A brief theory-based intervention that increases walking: Development, evaluation and more development

Prof David French
Coventry University
(david.french@coventry.ac.uk)

Theory of Planned Behaviour

- Behavioural Beliefs → Attitude Toward the Behaviour
- Normative Beliefs → Subjective Norm → Intention → Behaviour
- Control Beliefs → Perceived Behavioural Control
Physical activity by age (England, 2003)

Overall plan

- Starting point: tpb and walking
- Literature reviewing: determinants of walking
  - Identify beliefs underlying the determinant
  - Refinement of intervention materials to change beliefs
  - Trial of efficacy

- Further revision: mediation analysis
- more reviewing
- Adaptation to primary care (acceptability)
- Exploratory trial
- Explanatory trial
**Literature review: Predictors of intentions to walk**

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Attitude</th>
<th>Subj Norm</th>
<th>PBC</th>
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</thead>
<tbody>
<tr>
<td>Eves (2003)</td>
<td>233</td>
<td>.06</td>
<td>-.01</td>
<td>.37**</td>
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<tr>
<td>Scott (2007a)</td>
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<tr>
<td>Scott (2007b)</td>
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<td>.69**</td>
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<td>Darker (unpub1)</td>
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<td>Darker (unpub2)</td>
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<td>.33*</td>
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<td>Rhodes (2006)</td>
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<td>Galea (2006)</td>
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<td>.74**</td>
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<td>.74**</td>
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**Theory of Planned Behaviour**

1. Behavioural Beliefs → Attitude Toward the Behaviour
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Frequency of barriers to walking (N=180)

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Count</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Time (lack of)</td>
<td>56</td>
<td>31.2%</td>
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<tr>
<td>Work/ family commitments</td>
<td>51</td>
<td>28.3%</td>
</tr>
<tr>
<td>Injury/illness</td>
<td>45</td>
<td>25%</td>
</tr>
<tr>
<td>Inclement weather</td>
<td>43</td>
<td>23.9%</td>
</tr>
<tr>
<td>Motivation (lack of)</td>
<td>12</td>
<td>6.7%</td>
</tr>
<tr>
<td>Tiredness</td>
<td>6</td>
<td>3.3%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>24</td>
<td>13.4%</td>
</tr>
</tbody>
</table>

Darker, French, Longdon, Morris & Eves (2007) Brit J Health Psych

Altering control beliefs to alter intentions to walk

- No systematic reviews on which strategies to alter PBC/ self efficacy are most effective!
- Instead drew from Bandura’s work on self-efficacy (mastery experiences) and “motivational interviewing”
- Tried to elicit participants’ own reasons for why walking (more) is under their own control
- Three motivational strategies

French, Darker, Eves & Snellhotta (unpublished)
What makes it easy/difficult?

- Ask about a situation when **were** in control
- Ask about a situation when **not** in control
- Ask what was the difference between these two situations?
- NB: the participants are providing their own reasons why they can walk more

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- Intention → Behaviour

Motivational phase – develops an intention
Volitional phase – intention planned, initiated, maintained
Facilitative Planning

Helpful factor 1:
   *Example: support from family*
Plan to successfully bring about this factor:
   *Example: talk with them, elicit their practical help (free time) or emotional support (encouragement)*

Helpful factor 2:
   *Example: more free time*
Plan 2:
   *Example: book time in diary, etc*

Evaluation: Trial methods

- Two group “waiting list control” design
- Participants randomised to group after baseline measures
- Recruitment N=130 general public volunteers
- Full tpb questionnaire (based on elicitation study)
- Walking assessed by an “objective” measure (pedometers) and two self-report measures (PAR, NPA)

Darker, French, Eves & Sniehotta (under review)
Did it change pbc?
Did it change intention?

![Intention Chart]

Did it change self-reported walking?

![Walking Chart]
Did it change actual walking (pedometer scores)?

These effects are LARGE!

- According to Cohen, an effect size of $d=0.8$ (mean diff/sd) is large:
  - Control beliefs ($d=0.49$)
  - PBC ($d = 1.86$)
  - Attitude ($d = 0.98$)
  - Intention ($d = 1.55$)
  - NPA ($d = 0.84$)
  - Pedometer ($d = 0.82$)
- An increase of 87 minutes per week
- Mean 19.8 mins to 32.2 mins increase (>60%)
Was the change maintained? (pedometer scores)

Were effects maintained? (self-report)
How developing this intervention

- Greater understanding of mechanism (via mediation analysis) – self efficacy
- Literature reviewing to identify which techniques are most effective at increasing self-efficacy
- Iterative process of refinement to increase acceptability to:
  - Patients (recipients)
  - Practice nurses (providers)

How did the intervention work?
What is the best way to change self efficacy?

- Systematic review
- Intervention studies to alter lifestyle/recreational physical activity of “well” adults
- Reported pre/post or between groups comparisons of self efficacy
- Coded intervention content, using coding scheme we developed, base on Bandura’s four sources of self-efficacy

Review main results

- Found 27 unique studies – with 37 intervention groups
- Overall N = 6787 adults
- Change in self efficacy moderately related to change in physical activity  \( r = 0.27, n=24, p=0.20 \).
- Found small, yet sig, effect of the interventions on self-efficacy  \( d = 0.16, p < 0.001 \)
- Heterogeneity – moderator analysis!
Techniques used (N=37)

- Enactive mastery experience (n=34)
- Persuasion (n=33)
- Goal setting (n=27)
- Barrier identification (n=19)
- Feedback (n=11)
- Modelling (n=9)
- Phys/ fitness feedback (n=6)

Meta analysis results

Cohen’s d effect size estimates and 95% confidence intervals
Feedback of own performance

Phase 1: increase acceptability to patients

- Research Nurse delivered sessions to 10 patients in one practice, and 7/10 patients interviewed
- Generally high levels of acceptability, but:
  - Patients: Comprehension of worksheets, number of sessions (follow up).
- Intervention content, manual and materials adapted on the basis of this feedback

p < 0.001
**Phase 2: increase acceptability to nurses**

- Currently conducting this phase – with 4 practice nurses
- Each nurse will receive training, deliver the intervention to 4 primary care patients – and feedback on this (via focus groups and interviews)
- Also, interviews with patient recipients
- Research team will adapt the training and intervention on the basis of feedback received

**Next steps**

- Phase 3 “exploratory” trial, to pilot and refine trial procedures, including:
  - Fidelity of intervention delivery
  - Recruitment and response rate
  - Questionnaire performance
  - Practice issues
- Phase 4 “exploratory” trial
  - Can it work?
  - How does it work?
  - How expensive is it?