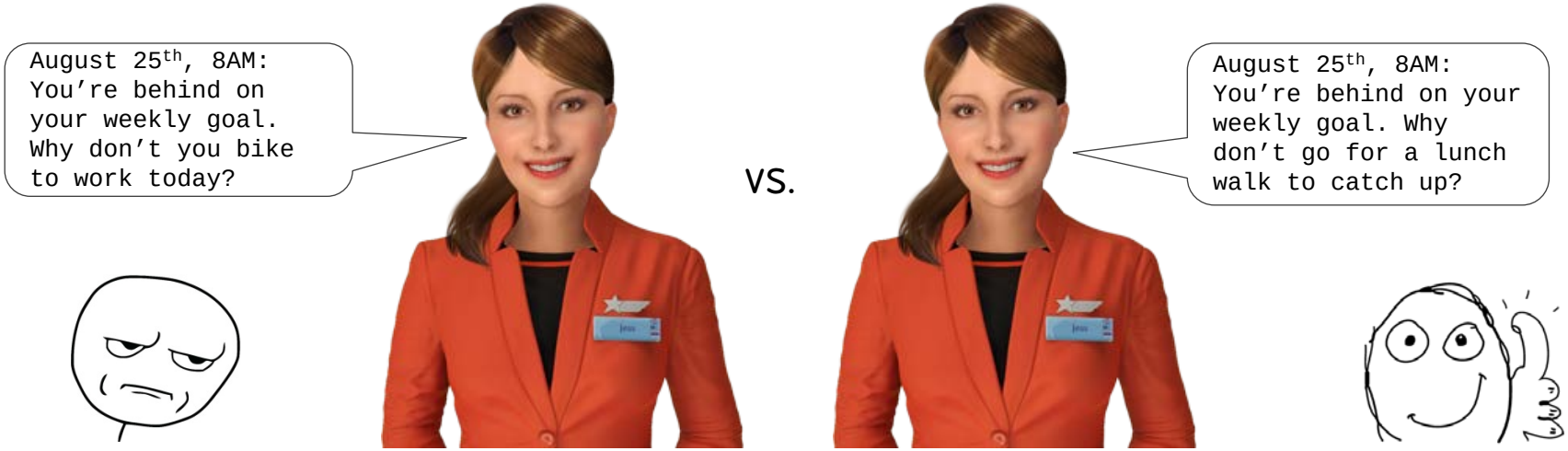


Virtual Health Agents

- Ingredients for success:
  - Encourage humanlike relationship
  - Enable intelligent interaction
  - **Provide relevant and useful information/advice**

Virtual Health Agents

- Intelligent behavior change support:
  - Not only advanced medium for information transfer, but also tool to derive appropriate message



Methods for Intelligent Behavior Change Support

- General:
  - Take history of user into account, adapt over time
    - Focus on problematic aspects of behavior
  - Take physical/social context into account
    - Insight in behavior, filter messages

Methods for Intelligent Behavior Change Support

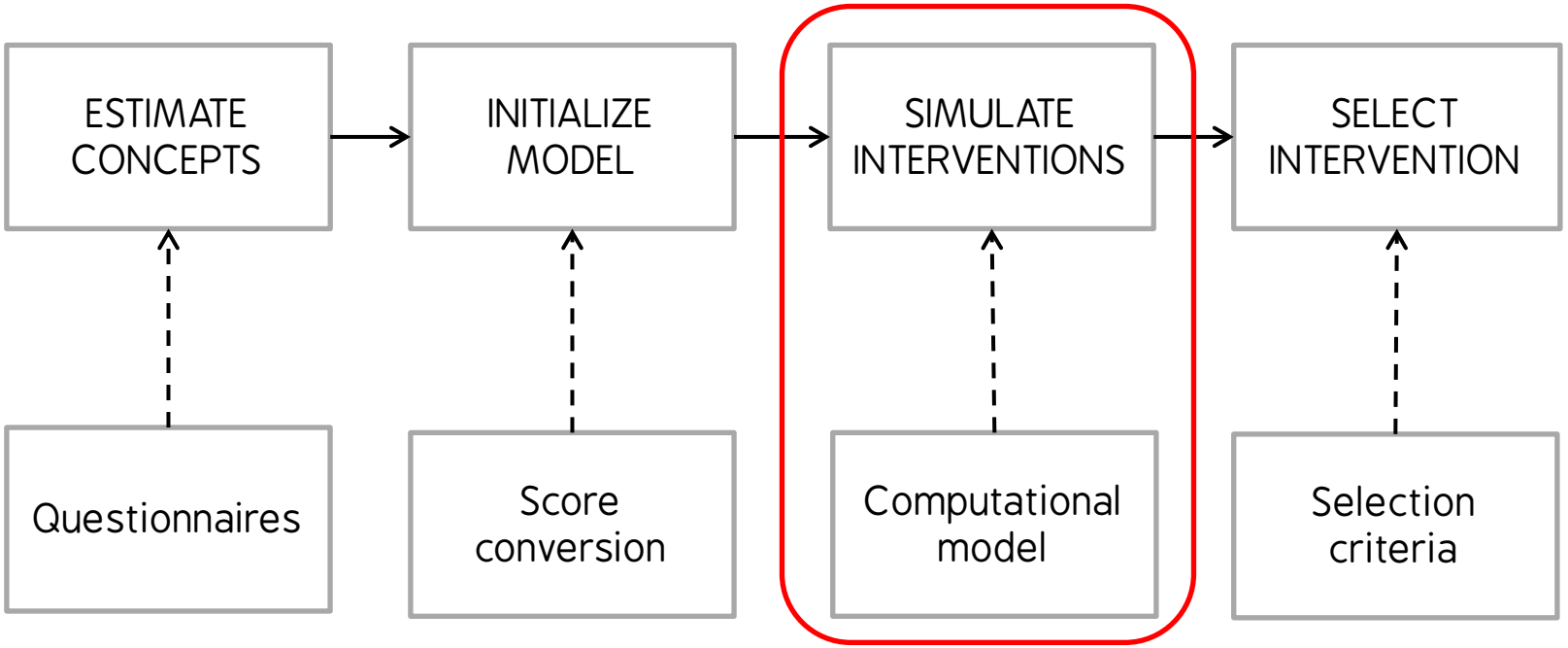
- Active2Gether:
  - Personal evaluation of behavior evaluation
  - **Selection of most effective interventions**
  - Interventions on the social network

Selection of most effective interventions

- Psychological determinants play a role in behavior and behavior change
- What determinants should be targeted?
  - The “weakest link”
  - The determinant with best expected improvement

Selection of most effective interventions

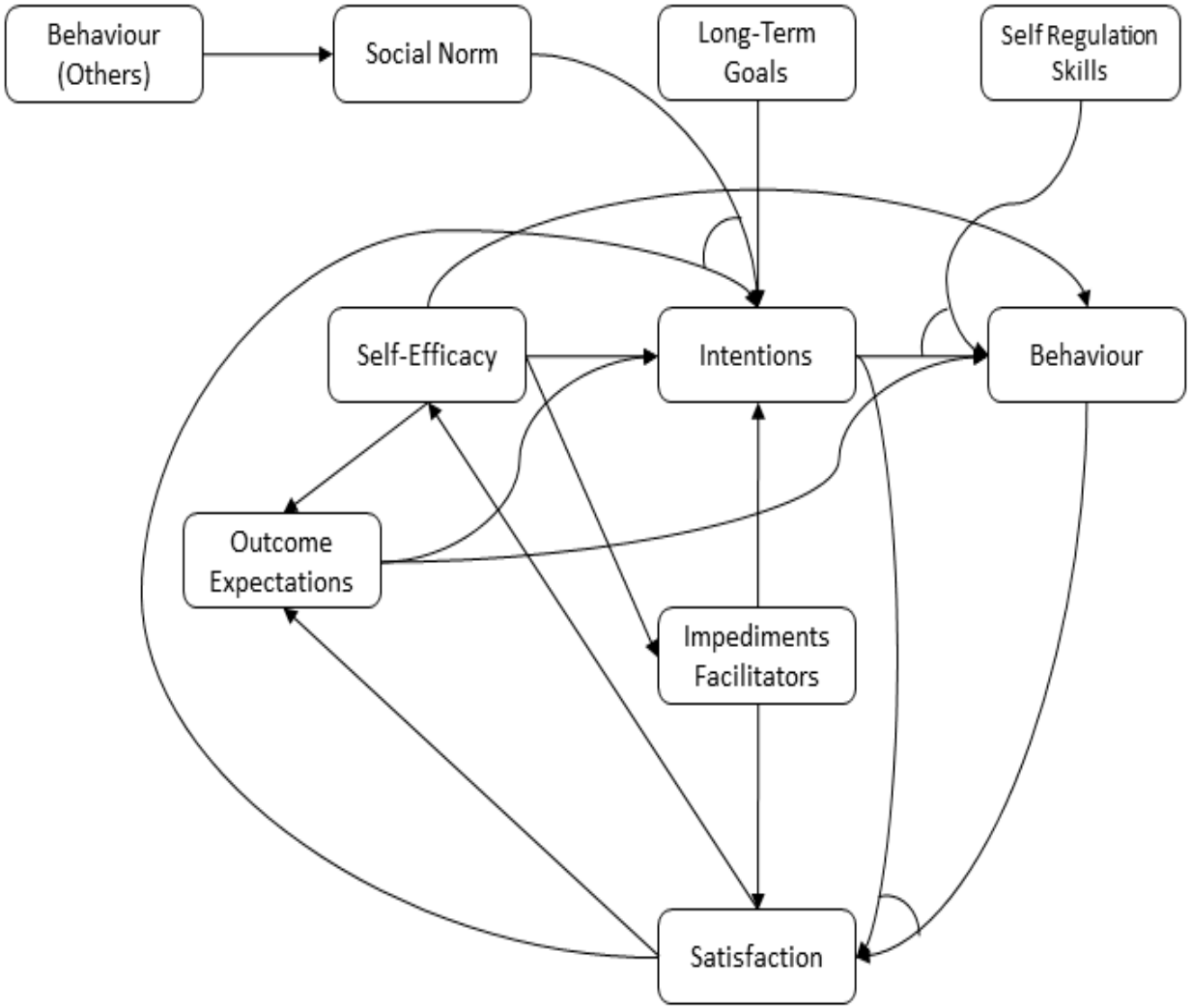
- Use computational model of behavior change to predict effects



Selection of most effective interventions

- Computational model of behavior change
- Based on literature:
  - Social Cognitive Theory, Theory of Planned Behavior, Health Belief Model, Self-Regulation Theory
- Concepts:
  - Self-efficacy, outcome expectations, intentions, social norm, etc.

Selection of most effective interventions



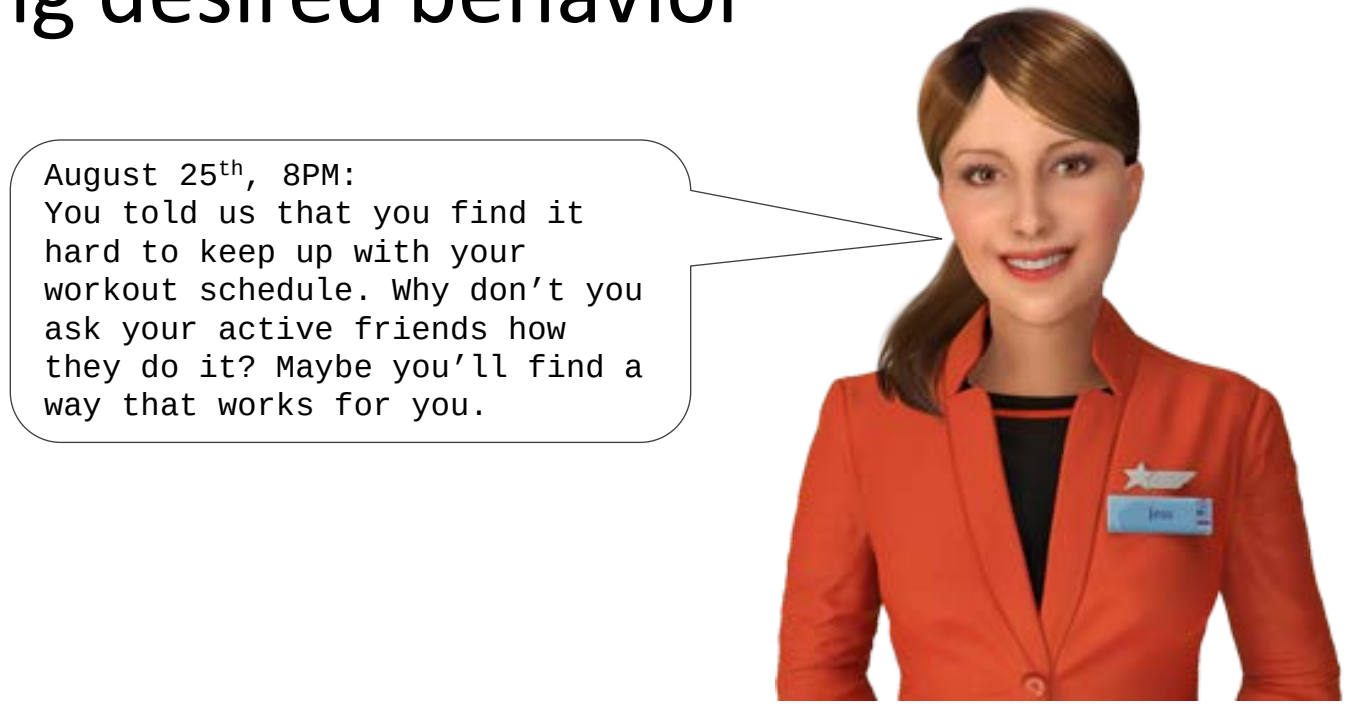
Selection of most effective interventions

- Selection of intervention based on predicted value of *behavior*

Intervention	Target concept	Simulation result	Selected
Intervention1	Self-efficacy	0.753	⇦
Intervention2	Intentions	0.620	
Intervention3	Self-regulation	0.460	
Intervention4	Facs & Imps	0.568	
Intervention5	Social norm	0.687	

Selection of most effective interventions

- Send message that increases self-efficacy regarding desired behavior



Discussion

- In what other ways can the *content*-aspect of the agent be improved?
- Form vs. content? Efforts?
  - Does effective coaching without "intelligent" interface exist?
  - Does effective interface without "intelligent" content exist?
- Contradiction: increased effect and adherence vs. eliciting critique, distracting from essence?
- Contradiction: easier access to information (elderly) vs. not "cool", not for me?
  - Virtual agents unnecessary for the next generation?