Why Interventions Fail
The Reasoned Action Approach to Changing Human Behaviour

Icek Ajzen
University of Massachusetts
Amherst (USA)
School Health Education Program to Prevent HIV/AIDS (Fawole et al., 1999)

- **Population:** Senior high-school students in Nigeria.
- **Behavior:** Self-reported condom use before and after intervention.
- **Intervention:** 6 weekly HIV/AIDS education sessions on transmission and prevention of AIDS: Lectures, films, role playing, stories, debates. Demonstration of proper condom use.
- **Control group:** No intervention.
Effect of Intervention on Knowledge About HIV/AIDS Transmission and Prevention

![Bar chart showing knowledge scores before and after intervention.](chart.png)
Effect of Intervention on Condom Use at Last Sexual Intercourse

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control</strong></td>
<td>43</td>
<td>42</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>53</td>
<td>54</td>
</tr>
</tbody>
</table>
Relation Between Knowledge and Behavior: Research Findings

- Helweg-Larsen and Collins (1997): “... the many research efforts ... examining the relation between knowledge about AIDS ... and preventive behaviors suggests overwhelmingly that this relation is weak or nonexistent”

- Silver Wallace (2002): “Knowledge has been consistently shown to be noninfluential in predicting behavior.”
Items of Knowledge Can Be Irrelevant

Much knowledge has no clear behavioral implications.

Examples:

- Knowledge about HIV/AIDS
  “AIDS is not spread by mosquitoes.”
  Use condoms?

- Environmental knowledge
  “If the polar ice caps melted completely sea levels would rise approximately 4-5 inches.”
  Buy an electric car?
**Principle of Compatibility: Energy Conservation Behavior (Ajzen et al., 2011)**

<table>
<thead>
<tr>
<th>Environmental attitude</th>
<th>Behavior</th>
<th>.33*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward conserving energy</td>
<td>Behavior</td>
<td>.60*</td>
</tr>
</tbody>
</table>
Message to Encourage Alcohol Treatment (Ajzen & Fishbein, 1980)

- No message control: 0.48
- Drinking threat appeal: 0.29
- Positive ATU appeal: 0.56
- Negative ATU appeal: 0.63

% signing up for ATU
### Theory of Planned Behavior: Sample Applications

<table>
<thead>
<tr>
<th>Health-Related</th>
<th>Physician referrals</th>
<th>Job-search behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant sugar intake</td>
<td>Medical checkup</td>
<td>Academic performance</td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>Using dental floss</td>
<td>Choice of travel mode</td>
</tr>
<tr>
<td>Condom use</td>
<td>Skin protection</td>
<td>Shoplifting</td>
</tr>
<tr>
<td>Food choice</td>
<td>Taking hormone replacements</td>
<td>Taking physics classes</td>
</tr>
<tr>
<td>Living kidney donation</td>
<td></td>
<td>Extramarital relations</td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td>Voting</td>
</tr>
<tr>
<td>Testicular self-examination</td>
<td>Other</td>
<td>Anti-nuclear activism</td>
</tr>
<tr>
<td>Using illegal drugs</td>
<td>Playing basketball</td>
<td>Attending church</td>
</tr>
<tr>
<td>Donating blood</td>
<td>Investment decisions</td>
<td>Recycling</td>
</tr>
<tr>
<td>Medical decisions</td>
<td>Playing video games</td>
<td>Applying for promotion</td>
</tr>
<tr>
<td>Dental hygiene</td>
<td>Seeking redress</td>
<td>Employment decisions</td>
</tr>
<tr>
<td>Breast self-examination</td>
<td>Volunteering behavior</td>
<td>Conserving water</td>
</tr>
<tr>
<td>Drinking alcohol</td>
<td>Political participation</td>
<td>Studying for an exam</td>
</tr>
<tr>
<td>Eating low-fat diet</td>
<td>Employment turnover</td>
<td>Technology acceptance</td>
</tr>
<tr>
<td>Weight loss</td>
<td>Driving violations</td>
<td>Gift-giving</td>
</tr>
<tr>
<td>Eating fruit and vegetables</td>
<td>Using infant seats</td>
<td>Using safety helmets</td>
</tr>
<tr>
<td>Medical compliance</td>
<td>Purchase decisions</td>
<td>Hunting</td>
</tr>
<tr>
<td>Dieting</td>
<td>Motorcycle safety</td>
<td>Leisure behavior</td>
</tr>
<tr>
<td></td>
<td>Environmental protection</td>
<td></td>
</tr>
</tbody>
</table>

**List of references on the Web:**
http://www.people.umass.edu/aizen/tpbrefs.html
### Internet-Based Behavior Change Interventions (Webb et al., 2010)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>k</th>
<th>(d^+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>20</td>
<td>0.24</td>
</tr>
<tr>
<td>Dieting</td>
<td>10</td>
<td>0.20</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>9</td>
<td>0.14</td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>12</td>
<td>0.07</td>
</tr>
<tr>
<td>All studies</td>
<td>85</td>
<td>0.16</td>
</tr>
</tbody>
</table>
### Importance of Theoretical Basis for Intervention
*(Webb et al., 2010)*

<table>
<thead>
<tr>
<th>Theory</th>
<th>$k$</th>
<th>$d+$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of planned behavior</td>
<td>9</td>
<td>0.36</td>
</tr>
<tr>
<td>Transtheoretical model</td>
<td>12</td>
<td>0.20</td>
</tr>
<tr>
<td>Social cognitive theory</td>
<td>12</td>
<td>0.15</td>
</tr>
</tbody>
</table>
The Theory of Planned Behavior
(Ajzen, 1991)
Example: Drinking Alcohol
(Ajzen, Joyce, Sheikh, & Gilbert Cote, 2011)

1. Please rate how often you drink alcohol
   Never  1  2  3  4  5  6  7  Virtually every day
2. How many drinks do you typically consume on one occasion?
   _______ drinks
3. How would you describe yourself in terms of your current use of alcohol?
   _____ abstainer   _____ moderate drinker
   _____ infrequent drinker   _____ heavy drinker
   _____ light drinker   _____ chronic alcohol abuser
4. On how many occasions have you had one or more drinks in the past 30 days?
   _____ none   _____ 6 to 9 occasions
   _____ 1 to 2 occasions   _____ 10 to 15 occasions
   _____ 3 to 5 occasions   _____ more than 16 occasions

$\alpha = .79$
Drinking Alcohol: Sample TPB Items (5-point scales)

**Attitude:** For me to drink alcohol this semester would be…
very unpleasant --- very pleasant

**SN:** People who are close to me approve of my drinking alcohol this semester. (Strongly disagree --- Strongly agree)

**PBC:** For me to drink alcohol this semester is …
(Completely impossible --- Definitely possible)

**Intention:** I am planning to drink alcohol this semester.
(Definitely --- Definitely not)

$\alpha = .71 - .98$
TPB Prediction of Drinking Alcohol (Ajzen et al., 2011)

- **Attitude**
- **Subjective norm**
- **Perceived behavioral control**

Intention

Behavior

$R^2 = 0.86$

$R^2 = 0.58$

Significant path
TPB Prediction of Energy Conservation
(Ajzen et al., 2011)

- Attitude
- Subjective norm
- Perceived behavioral control

Intention

R² = .69

Behavior

R² = .41

Significant path
Stage Models of Change

The Trans-theoretical Model (Prochaska & DiClemente, 1983)

Pre-contemplation – Contemplation – Preparation – Action – Maintenance

Critical distinction: **Motivation vs. Implementation**
Eliciting Beliefs and Testing the Model

- Elicit accessible beliefs using open-ended questions
  - *Outcomes:* Advantages & disadvantages; likes and dislikes associated with the behavior.
  - *Normative referents:* People or groups who approve or disapprove; perform or do not perform the behavior.
  - *Control factors:* Factors that make performance of the behavior easier or more difficult.

- Construct lists of the most accessible behavioral, normative, and control beliefs.

- Conduct a TPB survey.
Implementing Behavior Change

The Intention-Behavior Gap
Intention → Behavior

**INT-BEH Correlation** (k = 422) – (Sheeran, 2002)

- Mean $d = .53$

**Intention & Behavior Change** (k = 47) – (Webb & Sheeran, 2006)

$\Delta$ Intention: Mean $d = .66$

$\Delta$ Behavior: Mean $d = .36$
Intention – Behavior Gap: 6 Studies in Health Domain
Condom Use, Cancer Screening, Exercise (Sheeran, 2002)
Reason 1
Forgetting – Failure of “prospective memory”

Implementation Intention: Attending a Cervical Cancer Screening (Sheeran & Orbell, 2000)
Reason 2: 
*Low (Perceived) Control*

*Not Eating “Junk Food”* (Papies, Stroebe, & Aarts, 2008)

- **Intention** – not to eat Pizza, chocolate, cookies, French fries, chips.
- **Behavior** – 15 days later: How often have you eaten the 5 food items (7-pt, never – very often)?
- **PBC** – How successful are you in losing weight, watching your weight, and staying in shape (7-pt scales)?
Effect of Perceived Control on Intention-Behavior Correlation

- On diet: Low PBC (0.27) vs. High PBC (0.9)
- Not on diet: Low PBC (0.45) vs. High PBC (0.63)
Reason 3: Changes of Mind
Intention Change Prior to Behavior
(Sheeran, Orbell, & Trafimow, 1999)

- **Behavior**: Self-reported studying during winter vacation.
- **Intention**: Measured twice, 5 weeks apart prior to winter vacation.
- **Overall intention-behavior correlation**: .38**
- **Results of moderated regression analysis**:

![Graph showing intention-behavior correlation](image-url)

- Stable intention (r = .58)
- Unstable intention (r = .08)
Reasons 4: Hypothetical vs. Real Context
Contingent Valuation (Brown, Ajzen, & Hrubes, 2003)

- Symbolic: 70% Yes Vote
- Real: 41% Yes Vote

$8 Referendum
Corrective Entreaty Prior to Hypothetical Vote

- Hypothetical bias is described.
- Bias is explained as desire to support a worthy cause.
- Asked to think whether they actually would spend their money this way in a real vote.
- Consider other options: Spend the money on such things as groceries, a movie, or a charity.
- Vote as if you would really have to pay the money if the proposition passes.
No Hypothetical Bias After Entreaty

$8$ Referendum

<table>
<thead>
<tr>
<th></th>
<th>Symbolic</th>
<th>Real</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Yes vote</td>
<td>28</td>
<td>29</td>
</tr>
</tbody>
</table>
Examples of Interventions Designed on the Basis of the TPB
Testicular Self-Examination
(Murphy & Brubaker, 1990)

- **Population:** 10\textsuperscript{th} grade boys in health classes.
- **Behavior:** Self-reported TSE 4 weeks following intervention.
- **Intervention:** Persuasive communication
- **3 conditions**
  - **TPB-based:** 12-minute videotaped message designed to strengthen ATT, SN, and PBC toward performing TSE.
  - **Cancer information:** Audio-visual slide presentation providing general information about testicular and other cancers.
  - **Health information control:** Pamphlet about health in general.
% TSE 4 Weeks After Intervention

- Health Control: 0.06
- Cancer Info: 0.23
- TPB - TSE: 0.42
Seeking Treatment for Alcohol Abuse
(Stecker, McGovern, & Herr, 2011)

- **Population:** 189 adults with alcohol use disorders.
- **Intervention:** 45-50 min telephone session to change TPB beliefs about entering alcohol treatment.
- **Control group:** Were read a pamphlet about the dangers of alcohol abuse published by NIAAA.
- **Behavioral, normative, and control beliefs, intentions:** Assessed pre-and post-intervention.
- **Behavior:** Treatment at 3-month follow-up.
## Intervention Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral beliefs</td>
<td>5.64</td>
<td>5.87</td>
</tr>
<tr>
<td>Normative beliefs</td>
<td>5.85</td>
<td>5.62</td>
</tr>
<tr>
<td>Control beliefs</td>
<td>5.40</td>
<td>5.98*</td>
</tr>
<tr>
<td>Intention</td>
<td>3.85</td>
<td>4.50*</td>
</tr>
<tr>
<td>Alcohol treatment (%)</td>
<td>.12</td>
<td>.31*</td>
</tr>
</tbody>
</table>
Taking the Bus to Campus
(Bamberg, Ajzen, & Schmidt, 2003)

- **Population:** College students at the University of Giessen, Germany.
- **Behavior:** Self-reported bus use to get to the campus.
- **Intervention:** Prepaid semester bus ticket, accompanied by an extensive TPB-based informational campaign.
## Intervention Outcomes

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>2.31</td>
<td>2.60*</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>2.24</td>
<td>2.46*</td>
</tr>
<tr>
<td>Perceived Behavioral Control</td>
<td>2.57</td>
<td>2.99*</td>
</tr>
<tr>
<td>Intention to use the bus</td>
<td>1.65</td>
<td>2.11*</td>
</tr>
<tr>
<td>Bus use (%)</td>
<td>.15</td>
<td>.30*</td>
</tr>
</tbody>
</table>
Healthy Eating
(Kelley & Abraham, 2004)

- **Population**: Outpatients 65 or older.
- **Behavior**: Self-reported eating a healthy diet, on 10-point scale.
- **Intervention**: 8-page booklet based on TPB targeting intentions and perceived control in relation to healthy eating vs. patient satisfaction survey (control group).
Effects of Intervention: Healthy Eating

Pre-to-post test change

- Perceived Control
- Intention
- Behavior

Control
Intervention
Conclusions

- Focus on general information and broad attitudes is unproductive
  - Not a good basis for behavioral prediction
  - Interventions often ineffective

- TPB provides a useful conceptual framework
  - To predict and explain behavior
  - To identify behavioral, normative, and/or control beliefs to target in interventions
  - To evaluative the success or failure of the intervention