Understanding Tailoring Using
The Integrative Model of Behavior Prediction

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Annenberg Public Policy Center
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The Basic Question

• What elements of a message make it persuasive?
Audience Segmentation

- Grouping the audience into homogenous subgroups
- Groups that are more similar than different react similarly to targeted messages

Grunig, 1989
Rogers & Storey, 1987
Kreuter, et al., 1999
What is Tailoring?

Individualization

Message

Greater Effects
Health Communication Message Hierarchy

- Mass/General Communication
- Targeted Communication
- Tailored Communication
Lungs are like sponges.

Smokers’ lungs are like sponges full of tar.

Our lungs are made up of millions of tiny air sacs, much like the texture of a household sponge. Every time you inhale cigarette smoke, you draw cancer-producing tar deep into your lungs. Some is coughed back up; some stays in your lungs; and some gets into your bloodstream and spreads throughout your body.

The more you smoke, the more tar goes in — and the more your risk of diseases like lung cancer increases.

If you could squeeze out the cancer-producing tar that goes into a pack-a-day smoker’s lungs every year, you’d get around 150mLs — or half a cup.

Giving up smoking is never easy but it is important, for you and your family.

Call the Quitline, 13 7848, today for information and advice to help you quit and stay quit. The service is free and all of our advisors are trained professionals.
Syphilis could make me paralyzed.

GET TESTED. GET CURED. 425-4430

Syphilis could make me go blind.

GET TESTED. GET CURED. 425-4430

La sífilis podría matar a mi bebé antes de nacer.

HÁGASE LA PRUEBA. CÚRSESE. 425-4430
More Information Just for YOU

Women need to consider the benefits and limitations of mammograms to make informed choices.

That's where PRISM comes in. PRISM is a program of Duke University Medical Center and Blue Cross and Blue Shield of North Carolina. We are here to help women like you make informed decisions about getting mammograms. The project is for both those women who are getting mammograms and those who are not. It is also for current and past members of Blue Cross and Blue Shield.

Last year, we interviewed you and then created a booklet just for you. You also talked with Linda James, a PRISM health advisor. This newsletter tells you where you stand on the issues now and what other women in PRISM are doing. It also updates you on your risk and answers any questions you told us about. We hope this newsletter will help you decide how often you should get mammograms. Read on to learn the latest!

Taking Steps for Good Health

You're on your way to good health! A few weeks ago, you told us that you have not had a mammogram within the last year, but you are planning to get one in the next year. Congratulations on making a smart decision to protect your health!

Most women in their 50s are getting regular mammograms. In fact, 64% of women in their 50s who are taking part in PRISM are doing so. We hope you will join the other women your age who are taking care of their health by getting mammograms every year. So take action!
First Generation Tailoring Studies

• Computer-generated print materials mailed

• Tailored telephone counseling

Stretcher, 1999
Velicer et al., 2006
Lustria et al., 2009
Lessons Learned

• Broad reach typical with mass communication

• Level of persuasion typical with interpersonal communication

Rimal & Adkins, 2003
Noar, 2009
Lessons Learned

• Messages perceived as more relevant
• More likely to be read and recalled
• More effective at changing health behavior

Kreuter et al., 2000
Kroeze et al., 2006
Stretcher, 1999
Mechanism of Tailoring

If tailored interventions are efficacious vs.

Under what circumstances tailoring is most efficacious

(Hawkins et al., 2008)
(Noar et al., 2009)
Mechanism of Tailoring

“black box” of tailoring that often resulted from a “kitchen sink” approach

Abrams, Mills, & Bulger, 1999
Basic Question

• What elements of a message make it persuasive?
Tailored Print Interventions Review

- 57 studies reviewed
- 67% Preventive, 28% Screening, 5% Vaccination
- 96% tailored ≥ 1 theory concept
  - Range 0 to 9; Mean = 3.96 (SD = 2.04)
- 54% tailored on a behavior
- 18% tailored on demographic variables

### Summary of Theories and Health Behaviors in the 57 Studies

<table>
<thead>
<tr>
<th>Study Characteristic</th>
<th>k</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral theories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stages of change model</td>
<td>18</td>
<td>32</td>
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<tr>
<td>Transtheoretical model</td>
<td>17</td>
<td>30</td>
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<tr>
<td>Health belief model</td>
<td>16</td>
<td>28</td>
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<tr>
<td>Social cognitive theory</td>
<td>11</td>
<td>19</td>
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<tr>
<td>Attitude-social influence-self-efficacy model</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Theory of reasoned action</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Theory of planned behavior</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Other (one of each of the following: adherence model, elaboration likelihood model, lay health advisor model, precaution adoption process model, decision-making theory, social inoculation theory)</td>
<td>6</td>
<td>11</td>
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<tr>
<td>Behaviors</td>
<td></td>
<td></td>
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<tr>
<td>Smoking cessation</td>
<td>15</td>
<td>26</td>
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<tr>
<td>Diet</td>
<td>13</td>
<td>23</td>
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<tr>
<td>Mammography screening</td>
<td>12</td>
<td>21</td>
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<tr>
<td>Exercise</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Vaccination/immunization</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Pap test</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Other (one of each of the following: sunscreen use, safer sex, passive cancer detection, seatbelt use, colorectal cancer screening, injury prevention, routine medical appointments, diet and exercise)</td>
<td>8</td>
<td>14</td>
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<tr>
<td>Behavior Types</td>
<td></td>
<td></td>
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<tr>
<td>Preventive behavior</td>
<td>38</td>
<td>67</td>
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<tr>
<td>Screening behavior</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>Vaccination/immunization behavior</td>
<td>3</td>
<td>5</td>
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</table>
Tailored Print Interventions Review

Noar, et al. (2007)

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>4%</td>
</tr>
<tr>
<td>Theory</td>
<td>33%</td>
</tr>
<tr>
<td>Theory + Demo</td>
<td>12%</td>
</tr>
<tr>
<td>Theory + Behavior</td>
<td>46%</td>
</tr>
<tr>
<td>Theory + Demo + Behavior</td>
<td>5%</td>
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</table>
Effect Sizes of Tailoring Factors

Pairwise Z test, Bonferroni correction for the 10 pairwise comparisons of $p<.01$

Noar, et al. (2007)
Theoretical Tailoring

• Studies tailoring on:
  – Attitude
  – Self Efficacy
  – Stage of Change
  – Social Influences

had significantly larger effect sizes
Integrative Model (IM)

- Attitude
- Perceived Normative Pressure
- Perceived Behavioral Control

Intention

Behavior
Integrative Model

Distal Variables
- Behavioral beliefs and outcome evaluations
- Injunctive and Descriptive Normative beliefs
- Efficacy beliefs

Behavioral beliefs and outcome evaluations
- Attitude
- Perceived Normative Pressure
- Self-Efficacy

Skills

Intention

Environment constraints

Behavior

Demographics
- Culture
- SES
- Personality traits
- Medial & Intervention exposure
- Other individual difference variables

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Nicotine Replacement Patch Tailoring Study

- $N = 495$
- Demographic tailoring (age, gender, ethnicity)
- Theoretical tailoring (attitude, norms, self-efficacy)
- 7 conditions (0 tailoring to complete tailoring)
Nicotine Replacement Patch Tailoring Study

Assessment Instrument

Demographics
Salient Determinants

Post Test
Quitting smoking is tough. But it doesn’t have to be brutal.

We understand it is difficult to quit smoking, especially on your own. Most smokers have several quit attempts before they stop. Your chances to quit depend on how strongly you are addicted to nicotine, how much you want to quit, and how closely you follow a quitting program. The nicotine replacement patch combined with information in this newsletter is a powerful way to help you quit smoking for good.

This newsletter guides you through the thinking about stopping smoking using the nicotine replacement patch. It gives tips on fighting temptation and what to do if you give in. By telling you what to expect, it can help you through the day-by-day process of using the nicotine replacement patch to quit smoking.

This time you can do it. Get serious. Get started.

- NicoDerm CQ the first and only clear nicotine replacement stop smoking patch. If you have ever tried to quit smoking, you probably know how difficult it can be. Quitting is hard. Usually people take 5 to 7 attempts or more before they are finally able to quit. Studies have shown that each time you try to quit, you will be stronger and will have learned more about what made you slip. Anyone can quit smoking if they set their heart to it. It does not matter you age, health, or lifestyle. Having a plan is important. The first step in quitting is to pick a quit date, decide a plan on how you are going to quit, keep a positive attitude and go for it!

Over 35 million smokers try to quit each year, yet less than 5% reach their one-year anniversary. For these smokers the key to stopping may seem elusive. But the facts of nicotine addiction are no mystery.

Nicotine from smoking changes the structure and function of your brain. When the brain stops getting the nicotine it’s used to, you begin feeling strong withdrawal cravings. These cravings for cigarettes are actually your brain craving nicotine.

The nicotine replacement patch, on the other hand, delivers controlled amounts of nicotine at a slower, less intense pace. It relieves cravings while allowing you to gradually wean yourself from nicotine addiction. Over an 8 to 10 week period, depending on the strength you choose, you lower the dosage until you stop using it altogether.
Nicotine Replacement Patch Tailoring Study

- Attitude
- Perceived Normative Pressure
- Perceived Behavioral Control

Intention

$R^2 = 0.53$

Coefficients:
- Attitude: 0.48
- Perceived Normative Pressure: 0.28
- Perceived Behavioral Control: 0.08
Nicotine Replacement Patch Tailoring Study

Perceived Normative Pressure

Perceived Behavioral Control

Attitude

Intention

R^2 = .53

Caucasian
Nicotine Replacement Patch Tailoring Study

African American

Attitude

Perceived Normative Pressure

Perceived Behavioral Control

.42

.36

.05ns

Intention

R² = .52
Nicotine Replacement Patch Tailoring Study
Demographics and the IM

Demographics → ? → Intention
### Intention

<table>
<thead>
<tr>
<th></th>
<th>Intention</th>
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</thead>
<tbody>
<tr>
<td><strong>β (SE)</strong></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-.33 (.19)*</td>
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<tr>
<td>Age</td>
<td>-.08 (.27)</td>
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<tr>
<td>Gender</td>
<td>.04 (.27)</td>
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<tr>
<td>Ethnicity</td>
<td>-.002 (.29)</td>
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<tr>
<td>Attitude</td>
<td>.19 (.23)*</td>
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<tr>
<td>Perceived Normative Pressure</td>
<td>.21(.29)*</td>
</tr>
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<td>Perceived Behavioral Control</td>
<td>-.02 (.28)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.10</td>
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</table>

* *p<.05
Perceived Message Effectiveness

- read materials if received in mail
- liked
- attention-catching
- re-reading them
- useful
- applicable to the participant’s life
- showing them to others
- attractive
- understandable
- trustworthy
- containing new information
- making lifestyle changes
- informative
- credibility of source
Correlations of the behavioral determinants with intention

<table>
<thead>
<tr>
<th></th>
<th>Intention</th>
<th>Perceived Message Effectiveness</th>
<th>Attitude</th>
<th>Perceived Normative Pressure</th>
<th>Perceived Behavioral Control</th>
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</thead>
<tbody>
<tr>
<td>Perceived Message Effectiveness</td>
<td>.565**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Attitude</td>
<td>.680**</td>
<td>.503**</td>
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<tr>
<td>Perceived Normative Pressure</td>
<td>.605**</td>
<td>.450**</td>
<td>.589**</td>
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<tr>
<td>Perceived Behavioral Control</td>
<td>.421**</td>
<td>.232**</td>
<td>.408**</td>
<td>.528**</td>
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<tr>
<td>$\Sigma_{be}$</td>
<td>.437**</td>
<td>.602**</td>
<td>.475**</td>
<td>.475**</td>
<td>.334**</td>
</tr>
<tr>
<td>$\Sigma_{bm}$</td>
<td>.226**</td>
<td>.461**</td>
<td>.286**</td>
<td>.343**</td>
<td>.205**</td>
</tr>
<tr>
<td>$\Sigma_{cb}$</td>
<td>.365**</td>
<td>.574**</td>
<td>.377**</td>
<td>.454**</td>
<td>.235**</td>
</tr>
</tbody>
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*p < .05

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## Type of Tailoring

<table>
<thead>
<tr>
<th></th>
<th>Intention $\beta$ (SE)</th>
<th>Perceived Message Effectiveness $\beta$ (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.61 (.20)*</td>
<td>4.08 (.15)*</td>
</tr>
<tr>
<td>Demographic tailoring</td>
<td>-.001 (.09)</td>
<td>.13 (.06)*</td>
</tr>
<tr>
<td>Theoretical tailoring</td>
<td>.31 (.08)*</td>
<td>-.004 (.06)</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.09</td>
<td>.02</td>
</tr>
<tr>
<td>N = 495</td>
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</tbody>
</table>

*p<.05
So What Works?

• Theory based interventions
  – best theory to use: Integrative Model

• Highly tailored messages
  – personalized and customized
    • demographics
    • behavior
  – theoretical concepts
Summary: Tailoring 101

- Analyze the behavior
- Theoretical program framework
- Assessment tool
- Design feedback
- Create tailored message
- Develop algorithms
- Automate tailoring process
- Program Implementation