

## Health Behaviour Change: Applying Prochaska and DiClemente's Stages of Change Model



Image Sources

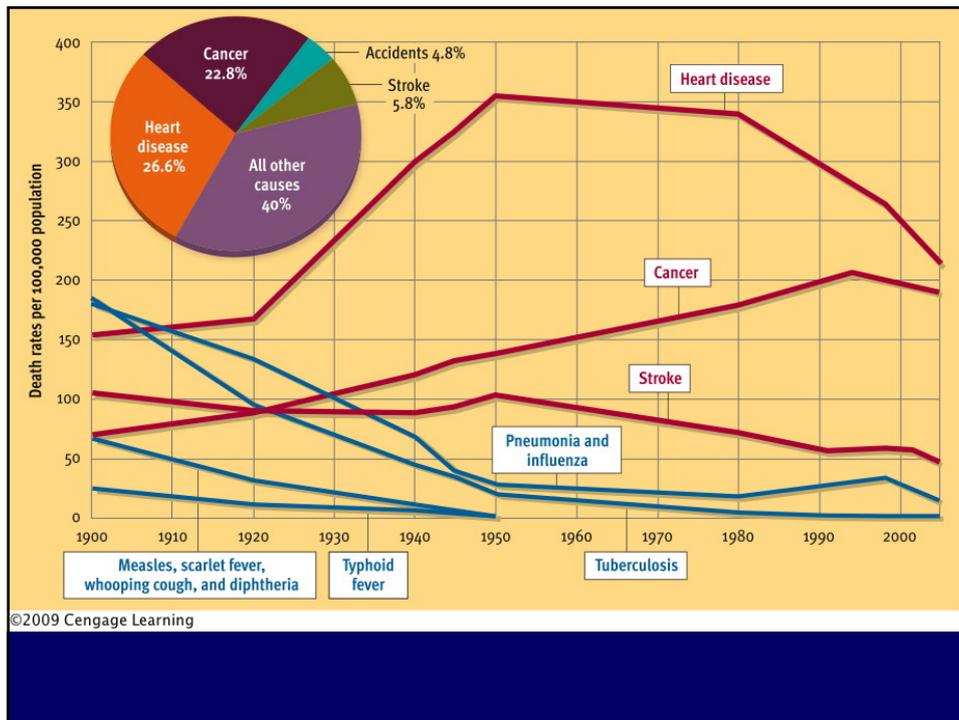
<http://www.clevelandseniors.com/forever/100-smoker.htm>

<http://bacontoday.com/bacon-flavored-diet-coke/>

<http://www.jointessential.com/overview-on-what-is-psoriatic-arthritis/>

<http://pandawhale.com/post/14274/pug-o-war-using-his-teeth-too-to-keep-it-fair>

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

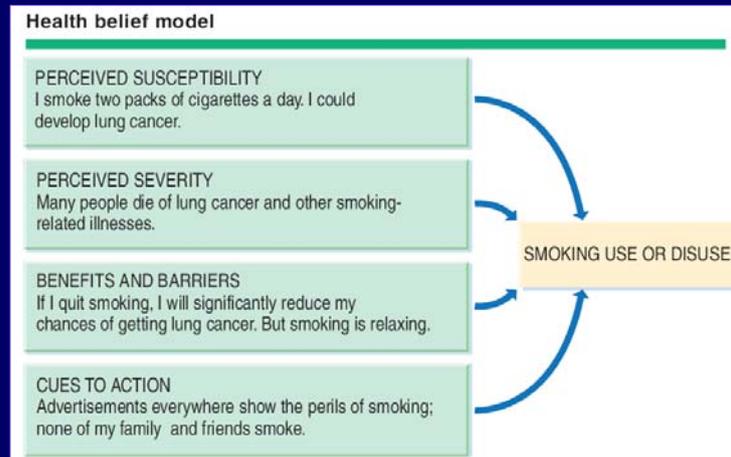
## So why not take better care?.....

- ▶ 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

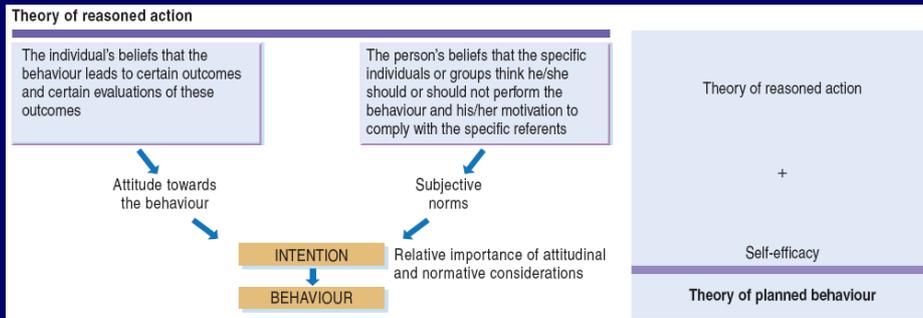
## Health Belief Model HBM (Smoking)



## 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

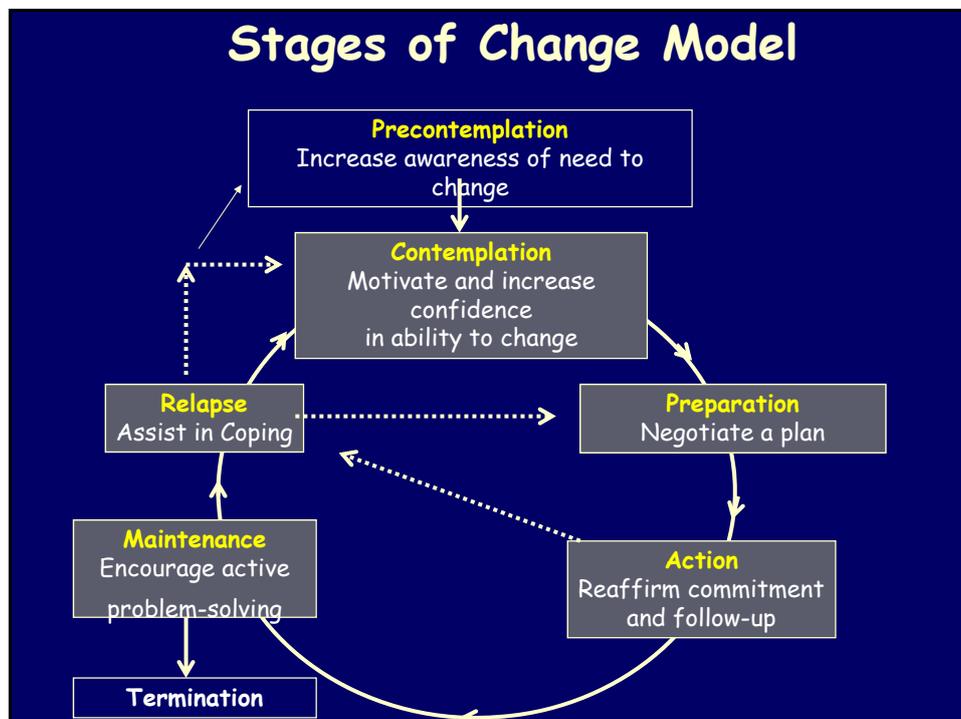


## Key Features of the Stages of Change Model

- ▶ 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)



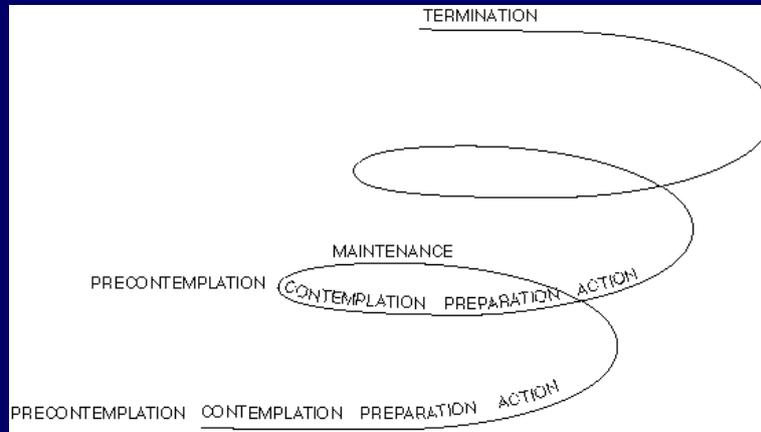


Figure 2. Spiral of change

From Prochaska, DiClemente & Norcross, 1992, p1104

## 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

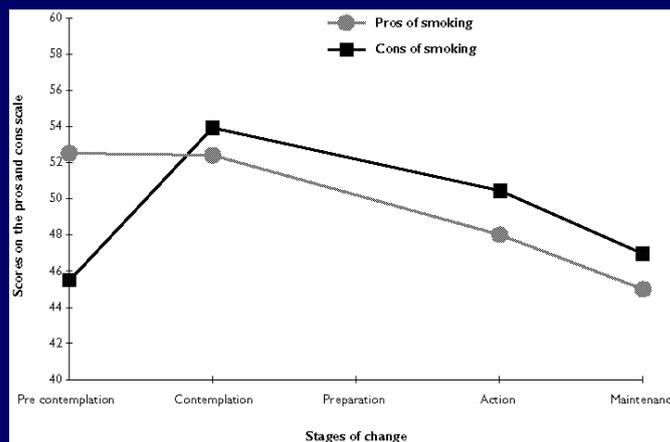


Figure 3. Decisional Balance Across the Stages of Change

From Prochaska, Velicer, Rossi et al. 1994 pg.43

## Decisional Balance Worksheet

NO CHANGE

PROS (Status Quo Behavior)

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CONS (Change)

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CHANGE

CONS (Status Quo Behavior)

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PROS (Change)

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## 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

## Some research examples

### 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)

Girling Butcher, R., Towers, A. J., Flett, R. A., & Seebeck, R. F. (2006). Influences on the stages and processes of exercise adoption in women. *Australian Journal of Rehabilitation Counselling*, 12(2), 110-123.

**TABLE 1**

Means and Standard Deviations for Self-Report Data Provided by Respondents in Each Stage of Exercise Adoption

Measure	Precontemplation (n = 18)	Contemplation (n = 19)	Preparation (n = 38)	Action (n = 24)	Maintenance (n = 41)	Univariate F <sup>a</sup>
Pros scale (T score)	38.03 ± 6.49	48.99 ± 8.24	50.58 ± 9.24	53.70 ± 7.13	53.02 ± 10.39	10.56**
Cons scale (T score)	58.32 ± 10.50	57.28 ± 8.01	48.70 ± 8.89	50.04 ± 8.62	44.15 ± 7.93	12.35**
Decisional balance	-20.29 ± 13.17	-8.30 ± 12.45	1.88 ± 10.64	3.66 ± 11.19	8.87 ± 11.85	22.73**
Self-efficacy	1.32 ± 0.48	1.82 ± 0.83	2.36 ± 0.82	3.08 ± 0.69	3.69 ± 0.66	46.90**
Self-rated health	5.12 ± 1.36	5.16 ± 1.01	5.00 ± 1.12	5.04 ± 0.86	6.07 ± 0.85	7.17**

Note: <sup>a</sup>Degrees of freedom (4, 135)

\*p &lt; 0.01; \*\*p &lt; 0.001; all p values two-tailed.

**TABLE 3**

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

	Process of Change	Stage exercise adoption					Univariate F
		Precontemplation (n = 18)	Contemplation (n = 19)	Preparation (n = 38)	Action (n = 24)	Maintenance (n = 41)	
Experiential processes	Consciousness raising	6.56 ± 1.95	8.68 ± 2.67	10.89 ± 2.78	10.58 ± 2.65	11.40 ± 4.24	9.04**
	Dramatic relief	4.22 ± 1.35	6.58 ± 2.99	7.03 ± 2.31	7.17 ± 2.38	7.68 ± 3.12	5.93**
	Environmental reevaluation	7.28 ± 1.93	10.11 ± 3.14	10.50 ± 3.67	10.58 ± 3.28	9.44 ± 3.36	3.62*
	Self reevaluation	7.44 ± 2.89	11.68 ± 3.74	13.87 ± 4.25	14.25 ± 2.59	14.80 ± 3.67	16.57**
	Social liberation	8.00 ± 2.35	10.42 ± 3.70	10.84 ± 2.90	10.52 ± 1.90	11.88 ± 3.07	5.73**
Behavioural processes	Counter-conditioning	6.61 ± 1.65	9.26 ± 3.21	11.45 ± 3.48	13.71 ± 3.09	15.70 ± 2.70	36.59**
	Helping relationships	5.56 ± 1.46	7.74 ± 3.54	8.53 ± 2.93	8.33 ± 3.03	10.13 ± 3.92	6.58**
	Reinforcement management	7.11 ± 2.37	10.06 ± 3.10	11.16 ± 2.73	12.13 ± 3.34	12.61 ± 3.23	11.78**
	Self liberation	7.89 ± 1.97	10.68 ± 2.87	13.18 ± 3.01	13.96 ± 3.34	12.61 ± 3.33	22.30**
	Stimulus control	5.06 ± 1.00	7.32 ± 2.65	8.32 ± 2.62	9.48 ± 3.17	8.51 ± 2.51	8.04**

Note: \*p &lt; .01; \*\*p &lt; 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)

Towers, A. J., Flett, R. A., & Seebeck, R. F. (2005). Assessing potential barriers to exercise adoption in middle-aged men: Over-stressed, under-controlled, or just too unwell? *International Journal of Men's Health*, 4(1), 13-27.

Table 1  
*Participant Distribution Pattern Across the Five Stages of Change*

Stage of change	Number of respondents
Precontemplation	4 (4.6%)
Contemplation	6 (6.9%)
Preparation	25 (28.7%)
Action	7 (8.1%)
Maintenance	30 (34.5%)

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

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

*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

- ▶ **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)

Kingi, D., Towers, A. J., Seebeck, R. F., & Flett, R. A. (2005). Pacific women's decisions about exercise adoption: Utilising the stage-of-exercise-adoption model. *New Zealand Medical Journal*, 118(1216).

## 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

	Stage of exercise adoption										Univariate F
	Precontemplation		Contemplation		Preparation		Action		Maintenance		
	M	SD	M	SD	M	SD	M	SD	M	SD	
Pro (T score)	41.67	(9.68)	52.68	(8.49)	50.07	(9.78)	52.02	(7.74)	50.70	(11.16)	2.78*
Con (T score)	48.04	(6.89)	54.33	(9.86)	51.83	(9.56)	47.56	(5.21)	45.59	(11.75)	2.99*
Decisional balance	-8.05	(7.69)	-1.90	(12.14)	-2.00	(7.29)	3.58	(7.92)	5.11	(12.42)	4.36**
Self-efficacy	1.38	(0.52)	2.30	(0.78)	2.87	(0.80)	3.02	(1.04)	3.87	(0.72)	23.48***
Self-rated health	4.25	(1.36)	3.67	(1.65)	4.49	(1.07)	4.69	(1.49)	5.80	(0.91)	5.20***
Barriers to exercise	3.73	(1.74)	3.30	(1.87)	3.19	(1.37)	2.55	(1.57)	1.75	(1.41)	4.316**

M=Mean; SD=Standard deviation; \* p < 0.05; \*\*p < 0.01; \*\*\*p < 0.000

## Pacific women's decisions about exercise adoption: utilising the stage-of-exercise-adoption model

### 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.

Pacific women's decisions about exercise adoption: utilising the stage-of-exercise-adoption model

### 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

Paddison, J., & Flett, R. A. (2005). Age and gender differences in the stages of change for six health-related behaviours: A pilot study in New Zealand. *Health Education Journal*, 64(4), 372-381

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

Behaviour	Stage						Gender differences $\chi^2$
	Ignoring behaviour		Thinking about behaviour		Performing behaviour		
	Male	Female	Male	Female	Male	Female	
Avoiding high fat diet	64.00	36.00	45.70	54.30	46.60	53.40	10.40 <sup>b</sup>
Eating high fibre diet	57.10	42.90	39.40	60.60	50.30	49.70	3.32
Losing weight	62.50	37.50	51.00	49.00	37.70	62.30	24.51 <sup>c</sup>
Regular exercise	65.20	34.80	35.10	64.90	51.60	48.40	12.80 <sup>b</sup>
Reducing stress	56.60	43.40	31.40	68.60	52.00	48.00	9.31 <sup>b</sup>
Self-exam for cancer	64.60	35.40	57.40	42.60	46.20	53.80	9.59 <sup>b</sup>

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

<sup>a</sup>  $p < .05$ , <sup>b</sup>  $p < .01$ , <sup>c</sup>  $p < .001$

- ▶ 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.

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

Behaviour	Stage			F	$\eta^2$
	Ignoring behaviour	Thinking about behaviour	Performing behaviour		
Avoiding high fat diet	42 <sup>a</sup> (18.2) <sup>b</sup>	36 (16.5)	53 (15.8)	30.38 <sup>e</sup>	0.12
Eating high fibre diet	41 (17.5)	35 (15.7)	53 (16.5)	26.92 <sup>e</sup>	0.11
Losing weight	49 (19)	47 (16.1)	50 (16.6)	0.54	0.00
Regular exercise	49 (16.7)	45 (16.5)	50 (18.0)	2.33	0.01
Reducing stress	48 (19.3)	39 (16.0)	51 (16.7)	11.33 <sup>e</sup>	0.05
Self-exam for cancer	39 (19.1)	44 (17.6)	52 (16.2)	17.90 <sup>e</sup>	0.07

Note: Interpretation of effect size made using Cohen's (1988) classification. Small effect size  $\geq .01$ , moderate effect size  $\geq .06$ , large effect size  $\geq .14$ . Available  $n=460$ , however in some cases there is a short fall due to missing data.

<sup>a</sup> Mean age <sup>b</sup> Standard deviation of age

<sup>c</sup>  $p < .05$ , <sup>d</sup>  $p < .01$ , <sup>e</sup>  $p < .001$

### 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

## 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)

Jury, A., & Flett, R. (2010). Stages of change for fruit and vegetable intake among New Zealand men: Readiness to eat five servings a day and impact of contextual factors. *International Journal of Men's Health*, 9(3), 184-200.

- ▶ **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

## Changing health behaviour remains challenging...

- ▶ *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...

