Implicit attitudes towards physical activity

Interplay of impulses and reflections in predicting health behavior

Hildegunn Nordtug
hildegunn.nordtug@uit.no
Overview

• Background: Health behavior: Explicit and implicit cognition.

• Research: Implicit attitudes in the prediction of physical activity
Health behavior

• Among the leading causes of death in Western societies are heart disease, cancer, and stroke (e.g., Taylor, 2003), with approx. half of the current death rate stemming from preventable causes such as a poor diet, smoking, drinking, or physical inactivity (Brannon & Feist, 2000).

• A great need for health psychologists to develop and test models that help to explain when and why people are likely to engage in unhealthy behaviors.
Physical activity

• The problem:

• Only 30 % of European adults sufficiently active (Sjöström, Oja, Hagströmer, Smith, & Bauman, 2006) *self-report*

• 10 % of American adults (Tucker et al., 2011) *accelerometry*

• 20 % of Norwegians (The Norwegian Directorate of Health, 2009) *accelerometry*
Implicit cognition and health behavior

Traditionally:
• Behavior is rational and deliberate

More recently:
• Behavior is also often automatic and/or executed without deliberation and/or outside consciousness.
Implicit cognition and health behavior

- Sticking to a preconceived plan often fail in the heat of temptation.

- Eating or drinking more than planned, some consume toxic substances, and embark on sexual adventures with unknown risks.
Known predictors of physical activity: Reasoned standards

The Theory of Planned Behavior (Ajzen, 1991)

- But...
- Large change in intention $\rightarrow$ small change in behavior (Chatzisarantis & Hagger, 2005).
- Inclined abstainers
- Intention-behavior gap (Orbell & Sheeran, 1998).
Reasoned (explicit) cognition vs. Impulsive (implicit) cognition

• **Explicit cognition:**
  - conscious rule-application ("if - then")
  - slow and deliberate
  - self-report possible
  - direct measurement (e.g., questionnaire)

• **Implicit cognition:**
  - pre-conscious operation (spreading activation)
  - rapid and automatic
  - self-report not possible
  - indirect measurement (e.g., response times on computers)

(both also called higher cognition, controlled, rational, systematic, analytic, reflective ...etc)
Conflict and synergy between impulsive and reasoned cognition

(Hofmann, Friese and Wiers, 2008; Friese, Hofmann, & Wiers 2011)
Implicit attitudes and physical activity I

Method

- Web-based
- Two universities in Norway
- 196 individuals

Measures:
- Self-reported behavior (IPAQ)
- Intentions
- Explicit attitudes
- Social norms
- Perceived behavioral control
- Implicit attitudes (ST-IAT)

Implicit attitudes and physical activity I

Results

**Mediation model**

$DV = PA$

$R^2 = .30$

$DV = PA$

$R^2 = .33$

$p < .01$
Implicit attitudes and physical activity I

Results

Regression lines predicting physical activity as a function of intentions and implicit attitudes (IA)
Implicit attitudes and physical activity II

- Same research question as the web-based study, but:
  - Objectively observed behavior
  - Prospectively observed behavior

Implicit attitudes and physical activity II

Results

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Current behavior (N = 53)</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit</td>
<td>β: .78***, R²: .61***</td>
<td>β: .67†, R²: .08</td>
<td>β: .72*, R²: .17</td>
<td>β: .75*, R²: .27*</td>
</tr>
<tr>
<td>Explicit attitude</td>
<td>.00, R²: -.24</td>
<td>-.29</td>
<td>-.19</td>
<td>.19*</td>
</tr>
<tr>
<td>Social norms</td>
<td>.13, R²: .09</td>
<td>.40†</td>
<td>.40†</td>
<td>.36*</td>
</tr>
<tr>
<td>PBC</td>
<td>.30*, R²: .72*</td>
<td>.45</td>
<td>.24</td>
<td>.36†</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Step count (N = 52)</th>
<th>Prospective behavior (N = 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit</td>
<td>β: .74***, R²: .55***</td>
<td>β: .74***, R²: .66</td>
</tr>
<tr>
<td>Explicit attitude</td>
<td>.00, R²: -.43†</td>
<td>-.43†</td>
</tr>
<tr>
<td>Social norms</td>
<td>.09, R²: -.07</td>
<td>-.07</td>
</tr>
<tr>
<td>PBC</td>
<td>.30*, R²: .45</td>
<td>.45</td>
</tr>
</tbody>
</table>

Note. † p < .10 * p < .05 ** p < .01 *** p < .001
Implicit attitudes and physical activity II

Results

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Current exercise

Prospective exercise

Step count

- Positive implicit attitude (ST-IAT +1 SD)
- Neutral implicit attitude (ST-IAT +/- 0 SD)
- Negative implicit attitude (ST-IAT -1 SD)
To conclude...

- Implicit cognition matter for the understanding and prediction of physical activity

- Implicit attitudes predict behavior over and above known explicit determinants of behavior.

- There is an interplay between implicit attitudes and reasonned intentions in the determination of physical activity. Implicit attitudes may facilitate or constrain the effect of intention on behavior.
THANK YOU

hildegunn.nordtug@uit.no
Measuring implicit attitudes: IAT  
(Greenwald, McGhee, & Schwartz, 1998)

Press "E" if ...  
Press "I" if ...  

PLEASANT  
or  
PHYSICAL ACTIVITY  

UNPLEASANT

Words/pictures shown here, e.g.:  
" run "  
" jog "  
" love "  
" friend "  
...
Measuring implicit attitudes: ST-IAT (Wigboldus, Holland, & van Knippenberg, 2005)

Press "E" if ...

PLEASANT
or
PHYSICAL ACTIVITY

Press "I" if ...

UNPLEASANT

Words/pictures shown here, e.g.:
" run "
" jog "
" love "
" war "
...
The Reflective-Impulsive Model (Strack & Deustch, 2004)

Perception

Explicit cognition

Behavior

love
run
jog
war

Physical activity

Pleasant
Unpleasant
The Reflective-Impulsive Model (Strack & Deustch, 2004)

What we aim to measure

Explicit cognition

Perception

Behavior

Love

Physical activity

Pleasant

Unpleasant

Run

Jog

War

Pleasant

Unpleasant
Implicit attitude influences

- How are implicit activity attitudes formed and influenced?
- How can implicit attitudes be changed?
Experiential approach

• Affect is an important feedback mechanism
• Implicit attitudes has a strong affective component

• Will linking “feeling better” with physical activity improve implicit attitudes towards physical activity?

Implicit attitudes and affective responses

Method

Past behavior
Demographics
FS
FAS
RPE
Implicit attitude

- 12 min -
FS FAS RPE every 3 min.

Post I:
FS
FAS
RPE
Implicit attitude

Rest 7 min

Post II:
FS
FAS
RPE
Implicit attitude
Implicit attitudes and affective responses

Interaction:
\[ F(1.86, 144.98) = 3.54, \ p = .04, \ \eta_p^2 = .04 \]

Negative/no affective change:
\[ F(2, 68) = 6.86, \ p < .01, \ \eta_p^2 = .17 \]

Positive change:
\[ F(1.97, 73.54) = 0.49, \ p = .58, \ \eta_p^2 = .01 \]
Implicit attitudes and affective responses

• Associating exercise with feeling worse, or even no affective benefits results in more negative implicit attitudes

• Associating exercise with feeling better “protects” positive implicit attitudes

• Indication on how implicit attitudes are formed

• Implications for activity promotion

• ((Change implicit attitudes:
  ▪ Self-reference task))