Members of our Western societies continue to eat as though our bulging waistlines will never bring on the many varied and crippling coronary and related diseases, we smoke as though our blackening lungs will not spawn neoplasms, we alter the chemistry of our brains as though our neurological systems are endlessly forgiving of our excesses, and we avoid activity like the plague as though to lull our resting hearts into premature eternal rest (Cormier, Prefontaine, MacDonald, & Stuart, 1980, p. 224).
Taking care of your health....

“I need to..."

- Get enough sleep
- Exercise regularly
- Eat a nutritious diet
- Drink alcohol only in moderation
- Not overeat or go on starvation diets
- Wear seatbelts
- Not smoke cigarettes
- Reduce stress
So why not take better care?.....

- Can’t be bothered, too lazy, lack of time, not worthwhile, too difficult or expensive, no support, don’t want to think about it, dismiss the importance of change or the need for change etc.

Theories of Health Behaviour

- Health Belief Model (HBM).
- four factors:
  - Perceived susceptibility (optimistic bias)
  - Perceived seriousness/severity
  - Benefits and barriers
  - Cues to action
Health Belief Model HBM (Smoking)

Theories of Health Behaviour

- **Protection Motivation Theory of Health**: adds *self-efficacy* to the HBM
- **Theory of Reasoned Action (TRA)**: *attitudes* toward health behaviour and *subjective norms*
- **Theory of Planned Behaviour (TPB)**: adds *self-efficacy* to the TRA
Theory of Reasoned Action & Planned Behaviour

Key Features of the Stages of Change Model

► Deals with intentional behaviour change
► Views change as a process rather than an event
► The change process is characterised by a series of stages of change
► In attempting to change a behaviour a person typically cycles through these stages of change
Stages of change

1. **Pre-contemplation** (not even thinking about it)
2. **Contemplation** (thinking about it but not doing anything)
3. **Preparation** (planning to change in the next month, taking initial steps)
4. **Action** (change underway for a month or more)
5. **Maintenance** (change underway for 6 months or more)
What helps people move forward through the Stages of Change?

► Processes of Change

► Decisional balance

► Self-efficacy
10 Processes of Change

► Coping activities or strategies used by people in their attempts to change

► Each change process is a broad category of coping activities which encompasses multiple techniques, methods and interventions

► Use smoking as an example....

Two Main Types of Change Processes

Cognitive/Experiential change processes
Involve changes in the way people think and feel about their smoking

Behavioural change processes
Involve people making changes to their smoking behaviour
5 Cognitive/Experiential Processes

Consciousness raising
Increasing information about yourself and smoking

e.g. - thinking about health effects of smoking
- a doctor asking whether you smoke
- thinking about how you’re running out of breath

Dramatic relief
Experiencing strong emotional reactions to events associated with smoking

e.g. - deciding to do something about your smoking after your grand mother is diagnosed with lung cancer
- seeing the effect of blowing smoke through a white handkerchief
Environmental re-evaluation
Becoming aware of the impact of the problem behaviour on others

e.g.- thinking about the effects of smoking around the kids
- noticing cigarette butts on the street

Self-reevaluation
Affective and cognitive reexperiencing of one’s self and problems

e.g.- thinking that you’re no longer happy being a smoker
- imagining yourself as a non-smoker
Social liberation
Noticing and using social conditions that support personal changes

  e.g. - noticing the non-smoking areas around you
        - joining a quit smoking course

5 Behavioural Processes

Self-liberation
Belief in your ability to change and commitment to act on that belief

  e.g. - telling yourself that you can quit smoking
        - setting a quit day
        - telling others you’re quitting
Helping relationships
Trusting others and accepting their support in quitting

e.g. - asking a friend who used to smoke for help

Counter conditioning
Replacing smoking with more positive behaviours and experiences

e.g. - “Do something else”
**Reinforcement management**
Rewards for staying quit

e.g. - the family showering you with praise
- buying yourself a magazine, DVD, flowers
- telling yourself how wonderful you are

**Stimulus control**
Avoiding or countering stimuli that elicit the problem behaviour

e.g. - cleaning up ashtrays before your quit day
- not going to a bar the day after you quit
- putting up no smoking signs
Relationship between Processes and Stages of Change

- Cognitive change processes help at early stages
- Behavioural change processes help in later stages of change

Decisional Balance

- The relative advantages (pros) and disadvantages (cons) of the behaviour
- Motivation to change affected by decisional balance
Decisional Balance (Cont’d)

► Decisional balance changes across the stages of change

► Use of cognitive change processes can help tip the decisional balance in favour of quitting

Figure 3. Decisional Balance Across the Stages of Change

From Prochaska, Velicer, Rossi et al. 1994 pg.43
Decisional Balance Worksheet

NO CHANGE

PROS (Status Quo Behavior)

CONS (Status Quo Behavior)

CONS (Change)

PROS (Change)

Self-efficacy

► Confidence in ability to change

► Lowest in Precontemplation and highest in Maintenance

► Self-efficacy is a strong predictor of success in the Action and Maintenance stages
Influences on the Stages and Processes of Exercise Adoption in Women

► **Aim**: To examine the relationship between the stages of exercise change, and the processes of change, costs and benefits of exercising, self-efficacy, and self-rated health.

► **N=140 women (convenience sample)**
### Table 1
Means and Standard Deviations for Self-Report Data Provided by Respondents in Each Stage of Exercise Adoption

<table>
<thead>
<tr>
<th>Measure</th>
<th>Precontemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action</th>
<th>Maintenance</th>
<th>Univariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pros scale (T-score)</td>
<td>38.03 ± 6.49</td>
<td>48.99 ± 8.24</td>
<td>50.59 ± 9.23</td>
<td>53.70 ± 7.13</td>
<td>53.62 ± 10.39</td>
<td>10.56**</td>
</tr>
<tr>
<td>Cons scale (T-score)</td>
<td>58.32 ± 10.50</td>
<td>57.23 ± 8.01</td>
<td>48.70 ± 8.89</td>
<td>50.04 ± 8.62</td>
<td>44.15 ± 7.93</td>
<td>12.33**</td>
</tr>
<tr>
<td>Decisional balance</td>
<td>-20.29 ± 13.71</td>
<td>-8.30 ± 12.45</td>
<td>1.88 ± 10.64</td>
<td>3.66 ± 11.19</td>
<td>8.87 ± 11.85</td>
<td>22.73**</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>1.32 ± 0.48</td>
<td>1.83 ± 0.83</td>
<td>2.36 ± 0.62</td>
<td>3.08 ± 0.69</td>
<td>3.69 ± 0.66</td>
<td>46.90**</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>5.12 ± 1.36</td>
<td>5.16 ± 1.01</td>
<td>5.00 ± 1.12</td>
<td>5.04 ± 0.86</td>
<td>6.07 ± 0.85</td>
<td>7.17**</td>
</tr>
</tbody>
</table>

Note: Degrees of freedom (4, 120)
*P < 0.01, **P < 0.001, all p-values two-tailed.

### Table 2
Process of Change Means, Standard Deviations, and ANOVA Results Across the Five Stages Exercise Adoption

<table>
<thead>
<tr>
<th>Process of Change</th>
<th>Precontemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action</th>
<th>Maintenance</th>
<th>Univariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiential processes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consciousness raising</td>
<td>6.56 ± 1.95</td>
<td>6.68 ± 2.67</td>
<td>10.89 ± 2.78</td>
<td>10.58 ± 2.65</td>
<td>11.40 ± 4.24</td>
<td>9.04**</td>
</tr>
<tr>
<td>Dramatic relief</td>
<td>4.22 ± 1.35</td>
<td>6.58 ± 2.99</td>
<td>7.03 ± 2.31</td>
<td>7.17 ± 3.38</td>
<td>7.68 ± 3.12</td>
<td>5.93**</td>
</tr>
<tr>
<td>Self-validation</td>
<td>7.44 ± 2.89</td>
<td>11.68 ± 3.74</td>
<td>13.87 ± 4.23</td>
<td>14.25 ± 2.59</td>
<td>14.80 ± 3.67</td>
<td>16.57**</td>
</tr>
<tr>
<td>Social liberation</td>
<td>8.00 ± 2.33</td>
<td>10.42 ± 3.70</td>
<td>10.84 ± 2.90</td>
<td>10.52 ± 1.90</td>
<td>11.88 ± 3.07</td>
<td>5.71**</td>
</tr>
<tr>
<td>Behavioral processes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counter-conditioning</td>
<td>6.61 ± 1.65</td>
<td>9.26 ± 3.23</td>
<td>11.45 ± 3.48</td>
<td>13.71 ± 3.09</td>
<td>15.70 ± 2.70</td>
<td>36.59**</td>
</tr>
<tr>
<td>Helping relationships</td>
<td>5.56 ± 1.46</td>
<td>7.74 ± 3.54</td>
<td>8.53 ± 2.93</td>
<td>8.33 ± 3.03</td>
<td>10.13 ± 3.92</td>
<td>6.56**</td>
</tr>
<tr>
<td>Reinforcement management</td>
<td>7.11 ± 2.57</td>
<td>10.06 ± 3.10</td>
<td>11.16 ± 2.73</td>
<td>12.13 ± 3.34</td>
<td>12.61 ± 3.22</td>
<td>11.78**</td>
</tr>
<tr>
<td>Self-fallin</td>
<td>7.89 ± 1.97</td>
<td>10.68 ± 2.87</td>
<td>13.18 ± 3.01</td>
<td>13.96 ± 3.34</td>
<td>12.61 ± 3.33</td>
<td>22.30**</td>
</tr>
<tr>
<td>Stimulus control</td>
<td>5.06 ± 1.00</td>
<td>7.32 ± 2.65</td>
<td>8.32 ± 2.62</td>
<td>9.48 ± 3.17</td>
<td>8.51 ± 2.51</td>
<td>8.04**</td>
</tr>
</tbody>
</table>

Note: *P < 0.01, **P < 0.001, all p-values two-tailed.
Assessing Potential Barriers to Exercise Adoption in Middle-Aged Men: Over-Stressed, Under-Controlled, or Just Too Unwell?

► **Aim:** Consider the relationships between exercise adoption and exercise self-efficacy, decisional balance, self-rated health, perceived stress, and health locus of control

► **N = 72** (middle aged men - non random sample)


<p>| Table 1 |
| Participant Distribution Pattern Across the Five Stages of Change |
|----------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th>Stage of change</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precontemplation</td>
<td>4 (4.6%)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>6 (6.9%)</td>
</tr>
<tr>
<td>Preparation</td>
<td>25 (28.7%)</td>
</tr>
<tr>
<td>Action</td>
<td>7 (8.1%)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>30 (34.5%)</td>
</tr>
</tbody>
</table>
Pacific women’s decisions about exercise adoption: Utilising the stage-of-exercise-adoption model

► **Aim**: To investigate how the pros and cons of exercising, exercise self-efficacy, self-reported health, and sociodemographic barriers to exercise influence exercise adoption

► **N=106** Pacific women (non-random questionnaire survey)

---

Table 2: Means and Standard Deviations for Self-Report Scale Scores by Stage, Scale Reliability Alpha Coefficients, and ANOVA Statistics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Stage 1: Precontemplation and contemplation</th>
<th>Stage 2: Preparation</th>
<th>Stage 3: Action and maintenance</th>
<th>Total sample</th>
<th>Univariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>53.2 ± 9 (n = 10)</td>
<td>54.3 ± 9.8 (n = 25)</td>
<td>54.3 ± 9.1 (n = 37)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SRH</td>
<td>4.8 ± 1.2</td>
<td>5.0 ± 0.7</td>
<td>5.9 ± 0.9</td>
<td>—</td>
<td>10.8*</td>
</tr>
<tr>
<td>SE</td>
<td>4.3 ± 1.5</td>
<td>4.4 ± 1.0</td>
<td>5.6 ± 0.8</td>
<td>.92</td>
<td>12.4*</td>
</tr>
<tr>
<td>Pros</td>
<td>4.4 ± 1.1</td>
<td>4.2 ± 0.9</td>
<td>4.6 ± 0.9</td>
<td>.90</td>
<td>—</td>
</tr>
<tr>
<td>Cons</td>
<td>3.0 ± 0.8</td>
<td>3.0 ± 0.8</td>
<td>2.3 ± 0.7</td>
<td>.64</td>
<td>9.3*</td>
</tr>
<tr>
<td>DB</td>
<td>1.4 ± 1.5</td>
<td>1.2 ± 1.4</td>
<td>2.3 ± 1.2</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>PSS</td>
<td>1.6 ± 1</td>
<td>1.5 ± 0.5</td>
<td>1.2 ± 0.5</td>
<td>.87</td>
<td>—</td>
</tr>
<tr>
<td>IHLOC</td>
<td>4.2 ± 1.2</td>
<td>4.1 ± 0.7</td>
<td>4.3 ± 0.8</td>
<td>.79</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: SRH = Self-rated health; SE = Self-efficacy; Pros = Pros of exercise; Cons = Cons of exercise; DB = Decisional balance; PSS = Perceived stress scale; IHLOC = Internal health locus of control.

*p < 0.01; **p < 0.001. All p values two-tailed.
Pacific women’s decisions about exercise adoption: utilising the stage-of-exercise-adoption model

Table 1. Means, standard deviations, and univariate F scores for the pros, cons, decisional balance, self-efficacy, self-rated health, and barriers to exercise scale scores by stage of exercise-adoption

<table>
<thead>
<tr>
<th>Stage of exercise adoption</th>
<th>Precontemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action</th>
<th>Maintenance</th>
<th>Univariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>F</td>
</tr>
<tr>
<td>Pre (T score)</td>
<td>41.67 (9.88)</td>
<td>52.88 (8.49)</td>
<td>56.07 (9.78)</td>
<td>52.02 (7.74)</td>
<td>50.70 (11.10)</td>
<td>2.78**</td>
</tr>
<tr>
<td>Cons (T score)</td>
<td>40.04 (8.99)</td>
<td>54.33 (9.80)</td>
<td>51.83 (9.56)</td>
<td>47.56 (5.21)</td>
<td>45.56 (11.73)</td>
<td>2.99**</td>
</tr>
<tr>
<td>Decisional balance</td>
<td>-6.05 (7.09)</td>
<td>-1.09 (12.14)</td>
<td>-2.00 (7.29)</td>
<td>1.58 (7.92)</td>
<td>5.11 (12.42)</td>
<td>4.46***</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>1.38 (0.92)</td>
<td>2.96 (0.75)</td>
<td>2.97 (0.83)</td>
<td>3.02 (1.06)</td>
<td>3.07 (0.72)</td>
<td>20.10****</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>4.25 (3.10)</td>
<td>3.67 (4.07)</td>
<td>4.60 (4.07)</td>
<td>6.03 (1.40)</td>
<td>5.69 (0.96)</td>
<td>5.29***</td>
</tr>
<tr>
<td>Barriers to exercise</td>
<td>7.75 (7.74)</td>
<td>9.36 (1.87)</td>
<td>8.10 (1.37)</td>
<td>2.55 (1.57)</td>
<td>1.73 (1.61)</td>
<td>4.116**</td>
</tr>
</tbody>
</table>

*Mean SD=Standard deviation. **p < 0.05. ***p < 0.01. ****p < 0.001

Barriers to exercise:
Respondents were allocated a score of ‘1’ if they:

- Had one or more children,
- Did not have a telephone,
- Did not have a motor vehicle,
- Had some or a great deal of worry about their health,
- Had some, very little, or no control over their health,
- Were either dissatisfied or very dissatisfied with their overall standard of living,
- Had just enough money to get along on or can’t make ends meet,
- Had no family who exercised regularly, or
- Had no friends who exercised regularly.
Pacific women’s decisions about exercise adoption: utilising the stage-of-exercise-adoption model

Barriers to exercise:
► 54% had just enough money to get by or ‘couldn’t make ends meet’,
► 44% had no family who exercised regularly,
► 44% had no friends who exercised regularly
► 44% had one or more children,
► 44% had some, or a great deal of, worry about their health,
► 21% did not have a motor vehicle,
► 19% were either dissatisfied or very dissatisfied with their overall standard of living,
► 11% did not have a telephone, and
► 7% had some, very little, or no control over their health.

Two important barriers to exercise:
► In the lower stages-of-exercise adoption - fewer friends that also exercise, and less satisfied with their current income.
► These also associated with reduced self-efficacy to exercise.
► Potential importance of peer modelling behaviour (peer support)
► Need for inexpensive exercise options - focus upon readily available alternatives to gym-based exercise, such as community or church based exercise programs, or place an emphasis on simple cardiovascular exercises such as walking.
Age and gender differences in the stages of change for six health-related behaviours: A pilot study in New Zealand

► **Aim:** To use the stages of change model to examine six health-related behaviours: avoidance of a high-fat diet, eating a high-fibre diet, attempting to lose weight, undertaking exercise, stress reduction, and conducting cancer self-examinations.

► **N=460** (response rate 53%). Non probability convenience sample

---

### TABLE 1 Percentages of males and females within each stage of change category for six health behaviours

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Ignoring behaviour</th>
<th>Thinking about behaviour</th>
<th>Performing behaviour</th>
<th>Gender differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Avoiding high fat diet</td>
<td>64.00</td>
<td>36.00</td>
<td>45.70</td>
<td>54.30</td>
</tr>
<tr>
<td>Eating high fibre diet</td>
<td>57.10</td>
<td>42.90</td>
<td>39.40</td>
<td>60.60</td>
</tr>
<tr>
<td>Losing weight</td>
<td>62.50</td>
<td>37.50</td>
<td>51.00</td>
<td>49.00</td>
</tr>
<tr>
<td>Regular exercise</td>
<td>65.20</td>
<td>34.80</td>
<td>35.10</td>
<td>64.90</td>
</tr>
<tr>
<td>Reducing stress</td>
<td>56.60</td>
<td>43.40</td>
<td>31.40</td>
<td>68.60</td>
</tr>
<tr>
<td>Self-exam for cancer</td>
<td>64.60</td>
<td>35.40</td>
<td>57.40</td>
<td>42.60</td>
</tr>
</tbody>
</table>

Note: For males, available n=229. For females, available n=223. However, in some behaviours a short fall occurred due to missing data.

\( ^a p < .05, \ ^b p < .01, \ ^c p < .001 \)
Older respondents more likely to be avoiding fat, eating fibre, and conducting cancer self-examinations.

Younger respondents more likely to be thinking about reducing stress.

Associations between the 6 health behaviours

For men: avoidance of fat and eating fibre were most strongly associated with the other behaviours.

For women: avoidance of fat, eating fibre, and conducting cancer self-examinations were most strongly associated with the other behaviours.

Notion of gateway behaviours

Importance of considering age and gender in interventions.

**TABLE 2** Mean age and standard deviation for all participants at each stage of change for six health behaviours.

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Ignoring behaviour</th>
<th>Thinking about behaviour</th>
<th>Performing behaviour</th>
<th>Stage</th>
<th>( F )</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoiding high fat diet</td>
<td>42 ( (18.2) )</td>
<td>36 (16.5)</td>
<td>53 (15.8)</td>
<td></td>
<td>30.38*</td>
<td>0.12</td>
</tr>
<tr>
<td>Eating high fibre diet</td>
<td>41 (17.5)</td>
<td>35 (15.7)</td>
<td>53 (16.5)</td>
<td></td>
<td>26.52*</td>
<td>0.11</td>
</tr>
<tr>
<td>Losing weight</td>
<td>49 (19)</td>
<td>47 (16.1)</td>
<td>50 (16.6)</td>
<td></td>
<td>0.54</td>
<td>0.00</td>
</tr>
<tr>
<td>Regular exercise</td>
<td>47 (16.7)</td>
<td>45 (16.5)</td>
<td>50 (18.0)</td>
<td></td>
<td>2.33</td>
<td>0.01</td>
</tr>
<tr>
<td>Reducing stress</td>
<td>48 (19.3)</td>
<td>39 (16.0)</td>
<td>51 (16.7)</td>
<td></td>
<td>11.33*</td>
<td>0.05</td>
</tr>
<tr>
<td>Self-exam for cancer</td>
<td>39 (19.1)</td>
<td>44 (17.6)</td>
<td>52 (16.2)</td>
<td></td>
<td>17.90*</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Note: Interpretation of effect size made using Cohen’s (1988) classification. Small effect size \( \geq 0.1 \), moderate effect size \( \geq 0.6 \), large effect size \( \geq 1.4 \). Available \( n=460 \), however in some cases there is a small fall due to missing data.

? Mean age \( \text{? Standard deviation of age} \)

\( ^* \ p < .05, ^? \ p < .01, ^* \ p < .001 \)
Stages of Change for Fruit and Vegetable Intake Among New Zealand Men: Readiness to Eat Five Servings a Day and Impact of Contextual Factors

► **Aim:** Describe the proportion of men in each stage of change for fruit and vegetable intake, compare stage classification with intentions and behavior, and the impact of contextual factors on stage membership.

► **N = 518** (45% response rate)

► **Stages**
  - Pre-contemplation stage (32%)
  - Contemplation stage (10%)
  - Preparation stage (7%)
  - Action/maintenance stage (51%)

► **Dietary guideline knowledge, older age, higher income, education increased the likelihood of being in action/maintenance.**

► **Food insecurity** (limited or uncertain availability of nutritious, safe and personally acceptable foods that can be acquired in socially acceptable ways)
  - Food security associated with action/maintenance

► **Direct health promotion messages towards men**

---

Problems with the research

► Cross sectional – causal linkages uncertain
► Mostly non-random samples
► Arbitrariness of stage definitions
► Stage versus continuum models of behaviour change - ongoing debate
► Measurement of health behaviour and change
► Greater understanding of cultural and ethnic influences

But.... the Model is useful

► Framework for understanding the process of how people change
► Recognises that people in different stages of change need different types of interventions to help them progress.
Changing health behaviour remains challenging...

► **Individual Barriers**
  - Lack of knowledge?
  - Short-term rewards (feels good now)
  - Negative effects far away
  - Unrealistic optimism
  - Gender

► **Family Barriers**
  - Health habits acquired in childhood

► **Health System Barriers**
  - Doctors trained to focus on illness
  - Lack of health insurance
  - Relationship/communication between doctor and patient

► **Community, cultural and ethnic barriers**
  - Norms of the community
  - Rural and remote living (access to health services or other resources/supports?)
Thank you for listening...
Health behaviour change: Applying Prochaska and DiClemente's Stages of Change Model

Flett, RA

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