MESSAGE PRESENTATION EFFECTS IN HEALTH BEHAVIOUR COMMUNICATIONS

Sandra C. Jones
BA, MBA, PostGradDipHlthProm, MPH

This thesis is presented for the degree of

Doctor of Philosophy

of

The University of Western Australia.

School of Population Health

2002
ABSTRACT

Behavioral Decision Theory (BDT) appears to have potential for explaining and influencing health-related decisions. BDT research examines the influence of task characteristics, particularly message presentation variables, on consumer decisions. This thesis presents a series of 11 studies which apply BDT to health behaviour decisions. The primary aim of the studies was to examine the extent to which message presentation effects influence health behaviour decisions. The studies’ findings provide strong support for the existence and influence of presentation effects in health behaviour decision-making.

The three major areas of BDT considered in this thesis, applied to health behaviours such as smoking and exercise, are:

1. Prospect Theory and Message Framing
   The message framing studies provide further support for the instability of framing effects. It appears from these studies that the instability of framing effects may be due to differences in the linguistic complexity of messages, the presence or absence of specific words, and the consistency with which information is presented in relation to previous information to which the participants have been exposed.

2. Prospect Theory and Evaluations of Multiple Consequences in Hypothetical Decisions
   The studies of evaluations of multiple consequences in hypothetical decisions provide strong support for the existence of presentation effects in preference elicitation tasks. Specifically, the studies demonstrate that: presenting multiple consequences in an integrated form results in a majority preference for the integration of gains and for the integration of losses, contrary to previously reported studies; the underlying preference for the segregation of gains and the integration of losses predicted previously, but tested only on financial events, also applies to physical events, such as weight loss and dental treatment; altering the presentation format from integrated to segregated results in a change of preferences for temporal separation; and having participants pre-rate events can cause a reversal of majority preferences.
3. **Prospect Theory and Evaluations of Multiple Consequences in Health Behaviour Change**

Four studies were conducted to demonstrate the applicability of prospect theory and hedonic editing to the development of public health communications, and confirm the existence – and importance – of presentation effects in people’s processing of health-related information. As hypothesised, segregated presentation was more effective than integrated presentation of the same information in increasing Precontemplators’ and Contemplators’ perceptions of the negative consequences of smoking, and Precontemplators’ perceptions of the positive consequences of exercise.

Overall, the studies reported in this thesis suggest that BDT – particularly as it concerns message presentation effects – has the potential to increase our understanding of health behaviour decisions and to assist public health researchers and practitioners in developing communication campaigns to encourage people to increase health-protective behaviours and reduce health-damaging behaviour.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>ii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1 Introduction and Overview</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 2 Current Approaches to Understanding and Motivating Health Behaviour Change</td>
<td>7</td>
</tr>
<tr>
<td>Chapter 3 Behavioral Decision Theory</td>
<td>19</td>
</tr>
<tr>
<td>Chapter 4 The Health Issues</td>
<td>31</td>
</tr>
<tr>
<td>Chapter 5 Prospect Theory and Message Framing</td>
<td>47</td>
</tr>
<tr>
<td>Chapter 6 Prospect Theory and Evaluations of Multiple Consequences in Hypothetical Decisions</td>
<td>69</td>
</tr>
<tr>
<td>Chapter 7 Prospect Theory and Evaluations of Multiple Consequences in Health Behaviour Change</td>
<td>109</td>
</tr>
<tr>
<td>Chapter 8 Discussion and Conclusions</td>
<td>179</td>
</tr>
<tr>
<td>References</td>
<td>191</td>
</tr>
</tbody>
</table>

## Appendices:

- Appendix A Study 1 Questionnaires
- Appendix B Study 2 Questionnaires
- Appendix C Study 3 Questionnaires
- Appendix D Study 4 Questionnaires
- Appendix E Study 5 Questionnaires
- Appendix F Study 6 Questionnaires
- Appendix G Study 7 Questionnaires
- Appendix H Study 8 Questionnaires
- Appendix I Study 9 Questionnaires
- Appendix J Study 10 Questionnaires
- Appendix K Study 11 Questionnaires
- Appendix L Illustrations of the concepts (by Austin, aged 8)
ACKNOWLEDGEMENTS

My deepest gratitude to:

Professor Robert Donovan
Thank you for your inspiration and advice and for supervising this thesis from its inception until my move to Sydney

Associate Professor Billie Giles-Corti
Thank you for taking me on, and for providing the supervision and guidance I needed to turn this from a collection of studies into a thesis

It was my privilege to have the support and advice of several other very knowledgeable people throughout my candidature:

Dr Ron Borland – Thank you for helping me find my initial direction and for reading all my draft chapters and providing numerous insightful suggestions for improvement

Professor John Rossiter, Professor Neville Owen, Dr Garry Egger, Dr Michael Booth, Dr Philip Vita, Dr Ken Woollard, Mr Ron Edwards – Thank you for providing expert advice on various aspects of the study design and background literature

Thanks are also due to the people who assisted me with data collection for the studies in this thesis – especially Geoffrey Jalleh and Sarah Jones.

This majority of the work presented in this thesis was conducted while the candidate was the recipient of a Healthway Doctor of Philosophy Research Training Scholarship.

This thesis is dedicated to the people who made it all worthwhile:

Paul and Rosemary Jones, my parents: as always, the wind beneath my wings

and

Austin and Lincoln Wyatt, my beautiful sons, who keep my feet on the ground
CHAPTER 1: INTRODUCTION AND OVERVIEW

Behavioural Decision Theory (BDT) appears to have potential for explaining and influencing health-related decisions. BDT research examines the influence of task characteristics, such as information presentation and response options, on consumer decisions. This is potentially important for health promotion research and practice because an understanding of the ways in which people interpret, and are thus influenced by, health-related information is essential to the development of effective health promotion communication campaigns.

BDT has been applied in a number of areas, including marketing and finance. To the best of the candidate's knowledge, other than message framing, BDT has not been applied to health behaviour decision-making.

This thesis seeks to extend the application of BDT by presenting a series of studies related to health decisions. The overall aim of the series of studies was to investigate the applicability of BDT findings on presentation effects to health behaviour decision-making.

Chapters 2, 3 and 4 provide the background to the thesis. The literature on the behaviours to be studied and the theoretical underpinnings of the experiments conducted are reviewed. Chapters 5 to 8 describe the series of studies conducted for this thesis. Each chapter focuses on a specific area of BDT research, introducing the relevant theory, reviewing previous experimental evidence, and presenting one or more studies designed to investigate the applicability of the BDT findings to health decisions (the major theoretical underpinnings of this thesis are Prospect Theory and its extensions, a subset of BDT with important implications for health behaviour decisions). Finally, chapter 9 provides a summary of findings and discussion of the studies. It includes specific conclusions and recommendations about the value of BDT research for better understanding, predicting, and motivating health behaviour change.

The following section provides a brief overview of each chapter.
Chapter 2 – Current Approaches to Understanding and Motivating Health Behaviour Change

Failure to comply with recommended health-protective behaviours is a major contributor to death and disability worldwide. Mortality rates could be dramatically reduced if more people could be persuaded to adopt health-promoting behaviours or cease health-damaging behaviours. Contemporary models of health behaviour at the individual and interpersonal levels generally fall within the broad category of Cognitive-Behavioural Models (CBMs). The two main concepts underlying all CBMs are that behaviour is mediated through cognitions (what we know and think affects how we act) and knowledge is necessary but not sufficient to produce behaviour change. For example, other influences including perceptions, motivation, skills, and factors in the social environment are important. Chapter 2 introduces four major CBMs used in health promotion (Health Belief Model, Protection Motivation Theory, Theory of Reasoned Action/Planned Behaviour, and the Transtheoretical Model). This chapter briefly reviews the literature on applications of these models.

Chapter 3 – Behavioural Decision Theory

Chapter three reviews the literature on human decision-making, focusing on decision-making under uncertainty (where the outcomes are known but the probability of them occurring is not). It begins with a discussion of traditional economic theory models: the Theory of Rational Choice, Expected Value Theory, and Expected Utility. The chapter also introduces Prospect Theory, a relatively recent model of decision-making under uncertainty. Prospect Theory was developed by psychologists Daniel Kahneman and Amos Tversky to explain some of the reasons why people do not always make ‘logical’ decisions. The implications of this theory for health behaviour decision-making are considered.
Chapter 4 – The Health Issues

Chapter four provides a rationale for focusing on physical inactivity and cigarette smoking in this thesis. It commences with a summary of the epidemiological evidence on the health consequences of physical inactivity and cigarette smoking and the prevalence of these behaviours. The literature on perceptions of the risks (i.e., personal probabilities) associated with these behaviours is briefly reviewed, demonstrating that these probabilities are generally underestimated. To demonstrate this point, this chapter includes the results of the first study conducted for this thesis (Study 1), which assessed perceptions of the relative riskiness of physical inactivity.

Chapter 5 – Prospect Theory & Message Framing

Prospect Theory is one of the most researched theories in the BDT literature, and both Prospect theory itself and its theoretical extensions have considerable implications for health behaviour change communications. Thus far, the main application of Prospect Theory to health behaviour change has been in the area of message framing. According to Prospect Theory, when choosing between two discrete options people tend to be risk averse when considering gains (e.g., for lives saved, they choose the more-certain option) and risk seeking when considering losses (e.g., for lives lost, they choose the less-certain option). Studies of framing effects on health-related intentions and behaviour have been conducted in numerous health domains such as cancer screening, cancer treatment, smoking cessation, sun protection, cholesterol screening, and infant immunization. The results of these studies, however, are somewhat contradictory. After introducing the theory, and reviewing some of these previous studies, Chapter 5 reports the framing studies conducted as part of this thesis – Study 2 focuses on exercise behaviour and Study 3 on cannabis use.
Chapter 6 – Prospect Theory & Evaluations of Multiple Consequences in Hypothetical Decisions

Most decisions faced by people have multiple outcomes, both positive and negative. If a decision has multiple outcomes, as do many real-life decisions, how are these outcomes coded and evaluated? It has been suggested that outcomes can be either segregated (i.e., people evaluate each outcome separately and then the evaluations are summed overall) or integrated (i.e., people sum all of the outcomes together before they are evaluated). Following from Prospect Theory, and consistent with theorists (e.g., Kahneman and Tversky), economist Richard Thaler hypothesised that because of diminishing returns to beneficial outcomes, people will prefer to segregate multiple gains so as to experience a greater subjective total utility than would be achieved by considering the gains together. Conversely, because of diminishing returns to costly or harmful outcomes, people will prefer to integrate losses so as to experience less subjective negative utility than would be incurred by considering them individually. The predictions for the separation of gains and combination of losses form what is known as the ‘hedonic editing hypothesis.’ Thus, this chapter reviews a number of studies conducted in the areas of economics, finance, and marketing that provide varying levels of support for the hedonic editing hypothesis. After introducing the theory, and reviewing the studies, Chapter 6 reports a series of studies (Studies 4 through 8) which focus on the application of hedonic editing to hypothetical decision-making.

Chapter 7 – Prospect Theory & Evaluations of Multiple Consequences in Health Behaviour Change

Chapter 7 reports on a further series of studies on the application of hedonic editing to decision-making and preference elicitation (Studies 9 through 16). These studies focus on the application of these principles to message design – specifically to the development of educational materials to encourage smoking cessation and exercise uptake. In these studies, participants are presented with information about smoking or physical activity in either of two formats (aggregated or segregated), to determine whether encouraging processing of information in an aggregated or segregated manner differentially influences health behaviour intentions.
Chapter 8 – Discussion and Conclusions

Table 1.1 provides a summary of the 11 studies undertaken for this thesis. Chapter 8 summarises the findings of these studies. It relates the findings of these studies to the many studies reviewed in the introductory sections. It discusses the potential of BDT to increase our understanding of health behaviour decisions and to assist public health researchers and practitioners in developing communication campaigns to encourage people to increase health-protective behaviours and reduce health-damaging behaviour.
<table>
<thead>
<tr>
<th>Study</th>
<th>Chapter</th>
<th>Topic</th>
<th>n</th>
<th>Theoretical basis</th>
<th>Presentation effect observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Perceptions of the risks associated with inactivity</td>
<td>260</td>
<td>Risk perception</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Framing effects and intention to exercise</td>
<td>131</td>
<td>Prospect Theory (PT) &amp; Framing</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Framing effects and intention to use cannabis</td>
<td>109</td>
<td>PT &amp; Framing</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>Preferences for integration and segregation in non-health domains</td>
<td>175</td>
<td>PT &amp; Hedonic Editing Principles (HEP), multiple consequences</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>Preferences for integration and segregation in the health domain</td>
<td>175</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Stimulus presentation effects and open-ended responses</td>
<td>81</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>Stimulus presentation and measurement effects – pre-rating responses</td>
<td>220</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>Application of hedonic editing to anti-smoking communications – long text, fatal consequences</td>
<td>70</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>Application of hedonic editing to anti-smoking communications – short text, non-fatal consequences</td>
<td>120</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>Application of hedonic editing to anti-smoking communications – fatal and non-fatal consequences</td>
<td>252</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>7</td>
<td>Application of hedonic editing to pro-exercise communications</td>
<td>126</td>
<td>PT &amp; HEP, multiple consequences</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Failure to comply with recommended health-promoting behaviours is a major contributor to death and disability (Stampfer, Hu, Manson, Rimm and Willett 2000; Russell, Teutsch, Kumar, Dey and Milan 2001). Non-adherence to many health-promoting behaviours is high (Fox, Breuer and Wright 1997; Joffe 2000; Sherman, Bowen, Vitolins, Perri, Rosal, Sevick and Ockene 2000), particularly for discretionary preventive behaviours such as quitting smoking and engaging in regular physical activity (Newell, Bowman and Cockburn 2000; Wilbur, Chandler and Miller 2001; Cohen 2001), and diagnostic behaviours such as mammography and skin cancer examinations (Australian Institute of Health and Welfare 1998, Australian Bureau of Statistics 1997).

In 1998, the three leading causes of death in Australia were ischaemic heart disease (27,822 deaths), cerebrovascular disease (11,982), and lung cancer (6,874) (Australian Institute of Health and Welfare 2000). Similar orderings of causes of mortality are found in the United States (Floyd, Prentice-Dunn and Rogers 2000) and many other developed countries. Cardiovascular disease and cancer can both be reduced or prevented by adopting specific health-promoting behaviours (Blanchard 1994). Heart disease risk can be reduced by not smoking, exercising regularly, eating a well-balanced diet, and maintaining a healthy weight (Floyd et al. 2000); cerebrovascular disease risk can also be reduced by the same behaviours; and abstaining from smoking can all but eliminate lung cancer risk, over 80 percent of which is attributable to smoking (English, Holman, Milne, Winter, Hulse, Codde, Bower, Corti, de Klerk, Knuiman, Kurinczuk, Lewin and Ryan 1995).

It has been estimated that between 40% and 70% of all premature deaths, and up to two-thirds of all disabilities, could be prevented by controlling fewer than 10 health risk factors, such as diet, exercise and alcohol abuse (Signorielli 1993). Yet, despite the publicity of these well-known risk factors:

- 25% of Australian men and 20% of Australian women (Higgins, Cooper-Stanbury and Williams 2000) and 28% of 17 year old boys and 34% of 17 year old girls (Hill, White and Letcher 1999) continue to smoke;
• in 1999, only 57% of Australians (60% of males and 54% of females) achieved sufficient physical activity to obtain a health benefit, and this proportion decreased from 62% in 1997 (Active Australia 2000);

• 33% of Australian children are not immunised against whooping cough and 50% are not immunised against Hib (Australian Bureau of Statistics 1997);

• 25% of Australian children have never had a dental examination (Australian Bureau of Statistics 1997);

• only 82% of males and 83% of females report taking deliberate measures to protect themselves against the sun's ultra violet rays. Of these, only 47% of males and 61% of females report using a sunscreen (Australian Bureau of Statistics 1997) and only 64% of children report using sunscreen in the last month (Australian Bureau of Statistics 1997);

• 40% of the adult population report that they do not regularly check their skin (or have their skin checked by a doctor) for any changes to freckles and moles (Australian Bureau of Statistics 1997);

• 16% of Australian women have never had a Pap smear, including 51% of women over 75, and one-third of those who have had a smear have not had one in the last two years (Australian Bureau of Statistics 1997); and

• in 1996-1997, just under half of Australian women in the target age group (50-69 years) did not have a screening mammogram (Australian Institute of Health and Welfare 1998).

Explaining health-related behaviours

The determinants of health behaviour are complex and multidimensional, and are influenced by a vast array of factors. Five ‘levels of influence’ have been identified in an ecological model: (1) intrapersonal (individual) factors; (2) interpersonal factors; (3) institutional, or organizational factors; (4) community factors; and (5) public policy factors (McLeroy, Bibeau, Steckler and Glanz 1988). However, the focus of this thesis is on individual factors only.

A number of individual-level models have been developed to explain, predict and influence health behaviour. The majority of these have been adapted from theories and findings from the field of psychology. This chapter reviews the individual health
behaviour theories currently used to influence behaviour through the communication of health messages. Thus, the theories and approaches discussed are those that focus on individual characteristics and reactions, rather than environmental and policy influences.

**Cognitive-Behavioural Models (CBMs)**

Contemporary models of health behaviour at the individual and interpersonal levels generally fall within the broad category of Cognitive-Behavioural theories (Glanz and Rimer 1995). The two main concepts underlying all CBMs are that:

1. Behaviour is mediated through cognitions; that is, what we know and think affects how we act.
2. Knowledge is necessary but not sufficient to produce behaviour change. Behaviour is also influenced by people’s perceptions, motivation, skills, and factors in the social environment.

The following section presents four major CBMs used in health promotion: Health Belief Model, Protection Motivation Theory, Theories of Reasoned Action and Planned Behaviour, and the Transtheoretical Model. An overview of each model is provided and the literature on applications of these models is briefly reviewed.

*Health Belief Model*

The Health Belief Model (HBM) (Rosenstock 1966; Rosenstock 1974; Becker 1974) is one of the oldest theoretical models of health behaviour change. The HBM was developed in the 1950’s by psychologists from the US Public Health Service to explain why individuals did or did not participate in publicly-provided preventive health programs such as screening and immunisation programs.

The HBM is a cognitive model, which sees variation in individual responses as a function of their attitudes and beliefs, and does not take into account social or environmental influences. According to the HBM, the likelihood of an individual changing a health-related behaviour is based on the interaction between four factors:
1. Perceived susceptibility (how likely is it that the disease/problem will happen to 'me');
2. Perceived severity (how serious are the consequences of the disease/problem);
3. Perceived benefits (how likely is it that taking the action will reduce susceptibility or severity); and
4. Perceived barriers (what things will prevent 'me' taking the action)

The HBM also includes 'cues to action,' which are external and internal factor that trigger health-related action. External cues to action include media campaigns, reminder cards, and physicians' recommendations; internal cues are generally related to symptoms, such as pain or nausea, and perceptions of body states, such as feeling short of breath or being concerned about body image (Rosenstock 1966). However, cues to action are often not included in research on the HBM, perhaps due to the difficulties of assessing these and the variation between people in relevant cues (Adler, Kegeles and Genevro 1992).

There have been several additions to the HBM since its inception. ‘General motivation for health,’ defined as differences in orientation towards health and perceived control over health outcomes, was added in the early 1970's (Becker and Maiman 1975). Self-efficacy, or perceived ability to carry out recommended action (Bandura 1977) was added to the model by Rosenstock and others in the late 1980s (Rosenstock, Strecher and Becker 1988), largely to deal with the problems associated with changing habitual unhealthy behaviours, such as being sedentary, smoking, or overeating (Glanz and Rimer 1995).

Implications of the HBM for message design (adapted from Glanz and Rimer 1995):
- **Perceived Susceptibility**: Define the population(s) at risk, and specify risk levels; personalize risk communications based on a person's features or behaviour; heighten perceived susceptibility if this is insufficient to initiate action;
- **Perceived Severity**: Specify the consequences of the risk and the condition;
- **Perceived Benefits**: Define the appropriate action to take, including how, where, and when; clarify the positive effects to be expected;
- **Perceived Barriers**: Identify and reduce the perceived barriers through reassurance, incentives, and assistance;
• **Cues to Action:** Provide how-to information, promote awareness, send reminders; and

• **Self-Efficacy:** Provide training and guidance in performing the appropriate behaviours.

**Applications of the HBM to message design:** The HBM has generated more research on health-related behaviour than any other theoretical approach (Rosenstock et al. 1988). The HBM has been used to explain, predict, and develop interventions for: exercise (Morgan, Shephard, Finucane, Schimmelfing and Jazmaji 1984; Sommers, Andres and Price 1995; Mirotznik, Feldman and Stein 1995); smoking cessation (Stockon, McMahon and Jason 1997); HIV-preventive behaviours (Montgomery, Joseph, Becker, Ostrow, Kessler and Kirsch 1989; Rosenstock et al. 1988; Brunswick and Banaszak-Holl 1996; Bakker, Buunk, Siero and Van den Eijnden 1997); benzodiazepine use (Bakker, Van Hulten and Teeuw 1999); mammography screening (Thomas, Fox, Leake and Roetzheim 1996; Pakenham, Pruss and Clutton 2000) and breast self-examination (Ronis and Harel 1989); teenage contraceptive behaviour (Zellman 1984); and bicycle safety helmet use (Quine, Rutter and Arnold 1998; Quine, Rutter and Arnold 2000).

However, reviews of HBM research have found that while there are usually significant differences on the HBM variables between compliers and non-compliers, the proportion of variance explained is usually low (Rosenstock et al. 1988; Adler et al. 1992); and there are inconsistent findings on the relative importance of the different HBM variables, although this may be due in part to the variation in measures used (Jette, Cummings, Brock, Phelps and Naessens 1981).

**Protection Motivation Theory**

Protection Motivation Theory (Rogers 1975) was developed to explain the motivational effect of fear arousal from exposure to ‘threat’ communications. That is, people are motivated to protect themselves from social, psychological, and physical threats – and the model focuses on cognitive appraisals of the perceived threats (Rogers 1983). Note that this model, therefore, only attempts to explain health behaviours which are undertaken to protect oneself from a threat and not those which are positively motivated (e.g., exercising for enjoyment or social interaction).
Like the Health Belief Model, Protection Motivation Theory (PMT) posits that, on exposure to the threatening information, people make four appraisals:

1. perceived likelihood (how likely is it that the threatened event will happen to ‘me,’ i.e., perceived vulnerability);
2. perceived severity (how severe is the threatened harmful event);
3. perceived effectiveness (how effective is the proposed response in eliminating or reducing the threat, i.e., response efficacy); and
4. perceived ability (how capable am I of performing the proposed response)

The fourth component is self-efficacy, which was added to the model (Maddux and Rogers 1983), after its initial development.

The model combines these four perceptions into an appraisal of threat (severity and likelihood) and coping (response efficacy and self efficacy).

**Implications of PMT for message design:** As PMT contains similar constructs to the HBM, the implications for message design would be similar:

- **Perceived Likelihood:** Define the population(s) at risk, and specify risk levels; personalize risk communications based on a person’s features or behaviour; heighten perceived likelihood if this is insufficient to initiate action;

- **Perceived Severity:** Specify the consequences of the risk and the condition;

- **Perceived effectiveness:** Define the appropriate action to take, including how, where, and when; clarify the positive effects to be expected; and

- **Perceived ability:** Provide training and guidance in performing the appropriate behaviours.

**Applications of PMT to message design:** Protection Motivation Theory has been used to explain, predict, and develop interventions for exercise (Wurtele and Maddux 1987; Lynch, Birk, Weaver, Gohara, Leighton, Repka and Walsh 1992; Marcus and Owen 1992; McAuley 1992; Fruin 1994; McAuley, Courneya, Rudolph and Lox 1994; DuCharme and Brawley 1995; Plotnikoff and Higginbotham 1998; Courneya and Hellsten 2001); cigarette smoking (Rogers, Deckner and Mewborn 1978; Kanvil and Umeh 2000); safe sex and AIDS risk reduction (Ahia 1991; Aspinwall, Kemeny, Taylor, Schneider and Dudley 1991; Winett, Anderson, Moore, Sikkema, Hook,
Webster, Taylor, Dalton, Ollendick and Eisler 1992; Wulfert and Wan 1993; Basen-Engquist 1994; Hobfoll, Jackson, Lavin, Britton and Shepherd 1994); marijuana use (Epstein, Botvin, Diaz and Toth 1995); alcohol misuse (Stainback and Rogers 1983; Runge, Prentice-Dunn and Scogin 1993; Morris, Swasy and Mazis 1994); sun protection (Mermelstein and Riesenberg 1992; Jones and Leary 1994; Wichstrom 1994; Prentice-Dunn, Jones and Floyd 1997); cancer screening (Ronis and Kaiser 1989; Myers, Ross, Jepson, Wolf, Balshem, Millner and Leventhal 1994; Sutton, Bickler, Sancho-Aldridge and Saidi 1994); testicular self-examination (Steffen 1990); cancer prevention (Seydel, Taal and Wiegman 1990); adherence to medical treatment regimes (Dilorio, Faherty and Manteuffel 1994; Flynn, Lyman and Prentice-Dunn 1995); calcium intake and osteoporosis prevention (Smith-Klohn and Rogers 1991); and (un)healthy eating behaviours (Sheeska, Woolcott and MacKinnon 1993; Plotnikoff and Higginbotham 1995; Plotnikoff and Higginbotham 1998).

Theories of Reasoned Action and Planned Behaviour

The Theory of Reasoned Action (Ajzen and Fishbein 1980) was developed to explain the determinants of volitional behaviour (i.e., behaviour that is under the individuals’ voluntary control). The underlying assumption of this theory is that people are rational and will make predictable decisions in well-defined circumstances. The theory argues that the most immediate determinant of a person’s behaviour is behavioural intention; thus in order to influence behaviour one needs to influence behavioural intentions.

According to the Theory of Reasoned Action, two factors determine intentions:
1. *Attitude towards the behaviour* (which is a function of the individual’s beliefs that the behaviour will lead to certain outcomes and an evaluation of those outcomes); and
2. *Subjective norms* (the individual’s beliefs about what other people think they should do and motivation to comply with those wishes).

In 1985, a third factor was added to the model by Ajzen (Ajzen, 1985), to allow for the fact that not all behaviours are under the volitional control of the individual, and it was at this point that the name was changed to the Theory of Planned Behaviour:
3. *Perceived behavioural control* (the individual’s belief that they have personal control over the behaviour and their perceived power).

Thus, TRA/TPB considers a broader range of influences on intentions and behaviours than does the HBM, which focuses solely on health-related considerations.

**Implications of TRA/TPB for message design**

- **Attitude towards the behaviour**: Emphasise the positive outcomes from the behaviour;
- **Subjective norms**: Emphasise the normative nature of the behaviour, particularly among people similar to the target audience, and the benefits to significant others of the individual engaging in the behaviour; and
- **Perceived behavioural control**: Provide training and guidance in performing the appropriate behaviours.

**Applications of TRA/TPB to message design**: The Theories of Reasoned Action and Planned Behaviour have been used to explain, predict, and develop interventions for: exercise (Dzewaltowski, Noble and Shaw 1990; Godin 1993; Wankel and Mummery 1993; Nguyen 1997; Bozionelos and Bennett 1999; Courneya, Plotnikoff, Hotz and Birkett 2000; Courneya, Plotnikoff, Hotz and Birkett 2001); smoking initiation and cessation (Godin, Valois, Lepage and Desharnais 1992; Unger, Rohrbach, Howard-Pitney, Ritt-Olsom and Mouttapa 2001); breast self-examination (Moore, Barling and Hood 1998); mammography screening (Rutter 2000); testicular self-examination (Steffen 1990; Brubacker and Wickersham 1990); condom use and AIDS-related behaviours (Fishbein and Middlestadt 1989; Kashima, Gallois and McCamish 1993; Baker, Morrison, Carter and Verdon 1996); illicit drug use (Orbell, Blair, Sherlock and Conner 2001); adolescent alcohol consumption (Kuther 2002); use of Hormone Replacement Therapy (Quine and Rubin 1997); bicycle safety helmet use (Quine, Rutter and Arnold 2000; Quine, Rutter and Arnold 1998); unsafe driving (Parker, Manstead, Stradling and Reason 1992); and even ‘unethical behaviour’ (Chang 1998).
The Transtheoretical Model

The Transtheoretical Model (TTM) – often referred to as the Stages of Change Model – was developed by Prochaska and DiClemente (Prochaska, DiClemente and Norcross 1992) to describe and explain the change processes that are common to most behaviour change. The model incorporates concepts from multiple models and theories of behaviour change – thus the name ‘transtheoretical.’ Amongst others, it includes self-efficacy, decisional balance, and the theory of planned behaviour (Prochaska, Velicer and Rossi 1994; Prochaska and Velicer 1997).

In this model, behaviour change is viewed as a continuum, with individuals moving through the stages to behaviour change, and allows for relapse to earlier stages. Prochaska and DiClemente propose five ‘stages’ of change:

1. **Precontemplation:** when behaviour change is not being considered;
2. **Contemplation:** when behaviour change is being considered;
3. **Preparation:** taking small steps towards behaviour change;
4. **Action:** initial modification of the behaviour; and
5. **Maintenance:** sustained change over 6 months or more.

In later papers, Prochaska and colleagues refer to a sixth stage, ‘Termination,’ which is where the individual reaches a point of zero temptation to relapse. However, they point out that this is not a practical reality for most people, and thus is not given much emphasis in their research (Prochaska and Velicer 1997).

Prochaska and DiClemente also propose ten ‘processes’ of change (Prochaska and Velicer 1997):

- five cognitive strategies which can be used in changing ways of thinking (consciousness raising, dramatic relief, self-reevaluation, environment reevaluation, and social liberation); and
- five behavioural strategies that can be used to help people progress to higher levels (counterconditioning, reinforcement management, helping relationships, stimulus control, and self-liberation).
Implications of the Transtheoretical Model for message design: The ‘stages’ are a form of market segmentation, allowing the target population to be divided into five distinct audience groups. Each group can then be targeted with information tailored to move them to the subsequent stage. The ‘processes’ of change provide the guidelines for determining what communication strategies to use to achieve this progression.

Implications of the ‘stages’ for message design (adapted from Glanz and Rimer 1995):
• **Pre-contemplation**: Increase awareness of need for change, personalize information on risks and benefits;
• **Contemplation**: Motivate, encourage to make specific plans;
• **Preparation**: Assist in developing concrete action plans, setting gradual goals;
• **Action**: Assist with feedback, problem solving, social support, reinforcement; and
• **Maintenance**: Assist in coping, reminders, finding alternatives, avoiding slips and relapses.

Implications of the ‘processes’ for message design (adapted from Prochaska and Velicer 1997): Different change processes should be emphasised for each stage transition, as follows:
• **Moving from precontemplation to contemplation**: consciousness raising, dramatic relief, environmental reevaluation;
• **Moving from contemplation to preparation**: self-reevaluation;
• **Moving from preparation to action**: self-liberation; and
• **Moving from action to maintenance**: contingency management, helping relationship, counterconditioning, stimulus control.

Applications of TTM to message design

The TTM evolved from work with addictive behaviours, such as smoking and drug and alcohol addiction (Prochaska, DiClemente and Norcross 1992). It has been applied extensively to develop interventions for:
• Extinguishing a health-damaging behaviour such as smoking (Prochaska, Velicer, DiClemente and Fava 1988; Prochaska et al. 1994; Herrick, Stone and Mettler 1997; Aveyard, Cheng, Almond, Sherratt, Lancashire, Lawrence, Griffin and Evans 1999; Donovan, Leivers and Hannaby 1999; Breithaupt, Plotnikoff, Edwards and Hotz
2000; Prochaska, Velicer, Fava, Rossi and Tsoh 2001), illicit drug use (Prochaska et al. 1994), excessive alcohol consumption (Donovan, Jones, Holman and Corti 1998), and dietary fat consumption (Prochaska et al. 1994; Herrick et al. 1997);

- Preventing the uptake of a health-damaging behaviour such as smoking (Pallonen, Prochaska, Velicer, Prokhorov and Smith 1998; Plummer, Velicer, Redding, Prochaska, Rossi, Pallonen and Meier 2001); and


Are there other approaches that can be used to encourage health behaviour change?

Many programs to increase health-promoting behaviours and reduce health-damaging behaviours have been developed using the theories discussed above. However, as discussed in the introduction to this chapter, many people fail to make the necessary behavioural changes to ensure good health and longevity. Apart from creating more supportive environments (McLeroy et al. 1988), clearly, there is still a lot of work to be done in developing persuasive messages to motivate people to make the necessary behavioural changes.

One important assumption that is common to all of these CBMs is a dependence on attitude as a precursor to intention, and thus to behaviour. That is, for example, an individual’s attitude towards smoking is constructed from: perceived susceptibility, severity, benefits, and barriers (HBM); perceived likelihood, severity, effectiveness, and ability (PMT); or attitude towards the behaviour, subjective norms, and perceived behavioural control (TPB).

Attitude theory assumes that the mode of presentation of attributes should not matter, as long as the same information (e.g., incidence of lung cancer, severity of lung cancer,
reduction in risk of lung cancer from smoking cessation, and ease of quitting) is presented (Petty and Cacioppo 1981; McGuire 1985; Petty and Cacioppo 1986). Behavioural Decision Theory (BDT), on the other hand, posits that task characteristics (such as the mode of presentation format and response format) can have considerable impact on the evaluation of outcomes, and thus on intentions and behaviour (Bettman and Kakar 1977; Hershey, Kunreuther and Schoemaker 1982; Jarvenpaa 1989; Jarvenpaa 1990; Cox and Grether 1994; Slovic 1995; Krosnick and Shuman 1998; Hoeffler and Ariely 1999; Simonson, Carmon, Dhar, Drolet and Nowlis 2001). Thus, the following chapter reviews research in the area of BDT that has the potential to enhance message effectiveness, and discusses how this could be applied to health behaviour change.
CHAPTER 3 : BEHAVIOURAL DECISION THEORIES

This chapter reviews the literature on human decision-making from the perspective of BDT. It focuses on decision-making under uncertainty (where the outcomes are known but the probability of them occurring is not), as this is the decision scenario for the majority of health behaviours. For example, an individual smoker may know that smoking can cause lung cancer, but cannot know the exact probability of this happening 'to me.'

The chapter begins with a definition of Behavioural Decision Theory, followed by a discussion of traditional economic theory based models: the Theory of Rational Choice, Expected Value Theory, and Expected Utility. These economic models – like the CBMs reviewed in Chapter 2 – are all based on the assumption of rational decision-makers making rational choices in situations where they have accurate knowledge of options and outcomes.

However, BDT takes the analysis of decision-making further than the economic theories and CBMs, by allowing for exceptions to the assumptions of rational choice, and examining when and how these exceptions occur. This chapter introduces Kahneman and Tversky's Prospect Theory (Kahneman and Tversky 1979) and foreshadows some theoretical extensions of PT which are the primary subject of this thesis.

Behavioural Decision Theory (BDT)

Behavioural Decision Theory (BDT) research accounts for a large proportion of articles published in the consumer behaviour literature (Simonson et al. 2001). This body of literature is very relevant to public health, as health behaviour is a form of consumer behaviour. For example, the decision to 'consume' tobacco, alcohol or cannabis; or the decision not to 'consume' physical activity or screening services.

Research on judgement and choice are central to BDT. This differs from social cognitive research, reviewed in Chapter Two, in the following ways (summarised from Simonson, et al. 2001):
1. The primary influences on social cognitive research in health promotion (as in consumer behaviour) are from social cognitive research in psychology, including the theories of behaviour change reviewed in Chapter Two of this thesis. Conversely, the primary influences on consumer BDT research come from the BDT literature in the fields of psychology and economics, notably the work of Kahneman, Tversky and Thaler (whose research underlies this thesis). BDT research uses as its benchmark the classical economic assumptions (such as Expected Value Theory, Bernoulli 1954), and focuses on violations of these assumptions – such as framing effects, time-inconsistent preferences, and sunk costs.

2. Social cognitive research focuses on models of the communication process and the development of attitudes and judgements; whereas BDT focuses on decision-making models and the determinants of choice.

3. Social cognitive research tends to focus on memory-based tasks; whereas BDT research focuses on stimulus-based phenomena (such as framing and information presentation effects).

BDT research examines the influence of information presentation, response options, and contextual factors (known as task characteristics) on consumer decisions. Simonson argues that these contextual factors have received insufficient attention in social cognitive research, despite the fact that they have a considerable influence on persuasion. Moreover, “by integrating findings from the social cognition and BDT areas, we are likely to gain a better understanding of the moderators of consumer susceptibility to various biases” (Simonson et al. 2001, p. 259). Thus, the central tenet of this thesis is that information presentation effects exert considerable influence on the persuasiveness of health communications.

There is an extensive amount of research in the BDT field, which demonstrates the power of presentation effects on intentions and behaviours (Bettman and Kakar 1977; Hershey et al. 1982; Jarvenpaa 1989; Jarvenpaa 1990; Cox and Grether 1994; Slovic 1995; Krosnick and Shuman 1998; Hoeffler and Ariely 1999; Simonson et al. 2001). The application of this research to health-behaviour has been limited to a few studies, although there is a large body of research on message framing (reviewed in Chapter 5).
By way of example of the application of this theory, a study of undergraduate students’ reactions to a hypothetical flu vaccine (Kaplan, Hammel and Schimmel 1985) varied three elements: the level of risk of side effects (1/1,000, 1/10,000, or 1 in 100,000); the absence or presence of a visual aid (dots representing the proportion of patients experiencing side effects); and dramatisation of the side effects (inclusion of pictures and descriptions of the side effects). As might be expected, the investigators found that the likelihood of reporting they would have the vaccination reduced as the probability of side effects increased (a rational effect). They also found an increased likelihood of having the vaccination in the ‘visual aid present’ condition and a decreased likelihood in the ‘vivid description’ condition. Thus, one of the implications of information presentation effects on health-related decisions, such as the acceptance of medical treatment, is the extent to which information provided to patients in order to ensure informed consent, has the potential to result in decisions biased by these effects (MacLean 1991).

The following sections briefly review the theoretical underpinnings of the work of Kahneman, Tversky and Thaler, before demonstrating the applicability of their work to the development of health behaviour communications.

**Traditional Economic Theories**

Traditional models such as the Theory of Rational Choice (TRC) (von Neuman and Morgenstein 1947; Savage 1954) and Expected Value Theory (EVT) (Bernoulli 1954) originate from the field of economics. They are based on a number of assumptions, such as rational choice, which do not accurately describe or predict human decision-making.
The Theory of Rational Choice

The theory of rational choice claims that individuals make choices that maximize their well-being or utility in a given situation, within available resources and constraints (Herrnstein, Rachlin and Laibson 1997). This theory assumes that people are rational agents, who make rational choices using common knowledge (Skyrms 2000).

However, "The theory of rational choice fails as a description of actual behavior, but it remains unequaled as a normative theory. It tells us how we should behave in order to maximize reinforcement, not how we do behave" (Herrnstein 1990, p.356). In order to judge whether a decision or a behaviour is 'rational', or 'reasonable', we need to consider (Simon 1986):

- the situation in which the behaviour takes place;
- the goals it is aimed at achieving; and
- the computational means available for determining how the goals can be obtained.

Thus, many decisions are seen as irrational in terms of economic theory, which focuses on the outcomes of a decision, are reasonable in terms of the strategies an individual uses to come to that decision, given the factors listed above.

Expected Value Theory

Recognising that TRC describes only the way decisions should be made, EVT has been put forward to describe the way people actually make decisions (Bernoulli 1954). EVT, and its shortcomings as a description of real-life decision-making, are briefly discussed in the following section, followed by a review of some alternative theories.

*Expected value theory principles:* Assuming that a choice is to be made between two or more alternatives, and that neither is dominant, the following principles of expected value are said to apply (Yates 1990). Firstly, the decision-maker should choose the alternative with the best expected value, where the expected value is the sum of the potential magnitudes of gain and or loss, weighted by their probabilities. Secondly, this implies a long run rationale. That is, the law of large numbers says that the discrepancy...
between the expected value of the decision outcome and the actual value of the decision outcome will become progressively smaller as sample size increases.

One of the major drawbacks of EVT in explaining real-life decisions is that this theory applies only when the alternatives are to be evaluated in terms of a single, quantifiable outcome. However, most of our decisions will have many and varied outcomes. Additionally, as set out above, expected value principles maximise outcomes in the long run, and most real-life decisions need to be efficacious in the short run. For example, when choosing between several job offers, we do not have the luxury of multiple trials.

**Subjective Expected Utility**

Unlike expected value theory, which is based on *objective* outcome values, subjective expected utility (SEU) is based on the individual’s *subjective* ‘utility’ obtained, or anticipated, from different outcomes (von Neuman and Morgenstein 1947). The principles of SEU are:

- the various outcomes conform to the principle of unity summation (i.e., they are disjoint events — only one of them can occur — and they include all potential events);
- each potential outcome affords the decision-maker a subjective utility (i.e., the outcome has a subjective value);
- the decision-maker will choose the alternative which results in the outcome affording him the highest level of subjective utility (i.e., the expected utility choice principle); and
- the decision-maker’s evaluation of each alternative will be identical to the expected utility from the outcomes of that alternative; and he will be ambivalent between that alternative and a ‘sure thing’ with the same utility (i.e., expected utility evaluation principle).

In calculating ‘expected utility’ from an alternative, the decision-maker considers three factors: the value of the outcome; the effect of uncertainty; and the interaction between value and uncertainty (Yates 1990). The first of these is the most straightforward: the more highly valued the outcome, the more favourable the alternative. The second, i.e., the effect of uncertainty, however, is greatly influenced by individual differences in attitude towards risk: the decision-maker may be risk averse, risk seeking or risk
neutral. An individual’s risk-attitude can be determined from what Yates calls their ‘risk premium’: “the difference between the expected value of a prospect and the guaranteed outcome that is considered just as attractive as that prospect” (Yates 1990, p 248). The greater the risk premium (i.e., the amount of expected value the individual is prepared to forgo in order to exchange a risky prospect for a certainty), the more risk averse their decision rule. It is important to note that the same individual may be risk averse in some situations, and risk seeking or neutral in others.

Prospect Theory (Kahneman and Tversky 1979) is a model of decision-making built on expected utility theory principles, with the aim of developing a coherent model of complex decision-making processes. Prospect Theory is discussed in detail in the following section. It is fundamental to the theories upon which this thesis is based, including mental accounting and the hedonic editing hypothesis.

Prospect Theory – gains vs losses

Kahneman & Tversky introduced Prospect Theory (PT) (Kahneman and Tversky 1979) to explain some of the reasons why people do not always make ‘logical’ decisions. Their model of decision-making under uncertainty incorporates ideas from the psychophysical approach to decision-making, which originated from Bernoulli’s research on risk aversion (Bernoulli 1954). One of the major differences between Subjective Expected Utility and Prospect Theory is that in the latter the factor incorporated with value is a psychological ‘decision weight’ rather than the mathematical probability used in the former.

Kahneman & Tversky proposed that, when studying people’s decisions, the utility function of economic theory should replaced with the value function shown in Figure 3.1 (Kahneman and Tversky 1984). The underlying assumptions of this value function are:

1. It is defined over gains and losses relative to some neutral reference point (in most cases this will be the status quo). That is, all outcomes are expressed as deviations from the reference point. This is contradictory to the economic rational model,
which asserts that people assess the value of an outcome in terms of changes to their absolute state of wealth.

2. It is concave for gains and convex for losses. That is, “both the gain and loss functions display diminishing sensitivity... (which) reflects the basic psychophysical principle that the difference between $10 and $20 seems bigger than the difference between $1000 and $1010, irrespective of the sign” (Thaler 1999, p 185).

3. The loss function is steeper than the gain function (i.e., a loss of $25 has a greater perceived value than a gain of $25). This is the principle of ‘loss aversion’, which posits that, for most individuals, the response to losses is greater than the response to gains (Tversky and Kahneman 1986).

![Utility](image)

Figure 3.1: Kahneman & Tversky’s value function

The nature and shape of the Prospect Theory utility function have important implications for decision-making in the real world. For example, to the extent to which events or outcomes can be framed differently, they may well be evaluated differently. The fact that A is greater than B can, in terms of the neutral reference point, be framed as an advantage of A (gain) or a disadvantage of B (loss). Thaler and Johnson (1990) give the example of credit card companies’ charging policies: it is easier to forgo a discount than accept a surcharge (the former is a gain and the latter a loss). Thus, credit
card companies insist on retailers offering a ‘cash discount’ rather than imposing a ‘credit card charge’ (Thaler and Johnson 1990). Similarly, Tversky & Kahneman suggest that a government policy framed as a tax exemption for two-child families would be more acceptable to the community than a tax premium for childless couples (Tversky and Kahneman 1986).

Manipulating the reference point can similarly alter the way an outcome is evaluated. Yates (Yates 1990) gives three examples of alternative reference points for assessing losses, and their implications for the calculation of outcome value (this has been extended below to include gains):

- If the reference point is zero, any outcome more than zero is perceived as a gain, and any outcome less than zero as a loss;
- If the reference point is an expected value, a positive difference between expected and attained value is perceived as a gain, and a negative difference as a loss; and
- If the reference point is an aspiration target, any outcome above the target is perceived as a gain, and below the target as a loss.

Prospect Theory and Message Framing

Thus far, the main application of Prospect Theory to health behaviour change has been in the area of message framing. According to Prospect Theory, when choosing between two discrete options, people tend to be risk averse when considering gains (e.g., lives saved) and risk seeking when considering losses (e.g., lives lost). Thus, it appears that individuals will tend to be risk averse when the alternatives are framed positively (e.g., if detected early, ‘X’ can be treated before....) as they will think in terms of gains, and risk seeking when the alternatives are framed negatively (e.g., if not detected early, ‘X’ cannot be treated before....) as they will think in terms of losses (see, for example, Puto 1987; Qualls and Puto 1989).

Prospect Theory and the Weighting of Chance Events

Prospect Theory posits that the value of an uncertain outcome is multiplied by a subjective ‘decision weight’ (Kahneman and Tversky 1984). This is different from the
objective probability of the outcome. Some of the characteristics of the decision weighting process are:

- Low probabilities are overweighted;
- Moderate and (especially) high probabilities are underweighted;
- There is a ‘crossover probability’ point where this change from underweighting to overweighting occurs, although this point is not specified;
- There is ‘discontinuity’ at the two extremes of the scale, such that there is a point at which an event switches from being evaluated as ‘remote’ to being ‘impossible. The theory does not explicitly state where this point is; and
- Probability differences involving certainty and impossibility are disproportionately overweighted in comparison to differences in the middle of the scale (Tversky and Kahneman 1986).

In a study of choices between hypothetical vaccines (Slovic, Fischhoff and Lichtenstein 1982), participants were given a scenario of two hypothetical diseases that had identical symptoms and were mutually exclusive (i.e., if you catch one, you can’t catch the other); and asked how attractive they considered a vaccine that:

1. Reduced their risk of both diseases by 50%; or
2. Eliminated their risk of one disease, but had no effect on the other.

Participants rated vaccine 2 as more attractive than vaccine 1, although the objective impacts on the probability of disease were identical.

Health behaviour decisions

This irrational preference for certainty, hypothesised by Prospect Theory and confirmed by studies such as the one reviewed above, is perhaps one of the reasons why it is difficult to persuade people not to start smoking. While a higher risk of heart disease (and many other health problems) can be threatened, due to the multi-causal nature of these conditions, an individual can never be guaranteed of contracting a smoking-related illness if they smoke, or of not contracting the same illness if they don’t. The situation is even more complicated for smoking cessation, where damage, in many cases, has already been done. An individual smoker may know that their risk of lung cancer will
be reduced if they quit, but total risk can never be eliminated (see, for example, Donovan and Henley 1997).

As discussed earlier in this chapter, people often fail to make ‘rational’ decisions, even in situations where the choice elements are clear and the outcomes known. Many health behaviour decisions have multiple, probabilistic outcomes – both in terms of effects of ‘doing’ the behaviour and of ‘not doing’ the behaviour. Traditional decision theories assume rational agents, complete knowledge, and utility maximisation over the long-term. However, in practice, it appears that people do not objectively analyse and evaluate the myriad consequences of their health-related behaviours; rather, they often appear to be motivated to inaccurately evaluate these consequences.

Importantly, a number of studies have found that increased personal relevance determines the type of processing used (e.g., systematic vs. heuristic processing) and subsequent evaluation of message information (Jemmott, Ditto and Croyle 1986; Kunda 1987; Liberman and Chaiken 1992). It is generally agreed that people are more likely to fully process a message that is personally relevant (Petty and Cacioppo 1986). However, it is also the case that when the message is confronting, personal relevance can inhibit objective processing. In this circumstance, the personal relevance of the message may instead lead to ‘defensive’ processing in order to reduce the threat (Leventhal 1970; Kunda 1990; Liberman and Chaiken 1992).

It is often those at highest risk for the health problem who employ defensive techniques like message avoidance (Donohew, Lorch and Palmgreen 1991), denial of susceptibility (Stuteville 1970), or otherwise biased message processing in support of a desired conclusion (Kunda 1990). For example, Kunda (1987) found that while heavy caffeine drinkers accept that they are more likely to develop a caffeine-related disease than are light caffeine drinkers, they are also more likely to doubt the evidence of a link between caffeine and the disease. That is, those who engage in the health-damaging behaviour and are most threatened by the message are more likely to process the messages heuristically rather than systematically. In a replication of the Kunda study, Liberman and Chaiken (1992) found evidence of what they termed ‘defensive systematic processing’: that is heavy caffeine drinkers were more sceptical in their evaluation of the evidence supporting a link than they were in the evaluation of contrary evidence.
Anecdotal evidence supports this proposition: many of us know smokers who are extremely sceptical of the large body of evidence linking passive smoking to respiratory problems, but totally accept the findings of an occasional study reporting contrary results.

Conclusions

Prospect Theory, a subset of BDT, provides a theoretical basis for understanding the way that people will process information about the positive and negative consequences of a behaviour. If people code consequences as gains or losses and evaluate their value in the ways suggested by Prospect Theory, the resulting decisions are likely to be quite different to those predicted by rational economic models and by the CBMs generally used to understand and predict health behaviours. Taking the example of a smoker who is contemplating quitting: CBMs assume that the smoker will assess the absolute costs of smoking (perceived likelihood and severity in PMT) versus the absolute benefits (perceived effectiveness and ability in PMT) and reach a rational decision based on these absolute assessments – thus, increasing the perceived absolute costs of smoking should increase the likelihood of quitting. Prospect Theory, on the other hand, assumes that people assess gains and losses from their present position on the prospect curve. Therefore, the costs of smoking will be assessed as marginal costs only – and aggregated with costs already incurred. That is, if the person is a long-term smoker their reference point will be at a point on the loss curve far from the origin, and increasing the perceived costs of smoking is likely to have very little impact on the likelihood of quitting.

The following chapter introduces the two health behaviours that are the focus of the experiments reported in this thesis, and briefly reviews the literature on their prevalence and effects on health. The chapter then explains the applicability of these behaviours to the theoretical issues central to Prospect Theory, specifically the coding and evaluation of outcomes as gains and losses, which will be investigated in this thesis. The following two chapters then review the literature on Prospect Theory and demonstrate this applicability in a series of experiments.
This chapter introduces the two health behaviours that will be the subject of the experiments reported in this thesis – smoking and physical inactivity. The chapter commences with the reasons for selecting these behaviours: (a) in terms of their appropriateness in terms of the Prospect Theory variables; (b) in terms of the health consequences and the prevalence of these behaviours; and (c) in terms of specific target groups. The literature on people's perceptions of the risks associated with these behaviours is then briefly reviewed, demonstrating that these risks are generally underestimated, especially in relation to the self.

Prospect Theory and the choice of health behaviours to investigate

As discussed in Chapter Three, Prospect Theory and its extensions are based on a value curve that is defined in terms of gains and losses. Prospect Theory posits that people will prefer to segregate (savour) gains and aggregate (buffer) losses. In order to investigate the application of the theory to health behaviour communication, it was necessary to select:

1. a health behaviour for which the consequences are well-defined and universally accepted as negative (losses) and a health behaviour for which the consequences are well-defined and universally accepted as positive (gains). To test the theory fully, this required the selection of a health-damaging behaviour and a health-promoting behaviour;

2. a positive and a negative health behaviour that have been the subject of interest in interventions based on the social cognitive models discussed in Chapter Two;

3. a positive and a negative health behaviour that have multiple consequences (e.g., while breast cancer screening is a health-promoting behaviour, it has only one primary consequence – a reduction in the likelihood of developing untreatable breast cancer – and thus would not be suitable for a study of aggregation and segregation of consequences); and
After reviewing a wide range of health behaviours, it was decided to focus on cigarette smoking (negative behaviour with 'loss' consequences) and physical activity (positive behaviour with 'gain' consequences). As discussed in Chapter Two, both of these behaviours have been extensively studied using social cognitive models of behaviour change.

The following section addresses the selected behaviours, demonstrating their prevalence and multiple consequences.

**Australians and cigarette smoking**

Currently in Australia, approximately 25% of Australian men and 20% of Australian women (Higgins et al. 2000) are smokers. This reflects a considerable decrease over the last several decades. However, while the proportion of adults who smoke has declined significantly over time, the number of ex-smokers has increased – that is, the proportion of Australians who take up smoking has changed little over the last 20 years (Australian Bureau of Statistics 1997). Additionally, surveys show that the rate of decline of current smokers has plateaued over recent years (Hill, White and Scollo 1998). Among young people, smoking rates declined between 1980 and 1990, but then steadied among adolescent males and increased slightly among adolescent females in the first half of the last decade; in 1996, approximately 28% of 17-year-old boys and 34% of 17-year-old girls were current smokers (Hill et al. 1999). Between 1996 and 1999, smoking rates among 12-15 year olds resumed the decline (falling from 16% in 1996 to 14% in 1999) but remained static among 16-17 year olds (Hill, White and Effendi 2002).

*The health consequences of smoking*

"Cigarettes are the only available consumer product that is hazardous to health when used as intended" (Napier, London, Whelan and Golaine 1996)
The following section briefly reviews death and illness attributable to smoking. The negative consequences will be used to develop the intervention materials for the ‘loss’ segment of the experiments reported in this thesis. Note that the various studies reviewed refer to ‘tobacco smoking’, ‘cigarette smoking’ and ‘smoking’, and these terms are used interchangeably in this thesis.

**Smoking-related mortality:** The World Health Organisation (WHO) estimates that by the year 2020 tobacco will kill more people worldwide, and cause more premature death and disability, than any single disease. Tobacco deaths will surpass even HIV as a cause of death (World Health Organization 1996), tripling from 2.6% of the global burden of disease in 1990 to 9% in 2020. In the US, cigarette smoking is the leading cause of preventable death, causing approximately 500,000 deaths per year. That is, one-quarter of all deaths and one-half of all premature deaths in the US are due to smoking (Napier et al. 1996).

In the early 1990s, a comprehensive study was conducted to determine the impact of smoking on death and disability in Australia (English et al. 1995). The study found that in 1992, tobacco smoking killed 18,920 people and caused 88,266 person-years of life to be lost before the age of 70 years; that is, 15% of all deaths in Australia in 1992 were caused by smoking.

In 1998, the five major causes of death in Australia were ischaemic heart disease (27,822); cerebrovascular disease or stroke (11,982); lung cancer (6,874 deaths); colorectal cancer (4,744); and chronic obstructive pulmonary disease (COPD) (5,351). Smoking is a major causal factor in four of these five leading causes of death; it is the most common risk factor for COPD (Australian Institute of Health and Welfare 2000), and 85% of lung cancer deaths are due to smoking (DHFS & AIHW 1998).

Smoking is also a causal factor for a number of other cancers, including: oesophageal, laryngeal, oral (tongue, salivary gland, mouth and pharynx); nasal; bladder; kidney; pancreatic; stomach; anal; colorectal; and some gender-specific cancers, including cervical, vulvular and penile (English et al. 1995). Smokers are more likely to contract, and die from, respiratory infections including influenza and pneumonia (Napier et al.
1996); in Australia, approximately 174 males and 70 females died from tobacco-caused pneumonia in 1992.

Smoking has also been found to interact with other causes in such a way that the combined effects are multiplicative rather than additive. For example, there is a synergistic relationship with alcohol in the causation of head and neck cancers (Vokes, Weichselbaum and Lippman 1993; Dubner 2001; Busto, Corvo, Ricci, Sanguinetti and Benasso 2001).

**Smoking-related morbidity:** It is important to note that the negative health effects of tobacco smoking go beyond the contribution to premature death. WHO estimates that by 2020, the burden of disease attributable to tobacco will be greater than from any other single cause or disease, accounting for 9% of the total global burden of disease. In the US (Napier et al. 1996) and Australia (Australian Institute of Health and Welfare 2000), tobacco smoking is the single largest contributor to the burden of disease. In Australia in 1996, smoking was responsible for approximately 12% of the burden of disease among men and 7% among women, and is increasing among women (Mathers, Vos and Stevenson 1999).

**Australians and physical inactivity**

Between 1997 and 1999, reported physical activity declined significantly among Australian adults. The 1999 Active Australia survey found that 15% of adult Australians reported no physical activity during the previous week, an increase from 13% in 1997; and 60% reported participating in sufficient physical activity for good health, down from 62% in 1997. Also, those reporting walking at least three times a week declined from 58% to 54%, and those reporting three or more sessions of vigorous-intensity activity declined from 24% to 19% (Active Australia 2000). Surveys conducted in Western Australia and Australia-wide found that approximately 40% of adult Australians report weights and heights that indicate they are overweight or obese (Australian Bureau of Statistics 1997; Nutrition & Physical Activity Program 2001).
The health consequences of physical inactivity

The following section provides a brief overview of the effects of physical inactivity on health and disease, for the purpose of demonstrating the severity of physical inactivity as a public health issue for Australia, followed by a review of the positive consequences of physical activity which will be used to develop the ‘gain’ materials for the experiments reported in this thesis.

Physical inactivity-related mortality: The World Health Organisation lists physical inactivity as the eighth most significant risk factor in terms of contribution to the global burden of disease, estimating that in 1990 physical inactivity resulted in 1,991,000 deaths worldwide (World Health Organization 1996). It has been estimated that 18% of the burden of disease in Australia is attributable to physical inactivity, with more than 13,000 deaths in Australia, and direct health care costs in excess of $370 million per year attributable to physical inactivity (Stevenson, Bauman, Armstrong, Smith and Bellew 2000). Physical inactivity is the second leading attributable cause of death among Australian men, causing 5,924 (8.7% of the total) deaths in 1996, and the leading among women with 7,095 deaths (11.7% of the total) in 1996 (Mathers et al. 1999).

Significant reductions in mortality could be achieved by encouraging the sedentary or insufficiently active members of the population to become moderately active (US Department of Health and Human Services 1996; Egger, Donovan, Corti, Swinburn and Bull 1998; Stevenson et al. 2000). ‘Moderately active’ is defined as engaging in 30 minutes of moderate-intensity physical activity on most, preferably all, days, where ‘moderate-intensity physical activity’ is defined as exercise which “will cause a slight, but noticeable, increase in breathing and heart rate and may cause light sweating in some people” (Egger et al. 1998). Further, it is estimated that every one percent increase in the proportion of the Australian population engaging in regular moderate physical activity would result in a gain of 1,764 life years, and a saving of $3.6 million, per year (Egger et al. 1998).

Physical-inactivity related morbidity: There are also a number of conditions for which, while they contribute to mortality, the major contribution to the burden of disease is in
their impact on years of life lived with disability. Among the conditions that are associated with inadequate physical activity are musculo-skeletal disorders, osteoporosis, falls and fractures, obesity, and depression (Egger et al. 1998).

Positive consequences of regular physical activity

The positive effects of regular physical activity have also been documented and quantified, although less extensively than for the negative effects of smoking. The most widely-acknowledged benefits of regular physical activity are reductions in the likelihood of the negative consequences of inactivity, discussed above. However, as the purpose of using physical activity as the second behaviour of interest in this thesis was to investigate whether people prefer to aggregate or segregate positive consequences, it was necessary to include items that were clearly perceived as gains (i.e., improvements from a neutral state) rather than reductions in losses. This is related to the distinction in marketing (Rossiter and Percy 1997) between negatively oriented purchase and usage motives such as problem removal and problem avoidance (e.g., paracetamol to alleviate a headache) and positively oriented motives such as sensory gratification and intellectual stimulation (e.g., the ‘sugar boost’ from soft-drinks).

A review of the literature on people’s perceptions of physical activity (Sechrist, Noble Walker and Pender 1987; Steinhardt and Dishman 1989; Egger 1996; Myers and Roth 1997; Jaffee, Mahle Lutter, Rex, Hawkes and Bucaccio 1999) found that, among adults, perceived benefits include:

- Physical benefits – such as increased energy, weight control; improved body shape, cardiovascular fitness, muscle strength, muscle strength, stamina, avoiding future illness;

- Psychological benefits – such as enhanced self image, increased confidence, feeling more relaxed, sleeping better, coping better with stress, increased alertness, sense of accomplishment, enjoyment; and

- Social benefits – such as spending time with friends, meeting new people, and being more accepted by others.
Similarly, amongst adolescents, key motivators are weight management; mastery or accomplishment; body strength; fitness; appearance; social approval; social interaction; and enjoyment (Wankel and Kriesel 1985; Fruin 1994; Tappe, Duda and Menges-Ehrnwald 1990). A 1997 study confirmed that adolescents focus on these short-term gains, and place less importance on long-term health benefits (Fruin and Smith 1997).

**Risk perceptions and optimistic bias**

Most health behaviour models, such as The Health Belief Model, emphasise the importance of perceived vulnerability (i.e., the subjective perception of the probability of the negative outcome) in motivating health behaviour change (Adler et al. 1992). Unfortunately, this self-perceived vulnerability is often not an accurate assessment. One of the systematic biases impacting on this perception is defensive optimism (Schwarzer 1994).

“Most people are not willing to acknowledge that their risk of contracting a certain disease is equivalent to the risk carried by their peers” (Schwarzer 1994); p. 163). In a series of studies, Weinstein and colleagues found that people perceive their own chances of a negative event to be lower (and their own chances of a positive event to be higher) than those of other people (Weinstein 1980; Weinstein 1983; Weinstein 1987; Gouveia and Clarke 2001). In terms of health behaviour, not only do people underestimate the general risk of health-related problems, they systematically perceive their personal risk from most health and safety threats to be even lower than that of others (Weinstein 1983; Weinstein and Klein 1995). For example, optimistic bias has been found in people’s perceptions of their driving skill and driving safety, with over 75% of respondents perceiving themselves to be more skilful and safer drivers than their peers (Svenson 1981). Unfortunately, these inaccurate perceptions have also been shown to be extremely resistant to change (Weinstein 1983; Weinstein and Klein 1995).

Whereas functional optimism (i.e., ‘adaptive’ optimism which results in appropriate coping behaviours) is positively correlated with health-promoting behaviours, defensive optimism is inversely correlated with health-promoting behaviours – and thus needs to be minimised in order to motivate preventive/protective actions (Schwarzer 1994).
Perceptions of smoking-related risks

A recent review of research on smokers’ perceptions of risk (Weinstein 1998) concluded that the literature shows unequivocally that smokers acknowledge that smokers’ risks of health problems are greater than those of nonsmokers. However, this does not mean that they hold accurate perceptions of the extent of this risk; smokers consistently rate smoking as less risky than do nonsmokers and ex-smokers. An Australian study in the early 1990s (Borland 1997) found that only one-third of smokers acknowledged smoking as the most likely cause of death, approximately the same number who chose a car accident as the most likely cause. In fact, smoking fatalities outnumber motor vehicle fatalities by more than 10 to one – in 1996, 19,900 Australians died as a result of tobacco smoking (Australian Institute of Health and Welfare 2002), and 1,970 died in traffic accidents (Federal Office of Road Safety 1998).

Neither are people’s perceptions of the magnitude of deaths caused by smoking very accurate. For example, one study found that only 14% of smokers are aware that smoking causes more deaths than road accidents (Eiser and Sutton 1977).

Optimistic bias has been found to be a strong contributor to smokers’ inaccurate perceptions of smoking-related risks. Although most smokers acknowledge that smokers have a higher risk of long-term health problems than non-smokers (Boney McCoy, Gibbons, Reis, Gerrard, Luus and Von Wald Sufka 1992; Gerrard, Gibbons, Benthin and Hessling 1996), they also tend to perceive their personal level of smoking-related health risk to be lower than that of other smokers (Hansen and Malotte 1986; Leventhal, Glynn and Fleming 1987; Reppucci, Revenson, Aber and Reppucci 1991; Boney McCoy et al. 1992; Weinstein 1998). An Australian study found that while smokers perceive the risk of lung cancer, heart disease and stroke to be higher for smokers than for nonsmokers, they also perceive themselves to be at less risk than the ‘typical smoker’ (Lee 1989).

Smokers engage in a number of faulty cognitive mechanisms in order to reduce their self-perceived risk. Smokers’ estimates of the duration of smoking necessary to cause negative health effects increase with the length of time they have been smoking (Hahn and Renner 1998); they believe that the particular cigarettes they smoke are less health-

38 Chapter 4: The Health Issues
damaging than the 'average' brand (Segerstrom, McCarthy, Caskey, Gross and Jarvik 1993), and when their cessation attempts fail they reduce their ratings of the negative effects of smoking (Cohn, Macfarlane, Yanez and Imai 1995). A 1993 study of smokers' perceptions of the characteristics of lung cancer victims (Renner, unpublished, cited in Schwarzer 1994), found that smokers displayed a self-defence mechanism, minimising their own perceived risk describing the 'typical' victim's smoking history as quite different from their own. The hypothetical victim was described as, on average, as smoking 23 cigarettes a day for 14 years; whereas self-described smokers averaged 16 cigarettes a day for 18 years; that is, the smokers reduced their perceived risk by describing lung cancer victims as smoking more cigarettes per day, over a shorter period, than themselves.

It is important to note that people are rarely given information about their own specific susceptibility to health problems (Weinstein 1987), but rather information about population or 'average' risks – from which they estimate their own risk. These estimates are influenced by the biases discussed above.

An important caveat when considering people's estimates of the statistical likelihood of death or illness from smoking is that, as discussed in the earlier section on risk perceptions in general, people's responses to such questions may not reflect their opinions as much as their inability to think – and communicate – in mathematical terms. A 1990 US study asked people to estimate how many people will die from smoking, using one of three base rates: when asked to estimate 'out of 100,' they averaged approximately 41; when asked 'out of 1,000,' the majority gave a percentage rate as their response (i.e., still used 100 as the denominator); and when asked 'out of 2 million,' virtually none incorporated the denominator in their response (Viscusi 1992).

Similarly, it appears that most people do not fully understand – or, if they do understand, minimise the salience of – synergistic risk factors. A study of perceptions of the health risks associated with tobacco and alcohol consumption (Hermand, Mullet and Coutelle 1995) found that rather than seeing the combined risks as synergistic (which they are) or even summative, participants perceived that one risky behaviour resulted in maximal alteration to health and that the addition of the second had little further impact on health. A study of perceptions of synergistic effects of asbestos and
smoking on lung cancer risk (Lebovits and Strain 1990) found that, while 96% of the 129 asbestos workers surveyed stated that they knew of the synergistic risk, those who smoked were more likely to minimise the perceived risk by attributing health problems to luck or fate and to minimise the benefits of quitting.

**Perceptions of inactivity related risks**

An extensive search of the literature failed to identify empirical evidence on people’s perceptions of the risks associated with physical inactivity. This was confirmed by personal communications with experts in the field of physical activity promotion (Neville Owen, personal communication, 2001; Phil Vita, personal communication, 2001). An understanding of such perceptions appears fundamental to the development of effective communication campaigns to promote physical activity.

This absence of research is surprising both in terms of the importance to public health of physical inactivity and the extensive research that has been undertaken to characterise risk perceptions associated with a vast array of other activities. The existence of this body of literature on risk perception, however, provides valuable comparison data for studies in this area as well as assistance with the development of recommendations for action. A review of these risk perception studies (Jones, 2002) shows that, despite the extensive list of risks/hazards used in risk perception surveys, no previous studies have included ‘insufficient physical activity’ as one of the risks/hazards to be evaluated. The only study identified that included physical inactivity (described as ‘not taking enough exercise’) measured ‘worry’ rather than ‘risk’ (Houghton, Murray and Ball 1999). This study found that 25% of participants worried ‘a fair amount’ or ‘a lot’ about not taking enough exercise.

In terms of specific diseases that are related to inactivity, it has been shown that people underestimate their cardiovascular disease risk (Niknian, McKinlay, Rakowski and Carleton 1989) and heart attack risk (Davies, Smith and McKinlay 1989), with perceived risk being most accurate amongst those at the lowest risk. In a study that compared perceived heart attack risk to objective risk (with objective risk determined from a comprehensive HRA), 42% of people underestimated their own risk of suffering a heart attack (Avis, Hyg, Smith and McKinlay 1989). Additionally, the same study
found that while respondents listed number of cigarettes smoked, weight, blood pressure, cholesterol, and parental death from heart attack as factors that increased heart attack risk, they did not perceive that their heart attack risk was related to the amount of physical activity they undertook.

Unfortunately, low exercise levels and low perceived risk of exercise-related illness have both been found to be associated with being older, less educated, male, and having self-perceived lifestyle problems (Niknian et al. 1989; Mullineaux, Barnes and Barnes 2001).

Individualised feedback has been shown to be effective in increasing perceived risk of disease among those who underestimate their risk (Niknian et al. 1989; Davies et al. 1989), although this effectiveness is not always consistent. For example, one study (Kreuter and Strecher 1995) found that, while individualised risk feedback was successful in increasing perceived stroke risk among those who had underestimated their risk at baseline, it did not increase perceived cancer risk among those who had underestimated (it did, however, decrease perceived cancer risk among those who had overestimated their risk). Additionally, feedback had no impact on perceived heart attack or motor vehicle accident risk.

A study of optimistic bias in perceived heart attack risk (Davies et al. 1989) found that, while respondents saw some variables as strongly associated with heart attack risk (e.g., correlations of 0.24 for having high blood cholesterol, 0.23 for being overweight, and 0.38 for having a parent who died from heart disease), they saw the two behaviours central to this thesis – which are two of the major risk factors – as only weakly correlated with heart attack risk (i.e., 0.02 for cigarettes smoked per day and -0.03 for physical activity). Unfortunately, this study also found that even when the researchers were able to increase respondents' perceived risk of heart attack, they were no more likely to change their behaviour than those respondents whose risk perception was unchanged or even decreased.

As stated at the beginning of this chapter, the main focus on physical activity in this thesis is the perceived gains from physical activity. However, Study 2, reported in Chapter 5, also incorporates negative effects of not engaging in physical activity. Thus,
Study 1 was conducted to investigate Australian’s perceptions of the riskiness of physical inactivity, in comparison to other activities that have been extensively studied in the risk perception literature.

Study 1: Perceptions of the risks associated with physical inactivity

This study was designed to examine the perceived level of risk associated with physical inactivity in comparison to other items, among university students and the general population.

Hypotheses

H1a: Participants will rank physical inactivity as less risky than other items that are lower in actual risk.

H1b: Participants with a high level of knowledge of the health risks of physical inactivity will rank physical inactivity higher on the list of risky items than will those without this knowledge.

Methodology

Participants: Two groups of respondents were included in this study:

- Group One consisted of a convenience sample of 175 second to fourth year students in the Department of Human Movement & Exercise Science at a large public university; mean age 22.4 (range 18 to 53); 57% female; and 84% Australian-born.
- Group Two consisted of a convenience sample of 85 adult Australians, recruited in the Perth (Western Australia) central business district; 47% male; and 56% born in Australia.

Participants in Group One were expected to have a high level of knowledge of the health risks associated with physical inactivity, as they had completed a minimum of one year of tertiary study in the area of exercise science, whereas those in Group Two were expected to have limited knowledge. Thus, considerable differences were expected in both their ranking and their characterisation of physical inactivity risks.
Questionnaire: Participants were asked to rank six risk-items in terms of “the risks of dying, across all Australian society as a whole” from one (most risky) to six (least risky). This question was taken from that used in the studies of risk ranking discussed above (see Jones, 2002). The six items included in this study were physical inactivity, cigarette smoking, motor vehicle accidents, handguns, AIDS, and nuclear power. The order of presentation of the six items was randomised. They also answered questions on basic demographic information, such as age, gender, country of birth, and exercise status, for comparative purposes.

Results

In order to determine a rank ordering of risk, the mean position rating was calculated for each of the six items (from 1 = most risk of death through to 6 = least risk of death). The rankings and mean scores for the two groups, and the ranking of actual causes of death, are shown in Table 4.1.

<table>
<thead>
<tr>
<th>Actual deaths</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students</td>
<td>Adults</td>
</tr>
<tr>
<td></td>
<td>(n=175)</td>
<td>(n=85)</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>1 19,900a</td>
<td>1 2.2</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>2 13,019a</td>
<td>3 3.0</td>
</tr>
<tr>
<td>Motor vehicle accidents</td>
<td>3 1,761b</td>
<td>2 2.3</td>
</tr>
<tr>
<td>Handguns</td>
<td>4 353b</td>
<td>5 4.3</td>
</tr>
<tr>
<td>AIDS</td>
<td>5 157c</td>
<td>4 4.0</td>
</tr>
<tr>
<td>Nuclear power</td>
<td>6 0</td>
<td>6 5.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ranking</td>
<td>x</td>
</tr>
<tr>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>4</td>
<td>3.8</td>
</tr>
<tr>
<td>5</td>
<td>3.7</td>
</tr>
<tr>
<td>6</td>
<td>4.8</td>
</tr>
</tbody>
</table>

a 1996 (source: Australian Bureau of Statistics 1997b)
b 1999 (source: Australian Bureau of Statistics 2001)
Group One: Physical inactivity was rated third most risky of the six items (x = 3.0), after cigarette smoking (x = 2.2) and motor vehicle accidents (x = 2.3). This is consistent with H1a, as deaths from motor vehicle accidents are much less frequent than deaths from inactivity. As discussed above, this group of participants were Human Movement (exercise science) students, who had been exposed to a large amount of information on the risks associated with physical inactivity. The rank ordering of items was the same for both males and females, with one exception: males ranked cigarette smoking most risky, followed by motor vehicle accidents, but this order was reversed for females. However, although the rank ordering did not differ between the genders, the mean scores show that the males in the sample perceived inactivity to be more risky than did the females (males 2.6, females 3.3, p < .005), and this was the only risk for which the scores were significantly different between makes and females. Rank ordering did not differ between Australian and overseas-born participants. There was also no difference in the rank ordering of risks between committed, occasional and regular exercisers (as there were only three non-exercisers in the sample, separate analyses were not conducted for this group).

Group Two: Consistent with H1a, three of the four causes death which were ranked as more risky than physical inactivity (motor vehicle accidents, handguns and AIDS), actually have considerably lower mortality rates than inactivity. Consistent with H1b, physical inactivity was ranked as the fifth most risky out of the six items (x = 4.0), considerably less risky than it was ranked by the human movement students. Analysis of the rankings by gender, birth country, years in Australia, education, and exercise status found no significant differences.

Discussion

Most health behaviour models emphasise the importance of perceived vulnerability (i.e., the subjective perception of the probability of the negative outcome) in motivating health behaviour change. Therefore, if we are to motivate people to take action to reduce a risk, they must perceive the risk to exist (Mirotznik et al. 1995; Sommers et al. 1995).
Physical inactivity was rated as the third most risky item by the student group, and fifth most risky by the population sample. Both Group One (human movement students) and Group Two (population sample) ranked cigarette smoking as more risky than inactivity; which is correct for males. However, for Australian women, inactivity is a greater contributor than smoking to the mortality rate, with 5,181 deaths in 1996 from smoking and 7,095 from inactivity (Mathers et al. 1999).

However, both groups incorrectly ranked motor vehicle accidents as more risky than being inactive. For the population as a whole, the risk of dying from inactivity is approximately eight times that of dying from a motor vehicle accident (Federal Office of Road Safety 1999). Furthermore, women are considerably more likely than men to die from inactivity-related conditions (Stevenson et al. 2000) but far less likely to die from motor vehicle accidents.

Additionally, the community sample incorrectly ranked AIDS and handguns as more risky than physical inactivity. In 1998 there were only 348 new diagnoses and 170 deaths in Australia from AIDS (Australian Institute of Health and Welfare 2000). In 1999 there were a total of 353 deaths from all firearms in Australia (this includes 269 suicides); of the 65 homicide deaths in Australia in 1999, less than half were caused by handguns (Alpers, personal communication, 2001).

Slovic and his colleagues (Slovic, Fischhoff and Lichtenstein 1990) found that dramatic and sensational causes of death (i.e., those which are most likely to be covered extensively in the media) – such as homicides, traffic accidents, food poisoning and tornadoes – were greatly overestimated; and ‘unspectacular’ but common causes – such as all-illness, stomach cancer, and diabetes – were greatly underestimated, particularly where non-fatal cases of these conditions are common. The implication of these findings for health behaviours are apparent; inactivity-related deaths, for example those from NIDDM, are almost certain to be underestimated.

Conclusion

In summary, the two selected behaviours – smoking and physical activity – meet the criteria set out at the beginning of this chapter for adequate testing of the relevant BDT
theories in a health promotion context. First, smoking is a health-damaging behaviour that has consequences which are well-defined and universally accepted as negative (losses); and physical activity is a health-promoting behaviour that has consequences which are well-defined and universally accepted as positive (gains). Second, both smoking and physical activity have been the subject of interest in interventions based on each of the social cognitive models discussed in Chapter Two, but both behaviours have not been sufficiently modified at the population level (approximately one-quarter of the population smoke, and one-half are inadequately physically active). Third, both smoking and physical activity have multiple consequences. Fourth, both behaviours have serious consequences for the Australian population – in terms of mortality, morbidity and cost to the health-care system. In fact, as discussed above, smoking and lack of physical inactivity are the two major modifiable causes of death and disability in Australia.

Additionally, the literature on perceptions of risks associated with smoking, and the results of Study 1 on perceptions of risks associated with inactivity, demonstrate that people tend to underestimate the risks to their health from these behaviours.

The next four chapters demonstrate the applicability of the theoretical concepts introduced in Chapter 3 to the health issues discussed in this chapter. Each of the chapters present several studies combining the theory with its application to health behaviour, demonstrating the potential of Behavioural Decision Theory to address the issues raised in this chapter.
CHAPTER 5: PROSPECT THEORY AND MESSAGE FRAMING

This chapter reviews the literature on the application of Prospect Theory and message framing to health behaviour change. It presents the results of two experiments conducted to investigate the effects of message design characteristics (i.e., the format in which information is provided) on reported attitudes towards, and intentions to undertake, health-promoting and health-damaging behaviours.

**Message Framing**

The term ‘framing’ has been interpreted to mean different things in various studies, with the main distinction being between ‘different consequences’ and ‘different behaviours.’ Different consequences framing refers to the framing of information about the consequences in such a way that the *same behaviour* is presented as having either positive or negative consequences (Rothman, Salovey, Antone, Keough and Drake Martin 1993). Different consequences (of the same behaviour) framing has been used in studies on surgical preferences (McNeil, Pauker, Sox and Tversky 1982; McNeil, Pauker and Tversky 1988; Witte 1994). For example: “if a cancerous growth is detected, 19 out of 20 growths will be the less deadly nonmelanoma cancer” (positive frame) versus “If a cancerous growth is detected, 1 out of 20 growths will be the more deadly melanoma cancer” (negative frame).

Alternatively, information can be framed such that different behaviours are described as having the same consequences. This type of framing is most commonly used in studies of actual (rather than hypothetical) health behaviour decisions. Same consequences framing requires that “the positive and negative frames depict the same consequences in terms of either performing or not performing a behaviour” (Rothman et al. 1993). For example: “if you have a skin cancer examination, a cancerous growth can be detected before it becomes life threatening” (positive frame) versus “if you do not have a skin cancer examination, a cancerous growth cannot be detected before it becomes life threatening” (negative frame).

The majority of framing studies in the health behaviour area use ‘same consequences’ framing (i.e., the benefits gained, or losses avoided, from performing the behaviour
versus the benefits lost, or losses incurred, by not performing the behaviour). This framing lends itself to voluntary health behaviours, such as cancer screening, and thus is the *modus operandi* for research on communications to increase the prevalence of breast self-examination (BSE), testicular self-examination (TSE), and similar behaviours. Same consequences framing presents dichotomous outcomes - "if you do (don’t do) X; Y will (won’t) happen." This is operationally very different, however, to the original Kahneman and Tversky studies (Kahneman and Tversky 1979; Tversky and Kahneman 1981), which were based on a decision between two behaviours rather than a decision to do or not do a single behaviour.

Studies of framing effects on health-related intentions and behaviour have been conducted in numerous areas, including: breast self-examination (Meyerowitz and Chaiken 1987; Lalor and Hailey 1990); mammography (Banks, Salovey, Greener, Rothman, Moyer, Beauvais and Epel 1995); testicular self-examination (Steffen, Sternberg, Teegarden and Shepherd 1994); follow-up of abnormal papanicolaou tests (Lauver and Rubin 1990); cancer treatment (Cormier O'Connor, Boyd, Tritchler, Kriukov, Sutherland and Till 1985; Zimmerman, Baldo and Molino 2000); smoking (Wilson, Wallston and King 1990); sun protection (Rothman et al. 1993; Detweiler, Bedell, Salovey, Pronin and Rothman 1999); cholesterol screening (Maheswaran and Meyers-Levy 1990); exercise (Jones, Rossiter and Donovan 2001); and infant immunisation (Donovan and Jalleh 2000).

The results of these studies are somewhat contradictory. That is, some studies have found an advantage for gain framing (Detweiler et al. 1999), some for loss framing (Meyerowitz and Chaiken 1987), and some no difference between the frames (Lalor and Hailey 1990, Lauver and Rubin 1990; Rothman et al. 1993; Steffen et al. 1994). Others have found an interaction between framing and some other factor, such as involvement (Maheswaran and Meyers-Levy 1990; Rothman, Salovey, Antone, Keough and Drake Martin 1993), or personality characteristics (Tykocinski, Higgins and Chaiken 1994).

It has been argued (Rothman and Salovey 1997; Salovey, Rothman and Rodin 1998; Rothman, Martino, Bedell, Detweiler and Salovey 1999) that these inconsistent results can be at least partially explained by the differential nature of the behaviours concerned; cholesterol testing and melanoma screening, for example, are health-protective
behaviours, whereas sunscreen use and exercise are health-enhancing (prevention) behaviours. A detection behaviour (such as cancer screening) by its very nature causes people to think about potential losses, and thus can be seen as a risky behaviour. If we accept the earlier proposition that people are risk seeking when considering a potential loss, it follows that a negative frame would be more effective. In this case a negative frame means emphasising the negative effects of not performing the behaviour (e.g., not detecting a cancerous growth before it becomes life-threatening), and a positive frame the positive effects of performing the behaviour (e.g., detecting a cancerous growth before it becomes life-threatening). However, of the four studies referred to above which were of cancer detection behaviours, only one found an advantage for negative framing (Meyerowitz and Chaiken 1987). One found an interaction between framing and involvement (Rothman et al. 1993) and the other three reported no framing effect (Lalor and Hailey 1990; Lauver and Rubin 1990; Steffen et al. 1994).

Prevention behaviours (such as sunscreen use) can be seen as risk-averse (i.e., they are undertaken to avoid future problems and do not, in themselves, pose any risk to the individual). Prospect Theory would thus suggest that positively framed messages cause people to be risk averse, thus a positive frame would be more effective in persuading people to undertake prevention behaviours (e.g., if you exercise regularly, you will feel fit and energetic). According to this theory, a negative frame would cause people to become more risk-seeking, and thus less likely to engage in a prevention behaviour. However, the evidence thus far is not clear-cut: “research findings on prevention behaviours are inconsistent...(but) they do suggest there may be some advantage for positive framing” (Rothman, Salovey, Antone, Keough and Drake Martin 1993). Of the two studies of sunscreen usage listed above, one found no framing effect (Rothman, Salovey, Antone, Keough and Drake Martin 1993) and the other an advantage for positive framing (Detweiler, Bedell, Salovey, Pronin and Rothman 1999).

An alternative argument, and one that is consistent with the topic of this thesis, is that framing effects are mediated by the degree to which people engage in detailed processing of the messages (Maheswaran and Meyers-Levy 1990). Specifically, Maheswaran and colleagues argue that negative framing is more persuasive when the message is processed in detail and positive framing when the message is processed...
heuristically. The issue of message processing effects will be discussed in detail in this and subsequent chapters.

Study 2: Message Framing and Exercise Intentions

A number of authors have debated the value of a four-cell framing model (see for example Higgins and Tykocinski 1992; Higgins, Roney, Crowe and Hymes 1994; Brendl, Higgins and Lemm 1995; Rothman and Salovey 1997; Detweiler et al. 1999) where the two dimensions are attain versus not attain; and desirable versus undesirable. Using this approach, the outcome of a specified behaviour could be to:

a) obtain a desirable outcome;
b) not obtain an undesirable outcome;
c) obtain an undesirable outcome; or
d) not obtain a desirable outcome.

Within this framework, both (a) and (b) are outcomes of engaging in the behaviour - where the behaviour is a positive one - and are defined as ‘gain-framed messages’ (Detweiler et al. 1999), or positive framing. An example of this would be “if you exercise regularly you will stay fit” (obtain desirable) and “if you exercise regularly you won’t become unfit” (not obtain undesirable).

Both (b) and (c) are outcomes of not engaging in the behaviour (again, where the behaviour is a positive one) and are defined as ‘loss-framed messages’ (Detweiler et al. 1999), or negative framing. An example of this would be “if you don’t exercise regularly you won’t stay fit” (not obtain desirable) and “if you don’t exercise regularly you will become unfit” (obtain undesirable).

This framework can also be used in relation to a ‘negative’ behaviour, such as smoking, as follows:

a) If you don’t smoke you will have healthy lungs (obtain desirable);
b) If you don’t smoke you won’t damage your lungs (not obtain undesirable);
c) If you smoke you will damage your lungs (obtain undesirable); and
d) If you smoke you won’t have healthy lungs (not obtain desirable).
There is currently a debate about whether each of the four frames has a different persuasive impact (Higgins and Tykocinski 1992; Higgins et al. 1994), or whether there is simply a gain versus loss main effect (Petty and Wegener 1991) – that is (a) and (b) versus (c) and (d).

In their study of message framing and sunscreen use, Detweiler et al. (1999) presented subjects with a brochure containing information about sun protection and skin cancer. Statements in the brochures were framed in terms of:

a) the benefits gained by sun-protective behaviours (e.g., “protect yourself from the sun and you will help yourself stay healthy”);
b) the undesirable outcomes avoided by sun-protective behaviours (e.g., “don’t expose yourself to the sun and you won’t risk becoming sick”);
c) the undesirable outcomes incurred by unsafe sun exposure (e.g., “expose yourself to the sun and you will risk becoming sick”); or
d) the benefits foregone by unsafe sun exposure (e.g., “don’t protect yourself from the sun and you won’t help yourself stay healthy”).

In relation to both intention and behaviour, this study found “no significant main effects due to either the action dimension (i.e., attain versus not attain) or outcome dimension (i.e., desirable versus undesirable)...(but) a simple main effect between the gain-framed and loss-framed conditions” such that participants reading the gain-framed messages were more likely to obtain a free sample of sunscreen and to report intending to use sunscreen while at the beach (Detweiler et al. 1999). Further, they found that the differences between the two frames were more pronounced amongst subjects who had not intended to use sunscreen prior to the intervention.

Detweiler and colleagues (1999) concluded that gain framed messages (‘positive’ framing) are more effective than loss framed messages (‘negative’ framing) in persuading people to use high SPF sunscreen. Further, they posited that this lack of difference between the four cells was due to people’s ability to “think about the suggested behaviour both in terms of the good (bad) that will be achieved and the bad (good) that will be avoided if it is (not) performed” (regardless of whether an ‘attain’ or ‘not attain’ argument is presented). However, were this the case, one would expect that
‘rational subjects’ would also be able to think of the ‘gain’ and the ‘loss’ incurred whether they were presented with a positive or a negative frame, and thus there should be no framing effect at all.

Rossiter and Percy (1997) classify motives to purchase a good or service as being either positively or negatively motivated. Thus a positively framed message (i.e., “if you engage in this behaviour, you will...”) can be expressed in such a way as to appeal to either positive or negative motivations for engaging in the behaviour. Positive motivators are those that seek to achieve a state beyond ‘normal’ - such as sensory gratification, social approval and mastery. Negative motivators are those that seek to redress a negative state and return to ‘normal’ - such as problem-solution, problem-avoidance and incomplete satisfaction. Subsequent studies have found that this model extends to other consumption experiences, including the adoption and maintenance of health behaviours.

Applying the Rossiter-Percy model to exercise behaviour, it is likely that people who are motivated to undertake a behaviour in order to reduce a negative state are best targeted with an informational communication (i.e., provided with information on how the behaviour will reduce, eliminate or avoid the problem). Conversely, people motivated to achieve a state beyond normal are best targeted with a transformational communication (i.e. one that addresses their need to enhance their physical, mental or social state). In their study of motivations for the initiation of exercise, Donovan and Francas (1990) found that most people are motivated to commence, or consider, exercise as a result of negative motivators (problem solution or problem avoidance). However, this study did not look at communication strategies for increasing and maintaining exercise behaviour.

Objectives

This study compared the effectiveness of the four persuasive communication approaches. Given the recommendation of adopting a health-enhancing behaviour (where ‘do’ refers to adopting the behaviour and ‘don’t’ refers to not adopting the behaviour), and the type of consequences (positive or negative), the four communication approaches can be categorised as:
1) do and obtain the desirable consequences;
2) do and avoid the undesirable consequences;
3) don't do and incur the undesirable consequences; and
4) don't do and miss out on the desirable consequences.

Hypotheses

Given the contradictory theoretical predictions and findings of the studies reported above, it was anticipated that the results of this study would find no clear support for either of the two-cell ‘framing’ manipulations, but rather identify differences between the four framing cells. Thus, the hypotheses were as follows:

H2a: There will be no significant main effect on communication effectiveness between participants in the ‘different behaviour’ manipulations – that is, those who read the ‘do the behaviour gainframed’ messages and the ‘don’t do the behaviour lossframed messages’.

H2a: There will be no significant main effect on communication effectiveness between participants in the ‘different consequences’ manipulations – that is, those who read the ‘positive consequences gainframed’ messages and the ‘negative consequences lossframed messages’.

H2c: There will be a significant interaction effect on communication effectiveness between participants in the four framing manipulation cells.

Methodology

Participants were 76, year-10 high school students at a local government high school and 55 third-year undergraduate university students in the School of Human Movement and Exercise Science. Approval for the study was obtained from the University of Western Australia Human Research Ethics Committee, and approval for the high school students’ participation was obtained from the Principal and parents were notified of this by the school.
Participants were randomly allocated to one of the four experimental conditions (see communication approaches 1-4 above). Both the high school and undergraduate students undertook the study in classroom settings. They were told the purpose was to evaluate a health pamphlet. Because of the classroom administration, necessitating the distribution of different versions at the same venue, participants were told that several different pamphlets were being handed out and asked to concentrate on the one they received because that was what their questionnaire was about. They were then informed that their answers would be anonymous and confidential.

The front page of the questionnaire asked for demographic information and general health beliefs (see Appendix B). The pamphlet was included in the questionnaire and appeared as the next page. After reading the pamphlet, participants completed the questions about their emotional reactions to the information and their intentions to exercise more regularly. They were thanked and then given the opportunity to request the free information sheets about exercise.

The dependent variables were:

- Intention to increase exercise levels – this was measured on a 5-point scale, in response to the question: “Having read the pamphlet, will you try to do more regular exercise?”, from 1 = definitely won’t try to 5 = definitely will try.

- Request for information sheets on physical activity – respondents were offered a series of free information sheets “as a thank you for participating in the survey”. In order to obtain the information sheets they were required to provide their name and address, thus enabling us to determine the number of information sheets requested by participants in each condition. There were five information sheets available, and this intermediate behavioural measure was scored 1 – 5, based on the number of information sheets requested.

All four versions of the brochure contained the same illustrations and layout, and focused on the same health outcomes. The framing was manipulated in that the information was presented in terms of either do the behaviour (i.e., exercise regularly) or don’t do the behaviour; and positive consequences (benefits gained or lost) or negative consequences (incurred or avoided). Combining the two manipulations gives us a third categorization, in that the consequences can be seen as being turned “on”
The consequences are set out in Table 5.1.

**Table 5.1: Positive and negative consequences used in the information leaflets**

<table>
<thead>
<tr>
<th>Positive Consequences (Gained or lost)</th>
<th>Negative Consequences (Avoided or incurred)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Get even more energy</td>
<td>• Be tired and lacking in energy</td>
</tr>
<tr>
<td>• Feel good about yourself and your body</td>
<td>• Feel bad about yourself and your body</td>
</tr>
<tr>
<td>• Get or stay slim</td>
<td>• Become or remain fat</td>
</tr>
<tr>
<td>• Get or stay fit</td>
<td>• Become or remain unfit</td>
</tr>
<tr>
<td>• Achieve or maintain your correct weight</td>
<td>• Become or remain overweight</td>
</tr>
<tr>
<td>• Have firm muscles and good body strength</td>
<td>• Have weak muscles and poor body strength</td>
</tr>
<tr>
<td>• Get to enjoy the experience of regular physical activity</td>
<td>• Experience pain and discomfort associated with occasional exercise</td>
</tr>
</tbody>
</table>

Thus, the four conditions and their operationalisation were as follows:

- **Do and obtain** – This condition emphasised the positive outcomes gained from regular exercise ["If you do exercise regularly, you could...(list of benefits gained).”]
- **Do and avoid** – This condition emphasised the negative outcomes avoided by regular exercise ["If you do exercise regularly, you won’t...(list of losses avoided).”]
- **Don’t and incur** – This condition emphasised the positive outcomes lost by not engaging in regular exercise ["If you don’t exercise regularly, you could...(list of losses incurred).”]
- **Don’t and miss out** – This condition emphasised the positive outcomes lost by not engaging in regular exercise ["If you don’t exercise regularly, you won’t...(list of benefits foregone).”]

The order of presentation of the consequences was rotated to control for order effects.
Results

Intention to exercise: Results for intention to exercise, by experimental condition, for the younger, older and both groups combined, are presented in Table 5.2. The results from the one-way analyses of variance of the four conditions for each group revealed that intentions did not differ significantly by condition, for any of the groups. Additionally, the mean for intentions in all conditions ranged from 2.6 to 3.1 on the 1 to 5 intention scale, indicating that the messages had limited impact on this measure (that is, none of the message frames resulted in a significant increase in intention to exercise).

Table 5.2: Intention to Exercise¹ by Experimental Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>All participants</th>
<th>Older group</th>
<th>Younger group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do, obtain +ve</td>
<td>Mean 2.7 s.d. 1.3 N 21</td>
<td>Mean 2.6 s.d. 0.9 N 5</td>
<td>Mean 2.7 s.d. 1.4 N 16</td>
</tr>
<tr>
<td>Do, avoid -ve</td>
<td>Mean 2.8 s.d. 1.2 N 34</td>
<td>Mean 2.8 s.d. 0.9 N 16</td>
<td>Mean 2.8 s.d. 1.3 N 18</td>
</tr>
<tr>
<td>Don’t, incur -ve</td>
<td>Mean 3.1 s.d. 1.5 N 43</td>
<td>Mean 3.0 s.d. 1.4 N 23</td>
<td>Mean 3.2 s.d. 1.4 N 20</td>
</tr>
<tr>
<td>Don’t, miss +ve</td>
<td>Mean 2.9 s.d. 1.2 N 26</td>
<td>Mean 3.1 s.d. 1.4 N 11</td>
<td>Mean 2.8 s.d. 1.1 N 15</td>
</tr>
<tr>
<td>+ve consequences (combined)</td>
<td>Mean 2.8 s.d. 1.2 N 47</td>
<td>Mean 2.9 s.d. 1.2 N 16</td>
<td>Mean 2.7 s.d. 1.2 N 31</td>
</tr>
<tr>
<td>-ve consequences (combined)</td>
<td>Mean 3.0 s.d. 1.3 N 77</td>
<td>Mean 2.9 s.d. 1.2 N 39</td>
<td>Mean 3.0 s.d. 1.4 N 38</td>
</tr>
<tr>
<td>Gains (Do, combined)</td>
<td>Mean 2.7 s.d. 1.2 N 55</td>
<td>Mean 2.7 s.d. 0.9 N 21</td>
<td>Mean 2.7 s.d. 1.2 N 34</td>
</tr>
<tr>
<td>Losses (Don’t, combined)</td>
<td>Mean 3.0 s.d. 1.3 N 69</td>
<td>Mean 3.1 s.d. 1.4 N 34</td>
<td>Mean 3.0 s.d. 1.3 N 35</td>
</tr>
<tr>
<td>ON (combined)</td>
<td>Mean 3.0 s.d. 1.4 N 64</td>
<td>Mean 3.0 s.d. 1.3 N 28</td>
<td>Mean 3.0 s.d. 1.4 N 36</td>
</tr>
<tr>
<td>OFF (combined)</td>
<td>Mean 2.8 s.d. 1.2 N 60</td>
<td>Mean 2.9 s.d. 1.2 N 27</td>
<td>Mean 2.8 s.d. 1.2 N 33</td>
</tr>
</tbody>
</table>

¹ Measured on a 1 – 5 scale, where 1 = definitely won’t try and 5 = definitely will try
Requests for information: Results for the proportion of participants requesting any information by each experimental condition, and for younger, older and both groups combined, are presented in Table 5.3. There was a significant effect of condition for the older group (χ² = 10.07, df = 3, p = .02); and also for the two groups combined (χ² = 11.12, df = 3, p = .01), indicating that there was a difference in the information requests between conditions. The results of the one-way Anovas showed that the only statistically reliable effect was for operation framing (i.e., ‘ON’ versus ‘OFF’).

For the older group, the ON conditions generated a higher proportion of requests (42.9%) than the OFF conditions (7.2%) (t = 9.10, df = 53, p = .003). In the younger group, the ON conditions also generated a higher proportion of requests (48.8%) than the OFF conditions (30.3%), but this difference was not statistically significant (t = 2.59, df = 74, p = .11), although the overall result was significant.

<table>
<thead>
<tr>
<th>Table 5.3: Information Request Proportions by Experimental Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Do, obtain +ve</td>
</tr>
<tr>
<td>Do, avoid -ve</td>
</tr>
<tr>
<td>Don’t, incur -ve</td>
</tr>
<tr>
<td>Don’t, miss +ve</td>
</tr>
<tr>
<td>+ve consequences (combined)</td>
</tr>
<tr>
<td>-ve consequences (combined)</td>
</tr>
<tr>
<td>Gains (Do, combined)</td>
</tr>
<tr>
<td>Losses (Don’t, combined)</td>
</tr>
<tr>
<td>ON (combined)</td>
</tr>
<tr>
<td>OFF (combined)</td>
</tr>
</tbody>
</table>

*** p < .005
Results for the amount of information requested by participants exposed to the different experimental conditions are presented in Table 5.4. The only statistically significant effect was for operation framing (i.e., ON versus OFF) and, as with the previous results, only for the older group (ON mean = 1.5; OFF mean = 0.1; \( t = 3.58, df = 53, p = .001 \)). Although the difference for the younger group was not statistically significant, it was in the same direction (ON mean = 1.3; OFF mean = 0.9; \( t = < .88, df = 72, p = .38 \)).

Table 5.4: Number of Information Sheets Requested by Experimental Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>All participants</th>
<th>Older group</th>
<th>Younger group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>s.d.</td>
<td>N</td>
</tr>
<tr>
<td>Do, obtain +ve</td>
<td>1.7</td>
<td>2.0</td>
<td>24</td>
</tr>
<tr>
<td>Do, avoid -ve</td>
<td>0.4</td>
<td>1.1</td>
<td>34</td>
</tr>
<tr>
<td>Don’t, incur -ve</td>
<td>1.2</td>
<td>1.8</td>
<td>45</td>
</tr>
<tr>
<td>Don’t, miss +ve</td>
<td>0.7</td>
<td>1.6</td>
<td>26</td>
</tr>
<tr>
<td>+ve consequences</td>
<td>1.2</td>
<td>1.8</td>
<td>50</td>
</tr>
<tr>
<td>(combined)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-ve consequences</td>
<td>0.9</td>
<td>1.5</td>
<td>79</td>
</tr>
<tr>
<td>(combined)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gains (Do, combined)</td>
<td>1.0</td>
<td>1.6</td>
<td>58</td>
</tr>
<tr>
<td>Losses (Don’t, combined)</td>
<td>1.0</td>
<td>1.7</td>
<td>71</td>
</tr>
<tr>
<td>ON (combined)</td>
<td>1.4</td>
<td>1.8</td>
<td>69</td>
</tr>
<tr>
<td>OFF (combined)</td>
<td>0.6**</td>
<td>1.4</td>
<td>60</td>
</tr>
</tbody>
</table>

*** \( p < .005 \), ** \( p < .01 \)

Discussion

Various formulations of framing were examined in this study. We found no support for same behaviour, different consequences (consequence valence) framing as in the dramatic example of 'live' versus 'die' (McNeil et al. 1982). This perspective, in its basic form, predicts that the positive consequence conditions will be more effective than the negative consequence conditions. This prediction was not supported; the proportions
of requests were almost identical for positive consequences and negative consequences in each group.

Detweiler et al.'s (1999) gain-frame versus loss-frame hypothesis also was not supported. The gain-loss formulation predicts, for regular exercise, a prevention behaviour, that gain framing (positives obtained and negatives avoided, the two ways of reinforcing ‘do exercise’ behaviour) will be more effective than loss framing (negatives incurred and positives foregone, the two ways of punishing the alternative ‘don’t exercise’ behaviour). This prediction was not supported. There was no difference for gain and loss frames for the younger group or for the older group. Accordingly, the proportions of participants who requested information in both groups combined were identical for gain versus loss framing.

There was evidence, however, that ‘operation framing’ had an effect in which the presentation of consequences was more effective than the removal of consequences. Although self-reported intention to exercise was unaffected, presentation-framed messages generated a higher prevalence and number of requests for information across all groups, with these differences statistically significant for the older group. For this group, the ON conditions generated a higher proportion of requests than the OFF conditions, and a higher mean number of sheets requested. In the younger group, the ON conditions also generated a higher proportion of requests and mean number of sheets requested, although these results were not statistically significant.

A possible explanation for this result relates to the linguistic complexity of the messages and the consequent difficulty that may be experienced in processing them. Briefly, the ‘ON’ conditions (i.e., “If you do, you could benefit” and “If you don't, you could suffer”) are easier to understand than the ‘OFF’ conditions (“If you don't, you won't benefit” and “If you do, you won't suffer”) which include double negatives. Consistent with Detweiler and colleagues (1999) sunscreen usage study, the loss-framed messages may have performed less well due to the linguistic complexity of the ‘OFF’ messages. One of Detweiler et al.'s “do and miss out” conditions was captioned with a particularly complex headline: “Don’t protect yourself from the sun and you won’t help yourself stay healthy,” and included difficult statements such as “You are out in the sun right now – Are you not protecting yourself and not ensuring that your skin stays healthy?” It
is unlikely that health warnings written by professionals in real-life health campaigns would use such sentences. Psycholinguistic research (e.g., Johnson-Laird 1983) has shown that participants have poorer comprehension of negative constructions, particularly double negatives as in the “do and miss out,” or non-reward, examples. Thus, linguistic complexity could explain many so-called ‘framing’ effects where logically there should be no effect.

This study also has a number of practical limitations. The pamphlets used appeared to have only limited impact on the study’s participants. The use of dramatic, graphic visual illustrations could have produced stronger emotional responses and greater cognitive and behavioural effects. Moreover, our participants were high school students who were all participating to some extent in physical activity as part of their school curriculum, and university students, who, because of their area of study (human movement), could be expected to be more active than members of the general community. Future research should apply the framing of exercise messages to members of the general population, and particularly to inactive persons.

Study 3: Message Framing and Cannabis Use Intentions

The findings of Study 2 suggested that framing effects may be due, in part, to the linguistic complexity of information when presented in certain ‘frames.’ The purpose of Study 3 was to examine whether the absence of framing effects in many studies could be due to participants’ tendency to ‘reframe’ information into the form in which the information is usually presented (e.g., the unusual warning “Drive sober” may be reframed as the commonly used “Don’t drink and drive”).

Choice of target behaviour

For the purpose of this study, it was necessary to select a behaviour which:

1. Has substantial positive and negative consequences;
2. Has immediate, rather than delayed, consequences;
3. Is salient for high school students; and
4. Has serious consequences for the at-risk population, and is seen as a substantial public health problem affecting young people.
Neither of the two behaviours discussed thus far in this thesis (i.e., smoking and inactivity) meet these criteria. Cigarette smoking has substantial negative consequences, and few objectively verifiable positive consequences. Exercise has substantial positive consequences, and few negative consequences (other than the risk of injury). Both behaviours produce delayed consequences, that is, their health effects are generally long-term. Largely due to the long-term nature of the consequences, and the perceived immortality of young people, these behaviours – and their consequences – may not be sufficiently salient to young people. Thus, the behaviour chosen for this specific study was cannabis use.

Cannabis use is increasing in Australia. The proportion of the population aged 14 years and over who had ‘ever used’ cannabis rose from 31% in 1995 to 39% in 1998, with ‘use in the last 12 months’ rising from 13% to 18% over the same period (Australian Institute of Health and Welfare 2000). This increase was even more noticeable amongst 14-19 years olds, with ‘ever used’ increasing from 35% to 45% and ‘use in last 12 months’ rising from 28% to 35%.

Method

The study involved experimental-groups only and used a pre- and post-measurement design. The research was conducted in high schools, with parental and teacher consent. Ethics approval for this study was provided by the University of Wollongong Human Research Ethics Committee. To preserve privacy of responses, students were asked not to write their names on the questionnaires, but to use a 6-digit code of their own construction, which enabled anonymous matching of their pre- and post-intervention questionnaires.

Participants: The participants were Australian Year 9 students, aged 14 to 15 years, at a state government school (n=48), and Year 9 students at a private non-denominational Christian school (n=61). Both schools were in low-middle socioeconomic areas.

Questionnaire: The pre-test questionnaire measured alcohol usage and attitudes, cigarette usage and attitudes, and cannabis usage and attitudes (see Appendix C).
Participants then read the information sheets (see ‘stimuli’ below). The first measure on the post-test questionnaire asked for open-ended responses to a cannabis information sheet (“what were the thoughts, feelings, and mental pictures that went through your mind as you read the information?”). Then, post-attitudes to all three substances were measured, plus intended future cannabis use.

**Stimuli:** The stimuli were information sheets warning about the adverse effects of cannabis use, focusing only on personal health effects. Two versions of the information sheet were distributed; a ‘positively framed’ version and a ‘negatively framed’ version. The two versions were set out in an identical format, each containing three segments of information, and were illustrated with clipart (see Appendix C). The text included in the two versions of the information sheets is shown in Table 5.5.

Responses to the question “What do you believe are the three most important reasons given in the pamphlet not to smoke cannabis?” were coded as either:

- Positively framed reason (e.g., “you can stay in control of your life,” “you will be able to get great marks”)
- Negatively framed reason (e.g., “cancer and other horrible diseases,” “it kills you”)
- Neutral reason, including those that gave insufficient detail to determine the frame (e.g., “friends,” “memory”)
- Irrelevant (e.g., “this is not a test”)
- No response

Two independent coders, blinded to condition, read all responses and coded them into the five categories. Inter-coder reliability was 97.3% (216 matches out of 222 responses), and the discrepant items were resolved between the two coders.
<table>
<thead>
<tr>
<th>Positive Frame</th>
<th>Negative Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What happens if you say no to marijuana?</strong></td>
<td><strong>What happens when you smoke marijuana?</strong></td>
</tr>
<tr>
<td>Some people think that smoking marijuana helps them to enjoy themselves.</td>
<td>Some people think that smoking marijuana helps them to enjoy themselves.</td>
</tr>
<tr>
<td>They may not realise the benefits of saying no to drugs and staying &quot;straight&quot;:</td>
<td>They may not realise the short-term things that can happen to them.</td>
</tr>
<tr>
<td>People who say no to marijuana can enjoy themselves, stay calm and relaxed, and feel safe and in control; and are more likely to remember what they did, be able to concentrate on what they are doing, and stay in control of their bodies.</td>
<td>People who are using marijuana can experience feelings of anxiety, paranoia, and panic; and can experience a loss of memory, find it difficult to concentrate and pay attention, and have problems with coordination and motor skills.</td>
</tr>
<tr>
<td>If you say no to marijuana, you could gain these – and other – essential benefits.</td>
<td>If you smoke marijuana, you could experience these – and other – dangerous symptoms.</td>
</tr>
<tr>
<td><strong>What are the long-term effects of saying no to marijuana?</strong></td>
<td><strong>What are the long-term effects of smoking marijuana?</strong></td>
</tr>
<tr>
<td>Research shows that continuing to say no to marijuana can be very good for your long-term development and can help you stay physically and psychologically healthy.</td>
<td>Research shows that regular smoking of marijuana can be very bad for long-term health and can cause a number of physical and psychological problems.</td>
</tr>
<tr>
<td>People who say no to marijuana have an increased chance of having healthy lungs, having healthy airways, and staying free from some types of cancer; and an increased chance of keeping their memory, concentration, and cognitive (thinking) abilities.</td>
<td>Regular marijuana smokers have a greater risk of developing respiratory diseases, chronic bronchitis, and lung cancer; and can suffer long-term or permanent damage to their memory, concentration, and cognitive (thinking) abilities.</td>
</tr>
<tr>
<td>If you say no to marijuana, you increase your chances of having good long-term physical and psychological health.</td>
<td>If you smoke marijuana, you increase your risk of experiencing these – and other – long-term physical and psychological problems.</td>
</tr>
<tr>
<td><strong>Adolescents Who Say “No” to Marijuana</strong></td>
<td><strong>Adolescents and Smoking Marijuana</strong></td>
</tr>
<tr>
<td>Research shows that people who say no to marijuana when they are teenagers do better in life.</td>
<td>Research shows that people who start smoking marijuana when they are teenagers take on even greater risks.</td>
</tr>
<tr>
<td>People who say no to marijuana when they are teenagers are more likely to get good grades, and achieve more at school and work; and are more likely to not use marijuana when they are older, not use other drugs when they are older, and stay drug free throughout their lives.</td>
<td>They are more likely to get lower marks, and achieve less at school and work; and are more likely to become heavy users of marijuana, become addicted to marijuana, and use other illicit drugs.</td>
</tr>
<tr>
<td>If you say no to marijuana when you are a teenager, you are more likely to do well and stay in control of your life.</td>
<td>If you start smoking marijuana when you are a teenager, you increase your risk of having these – and other – problems as you get older.</td>
</tr>
</tbody>
</table>
Hypotheses

Anti-drug education is usually presented to young people in a negative frame (i.e., the negative consequences of using illicit, and licit, drugs). For example, the Federal Government's current National Illicit Drugs Campaign (co-branded "Tough On Drugs") includes television ads featuring a young man injecting drugs in a public bathroom, and later being zipped up in a body bag. The "Respect Yourself" safe drinking campaign includes television ads featuring a young man fighting in the street and a young woman vomiting on her date.

It is likely that people will find it easier to process information that is (a) linguistically less complex, as shown in Study 2; and (b) structurally and linguistically consistent with the way such information has been presented to them in the past. In this study, participants in the 'negative frame' condition read information presented in a format consistent with other drug education messages they have been exposed to. Participants in the 'positive frame,' however, read information presented in a format inconsistent with their previous exposure to drug education. Thus, the hypotheses were as follows:

\[ H3a: \text{There will be no significant difference between the two groups in stated intentions not to commence, or to discontinue, cannabis use.} \]

\[ H3b: \text{Participants in the 'negative frame' condition will recall messages as they were presented in the stimulus materials, and will not reframe the messages into a positive form} \]

\[ H3c: \text{Participants in the 'positive frame' condition will demonstrate a tendency to reframe the messages into a (more usual) negative form} \]

Results

The mean age of the participants was 13.9 years (SD = 0.7), and 56% were female. Usage rates, based on self-reports of 'ever used', were estimated for each group for cigarettes (37%), alcohol (69%), and cannabis (21%).

64 Chapter 5: Prospect Theory and Message Framing
Consistent with H3a, the results of the framing manipulation showed no significant differences by message type on stated attitudes towards cannabis (see Table 5.6). There was no difference in intentions to try cannabis among never-users, with both groups reporting virtually no intention to start (means of 1.3 and 1.6 on a 7-point scale where 1 equals “definitely won’t start” and 2 equals “probably won’t start”). Nor was there any difference in intentions to cease cannabis use among ever-users, with both groups reporting a mean intention of 3.0 on a 7-point scale, where 3 equals “might try to stop.” Additionally, there was no difference between the groups in stated beliefs that cannabis is bad for you (mean score for both groups of 1.4, on a 5-point scale where 1 equals “very bad for you” and 5 equals “very good for you”); or that using cannabis is dumb (mean scores of 1.3 and 1.4, on a 5-point scale where 1 equals “very dumb” and 5 equals “very smart”).

<table>
<thead>
<tr>
<th>Table 5.6: Reported attitudes and intentions by frame of information sheets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive frame</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Intention to start (mean)</td>
</tr>
<tr>
<td>Intention to stop</td>
</tr>
<tr>
<td>Cannabis is bad</td>
</tr>
<tr>
<td>Cannabis is dumb</td>
</tr>
</tbody>
</table>

As participants were specifically asked to list three messages that they recalled, the data are presented by number of messages recalled, rather than by number of participants. Consistent with H3b, participants in the negative frame condition recalled the messages as negatively framed (see Table 5.7). Of the 82 reported messages recalled, 89% were negatively framed and 11% were neutral. There were no instances of participants reframing the messages they recalled into a positive form.

Consistent with H3c, participants in the positive frame condition did reframe a large proportion of the messages recalled into a negative form. Of the 91 messages recalled, 55% were negatively framed, 37% were positively framed, and the remainder (8%) were neutral or irrelevant.
Table 5.7: Frame of message recall by frame of stimulus

<table>
<thead>
<tr>
<th>Stimulus Frame</th>
<th>Positive (n = 91)</th>
<th>Negative (n = 82)</th>
<th>Total (n = 173)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message Recall Frame</td>
<td>Positive</td>
<td>37%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>55%</td>
<td>89%</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Irrelevant</td>
<td>1%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Discussion

The results of Study 3 support the contention that one reason for the absence of framing effects in previous studies may be the tendency for some participants to reframe the information provided to them into a form that is consistent with prior messages about the behaviour. The participants in our study read the stimulus material, then immediately answered the questions about message recall and intentions. That is, the results were clearly not due to any contrary information being received between exposure to the materials and recall of the messages.

Those who received negatively framed information, that is consistent with other drug education messages, correctly recalled the information as presenting the negative consequences of cannabis use. There was not one single instance of reframing by any participant.

Those who were in the positive frame condition – that is, those who received information framed in a form inconsistent with other drug education messages – were more likely to recall the information in the opposite manner to which it had been provided. In other words, they reported more ‘reframed’ rather than ‘consistent-framed’ messages.

Limitations of the study: The generalizability of the results is limited by the small sample size, the use of only two schools (one public school and one non-denominational...
Christian school), and the fact that all the students were from similar socioeconomic backgrounds. Additionally, the data on cannabis usage relied on self-report only, and thus may not be accurate. However, the reframing effects reported were independent of reported cannabis usage – thus the important findings from this study are not dependent on the accuracy of this self-report data.

**General Discussion and Conclusions**

The study of preferences for different cancer drugs discussed earlier in this chapter (Cormier O'Connor et al. 1985) included a ‘mixed frame’ (probability of surviving and probability of dying), as well as the usual negative (dying) and positive (surviving) frames. They found that, while there was a significant difference between preferences in the positive and negative conditions, preferences in the mixed frame condition were virtually identical to the positive frame – and they concluded that the presence or absence of the word ‘survive’ was the main source of the framing effect.

The results of Studies 2 and 3 provide further support for the instability of framing effects. It appears from these studies that it is possible that the absence or presence of framing effects may be due to differences in the linguistic complexity of messages, the presence or absence of specific words, and the consistency with which information is presented in relation to previous information to which the participants have been exposed.

Thus, the next two chapters explore an extended application of Prospect Theory (and its extension, the Hedonic Editing Hypothesis) to decisions that have multiple outcomes. This is an important extension of the theory as many health behaviours have multiple consequences. For example, the decision to quit smoking results in a reduced likelihood of developing lung cancer, heart disease, cerebrovascular disease, emphysema, and other potentially fatal illnesses, as well as increased fitness, endurance, resistance to colds, and numerous personal and social benefits. Chapter 6 reports on a series of studies that focus on the application of hedonic editing to hypothetical decisions. Chapter 7 focuses on a series of studies on the application of hedonic editing to decision-making and preference elicitation in the context of smoking and physical activity.
CHAPTER 6: PROSPECT THEORY AND EVALUATIONS OF MULTIPLE CONSEQUENCES IN HYPOTHETICAL DECISIONS

As discussed in earlier chapters, people often fail to make ‘rational’ decisions, even in situations where the choice elements are clear and the outcomes known. Many health behaviour decisions have multiple, probabilistic outcomes – both in terms of effects of ‘doing’ the behaviour and of ‘not doing’ the behaviour. Traditional decision theories assume rational agents, complete knowledge, and utility maximisation over the long-term. However, in practice, it appears that people do not objectively analyse and evaluate the myriad consequences of their health-related behaviours; rather, they often appear to be motivated to inaccurately evaluate these consequences. This chapter reviews the relevant literature on decision-making where the options have multiple consequences, and reports the results of four studies of presentation effects in hypothetical decisions.

Processing and evaluation of messages

Importantly, a number of studies have found that increased personal relevance determines the type of processing used (e.g., systematic vs. heuristic processing) and subsequent evaluation of message information (Kunda 1987; Jemmott et al. 1986; Liberman and Chaiken 1992).

It is generally agreed that people are more likely to fully process a message that is personally relevant (Petty and Cacioppo 1986). However, it is also the case that – when the message is confronting – personal relevance can inhibit objective processing. In this case, the personal relevance of the message may instead lead to “defensive” processing in order to reduce the threat (Liberman and Chaiken 1992; Kunda 1990; Leventhal 1970). It is often those at highest risk for the health problem that employ defensive techniques like message avoidance (Donohew et al. 1991), denial of susceptibility (Stuteville 1970), or otherwise biased message processing in support of a desired conclusion (Kunda 1990). For example, (Kunda 1987) found that whereas heavy caffeine drinkers accept that they are more likely to a caffeine-related disease than are light caffeine drinkers, they are also more likely to doubt the evidence of a link between caffeine and the disease. That is, those who are engaging in the health-damaging
behaviour and are thus most threatened by the message are more likely to process the messages heuristically rather than systematically. In a replication of the Kunda study, (Liberman and Chaiken 1992) found evidence of what they termed “defensive systematic processing”: that is heavy caffeine drinkers were more sceptical in their evaluation of the evidence supporting a link than they were in the evaluation of contrary evidence. Anecdotal evidence supports this proposition – many of us know smokers who are extremely sceptical of the large body of evidence linking passive smoking to respiratory problems, but totally accept the findings of the occasional study reporting contrary results.

Prospect Theory – introduced in Chapter 3 – endeavours to predict and explain decision making in real-life contexts, allowing for the effects of individual differences and contextual elements of decision situations. The following section will examine a decision making theory which has grown out of these more practical approaches to decision making, the evidence supporting this theory, and its applicability to health behaviour decisions.

Integration & Segregation of Multiple Outcomes

Whereas some of the important events in people’s lives happen by chance, in many other cases people have some degree of control over the occurrence and timing of these events. For example, people can choose to pay bills all at once at the end of the month or separately as they arrive. For positive events there is also often a degree of time-related control. For example, people can take their retirement payout as a lump sum or spread it over monthly amounts (an option also offered by many government lotteries), and they may choose to take one long vacation or several short ones.

Most decisions faced by people have multiple outcomes, both positive and negative. If a decision has multiple outcomes, as do many real-life decisions, how are these

1 Also under the umbrella of “integration” research, but not considered in this thesis, are several studies of the ways in which people do, or do not, integrate the opinions of multiple others to reach a decision in situations of uncertainty (Budescu and Rantilla 2000; West and Bronisazyk 1998; Yaniv 1997); and the ways in which people integrate multiple sources of information, such as expectancies (due to brand names and quality labels) and experiences when evaluating products (Dougherty and Shanteu 1999).
outcomes coded and evaluated? It has been suggested (Kahneman and Tversky 1984; Thaler 1985), that outcomes can be either:

- segregated: each outcome is evaluated separately and the evaluations are combined) [i.e., v(x) + v(y)]

or

- integrated: combined in some way before they are evaluated [i.e., coded as v(x+y)].

(Throughout the literature, the terms “integration” and “aggregation” are used by different authors, to describe much the same process. I have chosen to use the term integration – the meaning of this term here is "to join, and thus evaluate, together in order to diminish in magnitude").

**Mental accounting**

Kahneman & Tversky (1984) introduced the concept of mental (budgetary) accounting – that people allocate income and expenditure to separate “mental accounts.” At the most explicit level, this can be seen in the way that some people (particularly those on a tight budget) physically separate their accounts by, for example, putting away specified portions of their salary into labelled envelopes each payday (e.g., $100 for food, $25 for gas and electricity, $30 for bus fares, etc.) However, as Kahneman and Tversky have shown, even without the explicit physical separation of monies, many people utilise a similar psychological procedure (i.e., mental accounting) – for example, a person may think to themselves “I can’t really afford to go to the movies this Friday as I went bowling on Monday and spent $50,” even if they have money physically available. This is not dissimilar to the recommendation that people trying to quit smoking put away the money they would have spent on cigarettes to reward themselves for not smoking.

**The hedonic editing hypothesis (HEP)**

As does Kahneman and Tversky’s Prospect Theory (Kahneman and Tversky 1979), Thaler proposes that because of diminishing returns to beneficial outcomes, people will prefer to segregate multiple gains so as to experience a greater subjective total utility than would be achieved by considering the gains together; and, because of diminishing returns to costly or harmful outcomes, they will prefer to integrate these so as to

\[2 \text{ Where } v = \text{value, } x = \text{outcome 1, } y = \text{outcome 2}\]
experience less subjective negative utility than would be incurred by considering them individually (Thaler 1985). These two statements and accompanying predictions for the combination of gains and losses, form what is known as the "hedonic editing hypothesis" (Thaler and Johnson 1990).

Note that the hedonic editing hypothesis is a motivational rather than cognitive theory: these evaluations are not the outcome of a passive (cognitive) process but an active (motivated) process whereby people actively reframe events and outcomes (in either segregated or integrated terms) in order to maximise positive utility or minimise negative utility (Thaler and Johnson 1990). Thaler (1999) suggests that the principles of hedonic editing are also a useful guide for a marketer who "wants to describe the advantages of a particular product in a way that will maximise the perceived attractiveness of the product to consumers" (p. 187).

**Segregation of gains**

An everyday example of the preference for segregation of gains is familiar to any parent of a young child (or who remembers being a young child themselves). On Christmas Eve, given the choice between wrapping several presents in one parcel or wrapping each individually, most parents will opt for the separate wrapping. This is because by segregating the outcomes (presents) in such a way that they will be evaluated (opened and admired) separately, they know they will maximise utility (the child's enjoyment and excitement). Commercial marketing provides numerous examples of the segregation of gains in order to maximise perceived utility. In an anecdotal example, (Thaler 1985) describes late-night television advertisements for kitchen utensils, where not only does each item have a multitude of separate uses, but each item is also introduced separately (i.e., "but wait, there's more...") as almost a caricature of the segregation principle.

**Integration of losses**

Gambling is a frequently cited example of the preference for integration of losses, whereby the gambler will prefer to think of his losses from a "losing streak" as a single negative outcome (e.g., amount lost at the racetrack) rather than as a number of negative...
outcomes (e.g., amount lost on each race). Thaler suggests that “loss-averse people are more willing to take risks if they combine many bets together than if they consider each one separately” (Thaler 1999, p.199). A similar psychological process can be said to exist with credit cards, with many people preferring to view their overall spending on credit over the month rather than to separately consider and evaluate each item of expenditure in isolation (Kivetz 1999).

Testing the hedonic editing hypothesis

Thaler tested his hypotheses by presenting participants with four scenarios, each with the pair of outcomes either segregated or integrated (Thaler 1985). Participants were asked to decide whether person A (who received two separate outcomes) or person B (who received one integrated outcome) was happier. For example, in the two gains condition, “Mr A was given tickets to two lotteries involving the World Series. He won $50 in one lottery and $25 in the other. Mr B was given a ticket to a single, larger World Series. He won $75. Who was happier?” For each of the conditions, a large majority of participants chose the outcome predicted by the theory: they felt that the man with the segregated gains would be happier than the man with the integrated gains; and the man with the integrated losses would be “less unhappy” than the man with the segregated losses.

It is important to note that, in the above experiments, the outcomes used were stated in dollars. This raises the question as to whether people would still prefer to integrate or segregate as predicted by the theory when outcomes are on non–monetary dimensions, such as multiple health or social outcomes. Also, as pointed out by Thaler (Thaler and Johnson 1990), and mentioned earlier, these experiments were not pure tests of the hedonic editing hypothesis as the participants simply stated which of two frames they would prefer, but their ability or desire to reframe the situation in accordance with this preference was not tested.

In a subsequent study, Thaler & Johnson (Thaler and Johnson 1990) tested the hedonic editing hypothesis by asking participants to make choices which reflected their preferred framing of events. That is, participants were asked whether it would be preferable to have a pair of events happen on the same day or two weeks apart. In terms
of gains, they found that people did indeed prefer to space out positive events over time (to "segregate the pleasures.") In terms of losses, however, they did not find the hypothesised preference for integration. In a subsequent experiment, they asked participants whether losing an amount of money hurt more after losing a previous amount or when it occurred alone, and found an inverted U disutility function which they tentatively interpreted to mean that "while a small to moderate loss may sensitize the individual to further losses of roughly the same magnitude, a large loss may numb the individual to subsequent small losses" (p650).

Thaler reviewed a number of studies which have demonstrated strong support for the segregation of gains, but mixed results for the integration of losses (Thaler 1999). In particular he focused on studies that use the time (temporal) dimensions, i.e., preferences for temporal separation as an indicator of preferences for cognitive segregation and preferences for temporal integration as an indicator of preferences for cognitive integration.

Integration and segregation: Applications and evidence

**Pricing of commercial products:** Thaler suggests that the principles of hedonic editing are a useful guide for a marketer who "wants to describe the advantages of a particular product in a way that will maximise the perceived attractiveness of the product to consumers" (Thaler 1999, p. 187).

Previous studies have shown that price bundling (i.e., selling a group of related products for a combined price, rather than pricing each item separately) can and should decrease price sensitivity and increase purchase likelihood (Harlam, Krishna, Lehmann and Mela 1995; Yadav and Monroe 1993; Drumwright 1992; Gaeth, Levin, Chakrabarty and Levin 1990). There are numerous examples of price bundling in the real world – such as holiday package tours, computer packages which include software and printers, and magazine subscriptions – which are testimony to the effectiveness of this pricing method in increasing purchase behaviour.

It has also been found that, when purchasing two products, consumers prefer two smaller discounts, i.e., a reduction in the price of each product, to one larger combined
discount, i.e., of the combined price, even when the dollar value saved is the same (Mazumdar and Jun 1993). Conversely, when purchasing two products, consumers are more likely to tolerate one larger combined price increase, i.e., of the combined price, than two smaller price increases, i.e., an increase in the price of each product, even when the dollar value lost is the same (Mazumdar and Jun 1993).

**Price bundling (integration) and consumption:** Soman and colleagues (Soman and Gourville 2001; Gourville and Soman 2001) have argued that, because price bundling “decouples” transaction costs and benefits, it reduces attention to sunk costs and decreases the likelihood of consuming the purchased products, compared to people who paid for each item individually. They conducted a series of laboratory and field studies which provided support for this assertion (Soman and Gourville 2001). The laboratory studies used hypothetical “bundled” four-day ski pass versus four one-day ski passes, and found that participants in the “bundled condition” were less likely to use final day’s ski pass. The field study looked at a real-world Summer Shakespeare Festival and found that single ticket purchasers almost certain to attend their chosen play, but four-ticket subscribers were only 84% likely to use their first ticket and 78% likely to use their fourth. They suggest a possible implication for health care: “the provider of a virtuous service could psychologically unbundle its offerings so as to encourage consumption” (Soman and Gourville 2001, p.41); e.g., itemise or highlight the cost of each check-up or procedure in order to one-to-one couple the cost with the benefit and increase the likelihood of attendance.

In order to determine whether this effect was cognitive or motivational, they conducted a further (hypothetical) study (Gourville and Soman 2001) in which participants were told that they had purchased two play tickets and there was a conflict between the second play and with either a positive event (going to a party) or a negative event (helping a friend to move). Their findings suggest that there is both a cognitive and a motivational influence on this effect:

- among participants in the first group, who were told that they had paid for the ticket (the deal was pay for 2nd play and get the 1st free), the majority said they would go to the play and there was little difference between the groups (27/40 would go to the play rather than the party and 32/40 would go to the play rather than help with the move;
among participants in the second group, who were told that they had not paid for the ticket (the deal was pay for 1st play and get the 2nd free), the majority said that they would not go to the play and again there was little difference between the groups (only 9/40 would go to the play rather than the party and 13/40 would go to the play rather than help with the move; but

among participants in the third group, for whom the situation was ambiguous (the deal was simply “buy one, get one free”), there was a considerable difference between the groups (only 10/40 would go to the play rather than the party, but 28/ would go to the play rather than help with the move).

They concluded that the results indicate that participants “creatively allocated costs across the two plays so as to justify their desired behaviour” and that “bundling appears to effect consumption by providing the needed flexibility to allow for such creative allocation, supporting the flexibility explanation” (Gourville and Soman 2001, p. 34).

**Myopic loss aversion:** The equity premium puzzle – the reality that people buy bonds despite the “empirical fact that stocks have outperformed bonds over the last century by a surprisingly large margin” (Benartzi and Thaler 1995, p.73) has recently been the focus of several studies. In simple terms, in the U.S. since 1926 the annual real return on stocks has been approximately 7% and on bonds approximately 1%, so the question arises: why do people hold bonds? (Benartzi and Thaler 1995).

Benartzi’s theoretical explanation, based on analysis of stock market history, was that the equity premium is produced by a combination of loss aversion (as predicted by Prospect Theory) and the frequency of evaluation. This effect has been termed “myopic loss aversion” and occurs when people check their shares frequently (i.e., segregate by individually evaluating each change in stock price) – stocks will sometimes be seen as losses – thus stocks will only be seen as increasingly attractive the longer the time between evaluations (i.e., integrating price changes). Myopic loss aversion (MLA) has been found to occur in institutions (such as pension funds, foundations, and university endowments) as well as individuals (Benartzi and Thaler 1995).

Applying this finding to gambling behaviour, Gneezy hypothesised that, if an individual weighs losses more heavily than gains (an assumption of MLA), when offered a
sequence of three independent, but identical lotteries, in which there is a probability of 2/3 to lose $1 and a probability of 1/3 to win $2.50, “the attractiveness of the lotteries may depend on whether the financial consequences of the gambles are evaluated separately or in combination” (Gneezy and Potters 1997, p.632). He investigated this using an experimental twelve round betting game, in which the evaluation period was manipulated by the form of the betting rounds. In Treatment H (high frequency, or segregated), participants played one round at a time, and then chose how much to bet on next round. In Treatment L (low frequency, or integrated), participants played three rounds at a time, and chose how much to bet on next three rounds after being informed about the combined gain or loss from the last three rounds – that is “they could not assign a gain or a loss to any particular round, but only knew the aggregate result.” (Gneezy and Potters 1997, p.633). The results showed a clear treatment effect; in each round the average bets were larger for Treatment L (integrated) than Treatment H (segregated); over 9 rounds, the participants in Treatment H bet 50.5% of their endowment, and the participants in Treatment L bet 67.4% of their endowment (p = .002). They concluded that their study provided strong empirical support for the predictions of MLA (that a longer evaluation period makes a risky option with positive expected return look more attractive), and that by making their risky investments in an integrated way participants were “less likely to be deterred by occurrence of losses (and thus) we observe higher earnings for the participants who evaluate their investment in a more aggregate way” (Gneezy and Potters 1997, p.639)

Langer and Weber (2001) conducted a pair of studies using hypothetical gambles to determine whether people were more likely to accept an individual gamble or a series of gambles.

Choice 1 was a gamble – or series of gambles – with a 50% chance of winning $2,000, and a 50% chance of losing $500):

- In the “single gamble” scenario, 59% of participants said they would accept the gamble
- In the “two gamble” scenario, 59% of participants said they would accept the gamble when it was presented in a segregated form (i.e., repeated trial: R+R), but this rose to 76% when it was presented in an integrated form (i.e., 2R)
In the “five gamble” scenario, 67% of participants said they would accept the gamble when it was presented in a segregated form (i.e., repeated trial: R+R+R+R+R), but this rose to 88% when it was presented in an integrated form (i.e., 5R).

That is, the integrated version of the gamble was more attractive.

In Choice 2, which had a 96% chance of winning $400, and 4% chance of losing $2100—i.e., a small probability of a large loss):

- In the “single gamble” scenario, 20% of participants said they would accept the gamble.
- In the “two gamble” scenario, 24% of participants said they would accept the gamble when it was presented in a segregated form (i.e., repeated trial: K+K), but this fell to 18% when it was presented in an integrated form (i.e., 2K).
- In the “five gamble” scenario, 42% of participants said they would accept the gamble when it was presented in a segregated form (i.e., repeated trial: K+K+K+K+K), but this fell to 30% when it was presented in an integrated form (i.e., 5K).

That is, the segregated version of the gamble was more attractive.

For the remaining scenarios, small probability of high gain and approximately equal gain and loss, the integrated gambles were more attractive than the segregated.

In combination, these studies suggest that “providing investors with less frequent information feedback about how a particular risky fund is doing might make the fund appear more attractive by decreasing the likelihood that a loss will be experienced” (Gneezy and Potters 1997, p.640).

Implications for health behaviour communications

If these findings hold for health behaviours, that would suggest that providing less frequent feedback on the negative consequences of a health-damaging behaviour (such as smoking) would, as for stock markets and gambling, decrease the likelihood of a loss being experienced and increase risk-taking behaviour. Conversely, for health-
promoting behaviours (such as exercise), providing more frequent feedback about positive consequences would increase the likelihood of a gain being experienced. It is likely that this is one of the reasons for the success of weight loss programs and fitness programs, where participants are given frequent positive feedback.

**Alternative theories of integration or segregation of multiple outcomes**

The following section briefly reviews some competing explanations of the tendency to combine or separate gains or losses, and discusses why these are less applicable to the topic of this thesis – that is, how people process information on the positive and negative consequences of health-related behaviours.

*Quasi-hedonic editing:* Initial tests of PT/HEP were supportive. Participants in these tests were presented with choices between combined or separated events occurring on the same day (for example, winning $50 in one lottery and $25 in another on the same day, or $75 in one lottery). When the tests were extended by introducing a time dimension (Thaler and Johnson 1990), such that the events could occur combined on the same day or separated by two weeks, the loss prediction of PT/HEP failed to hold. When given a choice of a combined simultaneous loss and time-separated losses of equal magnitude, people preferred to separate the losses. To account for temporal separation of events, Thaler and Johnson proposed the “Quasi-Hedonic Editing Principles (QHEP),” which predict preference for separation of gains (as does PT and HEP) and also separation of losses (Thaler and Johnson 1990).

It is important to note that, in the above experiments, the choices were all monetary. This raises the question as to whether people would still prefer to combine or separate, as predicted by the theory, when the choices are on non-monetary dimensions, such as multiple health or social outcomes. It is also important to note that these scenarios differ from those in the earlier studies, in such a way as to make these findings less relevant to the topic of this thesis. The original HEP studies examined participants’ views of the relative overall utility (positive or negative) of combined or separated outcomes. These subsequent studies (QHEP) focussed on preferences for events to be temporally combined or separated; that is, in either case, the events would still be processed as separate events.
**Renewable Resources:** Independently of Thaler and Johnson’s QHEP, Linville and Fischer proposed a time-related “Renewable Resources Model (RRM)” (Linville and Fischer 1991). Whereas the QHEP focuses on utility, the RRM introduces a cost factor, namely, people’s cognitive, emotional and physical resources. Linville and Fischer propose that the preference for separation not only of gains but also of losses is due to people’s limited “gain-savoring” and “loss-buffering” resources, respectively, and that, once these resources are consumed, they are renewed over time.

Linville and Fischer examined gains and losses across three domains (academic, financial, and social) in terms of large gains/losses, small gains/losses, and mixed gains and losses (Linville and Fischer 1991). We are interested in the main phenomena of multiple gains and multiple losses, not mixed gains and losses, thus only the relevant portion of Linville and Fischer’s study will be discussed here.

Participants in Linville and Fischer’s study were given pairs of outcomes (e.g., in the large gains condition: “You receive an excellent grade, better than you expected, on an exam that counts 40% towards your grade in an important course in your major” and “You receive an excellent grade, better than you expected, on a paper that counts 40% towards your grade in another important course in your major”), and asked to state whether they would prefer to have both events occur on the same day or on different days. It is important to note, and this will be discussed later in this chapter in relation to Study 4 of this thesis, that Linville and Fischer had their participants pre-rate the individual events for desirability before they undertook the choice phase.

Linville and Fischer found a strong preference for separating large gains (78% of participants chose this option) and a non-significant preference (52%) for separating small gains. Further, they found a strong preference for separating large losses (72%) and a weaker but significant preference (56%) for separating small losses. The findings were robust across the choice tasks in academic, social and financial domains.

Thus, the findings of their study evidenced strong support for the predictions of the RRM (and QHEP), for both losses and gains, as long as these are of reasonably substantial magnitude. Explanations sought from participants by Linville and Fischer
following task completion suggested, in accordance with RRM theory, that resource renewal and depletion over time were the most prevalent causes of preferences.

Again, the RRM is not directly relevant to the topic of this thesis (although the Linville and Fischer experiments are directly relevant). This theory, and its accompanying experiments, again examines the way in which people prefer to temporally combine known and certain, and clearly independently perceived and evaluated, outcomes.

Loss sensitivity: As discussed above, much of the research that has been conducted to examine people’s preferences for integration and segregation of multiple outcomes has focussed on whether people prefer to temporally combine or separate these outcomes. Additionally, much of this research has focussed on preferences for combining or separating prior and subsequent events or outcomes. For example, Romanus and colleagues have conducted a number of experimental studies to determine people’s preferences for integrating outcomes of risky decisions (Romanus and Garling 1999; Romanus, Hassing and Garling 1996; Karlsson, Garling and Selart 1997) and have found that people are more likely to integrate prior losses with subsequent or expected losses if the amounts are large and if the events are salient (e.g., more likely to integrate losses from a horse-racing gamble with losses from another horse-racing gamble). They posit a loss-sensitivity explanation for these findings. This is supported by their finding that people are more likely to agree to accept a gamble after a prior gain than a prior loss – that is, to demonstrate the irrational effect of previous loss on evaluations of outcomes of current decision (Brockner 1992; Arkes and Ayton 1999) – but not to be influenced by, or integrate, concurrent outcomes. (Boe and Garling 1998). Similarly, Thaler and Johnson (1990) report on a series of studies examining people’s preferences for combining future gambles with past gains (“gambling with the house money”) and past losses (“trying to break even”).

Again, this field of research has limited applicability to this thesis as, with health-related consequences such as the effects of smoking, the events or outcomes to be evaluated are generally all anticipated rather than experienced.

Seizing and freezing: Block and Williams (2001) conducted a study designed to examine the role of elaboration as a mechanism to encourage less biased processing of
personally relevant health appeals. They theorised that “elaboration on consequences of engaging in risky behaviours rather than elaboration on recommendations for reduction in such behaviours (may be) the driving force behind message persuasion for high-relevance consumers” (Block and Williams 2001, p. 4)

Their hypothesis was based on Kruglanski & Webster’s finding that people tend to preserve past knowledge and safeguard future knowledge by limiting their learning of contrary information (Kruglanski and Webster 1996); that is they “seize” on information supporting their past knowledge and “freeze” on it, and do not elaborate on subsequent (contradictory) information. Therefore, Block and Williams hypothesised that encouraging renewed elaboration of the message may “undo” the effects of seizing and freezing (Block and Williams 2001). Specifically, they argued that forcing people to elaborate on the consequences of the relevant behaviour would increased their perceptions of the severity of the consequences and enable greater processing of the recommendation, leading to higher perceived efficacy.

In their Study 1, with 123 undergraduates, participants read an article on health effects of caffeine. Half then elaborated on the problem (consequences) and half on the solution (recommendations) by writing a short essay. As hypothesised, they found that the recall of the threat was lower for the heavy caffeine drinkers in the elaborate-recommendations condition than in the elaborate-consequences condition. This result is in itself unsurprising as the elaborate-consequences group were elaborating on the threat, so they would obviously have a higher recall.

Secondly, they report that the heavy caffeine drinkers reported a greater change appraisal (perceived severity and efficacy) in the elaborate-consequences condition than the elaborate-recommendations and the light caffeine drinkers did not differ between conditions. However, it could be argued that whereas the elaborate-consequences group was forced to consider the threat, the elaborate-recommendations group was forced to think about the ways they could change their behaviour. It may well be that this group reported lower perceived efficacy for change because these were heavy caffeine drinkers, writing an essay about the behavioural changes they would have to make to reduce their caffeine intake. It is perhaps more likely that the experimental
manipulation resulted in the elaborate-recommendations group reducing their efficacy perceptions rather than the elaborate-consequences group increasing theirs.

Thirdly, they report that message persuasion (intention to reduce caffeine intake) was higher in the elaborate-consequences group than the elaborate-recommendations for the heavy caffeine drinkers. Again, it is suggested that this may be the effect of the decreased efficacy among the elaborate-recommendations group as much as, or perhaps even more than, the increased threat among the elaborate-consequences.

In their Study 2, Block and Williams focussed on developing a more practical method of reversing the “seizing” and “freezing” effects, recognising that a health educator would be unlikely to be able to enforce essay-writing tasks in the general population. This study, with 92 graduate and undergraduate students, focussed on the health consequences of the consumption of olestra (a common ingredient in low-fat foods) in this study, elaboration was manipulated within the message (rather than by a post-message task). In the “elaboration present” condition, participants were given explicit directions to read the information and the message included a line drawing representing the consequences. Neither of these manipulations was present in the “elaboration absent” condition. As they found insignificant effects for the “elaborate-recommendations” manipulation, they report only on the “elaborate-consequences”.

However, there were again only two groups in this study; that is, those in the “elaboration absent” recommendation condition were in the “elaboration present” consequences condition. This can be confirmed from their Table 2, which reports results for 51 participants in the consequences-elaboration-present condition and 41 participants in the consequences-elaboration-absent condition (of the total 92 participants in the study).

All groups reported an equal recall of non-threatening information, however the high-relevance participants in the elaboration-present (consequences) condition had a higher accuracy rate than the elaboration-absent and the low-relevance (only for recognizing items not in the materials). However, there are two important confounders that were not discussed: a) the presences of the “line drawing” means they read the information twice; and b) the non-elaborators were actually elaborating on the recommendations, so may
have been distracted by the additional information in the recommendations section. The results for change appraisal and persuasion replicated those in Study 1, however the same cautions apply as discussed earlier.

Block and Williams (2001) concluded that "High-relevance consumers who do not elaborate on the consequences freeze on the threatening portion of the message; increased elaboration on the consequences will "unfreeze" message processing, as evidenced by recall measures in both studies, and an accuracy test in Study 2. Unfreezing on the threatening information increases change appraisal (severity, response efficacy and self-efficacy), which leads to greater message persuasion" (Block and Williams 2001, p. 29).

However, these results could equally be interpreted to conclude that increasing elaboration on the recommendations reduces perceived efficacy and thus reduces persuasion. Further, central to this thesis is the use of the "line drawing" to force elaboration. While the line-drawing was not included in the paper, correspondence with the second author confirmed that the "line-drawing" was a diagrammatic representation of the consequences (in the elaborate-consequences condition) or the recommendations (in the elaborate-recommendations condition). The diagrams were similar in form to Figure 6.1.

As can be seen from Figure 6.1, not only did the participants in the "elaboration" conditions receive the information twice, they also received it in a segregated form. It is important to identify and evaluate the effects of these two factors on persuasion.

![Figure 6.1: a representation of the "line drawings" in Block & Williams (2001)](Image)
So what does this mean for health communications?

Social cognitive theories, and their associated models of health behaviour change, assume that as long as the same – and same number – of consequences are presented, consumers will simply average these, leading to identical attitude. According to the Health Belief Model for example, the likelihood of a person quitting smoking is a function of \([(\text{perceived susceptibility to smoking-related illness} + \text{perceived severity of smoking-related illness} + \text{perceived benefits from quitting smoking}) - \text{perceived barriers to quitting smoking}]\), regardless of how this information is presented to them. That is, the mode of presentation of consequences (attributes in the multi-attribute attitude model) should not matter.

Behavioural decision theories, on the other hand, assume that the form in which information is presented can have a considerable impact on attitudes, intentions, and behaviours. Prospect Theory posits that people prefer to “sub-add” negative consequences to buffer them and “super-add” positive consequences to savour them – hence the different utility curves for negative and positive consequences. The important implication of BDT and PT for health communications is that by manipulating the format of threat and reward information, we may be able to increase – or decrease – the resulting attitudes, intentions and behaviours.

Study 4: Presentation effects in the elicitation of preferences for integration and segregation in different domain

Participants in Linville and Fischer’s (1991) study, discussed above, were given pairs of outcomes and asked to state whether they would prefer to have both events occur on the same day or on different days. It is important to note that Linville and Fischer had their participants pre-rate the individual events for desirability before they undertook the choice phase. Linville and Fischer found a strong preference for separating large gains and a non-significant preference for separating small gains. Further, they found a strong preference for separating large losses and a weaker but significant preference for separating small losses. The findings were robust across the choice tasks in academic, social and financial domains. Thus, the findings of their study evidenced strong support
for the predictions of the RRM (and QHEP), for both losses and gains, as long as these are of reasonably substantial magnitude.

Despite the apparent support for RRM, Linville and Fischer’s results may have been induced by the specific procedure and method of task presentation that they employed — that is by presentation effects. Study 4 was designed to examine this possibility. Study 4’s methodology differed from Linville & Fischer’s in four main aspects:

1. The number of events in each choice scenario was increased from two to three. If the separation of losses is due to the need to “recover” from each before incurring the next, and the separation of gains is due to the desire to “savor” each, then the tendency to separate should be higher when the number of events is increased.

2. Participants did not pre-rate the individual events for desirability. This prior task is likely to result in a presentation effect which encourages cognitive separation of the events.

3. Whereas Linville and Fischer presented participants with all possible choice pairs — that is, each participant made 38 decisions about different combinations of the same 24 events — participants in this study made only one decision in each scenario.

4. The domain specificity of events was increased. Linville & Fischer presented participants with pairs of events that were similar, but not identical. For example, in the “small financial losses” condition, the events were “You lose a paperback novel that you just bought for $5” and “You lose a $5 bill.” Kahneman and Tversky (1984) have demonstrated — in relation to financial events — that people will be more inclined to combine events where the events are coded by the individual as part of the same “mental account” (e.g., “regular bills”); and more likely to separate when the outcomes are coded to separate accounts (e.g., “regular bills” and “unforeseen medical expenses”). Conversely, the concept of “renewable resources” would imply that the more related the groups of events, the more likely it is that people will separate them; that is, the more they will deplete — and thus require the recovery of — the same resource(s). Therefore, if Linville and Fischer’s respondents coded the events into separate mental accounts this would provide a rival explanation for
separation that does not depend on renewable resources. To test the Renewable Resource Model’s predictions, the events used within each scenario in this study were identical (e.g., three x $10 library fines, three x failed assignments). We note that “mental accounting” suggests that the more related the groups of events, the more likely that people will combine them; this would favor combination of events in the case of both positive and negative events.

**Hypotheses**

Given that three task factors that appeared likely to favour preference for separation of events were removed (see points 2, 3 and 4 above), it was hypothesised that the results would not replicate Linville and Fischer’s findings of separation preferences for gains and separation preferences for losses. Thus, compared with Linville and Fischer:

\[ H4a: \quad \text{Participants will show a lesser preference for the separation of gains when compared to combining gains.} \]

\[ H4b: \quad \text{Participants will show a lesser preference for the separation of losses when compared to combining losses.} \]

**Methodology**

The present study was designed to replicate the above-mentioned sections of Linville and Fischer’s study (with modifications as discussed). Linville and Fischer used “large” and “small” events, and obtained support for RRM only with the large events. This study used “medium” value events, chosen to be of sufficient magnitude to require resources, but not so large as to virtually guarantee separation. For example, in the social domain, Linville and Fischer used “you share a pizza with some good friends” (small) and “the friends that you would most like to live with want you to join them in a suite next year” (large); this study used “you have done something which will make three of your close friends very happy” (medium).

The six conditions (three domains, positive and negative) and the verbatim tasks are shown in Table 6.1. It is important to note that the events were chosen to minimize any
financial cost or physical effort differentials between the combined and separate events. That is, for example, library fines were described as payable in class, thus eliminating the possibility of choices being influenced by the additional physical effort which would have been required for separate payment of fines, such as speeding fines, which necessitate traveling to a police station or addressing and posting checks.

Table 6.1: The choice scenarios in Study 4

<table>
<thead>
<tr>
<th>Domain</th>
<th>Gains</th>
<th>Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>Imagine you have been doing very well in your course. You have three assignments which have just been graded, one for each of three different units, and you have achieved a distinction for all three. Would you rather: have all three handed back in the one day OR have each one handed back on a separate day.</td>
<td>Imagine you have not been doing very well in your course. You have three assignments which have just been graded, one for each of three different units, and you have failed all three. Would you rather: have all three failed assignments handed back in the one day OR have each failed assignment handed back on a separate day.</td>
</tr>
<tr>
<td>Financial</td>
<td>Imagine you have entered the department's lotto syndicate, which has won 5th division ($10 each) 3 times. Would you rather: find out about, and receive, all three winnings on the one day OR find out about, and receive, each of the three winnings on a separate day.</td>
<td>Imagine you have a number of books on loan from the department which are overdue. They can be returned to your lecturer in your normal class time. Each one will incur a fine of $10. Would you rather: return all three books, and pay all three fines, in the one day OR return each one, and pay each fine, on a separate day.</td>
</tr>
<tr>
<td>Social</td>
<td>Imagine you have done something which will make three of your close friends really happy. Would you rather: tell them all, and have them all be pleased with you, on the same day OR tell each of them, and have each of them be pleased with you, on a separate day.</td>
<td>Imagine you have done something which will really annoy three of your friends. Would you rather: have them all find out, and all get mad, on the same day OR have each of them find out, and each get mad, on a separate day.</td>
</tr>
</tbody>
</table>
Participants: The participants were 175 2\textsuperscript{nd}, 3\textsuperscript{rd}, and 4\textsuperscript{th} year students in the Department of Human Movement & Exercise Science at a large Australian public university. The participants ages ranged from 18 to 53 (mean age 22.4 years); 57\% were female; and 84\% were born in Australia.

Scenarios were randomly allocated to participants, such that each received one scenario in each domain, a combination of positive ("gain scenarios") and negative ("loss scenarios"). The questions were presented as forced-choice (i.e., the instructions stated that participants must choose one of the two options), and the order of presentation of scenarios was randomised.

Results

The percentages of participants stating a preference for the separated gains and separated losses, in each domain – across the Linville and Fischer study and the present study – are shown in Tables 6.2 and 6.3.

Segregation of Gains

As hypothesised, participants did not demonstrate a preference for separation of gains; but instead, in all three domains, demonstrated a preference for combining gains.

*Academic Achievement Domain:* Consistent with H4a, only 32\% of participants chose the separated gain (i.e., to receive each assignment back on a separate day), compared with 80\% in the Linville and Fischer (large) academic gain condition. Preference for combining gains in the academic achievement domain was significant at p < .005.

*Financial Domain:* Consistent with H4a, only 40\% of participants chose the separated gain (i.e., to receive each lottery win on a separate day) compared with 84\% in the Linville and Fischer (large) financial gain condition. Preference for combining gains in the financial domain was significant at p < .01.
Social Domain: Consistent with H4a, only 28% of participants chose the separated gains (i.e., tell each friend the good news on a separate day), compared with 70% in the Linville and Fischer (large) social gain condition. Preference for combining gains in the financial domain was significant at \( p < .001 \).

<table>
<thead>
<tr>
<th></th>
<th>Linville &amp; Fischer</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>80</td>
<td>32</td>
</tr>
<tr>
<td>Financial</td>
<td>84</td>
<td>40</td>
</tr>
<tr>
<td>Social</td>
<td>70</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 6.2: Percentage of participants choosing the separation option for gains across the three domains

Integration of Losses

As hypothesised, participants did not demonstrate a preference for separation of losses; but instead, in all three domains, demonstrated a preference for combining losses.

Academic Achievement Domain: Consistent with H4b, only 27% of participants preferred to separate the losses (i.e., to receive each failed assignment one at a time), compared with 63% in the Linville and Fischer (large) academic loss condition. Preference for combining losses in the academic achievement domain was significant at \( p < .001 \).

Financial Domain: Consistent with H4b, only 29% of participants preferred to separate the losses (i.e., to pay each fine one at a time), compared with 78% in the Linville and Fischer (large) financial loss condition. Preference for combining losses in the financial domain was significant at \( p < .001 \).

Social Domain: Consistent with H4b, only 21% of participants preferred to separate the losses (i.e., to have each friend get mad on a separate day), compared with 74% in the Linville and Fischer (large) social loss condition. This preference for combining losses in the social domain was significant at \( p < .001 \).
Table 6.3: Percentage of participants choosing the separation option for losses across the three domains

<table>
<thead>
<tr>
<th></th>
<th>Linville &amp; Fischer</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>63</td>
<td>27</td>
</tr>
<tr>
<td>Financial</td>
<td>78</td>
<td>29</td>
</tr>
<tr>
<td>Social</td>
<td>74</td>
<td>21</td>
</tr>
</tbody>
</table>

Discussion

Study 4 found a majority preference for combining gains and combining losses in all three domains; which is contrary to the Renewable Resources Model, and the findings of the Linville & Fischer study.

As discussed in the methodology section, the scenarios in the present study were deliberately designed to favor the theory of Renewable Resources, which predicts separation. However, what we found – in relation to both gains and losses – was a strong preference for combination. It is proposed that the most likely explanation for Linville and Fischer’s findings is found not in the Renewable Resources Model, but in Kahneman and Tversky’s (1984) “mental accounting” theory. Linville and Fischer employed non-identical choice options that participants probably assigned to separate mental accounts.

Moreover, the preference for separation that they observed may have been increased by the manner of presentation of the questions. Participants rated each event separately, before completing 38 questions, each question requiring them to state a preference for having two specified events occur on the same or different days. Several of the events were seen more than once, in conjunction with other events, and in the same or different domains. That is, it is quite likely that the way in which the events were presented in this study design encouraged participants to consider them separately. Thus, this study provides considerable support for the hypothesis that strong presentation effects are present in such preference elicitation tasks.
Study 5: Preferences for integration and segregation in the physical well-being domain

The purpose of Study 5 was to determine whether the findings in other domains (i.e., consumer decisions, product pricing, gambling, and investment decisions) regarding preferences for integration or segregation would also apply to health-related behaviour decisions and outcome preferences.

Due to the motivational basis of the underlying theory, it was decided (after Linville & Fischer, 1991) to ask questions of the form “which would you prefer” rather than “who was happier out of Mr X and Mr Y” (as was the case in the Thaler study discussed above). The two conditions (gain and loss) were:

- 3 x 1/2 kilogram weight loss; and
- 3 x tooth fillings.

Hypotheses

\[ H5a: \text{In accordance with the hedonic editing principles, participants will choose the segregated option for gains (weight loss) rather than the integrated option.} \]

\[ H5b: \text{In accordance with the hedonic editing principles, participants will choose the integrated option for losses (tooth fillings) rather than the segregated option.} \]

Methodology

Participants: Participants were the same 175 2\textsuperscript{nd}, 3\textsuperscript{rd}, and 4\textsuperscript{th} year students who participated in the previous study. The participants ages ranged from 18 to 53 (mean age 22.4); 57% were female; and 84% were born in Australia.

Scenarios: Participants were randomly allocated to one of two scenarios. The questions were presented as forced-choice (i.e., the instructions stated that participants must choose one of the two options). This study was conducted concurrently with study 4, and the order of presentation of scenarios was randomised.
Gain scenario: “Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. Would you rather: be told at the end of the program that you have lost 1.5 kilograms OR be told at each visit that you have lost .5 kilograms.”

Loss scenario: “Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that you need to have three fillings. Would you rather: have all three fillings done today, in the one visit OR have each filling done separately (i.e., 3 visits).”

Results

Gain scenario: Consistent with expectations, 75.3% (70) of participants chose the segregated gain (i.e., be told at each visit that they had lost 0.5kg), with the remaining 24.7% (23) choosing the integrated gain. Preference for segregating gains in the physical domain was significant at p < .001.

Loss scenario: Consistent with expectations, 91.5% (75) of participants chose the integrated loss (i.e., have all three fillings at once), with the remaining 8.5% (5) choosing the segregated loss. This preference for integrating losses in the physical domain was significant at p < .001.

There were no significant effects of gender in the gain scenario. In the loss scenario (dental fillings), the gender difference was significant at p < .01, with 100% of men choosing the integrated option (compared to 83.7% of women).

Discussion

The findings of Study 5, while preliminary, suggest that the predictions of the hedonic editing principles may apply to health behaviour decisions as much as, if not more than, they do to consumer purchase decisions and gambling behaviour. If these findings are replicated in future studies, they may have important implications for the design of health communication messages.
Study 6: Stimulus presentation effects and open-ended responses

Study 6 was designed to further investigate the two issues identified in the previous studies. First, to determine the extent, if any, of influence of stimulus presentation effects on stated preferences for combining or separating events. Second, to collect process data from the participants in order to examine the reasons for their choices.

Hypotheses

Consistent with the predictions of HEP and mental accounting, participants should prefer to segregate gains and integrate losses. Thus:

- **H6a**: Participants in the gain scenarios will express a majority preference for the separation of events across all four domains

- **H6b**: Participants in the loss scenarios will express a majority preference for the integration of events across all four domains

If – as this thesis asserts – there is a strong presentation effect in preference elicitation studies, varying the method of presentation of the choice options (while keeping the choices themselves consistent) should result in different majority preferences. Thus:

- **H6c**: Participants presented with the choice options in an integrated form will be more likely to express a preference for integrated outcomes than participants who are presented with the choice options in a segregated form, while majority preferences will remain constant, for both gains and losses.

Methodology

**Participants**: The participants were 81 3rd year undergraduate marketing students at large public university; 61% female; mean age 21.2 years (range 18 to 38 years). Three-quarters (61) of the participants were Australian-born, and the remainder had lived in Australia for a mean of 4.6 years.
Scenarios: The scenarios were positive or negative outcomes in four different domains (academic, financial, social, and physical). The eight scenarios are presented in Table 6.4.

Participants were randomly allocated to either integrated presentation or segregated presentation. Within the presentation condition, each participant was given four scenarios – two loss scenarios and two gain scenarios, with only one scenario in each domain.

For example, participants receiving version one were given a positive financial scenario, a negative academic scenario, a positive health scenario, and a negative social scenario (all presented in segregated form).

Questionnaire: The questionnaire consisted of three parts:

1. **Choices** – participants were asked to read each scenario and choose whether they would prefer to have the three events occur on the same day or on separate days.

2. **Explanations** – participants were then asked to briefly explain why they chose that option.

3. **Demographics** – finally, participants recorded their gender, age, country of birth, length of residence in Australia, monthly income, smoking status, and exercise status.
Table 6.4: The choice scenarios in Study 6

<table>
<thead>
<tr>
<th>Domain</th>
<th>Gains</th>
<th>Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>Imagine you are enrolled in a B. Com. degree. On your economics assignment you receive a “Distinction,” on your accounting assignment you have receive a “Credit,” and on your marketing assignment you have receive a “High Distinction.”</td>
<td>Imagine you are enrolled in a B. Com. degree. On your economics assignment you receive a “Fail,” on your accounting assignment you receive a “Pass Conceded,” and on your marketing assignment you receive a “Pass Restricted.”</td>
</tr>
<tr>
<td>Financial</td>
<td>Imagine you have had some good luck. You win $100 in a charity raffle, $25 in the department’s Lotto syndicate, and a $70 voucher from the university book shop.</td>
<td>Imagine you have just returned three overdue items from the departmental library. The reference book you returned incurs a $15 fine, the software package you returned incurs a $25 fine, and the video tape you returned incurs a $10 fine.</td>
</tr>
<tr>
<td>Social</td>
<td>Imagine you have some good experiences with your friends. A friend invites you to a concert and pays for your ticket, you find out a good friend from high school will be in your tutorial class, and a new friend invites you to their birthday party.</td>
<td>Imagine you have some problems with your friends. You have a serious argument with a close friend, you find out that a good friend is moving to Melbourne, and a new friend does not invite you to their birthday party.</td>
</tr>
<tr>
<td>Physical</td>
<td>Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. In week 1 you lose 0.7 of a kilogram, week 2 you lose a further 0.3 of a kilogram, and week 3 you lose a further 0.5 of a kilogram.</td>
<td>Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that you need a cavity filled in your back molar tooth, a tooth extracted, and an old filling replaced.</td>
</tr>
</tbody>
</table>
Results

Positive outcome scenarios

The percentage of participants across each of the four domains stating a preference for having all three events occur on separate days (segregated) rather than on the same day (i.e., integrated) is shown in Table 6.5, and the results are discussed in detail below.

Majority preferences: Consistent with H6a, participants demonstrated a majority preference for the separation of gains in the domains of physical events (85%), social events (70%), and financial events (58%). Contrary to H5a, this majority preference for separation of gains was not found in the academic domain.

Effect of presentation format: Consistent with H6c, participants who read the integrated presentation of the financial scenario were less likely to state a preference for having the events occur in a segregated form (47% vs. 67%). Similarly, participants who read the integrated presentation of the physical scenario were less likely to state a preference for having the events occur in a segregated form (79% vs. 90%).

Contrary to H6c, participants who read the integrated presentation were not more likely to state a preference for having the events occur in an integrated form in the social or financial domains (42% vs. 45%, and 72% vs. 68%, respectively).

Table 6.5: Percentage (number) of participants choosing the segregated option in the gain scenarios across the integrated and segregated conditions

<table>
<thead>
<tr>
<th>Domain</th>
<th>n</th>
<th>Integrated</th>
<th>Segregated</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>41</td>
<td>42 (8)</td>
<td>45 (10)</td>
<td>44 (18)</td>
</tr>
<tr>
<td>Financial</td>
<td>40</td>
<td>47 (9)</td>
<td>67 (14)</td>
<td>58 (23)</td>
</tr>
<tr>
<td>Social</td>
<td>40</td>
<td>72 (13)</td>
<td>68 (15)</td>
<td>70 (28)</td>
</tr>
<tr>
<td>Physical</td>
<td>40</td>
<td>79 (15)</td>
<td>90 (19)</td>
<td>85 (34)</td>
</tr>
</tbody>
</table>
**Open-ended responses:** Analysis of the open-ended responses provides strong support for the hedonic editing hypothesis as an explanation of these results, and a provisional explanation for the failure of the hypothesis in the academic domain. The overwhelming majority of explanations for the choice of separated gains in the social, financial, and academic scenarios fell into the category of hedonic – or pleasure-maximising – motivations: references to spreading out the ‘good news,’ ‘happiness’ or ‘good luck’ to maximise its value. The physical scenario differed in that ‘motivation’ and ‘reward’ were also major explanations.

Further support was found in the analysis of the responses from the majority in the academic scenario and large minority in the financial scenario who did not choose to separate the gains. In the financial scenario the main reason provided for the choice of integrated gains was the greater purchasing power and flexibility of the larger amount. In the academic scenario, the overwhelming reason for choosing the integrated gains was that the perceived stress of waiting for the second and third assignments seemed, for many people, to outweigh the hedonic value of spreading out the happiness.

**Negative outcome scenarios**

The percentage of participants across each of the four domains stating a preference for having all three events occur on the same day (integrated) rather than on separate days (i.e., segregated) is shown in Table 6.6, and the results are discussed in detail below.

**Majority preferences:** Consistent with H6b, participants demonstrated a majority preference for the integration of losses in the domains of physical events (83%), academic events (83%), and financial events (78%). Contrary to H6b, this majority preference for integration of losses was not found in the academic domain.

**Effect of presentation format:** Consistent with H6c, participants who read the integrated presentation of the financial scenario were more likely to state a preference for having the events occur in an integrated form (89% vs. 68%). Contrary to H6c, the reverse effect was found for the social domain (26% vs. 43%), but this effect is explained by the analysis of the open-ended responses (see below).
Table 6.6: Percentage (number) of participants choosing the integrated option in the loss scenarios across the integrated and segregated presentations

<table>
<thead>
<tr>
<th>Domain</th>
<th>n</th>
<th>Integrated</th>
<th>Segregated</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>40</td>
<td>79 (15)</td>
<td>86 (18)</td>
<td>83 (33)</td>
</tr>
<tr>
<td>Financial</td>
<td>41</td>
<td>89 (17)</td>
<td>68 (15)</td>
<td>78 (32)</td>
</tr>
<tr>
<td>Social</td>
<td>40</td>
<td>26 (5)</td>
<td>43 (9)</td>
<td>35 (14)</td>
</tr>
<tr>
<td>Physical</td>
<td>40</td>
<td>84 (16)</td>
<td>81 (17)</td>
<td>83 (33)</td>
</tr>
</tbody>
</table>

Open-ended responses: Analysis of the open-ended responses provides strong support for the hedonic editing hypothesis as an explanation of these results, and a provisional explanation for the failure of the hypothesis in the academic domain. The overwhelming majority of explanations for the choice of integrated losses in the physical, financial, and academic scenarios again fell into the category of hedonic – or pain-minimising – motivations: references to getting it ‘out of the way’ or ‘over and done with’ or otherwise combining the negative events to minimize their value. The social domain appears to be qualitatively different to the other three domains, as evidenced by the preferences and the explanations provided for these; the overriding explanation given for this domain-specific preference for the separation of losses was that the three events would be too much to deal with in one day (that is, contrary to the other seven scenarios, preferences in the domain of social losses appear consistent with the renewable resources theory). This provides a plausible explanation for the reverse presentation effect found for the social losses domain – if participants find the three integrated losses emotionally threatening (as suggested by these responses), seeing them in an integrated form is likely to heighten this reaction, and thus further reduce the preference for having them occur on the same day.


**Discussion**

The results from Study 6 support the predictions of the hedonic editing hypothesis in six of the eight domains, both in terms of the stated preferences and the open-ended explanations. In the seventh domain (academic gains), the preference phenomenon was confounded by the expectation-related stress of the assessment process; and in the eighth (social losses), there appeared to be a strong influence of resource depletion.

Further, the results provided initial support for the hypothesised presence of presentation effects, although these were not always in the direction hypothesised. It appears from these results that:

- There was no presentation effect for the academic outcomes scenarios. In the gain scenario, there was a 42% preference for segregation in the integrated presentation group vs. 45% in the segregated presentation group; in the loss scenario, there was a 79% vs. 86% preference for integration.

- There was a presentation effect – the reverse of that hypothesised – for the social loss scenario (with a 26% vs. 43% preference for integration).

- There was a presentation effect – in the direction hypothesised – for the financial and physical scenarios. In the financial gain scenario, there was a 47% preference for segregation in the integrated presentation group versus 67% in the segregated presentation group; in the financial loss scenario, there was an 89% versus 68% preference for integration. In the physical gain scenario, there was a 79% preference for segregation in the integrated presentation group versus 90% in the segregated presentation group.
Study 7: Stimulus presentation and measurement effects – pre-rating responses

The purpose of Study 7 was to determine the effect of pre-rating the individual events (as did Linville and Fischer’s participants) on the stated preference for integration or segregation.

Hypotheses

H7a: Participants who pre-rate the events will be more likely to choose to have them occur separately than will participants who do not pre-rate the events.

H7b: This effect will be greater in the negative outcome scenarios, where the predominant preference is for the integration of events.

Methodology

Participants: 80 1st year undergraduate marketing students at large public university, and 140 parents of these students. The mean age of the student sample was 20.9 years; 65% were female; and 71% were born in Australia. The mean age of the parent sample was 51.6 years; 51% were female; and 65% were born in Australia. Envelopes containing the questionnaires (one “student” questionnaire and two “parent” questionnaires) were handed out in class. Students were asked to complete the student questionnaire and to ask their parents (or any other adult related to them) to complete the parent questionnaires, and to return the questionnaires in a sealed envelope at the following week’s class. Participation was voluntary; and all students were given three chocolate frogs on return of their envelope, regardless of whether any or all of the questionnaires had been completed.

Scenarios: The scenarios for the students were the same eight scenarios used in Study 6. The scenarios for the parents were within the same domains as the students’ scenarios, but were modified so as to be relevant to adult non-students. The eight “parent” scenarios are presented in Table 6.7.
Participants were given each individual event and asked to rate its value to them. For example, in the pre-rate positive financial outcomes condition, participants were given the following events and questions (parents’ events in parentheses):

- You win $100 in a charity raffle ($100 in a charity raffle). How good would it be if this happened to you?
- You win $25 in the department’s Lotto syndicate ($25 in a Lotto syndicate). How good would it be if this happened to you?
- You win a $70 voucher from the university bookshop (a $70 voucher from a local store). How good would it be if this happened to you?

The rating of individual events was on a 0-10 scale. For the negative events, the scale was anchored with “not at all bad” (0), “absolutely devastating” (10), and the mid-point was labelled “moderately bad”. For the positive events, the scale was anchored with “not at all good” (0), “absolutely fantastic” (10), and the mid-point was labelled “moderately good”.

**Questionnaire:**

(1) *Choices* – participants were asked to read each scenario and choose whether they would prefer to have the three events occur on the same day or on separate days.

(2) *Demographics* – again, student participants recorded their gender, age, country of birth, length of residence in Australia, monthly income, smoking status, and exercise status. Parent participants were asked to report highest level of education attained rather than income.
## Table 6.7: The choice scenarios for adults in Study 7

<table>
<thead>
<tr>
<th>Domain</th>
<th>Gains</th>
<th>Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic</strong></td>
<td>Imagine you decide to join in some community activities. You do an “Introduction to Computers” course and your final mark is a “Distinction,” you play in the local bowls team and you win the “Fairest and Best” award, and you enter a painting in a local art competition and your painting is awarded “Highly Commended.”</td>
<td>Imagine you decide to join in some community activities. You do an “Introduction to Computers” course and you fail, you play in the local bowls team and you don’t get selected to play next year, and you enter a painting in a local art competition and it comes last.</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td>Imagine you have had some good luck. You win $100 in a charity raffle, $25 in a Lotto syndicate, and a $70 voucher from a local store.</td>
<td>Imagine you have just returned three overdue items from the library. The reference book you returned incurs a $15 fine, the software package you returned incurs a $25 fine, and the video tape you returned incurs a $10 fine.</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Imagine you have some good experiences with your friends. A friend invites you to a concert and pays for your ticket, you find out a good friend will be moving into your street, and a new friend invites you to their dinner party.</td>
<td>Imagine you have some problems with your friends. You have a serious argument with a close friend, you find out that a good friend is moving to Melbourne, a new friend does not invite you to their dinner party.</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td>Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. In week 1 you lose 0.7 of a kilogram, week 2 you lose a further 0.3 of a kilogram, and week 3 you lose a further 0.5 of a kilogram.</td>
<td>Imagine you have just been to the dentist for your annual check-up. The dentist tells you that you need a cavity filled in your back molar tooth, a tooth extracted, and an old filling replaced.</td>
</tr>
</tbody>
</table>
Results

Ratings of the individual events

Across all participants who pre-rated events, the mean ratings for the groups of events were around six to seven on the 10-point scales (“not at all bad” to “absolutely devastating” for the losses, and “not at all good” to “absolutely fantastic” for the gains). That is, as intended, the losses were generally seen as moderately negative events and the gains as moderately positive events. Among the gains scenarios, social gains received the highest mean rating (7.20), followed by the financial gains (7.12), academic gains (6.40) and physical gains (4.24). Among the loss scenarios, the physical losses received the highest mean rating (7.21), followed by the academic losses (6.32), social losses (6.14), and financial losses (5.76).

Majority preferences – positive outcome scenarios

The percentages of participants across each of the four domains stating a preference for having all three events occur on separate days (segregated) rather than on the same day (i.e., integrated) for participants in this study – compared to those in the previous study who did not pre-rate the events – are shown in Table 6.8, and the results are discussed in detail below.

Academic gains: Consistent with H7a, just over half (52%) of the participants reported a preference for segregation of the academic gains, compared to only 44% of the participants in Study 6, although this difference was not statistically significant.

Financial gains: Contrary to H7a, the participants in this study were not more likely to report a preference for segregation of the financial gains than those in Study 6 (42% versus 58%, difference not statistically significant).

Social gains: Consistent with H7a, 88% of the participants reported a preference for segregation of the social gains, compared to only 70% of the participants in Study 6, significant at p < .05.
Physical gains: Contrary to H7a, the participants in this study were not more likely to report a preference for segregation of the physical gains than those in Study 6 (74% versus 85%, difference not statistically significant).

Table 6.8: Percentage of participants choosing the separation option for gains across the four domains, with and without pre-rating

<table>
<thead>
<tr>
<th></th>
<th>Study 6 (no pre-rating)</th>
<th>Study 7 (with pre-rating)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>44% (18/41)</td>
<td>52% (22/42)</td>
<td>.22</td>
</tr>
<tr>
<td>Financial</td>
<td>58% (23/40)</td>
<td>53% (18/34)</td>
<td>.701</td>
</tr>
<tr>
<td>Social</td>
<td>70% (28/40)</td>
<td>88% (37/42)</td>
<td>.02</td>
</tr>
<tr>
<td>Physical</td>
<td>85% (34/40)</td>
<td>74% (25/34)</td>
<td>.231</td>
</tr>
</tbody>
</table>

1 two-tailed

Majority preferences – negative outcome scenarios

The percentages of participants across each of the four domains stating a preference for having all three events occur on separate days (segregated) rather than on the same day (i.e., integrated) for participants in this study – compared to those in the previous study who did not pre-rate the events – are shown in Table 6.8, and the results are discussed in detail below.

Across three of the four scenarios, there was strong support for H7a, that the pre-rating of the individual events would result in a greater expressed preference for their segregated occurrence. The results also provided strong support for H7b, as the percentage shift in preference was much greater for the negative events than the positive events.

Academic losses: Consistent with the hypotheses, just over half (53%) of the participants reported a preference for segregation of the academic losses, compared to only 22% of the participants in Study 6, significant at p < .001.
Financial losses: Consistent with the hypotheses, 42% of the participants reported a preference for segregation of the financial losses, compared to only 17% of the participants in Study 6, significant at p < .05.

Social losses: Contrary to the hypotheses, 56% of the participants reported a preference for segregation of the social losses, compared to 65% of the participants in Study 6, a non-significant difference.

Physical losses: Consistent with the hypotheses, 60% of the participants reported a preference for segregation of the physical losses, compared to only 17% of the participants in Study 6, significant at p < .001.

Table 6.8: Percentage of participants choosing the separation option for losses across the four domains, with and without pre-rating

<table>
<thead>
<tr>
<th></th>
<th>Study 6 (no pre-rating)</th>
<th>Study 7 (with pre-rating)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>17% (7/40)</td>
<td>53% (18/34)</td>
<td>.000</td>
</tr>
<tr>
<td>Financial</td>
<td>22% (8/41)</td>
<td>42% (17/41)</td>
<td>.02</td>
</tr>
<tr>
<td>Social</td>
<td>65% (26/40)</td>
<td>56% (19/34)</td>
<td>.43^1</td>
</tr>
<tr>
<td>Physical</td>
<td>17% (7/40)</td>
<td>60% (25/42)</td>
<td>.000</td>
</tr>
</tbody>
</table>

^1 two-tailed

Discussion

The results of Study 7 provide further evidence of the existence of presentation effects in preference elicitation tasks. In previous experiments, participants have consistently demonstrated a preference for segregating positive events. In this study, having participants pre-rate the individual events before stating a preference for integration or segregation resulted in an increase in the proportion of participants stating a preference for having the events occur on separate days (i.e., segregated).
In the gain scenarios, this effect occurred for only two of the four domains, and only reached statistical significant in one – however, the effect for gains was expected to be low as the existing majority preference was already for segregation. In the loss scenarios, this effect occurred for three of the four domains, and reached statistical significance in all three cases. As expected, the effect was much more pronounced for losses, where the existing majority preference was for integration. In two of the domains (academic and physical) this effect was of sufficient magnitude to reverse the majority preference from integration to segregation.

General Discussion

These four studies provided strong support for the hypothesised existence of presentation effects in preference elicitation tasks. Study 4 demonstrated that presenting the multiple outcomes in a combined form and using events which would be allocated to the same mental account (such as three lottery wins) resulted in a majority preference for the integration of events for both gains and losses, across three domains, contrary to previously reported studies. Study 5 demonstrated that the underlying preference for the segregation of gains and the integration of losses predicted by Thaler’s hedonic editing hypothesis (Thaler 1985), but previously only tested on financial events, also applies to physical events, such as weight loss and dental treatment. Study 6 provided further support for the proposed explanation for the differences between the Linville and Fischer (1991) study and Study 4 of this thesis, by using both presentation formats and by collecting open-ended explanations for choices. Study 7 confirmed that having participants pre-rate events can cause a reversal of majority preferences.

The findings of the studies reported thus far have important implications for the development of persuasive messages. We now have evidence to suggest that people will prefer to integrate the losses and segregate gains in health-related contexts. In relation to a health-damaging behaviour, this suggests that a person engaged in the behaviour will be motivated to integrate the negative consequences, in order to minimize their subjective losses. If, however, we can develop persuasive messages that force them to evaluate these same consequences in a segregated form, this should have the effect of increasing the perceived losses associated with the behaviour (and thus increase desire to cease the behaviour). Similarly, if we can develop persuasive
messages that force people to evaluate the positive consequences of a health-protective
behaviour in a segregated form, this should have the effect of increasing the perceived
gains associated with the behaviour (and thus increase desire to engage in the
behaviour).

The following chapter takes the theoretical predictions of this thesis, which were
supported by the results of these four studies, and applies them to the development of
persuasive messages to encourage smoking cessation and exercise uptake.
Following on from the studies of hypothetical decision-making reported in Chapter 6, the studies reported in this chapter were designed to test the applicability of the predictions of Prospect Theory (PT) (Kahneman and Tversky 1979) and Thaler’s Hedonic Editing Principles (HEP) (Thaler 1985) to the development of communication campaigns for smoking cessation and exercise uptake. Specifically, the studies were designed to determine:

- whether presenting information about the negative consequences of smoking in a segregated form results in higher perceived risks of smoking and greater intention to quit smoking than presenting the same information in an integrated form; and

- whether presenting information about the positive consequences of regular exercise in a segregated form results in higher perceived benefits of exercise and greater intention to start exercising than presenting the same information in an integrated form.

According to both Kahneman and Tversky’s mental accounting (Kahneman and Tversky 1984) and Thaler’s hedonic editing principles (Thaler 1985), presenting information about the consequences of smoking in a segregated form may be more effective in increasing smokers’ perceived risk of smoking-related illness, and non-exercisers’ perceived benefits of regular exercise, than presenting the same information in an integrated form.

Integration, Segregation and the Transtheoretical Model

The Transtheoretical, or Stages of Change, Model (Prochaska, DiClemente and Norcross 1992), which was reviewed in Chapter 2, identifies five distinct stages in the behaviour change process: (1) “Precontemplation,” where the person is not thinking about changing the old behaviour; (2) “Contemplation,” where the person is thinking about changing; (3) “Preparation,” where the person is making plans for change; (4)
“Action,” where the person is actively changing their behaviour; and (5) “Maintenance,” where the individual works to maintain the new behaviour.

This thesis proposes that the hedonic editing hypothesis should operate within the Stages of Change, as follows:

- Precontemplators, who have no intention to change, will, to a greater extent than any of the other groups, be motivated to integrate the losses of maintaining their health-damaging behaviour, and integrate the gains of adopting a new health-promoting behaviour. This is a rational process for Precontemplators as it allows them to cognitively minimise the losses associated with their current behaviour or downplay the gains of adopting a new behaviour. For example, a smoker who wants to keep smoking will be motivated to integrate (and therefore minimise) the losses of smoking; and a non-exerciser who does not want to start exercising will be motivated to integrate (and therefore minimise) the gains of exercising.

- Contemplators, who have not yet decided to change their behaviour, will be motivated to undertake the same “editing” of gains and losses as Precontemplators, but to a lesser degree.

- Preparers, who have decided to change, will now be motivated to segregate (and thus cognitively increase) the losses of maintaining their health-damaging behaviour, and segregate (and thus increase) the gains of adopting a new health-promoting behaviour.

- “Actors” and Maintainers,” who are committed to the behaviour change, will be strongly motivated to segregate (maximise) the relevant gains or losses so as to cognitively justify the behaviour change (i.e., dissonance reduction). That is, by engaging in this cognitive process, the ex-smoker can subjectively increase the losses associated with smoking (and thus the gains of quitting); and the new-exerciser can subjectively increase the gains associated with exercise.
Implications for message design and presentation effects

If smokers in the earlier stages of change (i.e., Precontemplators and Contemplators) are motivated to process information about the negative effects of smoking in an integrated form in order to minimise the perceived losses from their smoking, then forcing them to process information in a segregated manner, by using a segregated presentation, should cause them to increase the perceived severity of these negative consequences. That is, combining the predictions of Hedonic Editing with the Stages of Change, presenting information about the effects of smoking in a segregated form to Precontemplators and Contemplators should be more effective in increasing perceived negative consequences than presenting the same information in an integrated form.

Conversely, because people in the later stages of change regarding smoking (Preparers, Actors, and Maintainers) are intrinsically motivated to process this information in a segregated form, the presentation format should make no difference. That is, Preparers, Actors, and Maintainers will process the information in a segregated manner regardless of whether it is presented in a segregated or integrated form. Thus, we would expect no differences between the two presentation conditions in ratings of perceived negative consequences for those in these later stages.

The same rationale would apply to the design of messages promoting regular exercise, where presenting information about the benefits of exercise in a segregated form to Precontemplators and Contemplators should be more effective in increasing perceived positive consequences than presenting the same information in an integrated form; but Preparers, Actors, and Maintainers will process the information in a segregated manner regardless of whether it is presented in a segregated or integrated form.

Thus, a “convergent” interaction between presentation and stage of change is expected for the dependent variables of rated severity of smoking’s negative consequences, on the one hand, and the rated value of exercise’s positive consequences, on the other. The predicted interaction is shown in Figure 7.1.
Application of prospect theory and hedonic editing to anti-smoking communications

Three studies (Studies 8 – 10) were conducted to examine the application of prospect theory and hedonic editing to the development of anti-smoking information materials. The first examined the effect in relation to materials providing detailed information on fatal consequences of smoking and found no evidence of presentation effects. The second used materials providing briefer information on non-fatal consequences, and found the predicted presentation effects. Finally, the third used materials providing briefer information on both fatal and non-fatal consequences to confirm the conditions under which presentation effects occur.
Study 8 – Integrated versus segregated fatal consequences of smoking

In this study participants were presented with one of two versions of an information brochure about four specific consequences of smoking: emphysema, stroke, heart attack, and cancers of the mouth, nose and throat. One version included integrated information (i.e., all the consequences were presented on a single page) and the other segregated information (i.e., each consequence presented on a separate page).

Hypotheses

Consistent with the predictions of prospect theory (PT) and the hedonic editing principles (HEP) it was expected that the presenting the information on the consequences of smoking in a segregated format would result in the participants, who are all regular smokers, rating the overall consequences of smoking more negatively. Thus:

\[ H8a: \text{ Participants in the "segregated" condition will rate smoking as worse for their health, and state a higher intention to quit than those in the "integrated" condition.} \]

If any such effects are the result of the presentation format, i.e., whether the information was integrated or segregated, we would expect no differences between the two groups of participants in ratings of the individual consequences. Thus:

\[ H8b: \text{ There will be no differences in the ratings of the individual smoking-related consequences between the "integrated" and "segregated" group.} \]

Consistent with the transtheoretical model and the concept of decisional balance, smokers who are in the precontemplation stage (i.e., are not thinking about quitting smoking) should be internally motivated to process information about the consequences of smoking in an integrated form. From the perspective of HEP (where \( v \) = value of the consequences; \(-a\) = negative consequence one; and \(-b\) = negative consequence two),
they should attempt to combine this information before evaluating it; as \( v[(-a)+(-b)] < v(-a) + v(-b) \). Conversely, smokers who are planning to quit (i.e., are in the preparation stage) should be motivated to process information about the negative consequences of smoking in such a way as to support their intent to quit. HEP suggests they will attempt to segregate the consequences, as \( v(-a) + v(-b) > v[(-a)+(-b)] \). Thus:

\[
H8c: \text{ Ratings of the negative consequences of smoking will be higher among precontemplators and contemplators in the segregated condition than the integrated condition, but these differences between conditions will not be evident among those in the preparation stage.}
\]

**Methodology**

**Participants:** Data were collected in an intercept survey of 70 adults in the City of Perth’s (Western Australia) central business district (CBD). A convenience sample was drawn by approaching adults in the Hay Street Mall during shopping hours. They were screened to select current smokers only. Overall, 49% (34) were males and 51% (36) were females; the mean age of participants was 33.2 years, and all were aged 18 years or over. Participants were randomly allocated to one of two conditions: segregated version or integrated version. Quotas were set for the conditions, to ensure equal gender distribution within and across conditions (i.e., 50% females in each condition), and the two conditions did not differ in age distribution.

**Stimuli:** Participants were presented with one of two versions of the smoking information sheet, that is, either integrated or segregated (see Appendix I).

Both versions contained:

- The heading text: “Smoking can cause a range of health problems. The following information explains some of these smoking-related problems.”

- Detailed information about the four consequences:
“Smoking causes Emphysema. In emphysema, the airsacs in the lungs are gradually destroyed until the lungs have difficulty absorbing enough oxygen. Thus it becomes harder to get your breath. These days, the most common cause of emphysema is cigarette smoking. In mild forms of this disease, breathlessness may occur walking up hills or stairs. In severe cases, breathlessness can occur walking slowly along flat ground and normal daily activities become more difficult as the disease gets worse. People with emphysema may have to carry around an oxygen bottle and wear an oxygen mask most of the day. They are more prone to chest infections and pneumonia and occasionally require admission to hospital for intensive treatment of their disease. Although a lot can be done to relieve symptoms, there is no cure for this condition”.

“Smoking causes Stroke. A stroke occurs when the blood supply to the brain is blocked, or when an artery within the brain bursts and bleeds. This prevents parts of the brain getting oxygen and those parts of the brain can die. Smoking significantly increases the risk of stroke. This may cause temporary or permanent disabilities, depending on where in the brain the stroke happens. The effects of stroke will depend on what area of the brain has been injured. A stroke can affect a person’s thinking, memory, personality, speech, movement, vision, senses, balance, create a weakness or numbness of the legs, arms and face on one side of the body, or create eating or swallowing difficulties. A stroke can kill”.

“Smoking causes Heart Attack. A heart attack occurs when the blood supply to the heart muscle is blocked off, causing the heart to malfunction and damage to the heart muscle. Smoking significantly increases the risk of heart disease. Whether it is mild or severe, a heart attack is a serious medical emergency. There are number of long-term complications from heart attack. Twenty per cent of people die within the first hour of a heart attack, a further 10 per cent die in hospital and 5 per cent die within 3 months of leaving hospital. Unless properly treated, heart attacks are likely to re-occur. Even with the best treatment, some people die”.

Chapter 7: Prospect Theory & Evaluations of Multiple Consequences in Health Behaviour Change
“Smoking causes cancers of the mouth, nose and throat. These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth: the tonsil and soft palate. Smoking is an important risk factor for these cancers. Symptoms of mouth or throat cancer include a sore in the mouth that does not heal, any swelling, lump, or thickening in the mouth or neck, a persistent blocked nose, and a persistent ear ache. Cancers of the nasal areas may cause a range of other symptoms including hearing difficulty, headache, pain in the face or upper jaw, bleeding through the nose, and blocked sinuses. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance. Throat cancer may result in the need for a tracheotomy, which means that they will need to breathe through a hole in their throat”.

Questionnaire: The questionnaires collected the following information:

(1) Smoking status (number of cigarettes smoked, stage of change for smoking cessation);

(2) Demographics (age and gender); and

(3) Responses to the stimulus materials (six items about the negative consequences of smoking in general and intentions to quit; five items about emotional reactions to the information presented; and three items about each specific medical consequence).

The main items, and their rating scales, are presented in Table 7.1; and the items about the specific consequences in Table 7.2.
Table 7.1: Items and response scales for Study 8’s main dependent variables

<table>
<thead>
<tr>
<th>#</th>
<th>Item</th>
<th>Response scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>In your opinion, how bad is smoking for your health?</td>
<td>0 – 10 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all bad for my health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 10 = Absolutely terrible for my health</td>
</tr>
<tr>
<td>8.2</td>
<td>In your opinion, how likely is it that you will die earlier than you</td>
<td>0–10 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td>otherwise would if you continue to smoke?</td>
<td>• 0 = Not at all likely to die earlier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 10 = Absolutely certain to die earlier</td>
</tr>
<tr>
<td>8.3</td>
<td>Out of 100 cigarette smokers, how many do you think will die as a</td>
<td>0 – 100 scale</td>
</tr>
<tr>
<td></td>
<td>result of their smoking?</td>
<td></td>
</tr>
<tr>
<td>8.4</td>
<td>Did reading this information lead you to think about quitting</td>
<td>• Made me think a lot about quitting</td>
</tr>
<tr>
<td></td>
<td>smoking?</td>
<td>• Made me think a little about quitting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Did not make me think about quitting</td>
</tr>
<tr>
<td></td>
<td>(NOTE: item was reverse-coded, so higher numbers reflect more</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thinking about quitting.)</td>
<td>more thinking about quitting.)</td>
</tr>
<tr>
<td>8.5</td>
<td>How much has reading this information increased or decreased your</td>
<td>• Increased my desire to quit smoking a lot</td>
</tr>
<tr>
<td></td>
<td>desire to quit smoking?</td>
<td>• Increased my desire to quit smoking a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Made no difference to my desire to quit smoking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decreased my desire to quit smoking a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decreased my desire to quit smoking a lot</td>
</tr>
<tr>
<td></td>
<td>(Item was reverse-coded)</td>
<td></td>
</tr>
<tr>
<td>8.6</td>
<td>What thoughts and feelings went through your mind when you were</td>
<td>Open-ended response</td>
</tr>
<tr>
<td></td>
<td>reading the information about the health effects of smoking?</td>
<td></td>
</tr>
<tr>
<td>8.7</td>
<td>On the following scales, please indicate how much you</td>
<td>Response options:</td>
</tr>
<tr>
<td></td>
<td>experienced the following feelings while reading the information:</td>
<td>• 1 = Not at all</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2 = Slightly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 = Quite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4 = Extremely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anxious</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Horrified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scared</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Shocked</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tense</td>
</tr>
<tr>
<td></td>
<td>8.8 How convinced are you that smoking causes emphysema?</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Smoking definitely causes emphysema</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoking probably causes emphysema</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoking possibly causes emphysema</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoking probably doesn’t cause emphysema</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoking definitely doesn’t cause emphysema</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.9 How easy was the information about emphysema to understand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very easy to understand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quite easy to understand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quite hard to understand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very hard to understand</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.10 Out of 100 cigarette smokers, how many do you think will die from emphysema as a result of their smoking?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 out of 100</td>
<td></td>
</tr>
</tbody>
</table>

*The same questions were used for each consequence – emphysema questions are presented as an example*

The information about the consequences of smoking was identical in the two versions. What differed between the two versions was the order of presentation of the questionnaire elements (see Table 7.3).

**Integrated version:** In the “integrated” version of the questionnaire, the above information was presented on a single page, immediately following the demographic questions. After reading the information, participants turned the page and answered the six questions about smoking and the five questions about emotional reactions. They were then asked the three questions about each of the specific diseases (to avoid the need to refer back to earlier pages, the information was re-presented at the top of each page).

**Segregated version:** In the “segregated” version of the questionnaire, the information about each consequence was presented on a separate page. Questions about that consequence immediately followed the information (on the same page). That is, after the demographics questions, participants read the information about emphysema and then answered the three questions about emphysema, and so on. Finally, they completed the general questions about smoking and reactions to the information.
Table 7.3: Order of presentation of the questionnaire elements

<table>
<thead>
<tr>
<th>Page</th>
<th>Integrated</th>
<th>Segregated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Smoking status questions</td>
<td>Smoking status questions</td>
</tr>
<tr>
<td></td>
<td>Demographics</td>
<td>Demographics</td>
</tr>
<tr>
<td>2</td>
<td>Information on the 4 consequences</td>
<td>Information on consequence 1</td>
</tr>
<tr>
<td></td>
<td>Questions about consequence 1</td>
<td>Questions about consequence 1</td>
</tr>
<tr>
<td>3</td>
<td>Questions about main dependent</td>
<td>Information on consequence 2</td>
</tr>
<tr>
<td></td>
<td>variables (effects of smoking and</td>
<td>Questions about consequence 2</td>
</tr>
<tr>
<td></td>
<td>behavioural intentions)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Information on consequence 1</td>
<td>Information on consequence 3</td>
</tr>
<tr>
<td></td>
<td>Questions about consequence 1</td>
<td>Questions about consequence 3</td>
</tr>
<tr>
<td>5</td>
<td>Information on consequence 2</td>
<td>Information on consequence 4</td>
</tr>
<tr>
<td></td>
<td>Questions about consequence 2</td>
<td>Questions about consequence 4</td>
</tr>
<tr>
<td>6</td>
<td>Information on consequence 3</td>
<td>Questions about main dependent</td>
</tr>
<tr>
<td></td>
<td>variables (effects of smoking and</td>
<td>variables (effects of smoking and</td>
</tr>
<tr>
<td></td>
<td>behavioural intentions)</td>
<td>behavioural intentions)</td>
</tr>
<tr>
<td>7</td>
<td>Information on consequence 4</td>
<td>Questions about consequence 4</td>
</tr>
<tr>
<td></td>
<td>Questions about consequence 4</td>
<td></td>
</tr>
</tbody>
</table>

Analysis: As the hypotheses were directional for the first two stages of change (i.e., that the segregated versions would be more persuasive than the integrated versions for precontemplators and contemplators), t-tests were conducted both as 2-tailed and 1-tailed. One-tailed tests were only conducted when the difference was in the hypothesised direction.

Results

All participants were daily cigarette smokers and smoked an average of 16 cigarettes per day. Approximately one-third of the participants stated that they were not thinking about quitting smoking (33%), just under half were thinking about quitting but had no plans to do so in the next month (47%), and the remainder were planning to quit smoking in the next 30 days (20%). There were no significant differences between the two groups in the number of cigarettes smoked or stage of change for cigarette smoking.
The results for the main dependent variables for all participants combined are presented in Table 7.4, and are discussed below.

**General consequences of smoking:** Generally, the results for consequences of smoking were contrary to H8a, that the segregated condition would have more impact than the integrated condition. When asked how bad smoking is for their health, the mean rating was slightly lower for those in the segregated condition (7.3) than for those in the integrated condition (8.3), although the difference was not statistically significant. There was no significant difference between participants in the two conditions in terms of their estimates of how likely they are to die earlier as a result of their smoking (mean of 6.6 for the segregated condition and 6.9 for the integrated condition). There was no significant difference between the two conditions in their estimates of the number of smokers, out of 100, who will die as a result of their smoking (mean of 49.9 for those in the segregated condition, and 50.5 for those in the integrated condition). Participants in the segregated condition (1.9) did not report thinking more about quitting smoking than those in the integrated condition (2.0). The mean for both conditions equates to “made me think a little about quitting.” Finally, those in the segregated condition (3.5) did not report a greater change in their desire to quit as a result of reading the information than those in the integrated condition (3.5). The mean for both conditions equates to halfway between “made no difference” and “increased a little.”
Table 7.4: Results for integrated and segregated conditions on the main dependent variables in Study 8

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=35)</td>
<td>Segregated (n=35)</td>
</tr>
<tr>
<td><strong>Bad for health</strong></td>
<td>8.3</td>
<td>7.3</td>
</tr>
<tr>
<td><strong>Die earlier</strong></td>
<td>6.9</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>Deaths out of 100</strong></td>
<td>50.5</td>
<td>49.9</td>
</tr>
<tr>
<td><strong>Think about quitting</strong></td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Desire to quit</strong></td>
<td>3.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

*a* two-tailed  
*b* 0-10 scale: 0 = not at all bad, 10 = absolutely terrible  
*c* 0-10 scale: 0 = not at all likely, 10 = absolutely certain  
*d* 0-100 scale  
*e* 1-3 scale: 1 = did not make me think, 2 = made me think a little, 3 = made me think a lot  
*f* 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

The open-ended responses were analysed for frequency of different categories of response. The most common response was, "heard/seen it all before" or "I am aware of the effects/know the risks". However, there were a number of differences between the two groups: 12 of the 35 participants in the integrated condition, but only 6 of 35 in the segregated condition, made comments along this line (marginally significant at p < .10, two-tailed). The five next most frequent response categories were comments about wanting to quit or cut down (14); acknowledgement that smoking is bad for health (12); and statements about death (4). Participants in the segregated conditions were more likely to make statements about quitting (9 vs. 5); equally likely to make comments about smoking being bad for them (6 in each condition); and less likely to mention death or dying (1 vs. 3). Given the small number of respondents in these categories, none of these differences were statistically significant.

**Emotional reactions to the information:** There were no significant differences (p ≥ .05) between the two groups on any of the emotional reactions to the information read: anxious, 1.7 vs. 1.6; horrified, 1.6 vs. 1.5; scared, 1.5 vs. 1.5; shocked, 1.4 vs. 1.5; tense,
1.7 vs. 1.6. It is noteworthy that across all five emotions measured the mean rating was about halfway between “not at all” (1) and “slightly” (2).

Specific consequences of smoking: For each of the four consequences of smoking (i.e., emphysema, stroke, heart attack, and cancers of the mouth, nose and throat), participants were asked: how convinced they were that smoking caused the consequence; how easy the information about the consequence was to understand; and how many smokers out of 100 they thought would die from the consequence as a result of their smoking. Consistent with H8b that there would be no differences between the conditions in the ratings of the individual consequences of smoking, there were no significant differences between the integrated and segregated conditions on any of these 12 measures.

Analysis by stage of change for quitting

In order to test the predictions of H8c that differences between the integrated and segregated conditions would be exist among precontemplators and contemplators, but not among preparers, the results were also analysed by stage of change for smoking cessation. There were no significant differences between the segregated and integrated groups at any of the three stages (Tables 7.5 to 7.9).

As shown in Table 7.5, contrary to H8c that ratings of how bad smoking is for health will be higher among precontemplators reading the segregated information, precontemplators in the segregated condition (5.3) did not rate smoking as worse for their health than those in the integrated condition (7.3). Conversely, but contrary also to H8c, preparers in the segregated condition rated smoking as worse for their health than preparers in the integrated condition, although this difference was not statistically significant. The severity ratings increased across stages among those in the segregated condition as predicted by the TTM (linear trend analysis, significant at p = .001); but not among those in the integrated condition (p = .37).
Table 7.5: Ratings of how bad smoking is for health by stage of change

<table>
<thead>
<tr>
<th>Stage of Change</th>
<th>Condition: mean score(^b)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td></td>
<td>(n=35)</td>
<td>(n=35)</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>7.3</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>(n=11)</td>
<td>(n=12)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>8.9</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>(n=17)</td>
<td>(n=16)</td>
</tr>
<tr>
<td>Preparation</td>
<td>8.4</td>
<td>9.6</td>
</tr>
<tr>
<td></td>
<td>(n=7)</td>
<td>(n=7)</td>
</tr>
</tbody>
</table>

\(^a\) two-tailed  
\(^b\) 0-10 scale: 0 = not at all bad, 10 = absolutely terrible

As shown in Table 7.6, contrary to H8c, precontemplators in the segregated condition (4.3) did not assess their likelihood of dying earlier as higher than those in the integrated condition (5.6). Similar to the previous question, contrary to H8c, preparers in the segregated condition assessed their likelihood of dying earlier as higher than preparers in the integrated condition, although this difference was not statistically significant. The severity ratings increased across stages among those in the segregated condition as predicted by the TTM (linear trend analysis, significant at \(p = .000\)); and among those in the integrated condition (marginally significant at \(p = .08\))
Table 7.6: Ratings of how likely to die earlier by stage of change

<table>
<thead>
<tr>
<th>Stage of Change</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplator</td>
<td>5.6</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>(n = 11)</td>
<td>(n = 12)</td>
</tr>
<tr>
<td>Contemplator</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td></td>
<td>(n = 17)</td>
<td>(n = 16)</td>
</tr>
<tr>
<td>Preparation</td>
<td>8.6</td>
<td>9.3</td>
</tr>
<tr>
<td></td>
<td>(n = 7)</td>
<td>(n = 7)</td>
</tr>
</tbody>
</table>

<sup>a</sup>two-tailed
<sup>b</sup>0-10 scale: 0 = not at all likely, 10 = absolutely certain

When asked to estimate how many cigarette smokers out of 100 will die as the result of their smoking, contrary to H8c, precontemplators in the segregated condition (31.6) did not provide higher estimates than those in the integrated condition (37.0). There were also no significant differences in estimates between conditions for contemplators or preparers (see Table 7.7). The mean estimate of the number of smokers who will die did not increase consistently across stages among those in the segregated condition as predicted by the TTM (linear trend analysis, not significant at p = .14); but did among those in the integrated condition (p = .003). It is interesting to note that in the segregated condition participants' estimates of the number of smokers who will die was highest among contemplators.
Table 7.7: Estimates of how many smokers out of 100 will die, by stage of change

<table>
<thead>
<tr>
<th>Stage of Change</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37.0</td>
<td>31.6</td>
</tr>
<tr>
<td></td>
<td>(n = 11)</td>
<td>(n = 12)</td>
</tr>
<tr>
<td>Contemplator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.0</td>
<td>63.1</td>
</tr>
<tr>
<td></td>
<td>(n = 17)</td>
<td>(n = 16)</td>
</tr>
<tr>
<td>Preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70.7</td>
<td>48.6</td>
</tr>
<tr>
<td></td>
<td>(n = 7)</td>
<td>(n = 7)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed  
<sup>b</sup> 0-100 scale

Contrary to H8c, precontemplators in the segregated condition (1.2) reported less thoughts about quitting than those in the integrated condition (1.6), although this difference was not statistically significant. There were no differences between the two conditions for contemplators and preparers. The reported effectiveness of the information increased across stages among those in the segregated condition as predicted by the TTM (linear trend analysis, significant at p = .000); and among those in the integrated condition (p = .001).

Table 7.8: Reported effect on thoughts about quitting by stage of change

<table>
<thead>
<tr>
<th>Stage of Change</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>(n = 11)</td>
<td>(n = 12)</td>
</tr>
<tr>
<td>Contemplator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>(n = 17)</td>
<td>(n = 16)</td>
</tr>
<tr>
<td>Preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.6</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>(n = 7)</td>
<td>(n = 7)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed  
<sup>b</sup> 1-3 scale: 1 = did not make me think, 2 = made me think a little, 3 = made me think a lot
Contrary to H8c, precontemplators in the segregated condition (2.9) did not report a greater increase in their intention to quit than those in the integrated condition (3.0). There were no differences in stated change in intention to quit between the two conditions for contemplators and preparers. The reported change in desire to quit increased consistently across stages among those in the segregated condition as predicted by the TTM (linear trend analysis, significant at p = .003); and among those in the integrated condition (p = .001).

<table>
<thead>
<tr>
<th>Stage of Change</th>
<th>Condition: mean scoreb</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplator</td>
<td>3.0</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>(n = 11)</td>
<td>(n = 12)</td>
</tr>
<tr>
<td>Contemplator</td>
<td>3.5</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>(n = 17)</td>
<td>(n = 16)</td>
</tr>
<tr>
<td>Preparation</td>
<td>4.3</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>(n = 7)</td>
<td>(n = 7)</td>
</tr>
</tbody>
</table>

* two-tailed

b 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

The open-ended responses to the question about thoughts and feelings when reading the information were not separately analysed by stage of change because of the small number of participants per cell. Reported emotional reactions to the information between the integrated and segregated versions for any of the stages of change were examined, and no differences were found.

**Discussion**

The results provided no support for the hypotheses proposed for Study 8. There were no significant differences between participants in the integrated and segregated conditions on any of the dependent variables.
One reason for the absence of differences between the integrated and segregated conditions in Study 8 may have been the cognitive load placed on participants by the amount of information contained in the information leaflet (see Appendix I). It is possible that participants did not read (or at least did not fully process) all of the information. Feedback from the interviewers supported this view. The interviewers reported that the majority of participants did not appear to spend sufficient time looking at the information pages to have actually read the information provided. Further, it was hypothesised that a ceiling effect might have been created by the use of four potentially fatal consequences. Participants may have felt that people were unlikely to contract more than one of the consequences, and could die from any of them. Thus, the non-combinatory nature of the consequences may have eliminated any impact of the difference in information format. Additionally, the small sample size resulted in very small cell sizes when the data were analysed by stage of change, reducing the likelihood of obtaining significant differences.

**Study 9 – Integrated versus segregated non-fatal consequences of smoking**

Study 9 was designed to overcome the limitations identified in Study 8. As discussed above, it was hypothesised that the absence of effects in Study 8 may have been due to both the cognitive load placed on the participants by the lengthy information provided and the non-combinatory nature of the fatal consequences used.

In this study participants were presented with one of two versions of an information brochure (integrated information or segregated information) about four specific consequences of smoking. However, two changes were made to the stimuli in order to address the two concerns mentioned above.

First, four non-fatal consequences were used, each of which could realistically occur in combination with the others: reduced fitness, yellow teeth, more coughs and colds, and damage to skin. Second, briefer descriptions of the consequences were used. In addition, in order to further examine the gender effects, in half of the questionnaires the line drawings of a physician were replaced with photographs of smokers gender-matched to the participants. Participants were randomly allocated to one of four
conditions: segregated version with photographs; segregated version with line drawings; integrated version with photographs; or integrated version with line drawings.

**Hypotheses**

The hypotheses were the same as those in Study 8. That is:

**H9a:** Participants in the “segregated” condition will rate smoking as worse for their health, and state a higher intention to quit than those in the “integrated” condition.

**H9b:** There will be no differences in the ratings of the individual smoking-related conditions between the “integrated” and “segregated” group.

**H9c:** Ratings of the negative consequences of smoking will be higher among precontemplators and contemplators in the segregated condition than the integrated condition, but these differences between conditions will not occur among those in the subsequent stages (i.e., preparation and action).

**Methodology**

**Participants:** Data were collected in an intercept survey of 120 adults in the City of Perth’s (Western Australia) central business district (CBD). A convenience sample was drawn by approaching adults in the Hay Street Mall during shopping hours, screening to select current smokers only. Overall, 50% (60) were males and 50% (60) were females; the mean age of participants was 28.8 years, and all were aged 18 years or over. Participants were randomly allocated to one of two conditions: segregated version or integrated version. Quotas were set for the conditions, to ensure equal gender distribution within and across conditions (i.e., 50% females in each condition), and the two conditions did not differ in age distribution.
Stimuli: Participants were presented with one of four versions of the smoking information sheet, that is, either integrated or segregated, with or without pictures (see Appendix J).

Both versions contained:

- The heading text: “Smoking and your health.”
- Brief information about the four consequences:
  - “Smoking reduces your fitness: Smoking reduces your blood’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance”.
  - “Smoking makes your teeth go yellow: Cigarettes contain a chemical called tar. Tar is the substance that makes smokers’ teeth go yellow”.
  - “Smoking makes you get more coughs and colds: Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds”.
  - “Smoking damages your skin: Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than nonsmokers”.

Questionnaire: The questionnaires collected the following information:

(1) Smoking status (number of cigarettes smoked, stage of change for smoking cessation);

(2) Demographics (age and gender); and
(3) Responses to the stimulus materials (four items about the negative consequences of smoking in general and intentions to quit; and three items about each specific consequence).

The main items, and their rating scales, are presented in Table 7.10. The items about the specific consequences are presented in Table 7.11.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Response scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>In your opinion, how bad is smoking for your health?</td>
<td>0 – 100° scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all bad for my health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely terrible for my health</td>
</tr>
<tr>
<td>9.2</td>
<td>In your opinion, how likely is it that you will die earlier than you</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td>you would if you continue to smoke?</td>
<td>• 0 = Not at all likely to die earlier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely certain to die earlier</td>
</tr>
<tr>
<td>9.3</td>
<td>How much has reading this information increased or decreased your desire to quit smoking?</td>
<td>Response options:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increased my desire to quit smoking a lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increased my desire to quit smoking a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Made no difference to my desire to quit smoking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decreased my desire to quit smoking a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decreased my desire to quit smoking a lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(NOTE: This item was reverse-coded, so that higher numbers reflected a greater desire to quit.)</td>
</tr>
<tr>
<td>9.4</td>
<td>What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?</td>
<td>Open-ended response</td>
</tr>
</tbody>
</table>

* The scale was changed from 0-10 in Study 8 to 0-100 in Study 9 for ease of comparison with other questions.
Table 7.11: Items and response scales Study 9’s specific consequences*

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5 How much have you thought about smoking and your fitness in the past?</td>
<td>- I have thought about it a lot</td>
</tr>
<tr>
<td></td>
<td>- I have thought about it quite a bit</td>
</tr>
<tr>
<td></td>
<td>- I have thought about it a little</td>
</tr>
<tr>
<td></td>
<td>- I haven’t thought about it much</td>
</tr>
<tr>
<td></td>
<td>- I haven’t thought about it at all</td>
</tr>
<tr>
<td>9.6 How likely do you think it is that your smoking will reduce your fitness?</td>
<td>0–10 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td>- 0 = Definitely won’t reduce your fitness</td>
</tr>
<tr>
<td></td>
<td>- 10 = Definitely will reduce your fitness</td>
</tr>
<tr>
<td>9.7 How bad would it be for you if your smoking reduced your fitness?</td>
<td>0–10 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td>- 0 = Not at all bad</td>
</tr>
<tr>
<td></td>
<td>- 10 = Absolutely devastating</td>
</tr>
</tbody>
</table>

*The same questions were used for each consequence – fitness questions are presented as an example

As with study 8, the two versions of the instrument differed in terms of the order of presentation of the questionnaire elements.

Integrated version: In the “integrated” version, the above information was presented on a single page, immediately following the demographic questions. After reading the information, participants turned the page and answered the four questions about smoking. They were then asked the three questions about each of the specific consequences (to avoid the need to refer back to earlier pages, the information was re-presented at the top of each page).

Segregated version: In the “segregated” version, the information about each consequence was presented on a separate page, immediately followed (on the same page) by the questions about that consequence. That is, after the demographics questions, participants read the information about fitness and then answered the three “fitness” questions, and so on. Finally, they completed the general questions about smoking.
**Analysis:** As the hypotheses were directional (i.e., that the segregated versions would be more persuasive than the integrated versions), t-tests have been conducted both as 2-tailed and 1-tailed; with one-tailed tests only conducted when the difference was in the hypothesised direction.

**Results**

All participants were screened to be daily cigarette smokers. Participants were divided into stage of change for smoking cessation on the basis of their response to the question “which one of the following statements best describes you”: “I am not thinking about quitting smoking” (precontemplation); “I am thinking about quitting smoking, but not in the next fortnight” (contemplation); “I am thinking about quitting smoking in the next fortnight” (preparation); or “I am trying to quit smoking at the moment” (action). Just under one-third (27.5%) of the participants were in precontemplation; over one-third (37.5%) in contemplation; and the remainder in preparation (19.2%) and action (15.8%). There were no significant differences in stage of change between the conditions.

The results for all participants combined support H9a, that the segregated presentation of information will be more effective than integrated presentation, and are shown in Table 7.12. Consistent with H9a, when asked how bad smoking is for their health, the mean rating was significantly higher for those in the three segregated conditions (84.0) than for those in the integrated condition (77.2). Further, 53% (n=32) of the participants in the segregated condition gave a rating of 100 (the highest point on the scale), compared to 38% (n=23) of those in the integrated condition, significant at p < .05, one-tailed.

Consistent with H9a, when asked how likely it is that they will die earlier if they continue to smoke, the mean rating was higher for those in the segregated condition (77.0) than for those in the integrated condition (69.7), but this difference did not reach statistical significance (p = .07). Further, in the segregated condition 52% (n=31) of participants gave a rating of 90 or 100 (i.e., the highest or second highest point on the scale); compared to only 21% (n=16) of those in the integrated condition, significant at p < .005, one-tailed.
Contrary to H9a, when asked how much the information had increased or decreased their desire to quit smoking, there was no significant difference in the mean rating between those in the segregated condition (3.7) and those in the integrated condition (3.5), although the rating was slightly higher among those in the segregated condition. Overall, the mean rating of effect on intention to quit was half-way between “made no difference” and “increased a little”.

Table 7.12: Results for integrated and segregated conditions on the main dependent variables in Study 9

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=60)</td>
<td>Segregated (n=60)</td>
</tr>
<tr>
<td>Bad for health⁴⁵</td>
<td>77.2</td>
<td>84.0</td>
</tr>
<tr>
<td>Die earlier⁶</td>
<td>69.7</td>
<td>77.0</td>
</tr>
<tr>
<td>Desire to quit⁷</td>
<td>3.5</td>
<td>3.7</td>
</tr>
</tbody>
</table>

* 0-100 scale: 0 = not at all bad, 100 = absolutely terrible
b 0-100 scale: 0 = not at all likely, 100 = absolutely certain
c 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

The open-ended responses were analysed for frequency of different categories of response. The most common response in all groups was “heard/seen it all before” or “I am aware of the effects/know the risks”. However, there was a considerable difference between the two groups: 26 of the 60 participants in the integrated condition, but only 11 of 60 in the segregated condition, made comments in this category, significant at p < .01, two-tailed.

The two next most frequent response categories were comments about wanting to quit or cut down (n=26) and acknowledgement that smoking is bad for health (n=11). Responses in both of these categories were more frequent among participants in the segregated conditions: want to quit (17 vs. 9); smoking is bad for health (7 vs. 4), with the former marginally significant at p < .10, two-tailed.
Specific consequences of smoking: For each of the four consequences of smoking, participants were asked: how convinced they were that smoking caused the consequence; how easy the information about the consequence was to understand; and how many smokers (out of 100) they thought would die from the consequence as a result of their smoking. Consistent with H9b, and with the results from Study 8, there were no significant differences between the integrated and segregated conditions on any of these 12 measures. For this reason, responses relating to these individual consequences are not analysed further.

Analysis of illustrated versus photographic versions

As discussed above, half of the participants in each condition read a version of the materials with a line drawing of a doctor, and the remainder read a version illustrated with a photograph of a gender-matched smoker. The following analysis was conducted to examine whether there were any differences between the line drawings and the photographs.

As shown in Table 7.13, when asked how bad they thought smoking was for their health, the mean rating was higher for those in the segregated conditions regardless of illustration type. However, the difference was statistically significant for those viewing the line drawing (mean for segregated 86.3, integrated 75.0, p = .03); but not for those viewing the photographs (81.7 vs. 79.3).

Table 7.13: Ratings of how bad smoking is for health by illustration type

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=60)</td>
<td>Segregated (n=60)</td>
</tr>
<tr>
<td>Line drawing</td>
<td>75.0</td>
<td>86.3</td>
</tr>
<tr>
<td>Photograph</td>
<td>79.3</td>
<td>81.7</td>
</tr>
</tbody>
</table>

*0-100 scale: 0 = not at all bad, 100 = absolutely terrible*
As shown in Table 7.14, when asked how likely they were to die earlier if they continue to smoke, the mean rating was not significantly different between those in the integrated and segregated conditions who viewed the line drawing (73.4 and 76.9 respectively). However, the difference was statistically significant for those viewing the photographs (mean for segregated 80.3, integrated 62.4, \( p = .006 \)).

<table>
<thead>
<tr>
<th>Table 7.14: Ratings of how likely to die earlier by illustration type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition:</strong> mean score<strong>b</strong></td>
</tr>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Line drawing</td>
</tr>
<tr>
<td>Photograph</td>
</tr>
</tbody>
</table>

a two-tailed  
b 0-100 scale: 0 = not at all likely, 100 = absolutely certain

As shown in Table 7.15, when asked how much reading the information had increased their desire to quit smoking, those in the segregated condition reported a slightly higher intention to quit than those in the integrated condition, across both the line drawing and photographic illustrations (3.6 vs. 3.4, and 3.8 vs. 3.6, respectively), although this difference was not statistically significant in either version. As with Study 8, in each case these means equate to around halfway between “made no difference” and “increased a little.”

<table>
<thead>
<tr>
<th>Table 7.15: Reported effect of information on desire to quit by illustration type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition:</strong> mean score<strong>a</strong></td>
</tr>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Line drawing</td>
</tr>
<tr>
<td>Photograph</td>
</tr>
</tbody>
</table>

a 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot
Analysis by stage of change for smoking cessation

The data were analysed by stage of change, and these results provide support for H9c that the segregated presentation of information will be more effective than integrated presentation for precontemplators and these differences will dissipate across the stages.

Consistent with H9c, and as shown in Table 7.16, when asked how bad they thought smoking was for their health, the mean rating for precontemplators was higher for the segregated condition than the integrated condition (segregated 79.5, integrated 60.8, \( p = .03 \)); as it was for contemplators (segregated 88.2, integrated 76.4, marginally significant at .06). Also consistent with H9c, there were no significant differences in mean ratings between those in the segregated versus integrated condition for those in the preparation (84.4 and 78.6, respectively) and action (83.3 and 90.0, respectively) stages. Consistent with the hypothesised interaction, the rated severity did not increase consistently across stages among those in the segregated condition as predicted by the TTM alone (linear trend analysis, not significant at \( p = .53 \)), but did among those in the integrated condition (\( p = .003 \)).

Table 7.16: Ratings of how bad smoking is for health by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>60.8</td>
<td>79.5</td>
</tr>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=20)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>80.0</td>
<td>88.2</td>
</tr>
<tr>
<td></td>
<td>(n=23)</td>
<td>(n=22)</td>
</tr>
<tr>
<td>Preparation</td>
<td>78.6</td>
<td>84.4</td>
</tr>
<tr>
<td></td>
<td>(n=14)</td>
<td>(n=9)</td>
</tr>
<tr>
<td>Action</td>
<td>90.0</td>
<td>83.3</td>
</tr>
<tr>
<td></td>
<td>(n=10)</td>
<td>(n=9)</td>
</tr>
</tbody>
</table>

*two-tailed

*0-100 scale: 0 = not at all bad, 100 = absolutely terrible
Consistent with H9c, and as shown in Table 7.17, when asked how likely they think they are to die earlier as a result of their smoking, the mean rating for precontemplators was higher for those in the segregated condition than those in the integrated condition (segregated 77.0, integrated 50.8, \( p = .01 \)); as it was for contemplators (76.4 vs 70.9), although the latter was not statistically significant. Also consistent with H9c, there were no significant differences in mean ratings between those in the segregated versus integrated condition for those in the preparation (77.5 and 79.2, respectively) and action (77.8 and 79.0, respectively) stages. Consistent with the hypothesised interaction, the rated likelihood of dying earlier did not increase consistently across stages among those in the segregated condition as predicted by the TTM alone (linear trend analysis, not significant at \( p = .93 \)), but did among those in the integrated condition (\( p = .004 \)).

Table 7.17: Ratings of how likely to die earlier by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score (^b)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated ((n=13))</td>
<td>Segregated ((n=20))</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>50.8</td>
<td>77.0</td>
</tr>
<tr>
<td>Contemplation</td>
<td>70.9</td>
<td>76.4</td>
</tr>
<tr>
<td>Preparation</td>
<td>79.2</td>
<td>77.5</td>
</tr>
<tr>
<td>Action</td>
<td>79.0</td>
<td>77.8</td>
</tr>
</tbody>
</table>

\(^a\) two-tailed
\(^b\) 0-100 scale: 0 = not at all likely, 100 = absolutely certain

Interaction effect: A composite score for perceived negative effects of smoking was calculated by summing the two cognitive measures (how bad smoking is for health and how likely smokers are to die earlier because of their smoking) to test for the hypothesised interaction effect. As shown by Figure 7.2, the predicted interaction effect was clearly demonstrated.
Contrary to H9c, as shown in Table 7.18, when asked how much reading the information influenced their desire to quit smoking, there was no significant difference between those in the segregated and integrated conditions for precontemplators or contemplators. Consistent with H9c, the mean ratings did not differ between the two conditions for those in the preparation stage. However, contrary to the hypothesis, the mean rating for those in the segregated condition was lower than for those in the integrated condition (3.2 versus 3.9, p = .05, two-tailed).
Table 7.18: Stated effect of information on intention to quit by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>3.1 (n=13)</td>
<td>3.1 (n=20)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>3.3 (n=23)</td>
<td>3.3 (n=22)</td>
</tr>
<tr>
<td>Preparation</td>
<td>3.7 (n=14)</td>
<td>3.6 (n=9)</td>
</tr>
<tr>
<td>Action</td>
<td>3.9 (n=10)</td>
<td>3.2 (n=9)</td>
</tr>
</tbody>
</table>

*a*two-tailed  
*b* 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

Analysis by Gender

Analysis of the data by gender identified substantial differences. As shown in Table 7.19, when asked how bad they thought smoking was for their health, the mean rating was higher for those in the segregated condition for both genders. The differences were not statistically significant, although they neared significance for males (81.0 vs 71.7, p = .06).

Table 7.19: Ratings of how bad smoking is for health by respondent gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td></td>
<td>(n=60)</td>
<td>(n=60)</td>
</tr>
<tr>
<td>Male</td>
<td>71.7</td>
<td>81.0</td>
</tr>
<tr>
<td>Female</td>
<td>83.7</td>
<td>87.0</td>
</tr>
</tbody>
</table>

*a*0-100 scale: 0 = not at all bad, 100 = absolutely terrible
As shown in Table 7.20, when asked how likely it is that they will die earlier as a result of their smoking, the mean rating was significantly higher for those in the segregated conditions for males only (82.3 vs 65.0, \( p = .005 \)). There was no significant difference between the conditions for females.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Condition: mean score(^b)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=60)</td>
<td>Segregated (n=60)</td>
</tr>
<tr>
<td>Male</td>
<td>65.0</td>
<td>82.3</td>
</tr>
<tr>
<td>Female</td>
<td>74.0</td>
<td>71.4</td>
</tr>
</tbody>
</table>

\(^a\)two-tailed
\(^b\)0-100 scale: 0 = not at all likely, 100 = absolutely certain

When asked how much reading the information increased or decreased their desire to quit smoking, there was no significant difference between those in the segregated and integrated conditions for either gender.

**Discussion**

Overall, the results of Study 9 supported H9a – that is, participants who read the segregated versions rated the health consequences of smoking as more negative and their chances of dying as higher. However, they reported only a marginal increase in desire to quit as a result of reading the materials. H9b was also fully supported by the absence of any differences in the ratings of the individual consequences, across all four conditions and all three measures.

The results of this study also provided strong support for H9c, in that the effects of segregation of consequences are most evident at the earlier stages of smoking cessation. As hypothesised, the segregated condition consistently resulted in significantly higher negative ratings of smoking among precontemplators; consistently, but less extremely,
higher ratings among contemplators; and no significant difference between conditions for preparers and actors.

It was suggested that the differences in effectiveness between the integrated and segregated versions could be due to perceived differences in probability (Smidts, personal communication); that is, that superadditivity may have occurred to a greater extent in the segregated version as participants were asked to rate the likelihood of each consequence before rating the likelihood of death from smoking. However this is an unlikely explanation as the health consequences considered in this study were mainly minor ailments, and unlikely to result in death. However, it was agreed that this question could be answered by analysing these open-ended responses: if the participants made any statements about probability or likelihood, the “superadditivity” hypothesis should be further explored; if they did not, this explanation could be discounted. The analysis of the open-ended responses revealed no comments about probability or likelihood of consequences across all conditions. Further, the analysis of the open-ended responses offers preliminary support for the hypothesised effects of segregated messages. Participants in the segregated conditions were more likely to report thoughts about quitting, about smoking being bad for them, and about specific consequences of smoking.

Study 10 – Integrated versus segregated fatal and non-fatal consequences of smoking

As discussed above, Study 9 was designed to overcome the two limitations of Study 8 which were believed to be responsible for the absence of differences between the integrated and segregated conditions – that is, the cognitive strain of processing lengthy segments of information and the non-combinatory nature of the fatal consequences. Additionally, Study 9 had more subjects than Study 8 (120 vs. 70), thus Study 9 had more power to detect significant differences between the two groups. While the results of Study 9 supported the study hypotheses, it is not clear whether the absence of a difference between conditions in Study 8 and the presence of a difference between conditions in Study 9 was due to one or both of the limitations addressed. Thus, Study 10 was designed to individually examine the impact of each of these changes (i.e., the
use of shorter text and the use of non-fatal consequences) on the existence of differences between the integrated and segregated conditions.

Two separate smoking manipulations were conducted (i.e., fatal versus non-fatal consequences), to address the issues discussed above. Thus, participants were recruited for one of the two discrete sub-studies:

- Smoking – delayed, fatal consequences
- Smoking – immediate, non-fatal consequences

Within each sub-study, participants were presented with one of two versions of the information brochure (integrated information or segregated information).

**Hypotheses**

The hypotheses were the same as those in the four previous studies. That is:

- **H10a:** Participants in the "segregated" condition will rate smoking as worse for their health, and state a higher intention to quit than those in the "integrated" condition.

- **H10b:** There will be no differences in the ratings of the individual smoking-related conditions between the "integrated" and "segregated" group.

- **H10c:** Ratings of the negative consequences of smoking will be higher among precontemplators and contemplators in the segregated condition than the integrated condition, but these differences between conditions will not occur among those in the subsequent stages (i.e., preparation and action).
Methodology

**Participants:** Data were collected in an intercept survey of 252 adults in the City of Perth’s (Western Australia) central business district (CBD). A convenience sample was drawn by approaching adults in the Hay Street Mall during shopping hours, screening to select current smokers only. Overall, 50% (126) were males and 50% (126) were females; the mean age of participants was 29.0 years, and all were aged 18 years or over. Participants were randomly allocated to one of four conditions: fatal or non-fatal consequences, and segregated version or integrated version. Quotas were set for the conditions, to ensure equal gender distribution within and across conditions (i.e., 50% females in each condition). There were no significant differences between the two groups – or between the conditions (i.e., integrated versus segregated) within the groups – in terms of gender, age, number of cigarettes smoked or stage of change for smoking cessation.

**Stimuli:** Participants were presented with one of four versions of the smoking information sheet, that is, either integrated or segregated, with the fatal or non-fatal consequences (see Appendix K). Within each group (i.e., ‘fatal’ or ‘non-fatal’) the information about the consequences of smoking was identical for the aggregated and segregated versions. All versions contained information about four consequences of smoking. The two different versions were:

*Group 1 – Fatal consequences:*

- The heading text: “Smoking and your health.”

- Brief information about the four consequences:

  - “Smoking causes Stroke. A stroke occurs when the blood and oxygen supply to the brain is blocked, or when an artery within the brain bursts and bleeds. A stroke produces sudden and unexpected brain injury which may cause temporary or permanent disabilities.”
“Smoking causes Heart Attack. A heart attack occurs when the blood supply to the heart muscle is blocked off, causing severe damage in the area. Twenty per cent of people will die within the first hour of a heart attack, with a further 10 per cent dying in hospital and 5 per cent dying within 3 months of leaving hospital.”

“Smoking causes Emphysema. In emphysema, the airsacs in the lungs are gradually destroyed so people have difficulty absorbing enough oxygen. Thus it becomes harder to breathe in and out, and normal daily activities become more difficult as the disease gets worse.”

“Smoking causes cancers of the mouth, nose and throat. These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance.”

Group 2 – Non-fatal consequences:

• The heading text: “Smoking and your health.”

• Brief information about the four consequences:

  • “Smoking reduces your fitness: Smoking reduces your blood’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance”.

  • “Smoking makes your teeth go yellow: Cigarettes contain a chemical called tar. Tar is the substance that makes smokers’ teeth go yellow”.

  • “Smoking makes you get more coughs and colds: Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds”.

144 Chapter 7: Prospect Theory & Evaluations of Multiple Consequences in Health Behaviour Change
“Smoking damages your skin: Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than nonsmokers”.

**Questionnaire:** The questionnaires collected the following information:

1. **Smoking status** (number of cigarettes smoked, stage of change for smoking cessation);
2. **Demographics** (age and gender); and
3. **Responses to the stimulus materials** (six items about the negative consequences of smoking in general and intentions to quit; and three items about each specific consequence).

The main items, and their rating scales, are presented in Table 7.21. The items about the specific consequences are presented in Table 7.22.

As with Studies 8 and 9, the versions of the instrument differed in terms of the order of presentation of the questionnaire elements.

**Integrated versions:** In the two “integrated” versions, the above information was presented on a single page, immediately following the demographic questions. After reading the information, participants turned the page and answered the six questions about smoking. They were then asked the three questions about each of the specific consequences (to avoid the need to refer back to earlier pages, the information was represented at the top of each page).

**Segregated versions:** In the two “segregated” version, the information about each consequence was presented on a separate page, immediately followed (on the same page) by the questions about that consequence. That is, after the demographics questions, participants read the information about fitness and then answered the three “fitness” questions, and so on. Finally, they completed the general questions about smoking.
<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Response scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1</td>
<td>In your opinion, how bad is smoking for your health?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 0 = not at all bad for my health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 100 = absolutely terrible for my health</td>
</tr>
<tr>
<td>10.2</td>
<td>In your opinion, how likely is it that you will die earlier than you otherwise would if you continue to smoke?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 0 = not at all likely to die earlier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 100 = absolutely certain to die earlier</td>
</tr>
<tr>
<td>10.3</td>
<td>Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 0 = not at all likely to die earlier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 100 = absolutely certain to die earlier</td>
</tr>
<tr>
<td>10.4</td>
<td>In your opinion, how likely is it that you will become ill because of your smoking?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 0 = not at all likely to become ill</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 100 = absolutely certain to become ill</td>
</tr>
<tr>
<td>10.5</td>
<td>In your opinion, how bad is smoking for your appearance?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 0 = not at all bad for my appearance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ 100 = absolutely terrible for my appearance</td>
</tr>
<tr>
<td>10.6</td>
<td>How much has reading this information increased or decreased your desire to quit smoking?</td>
<td>Response options:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ increased my desire to quit smoking a lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ increased my desire to quit smoking a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ made no difference to my desire to quit smoking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ decreased my desire to quit smoking a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>◆ decreased my desire to quit smoking a lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(NOTE: This item was reverse-coded, so that higher numbers reflected a greater desire to quit.)</td>
</tr>
</tbody>
</table>
Table 7.22: Items and response scales Study 10’s specific consequences

<table>
<thead>
<tr>
<th>10.7</th>
<th>How much have you thought about smoking and stroke in the past?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• I have thought about it a lot</td>
</tr>
<tr>
<td></td>
<td>• I have thought about it quite a bit</td>
</tr>
<tr>
<td></td>
<td>• I have thought about it a little</td>
</tr>
<tr>
<td></td>
<td>• I haven’t thought about it much</td>
</tr>
<tr>
<td></td>
<td>• I haven’t thought about it at all</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10.8</th>
<th>How likely do you think it is that your smoking will increase your risk of a stroke?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 – 10 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td>• 0 = Definitely won’t increase my risk</td>
</tr>
<tr>
<td></td>
<td>• 10 = Definitely will increase my risk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10.9</th>
<th>How bad would it be for you if your smoking increased your risk of a stroke?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 – 10 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td>• 0 = Not at all bad</td>
</tr>
<tr>
<td></td>
<td>• 10 = Absolutely devastating</td>
</tr>
</tbody>
</table>

*The same questions were used for each consequence – heart disease questions are presented as an example

Analysis: As the hypotheses were directional (i.e., that the segregated versions would be more persuasive than the integrated versions), t-tests have been conducted both as 2-tailed and 1-tailed; with one-tailed tests only conducted when the difference is in the hypothesised direction.

Results

All participants were regular cigarette smokers, and reported smoking an average of 14 cigarettes per day (range 1 to 50). Participants were divided into stage of change for smoking cessation on the basis of their response to the question “which one of the following statements best describes you”: “I am not thinking about quitting smoking” (precontemplation); “I am thinking about quitting smoking, but not in the next fortnight” (contemplation); “I am thinking about quitting smoking in the next fortnight” (preparation); or “I am trying to quit smoking at the moment” (action). Just over one-quarter (26.6%) of the participants were in precontemplation; over one-third (38.5%) in contemplation; and the remainder in preparation (14.7%) and action (20.2%). There were no significant differences in stage of change between groups.
Analysis of the results for the fatal and non-fatal consequences versions combined showed no significant differences between the integrated and segregated conditions. However, when the results for the types of consequences were analysed separately, it was apparent that the integration-segregation manipulation had opposite effects for the two groups. That is, the apparent absence of effects obscured the presence of two opposing effects. Thus, the results for the consequence types are reviewed separately below.

Specific consequences of smoking: For each of the four fatal or non-fatal consequences of smoking, participants were asked: how convinced they were that smoking caused the consequence; how easy the information about the consequence was to understand; and how many smokers (out of 100) they thought would die from the consequence as a result of their smoking. Consistent with H10b, and with the results from the previous studies, there were no significant differences between the integrated and segregated conditions on 22 of these 24 measures (participants in the fatal-consequences segregated condition did report a higher perceived likelihood of experiencing a stroke than those in the integrated condition, but this difference was not replicated for any of the other consequences, or for perceived severity of stroke). For this reason, responses relating to these individual consequences are not analysed further.

Results for Group 1 – Fatal consequences

The results for participants in the fatal consequences group were contrary to the hypothesis that the segregated presentation of information would be more effective than integrated presentation. As shown in Table 7.23, when asked how bad smoking is for their health, the mean rating was lower for those in the segregated condition (81.9) than for those in the integrated condition (89.2), p = .05 (two-tailed). The mean rating of the likelihood of dying earlier if they continue to smoke was lower for those in the segregated condition (74.0) than for those in the integrated condition (75.7), as was the estimate of the percentage of smokers who die as a result of smoking (55.9 versus 58.5), and the perceived negative effect of smoking on appearance (63.7 versus 64.7), although none of these differences were statistically significant. The mean rating was higher among those in the segregated condition for only one variable (likelihood of
becoming ill), although this difference was very small (66.7 versus 66.0) and not significant.

Table 7.23: Results for integrated and segregated conditions on the main dependent variables in Study 10 for those in the fatal consequences group

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=63)</td>
<td>Segregated (n=63)</td>
</tr>
<tr>
<td>Bad for health</td>
<td>89.2</td>
<td>81.9</td>
</tr>
<tr>
<td>Die earlier</td>
<td>75.7</td>
<td>74.0</td>
</tr>
<tr>
<td>% who die</td>
<td>58.5</td>
<td>55.9</td>
</tr>
<tr>
<td>Become ill</td>
<td>66.0</td>
<td>66.7</td>
</tr>
<tr>
<td>Bad for appearance</td>
<td>64.7</td>
<td>63.7</td>
</tr>
<tr>
<td>Desire to quit</td>
<td>3.8</td>
<td>3.9</td>
</tr>
</tbody>
</table>

* two-tailed  
^0-100 scale: 0 = not at all bad, 100 = absolutely terrible  
^0-100 scale: 0 = not at all likely, 100 = absolutely certain  
^0-100 scale  
^1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

For estimated likelihood of becoming ill from smoking, those in the segregated condition (66.7) provided a marginally higher rating than those in the aggregated condition (66.0), and a slightly higher change in desire to quit smoking (3.9 vs. 3.8). However, both of these differences were so small as to be of no statistical or practical significance.

Analysis by Gender (Group 1)

When the data for this group were analysed by gender, the results showed a similar pattern for male and female participants. For each gender, five of the six dependent variables were rated lower, and only one higher, among those in the segregated
condition than those in the integrated. Again, none of these differences were statistically significant.

*Analysis by stage of change for smoking cessation (Group 1)*

When the data were analysed by stage of change, there were no significant differences between the segregated and integrated conditions for any of the stages.

*Results for Group 2 – Nonfatal consequences*

The results for participants in the non-fatal consequences group supported the hypothesis that the segregated presentation of information would be more effective than integrated presentation.

As shown in Table 7.24, consistent with H10a, the mean rating of how bad smoking is for health was slightly higher for the segregated condition (81.3) than the integrated condition (80.3), although this difference was not statistically significant.

Consistent with H10a, the mean rating of likelihood of dying earlier as a result of smoking, was higher among those in the segregated condition (77.5) than those in the integrated condition (65.4), \( p = .008 \). Those in the segregated condition also provided a slightly higher estimate of the percentage of smokers who will die as a result of their smoking (56.9 vs. 54.5), although this difference was not statistically significant.

Consistent with H10a, the mean rating of likelihood of becoming ill as a result of smoking, was higher for those in the segregated condition (66.0) than for those in the integrated condition (58.1), \( p = .04 \).

Contrary to H10a, mean ratings of increase in desire to quit smoking were not higher among those in the segregated condition (3.3) than those in the integrated condition (3.5). Overall, participants ‘mean rating of effect of the information on desire to quit smoking was 3.4, which equates to just under halfway between ‘made no difference’ and ‘increased a little’.

150 Chapter 7: Prospect Theory & Evaluations of Multiple Consequences in Health Behaviour Change
Table 7.24: Results for integrated and segregated conditions on the main dependent variables in Study 10 for those in the non-fatal consequences group

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=63)</td>
<td>Segregated (n=63)</td>
</tr>
<tr>
<td>Bad for health(^b)</td>
<td>80.3</td>
<td>81.3</td>
</tr>
<tr>
<td>Die earlier(^c)</td>
<td>65.4</td>
<td>77.5</td>
</tr>
<tr>
<td>% who die(^d)</td>
<td>54.5</td>
<td>56.9</td>
</tr>
<tr>
<td>Become ill(^e)</td>
<td>58.1</td>
<td>66.0</td>
</tr>
<tr>
<td>Bad for appearance(^b)</td>
<td>52.4</td>
<td>55.2</td>
</tr>
<tr>
<td>Desire to quit(^e)</td>
<td>3.5</td>
<td>3.3</td>
</tr>
</tbody>
</table>

\(^a\) two-tailed  
\(^b\) 0-100 scale: 0 = not at all bad, 100 = absolutely terrible  
\(^c\) 0-100 scale: 0 = not at all likely, 100 = absolutely certain  
\(^d\) 0-100 scale  
\(^e\) 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

Analysis by stage of change for smoking cessation (Group 2)

The data for the non-fatal consequences differed between stages of change as hypothesised for three of the six items for precontemplators and five of the six items for contemplators. That is, the segregated presentation of information was clearly more effective than the integrated presentation for these two groups.

As shown in Table 7.25, contrary to H10c, among precontemplators the mean rating of how bad smoking is for health was not higher for the segregated condition (71.4) than the integrated condition (75.9). Consistent with H10c, however, among contemplators the mean rating was higher in the segregated condition (81.9) than the integrated condition (78.6), although this difference was not significant. The results for preparers and actors also provided support for the hypothesis, with no differences in the ratings between the segregated and integrated conditions. Consistent with the hypothesised
interaction, the rating of how bad smoking is for health increased consistently across stages among those in the integrated condition (linear trend analysis, significant at $p = .009$), but it also increased among those in the segregated condition ($p = .02$) as predicted by the TTM alone.

Table 7.25: Ratings of how bad smoking is for health by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score$^b$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>75.9  (n=22)</td>
<td>71.4  (n=14)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>78.6  (n=22)</td>
<td>81.9  (n=27)</td>
</tr>
<tr>
<td>Preparation</td>
<td>90.0  (n=10)</td>
<td>86.0  (n=10)</td>
</tr>
<tr>
<td>Action</td>
<td>85.6  (n=9)</td>
<td>87.5  (n=12)</td>
</tr>
</tbody>
</table>

$^a$ two-tailed

$^b$ 0-100 scale: 0 = not at all bad, 100 = absolutely terrible

As shown in Table 7.26, consistent with H10c, the mean rating of likelihood of dying earlier as a result of smoking, was higher for precontemplators in the segregated condition (74.3) than those in the integrated condition (56.2), $p = .03$; as it was for contemplators (77.8 versus 64.1), although this difference only approached significance ($p = .06$). Also consistent with H10c, there were no significant differences in mean ratings between those in the segregated versus integrated condition for those in the preparation (82.0 versus 77.8) and action (76.7 versus 77.8) stages. Consistent with the hypothesised interaction, the rated likelihood of dying earlier did not increase consistently across stages among those in the segregated condition as predicted by the TTM alone (linear trend analysis, not significant at $p = .39$), but did among those in the integrated condition ($p = .01$).
Table 7.26: Ratings of how likely to die earlier by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>56.2 (n=22)</td>
<td>74.3 (n=14)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>64.1 (n=22)</td>
<td>77.8 (n=27)</td>
</tr>
<tr>
<td>Preparation</td>
<td>77.8 (n=10)</td>
<td>82.0 (n=10)</td>
</tr>
<tr>
<td>Action</td>
<td>77.8 (n=9)</td>
<td>76.7 (n=12)</td>
</tr>
</tbody>
</table>

<sup>a</sup>two-tailed

<sup>b</sup>0-100 scale: 0 = not at all likely, 100 = absolutely certain

As shown in Table 7.27, consistent with H10c, the mean estimate of the percentage of smokers who will die earlier as a result of their smoking was higher among precontemplators in the segregated condition (55.8) than those in the integrated condition (54.3); as it was for contemplators (51.8 versus 49.3), although both of these differences were quite small and not statistically significant. Consistent with H10c, there were no significant differences in mean ratings between those in the segregated versus integrated condition for those in the preparation and action stages. Consistent with the hypothesised interaction, the estimated percentage of smokers who will die earlier did not increase consistently across stages among those in the segregated condition as predicted by the TTM alone (linear trend analysis, not significant at p = .07), but neither did it increase linearly among those in the integrated condition (p = .13).
## Table 7.27: Estimated percentage of smokers who will die earlier because of their smoking by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>54.3</td>
<td>55.8</td>
</tr>
<tr>
<td></td>
<td>(n=22)</td>
<td>(n=14)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>49.3</td>
<td>51.8</td>
</tr>
<tr>
<td></td>
<td>(n=22)</td>
<td>(n=27)</td>
</tr>
<tr>
<td>Preparation</td>
<td>47.6</td>
<td>67.0</td>
</tr>
<tr>
<td></td>
<td>(n=10)</td>
<td>(n=10)</td>
</tr>
<tr>
<td>Action</td>
<td>73.8</td>
<td>61.4</td>
</tr>
<tr>
<td></td>
<td>(n=9)</td>
<td>(n=12)</td>
</tr>
</tbody>
</table>

<sup>a</sup>two-tailed  
<sup>b</sup>0-100 scale

As shown in Table 7.28, consistent with H10c, the mean rating of likelihood of becoming ill as a result of smoking was higher among precontemplators in the segregated condition (57.1) than those in the integrated condition (52.7); as it was for contemplators (segregated 64.4, integrated 58.2), although neither of these differences were statistically significant. Consistent with H10c, there were no significant differences in mean ratings between those in the segregated and integrated condition for those in the preparation (68.5 versus 67.8) and action (77.5 versus 61.1) stages. Consistent with the hypothesised interaction, the rating of likelihood of becoming ill from smoking increased consistently across stages among those in the integrated condition (linear trend analysis, significant at p = .009), but it also increased among those in the segregated condition (p = .02) as predicted by the TTM alone.
Table 7.28: Ratings of how likely to become ill by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>52.7</td>
<td>57.1</td>
</tr>
<tr>
<td></td>
<td>(n=22)</td>
<td>(n=14)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>58.2</td>
<td>64.4</td>
</tr>
<tr>
<td></td>
<td>(n=22)</td>
<td>(n=27)</td>
</tr>
<tr>
<td>Preparation</td>
<td>67.8</td>
<td>68.5</td>
</tr>
<tr>
<td></td>
<td>(n=10)</td>
<td>(n=10)</td>
</tr>
<tr>
<td>Action</td>
<td>61.1</td>
<td>77.5</td>
</tr>
<tr>
<td></td>
<td>(n=9)</td>
<td>(n=12)</td>
</tr>
</tbody>
</table>

*a two-tailed

b 0-100 scale: 0 = not at all likely, 100 = absolutely certain

As shown in Table 7.29, contrary to H10c, among precontemplators the mean rating of how bad smoking is for appearance was not higher for the segregated condition (39.3) than the integrated condition (46.8). Consistent with H10c, among contemplators the mean rating was higher in the segregated condition (55.2) than the integrated condition (51.4), although this difference was not significant. The results for preparers and actors also provided support for the hypothesis, with no differences in the ratings between the segregated and integrated conditions. Consistent with the hypothesised interaction, the rating of how bad smoking is for appearance increased consistently across stages among those in the integrated condition (linear trend analysis, significant at p = .004), but it also increased among those in the segregated condition (p = .007) as predicted by the TTM alone.
### Table 7.29: Ratings of how bad smoking is for appearance by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>46.8 (n=22)</td>
<td>39.3 (n=14)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>51.4 (n=22)</td>
<td>55.2 (n=27)</td>
</tr>
<tr>
<td>Preparation</td>
<td>64.0 (n=10)</td>
<td>68.0 (n=10)</td>
</tr>
<tr>
<td>Action</td>
<td>55.6 (n=9)</td>
<td>63.3 (n=12)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed  
<sup>b</sup> 0-100 scale: 0 = not at all bad, 100 = absolutely terrible

**Interaction effect:** A composite score for perceived negative effects of smoking was calculated by summing the five cognitive measures (how bad smoking is for health, likelihood of dying earlier due to smoking, estimated percentage of smokers who will die early, likelihood of becoming ill due to smoking, and how bad smoking is for appearance) to test for the hypothesised interaction effect. As shown by Figure 7.3, the predicted interaction effect was clearly demonstrated.
As shown in Table 7.30, contrary to H10c, mean ratings of increase in desire to quit smoking were not higher among those in the segregated condition than those in the integrated condition for precontemplators (3.0 versus 3.2) or contemplators (3.3 versus 3.6). Consistent with H10c, the mean ratings did not differ between the two conditions for those in the preparation and action stages.
Table 7.30: Stated effect of information on intention to quit by stage of change for smoking cessation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>3.2 (n=22)</td>
<td>3.0 (n=14)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>3.6 (n=22)</td>
<td>3.3 (n=27)</td>
</tr>
<tr>
<td>Preparation</td>
<td>3.5 (n=10)</td>
<td>3.7 (n=10)</td>
</tr>
<tr>
<td>Action</td>
<td>3.8 (n=9)</td>
<td>3.5 (n=12)</td>
</tr>
</tbody>
</table>

<sup>a</sup>two-tailed  
<sup>b</sup>1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

Analysis by Gender (Group 2)

When the data for this group was analysed by gender, the results showed a similar pattern for male and female participants, and thus are not presented in detail. The results for female participants mirrored those of the results for the participants as a whole. For male participants, all but one of the six dependent variables were rated higher among those in the segregated condition than those in the integrated, the exception being a marginally higher rating of the negative effect of smoking on appearance among males in the aggregated conditions. However, none of these differences were statistically significant.

Discussion

Overall, the results of Study 10 support H10a (i.e., that those in the segregated presentation condition will rate smoking as worse for their health than those in the integrated presentation condition) for those in the nonfatal consequences groups. Conversely, for those reading about the fatal consequences, the hypothesised effects did not occur. This consistent with the findings from Studies 8 and 9, and answers the main
question which this study was designed to address. That is, it appears that the absence of an effect in Study 8 was due to the non-combinatory nature of the fatal consequences used in the information sheets. Thus, we conclude that the greater effectiveness of the segregated presentation of the negative effects of smoking is limited to those short-term, non-fatal consequences which can occur in combination.

H10b (i.e., that there would be no difference in ratings of the specific consequences between the two conditions) was also fully supported by the absence of any differences in the ratings of the individual consequences, across 22 of the 24 items.

The results of this study for those in the nonfatal consequences groups also provide support for H10c (i.e., that the effects will be strongest among precontemplators, and will not occur in the later stages of change), in that the consequences of segregation of consequences are most evident at the earlier stages of smoking cessation. As hypothesised, the segregated condition consistently resulted in higher negative ratings of smoking among precontemplators and contemplators; and inconsistent ratings among preparers and those in the action stage. As shown by Figure 7.3 the predicted interaction effect was clearly demonstrated among this group.

Application of hedonic editing to pro-exercise communications

Studies 8 – 10 demonstrated the applicability of prospect theory and hedonic editing to the processing of information about the negative consequences of a health-damaging behaviour (smoking). By manipulating the format of information presentation, while keeping the information itself consistent, it appears that we can increase or decrease the perceived severity of these negative consequences. That is, the results show strong support for the presence of presentation effects.

The following study (Study 10) was conducted to examine the application of prospect theory and hedonic editing to the processing of information about the positive consequences of a health-promoting behaviour (exercise). The same theoretical basis was used to develop information materials to promote regular exercise – that is, prospect theory and hedonic editing predict that presenting the consequences in a
segregated form will be more effective than an integrated form. The methodology of this study was the same as the previous (smoking) studies, and was designed to mirror the studies of anti-smoking messages (which focus on the ‘loss’ side of the prospect curve) to the ‘gain’ side of the prospect curve (the benefits of exercise).

Study 11 – Integrated versus segregated consequences of exercise

In this study participants were presented with one of two versions of an information brochure (integrated information or segregated information) about four specific positive consequences of exercise.

Hypotheses

The hypotheses reflect those in the three previous studies. That is:

\[ H11a: \text{Participants in the “segregated” condition will rate exercise as better for their health, and state a higher intention to commence exercising than those in the “integrated” condition.} \]

\[ H11b: \text{There will be no differences in the ratings of the individual exercise-related consequences between the “integrated” and “segregated” group.} \]

\[ H11c: \text{Ratings of the positive consequences of exercise will be higher among precontemplators and contemplators in the segregated condition than the integrated condition, but these differences between conditions will not occur among those in the subsequent stages (i.e., preparation and action).} \]

Participants: Data were collected in an intercept survey of 126 adults in the City of Perth’s (Western Australia) central business district (CBD). A convenience sample was drawn by approaching adults in the Hay Street Mall during shopping hours. Overall, 51% (64) were males and 49% (62) were females; the mean age of participants was 31.4 years, and all were aged 18 years or over. All participants were screened to be non-
regular exercisers. Participants were randomly allocated to one of two conditions: segregated version or integrated version. Quotas were set for the conditions, to ensure equal gender distribution (i.e., 50% females in each condition), and the two conditions did not differ in age distribution or stage of change for exercise commencement.

**Stimuli:** Participants were presented with one of two versions of the exercise information sheet, that is, either integrated or segregated (see Appendix K). In order to ensure that the consequences used were accepted by participants as accurate and that they were sufficiently motivating, the consequences focused on objective medical benefits of regular exercise, rather than subjective or emotional benefits.

Both versions contained:

- The heading text: “Exercise and your health.”

- Brief information about the four consequences:

  - “Regular exercise reduces your risk of heart disease. Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.”

  - “Regular exercise reduces your risk of Type 2 diabetes. Type 2 (adult) diabetes is the most common form of diabetes, and is most common after age 40. Type 2 diabetics' bodies gradually lose the ability to use insulin properly, so glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.”

  - “Regular exercise reduces your risk of obesity. Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.”
"Regular exercise reduces your risk of depression. Depression affects most of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress."

**Questionnaire:** The questionnaires collected the following information:

1. Exercise status;
2. Demographics (age and gender); and
3. Responses to the stimulus materials (seven items about the positive consequences of exercise in general and intentions to commence exercising; and three items about each specific consequence).

The main items, and their rating scales, are presented in Table 7.31. The items about the specific consequences are presented in Table 7.32.

As with the three previous studies, the two versions of the instrument differed in terms of the order of presentation of the questionnaire elements.

**Integrated version:** In the "integrated" version, the above information was presented on a single page, immediately following the demographic questions. After reading the information, participants turned the page and answered the seven questions about exercise. They were then asked the three questions about each of the specific consequences (to avoid the need to refer back to earlier pages, the information was re-presented at the top of each page).

**Segregated version:** In the "segregated" version, the information about each consequence was presented on a separate page, immediately followed (on the same page) by the questions about that consequence. That is, after the demographics questions, participants read the information about heart disease and then answered the
three “heart disease” questions, and so on. Finally, they completed the general questions about exercise.

### Table 7.31: Questions and response scales for Study 11’s main dependent variables

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Response scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>In your opinion, how good is exercise for your health?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all good for my health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely fantastic for my health</td>
</tr>
<tr>
<td>11.2</td>
<td>In your opinion, how likely is it that you will live longer if you start exercising regularly?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all likely to live longer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely certain to live longer</td>
</tr>
<tr>
<td>11.3</td>
<td>In your opinion, how likely is it that you will become more healthy if you start exercising regularly?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all likely to become more healthy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely certain to become more healthy</td>
</tr>
<tr>
<td>11.4</td>
<td>In your opinion, how good is exercise for your appearance?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all good for my appearance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely fantastic for my appearance</td>
</tr>
<tr>
<td>11.5</td>
<td>In your opinion, how likely is it that your appearance will improve if you start exercising regularly?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all likely to improve my appearance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely certain to improve my appearance</td>
</tr>
<tr>
<td>11.6</td>
<td>How much has reading this information increased or decreased your desire to start exercising regularly?</td>
<td>Response options:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increased a lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increased a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Made no difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decreased a little</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decreased a lot</td>
</tr>
<tr>
<td>11.7</td>
<td>How likely are you to start exercising regularly?</td>
<td>0 – 100 scale, endpoints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 = Not at all likely to start exercising</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 = Absolutely certain to start exercising</td>
</tr>
</tbody>
</table>
Table 7.32: Items and response scales Study 11's specific consequences

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
</table>
| 7.8 How much have you thought about exercise and your risk of heart disease in the past? | - I have thought about it a lot  
- I have thought about it quite a bit  
- I have thought about it a little  
- I haven't thought about it much  
- I haven't thought about it at all |
| 7.9 How likely do you think it is that regular exercise will reduce your risk of heart disease? | 0 – 100 scale, endpoints:  
- 0 = Not at all likely to reduce my risk  
- 100 = Absolutely certain to reduce my risk |
| 7.10 How good would it be for you if regular exercise reduced your risk of heart disease? | 0 – 100 scale, endpoints:  
- 0 = Not at all good  
- 100 = Absolutely fantastic |

*The same questions were used for each consequence – heart disease questions are presented as an example*

**Analysis:** As the hypotheses were directional (i.e., that the segregated versions would be more persuasive than the integrated versions), t-tests have been conducted both as 2-tailed and 1-tailed; with one-tailed tests only conducted when the difference was in the hypothesised direction.

**Results**

As shown in Table 7.33, for all participants combined, there were no significant differences between the responses of those in the segregated and integrated conditions on any of the seven dependent variables.
Table 7.33: Results for integrated and segregated conditions on the main dependent variables in Study 11

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition: mean score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated (n=63)</td>
<td>Segregated (n=63)</td>
</tr>
<tr>
<td>Good for health(^b)</td>
<td>85.4</td>
<td>88.9</td>
</tr>
<tr>
<td>Will live longer(^c)</td>
<td>76.8</td>
<td>76.0</td>
</tr>
<tr>
<td>Will be healthier(^c)</td>
<td>88.3</td>
<td>87.6</td>
</tr>
<tr>
<td>Good for appearance(^b)</td>
<td>81.6</td>
<td>82.9</td>
</tr>
<tr>
<td>Will look better(^c)</td>
<td>79.5</td>
<td>76.5</td>
</tr>
<tr>
<td>Impact on intention(^d)</td>
<td>3.7</td>
<td>3.9</td>
</tr>
<tr>
<td>Likely to start(^c)</td>
<td>60.0</td>
<td>61.3</td>
</tr>
</tbody>
</table>

\(^{a}\) two-tailed  
\(^{b}\) 0-100 scale: 0 = not at all good, 100 = absolutely fantastic  
\(^{c}\) 0-100 scale: 0 = not at all likely, 100 = absolutely certain  
\(^{d}\) 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

However, there was a tendency for participants in the segregated conditions to provide higher ratings on the dependent variables – with those in the segregated conditions providing higher ratings for perceptions of the benefits of exercise for health, benefits of exercise for appearance, stated impact of the information on intention to commence exercising, and stated intention to commence exercising (but not likelihood of exercise improving their health and appearance).

Specific consequences of exercise: Consistent with H11b, and with the results from the previous studies, there were no significant differences between those in the integrated and segregated conditions on any of these 12 measures, and these responses are not discussed further.
Analysis by stage of change for exercise commencement

Participants were divided into stage of change for commencing regular exercise on the basis of their response to the question: “Which one of the following statements best describes you?”: “I am not thinking about starting to exercise regularly”; “I am thinking starting to exercise regularly, but not in the next fortnight”; “I am thinking about starting to exercise regularly in the next fortnight or so”; or “I am trying to start exercising regularly at the moment”.

The data were analysed by stage of change, and found consistent support for the hypothesis that segregated presentation of information would be more effective for people in the precontemplation stage than integrated presentation, and that there would be no difference in effectiveness between the two conditions for those in later stages of change. However, the predictions for contemplators were not supported.

As shown in Table 7.34, consistent with H11c, the mean rating of how good exercise is for their health was higher among precontemplators in the segregated condition (87.5) than the integrated condition (74.0), p = .03. Contrary to H11c, the rating among contemplators was not higher in the segregated condition (88.1) than the integrated condition (92.3). Also consistent with H11c, there was no significant advantage of either presentation condition across the later stages of change.
### Table 7.34: Ratings of how good exercise is for health by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>74.0</td>
<td>87.5</td>
</tr>
<tr>
<td></td>
<td>(n=20)</td>
<td>(n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>92.3</td>
<td>88.1</td>
</tr>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>95.6</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>(n=9)</td>
<td>(n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>87.6</td>
<td>87.5</td>
</tr>
<tr>
<td></td>
<td>(n=21)</td>
<td>(n=28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed  
<sup>b</sup> 0-100 scale: 0 = not at all good, 100 = absolutely fantastic

As shown in Table 7.35, consistent with H11c, the mean rating of likelihood of living longer if they exercise was higher for precontemplators in the segregated condition (80.0) than the integrated condition (66.0), p = .01. Contrary to H11c, the rating among contemplators was not higher in the segregated condition (69.5) than the integrated condition (75.4). However, consistent with H11c, there was no significant advantage of either presentation condition across the later stages of change.
### Table 7.35: Ratings of how likely to live longer by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>66.0</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td>(n=20)</td>
<td>(n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>75.4</td>
<td>69.5</td>
</tr>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>86.7</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td>(n=9)</td>
<td>(n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>83.8</td>
<td>78.9</td>
</tr>
<tr>
<td></td>
<td>(n=21)</td>
<td>(n=28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed

<sup>b</sup> 0-100 scale: 0 = not at all likely, 100 = absolutely certain

As shown in Table 7.36, consistent with H11c, the mean rating of likelihood of becoming healthier if they exercise was higher among precontemplators in the segregated condition (86.3) than the integrated condition (79.5), although this difference was not statistically significant. Contrary to H11c, the rating among contemplators was not higher in the segregated condition (86.2) than the integrated condition (93.1). Finally, consistent with H11c, there was no significant advantage of either presentation condition across the later stages of change.
### Table 7.36: Ratings of how likely to become more healthy by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>79.5 (n=20)</td>
<td>86.3 (n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>93.1 (n=13)</td>
<td>86.2 (n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>95.6 (n=9)</td>
<td>96.7 (n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>90.5 (n=21)</td>
<td>87.1 (n=28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed

<sup>b</sup> 0-100 scale: 0 = not at all likely, 100 = absolutely certain

As shown in Table 7.37, consistent with H11c, the mean rating of how good exercise is for appearance was higher among precontemplators in the segregated condition (82.5) than the integrated condition (71.5), although this difference was not statistically significant. Contrary to H11c, the rating among contemplators was not higher in the segregated condition (77.1) than the integrated condition (83.9). Finally, consistent with H11c, there was no significant advantage of either presentation condition across the later stages of change.
Table 7.37: Ratings of how good exercise is for appearance by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>71.5 (n=20)</td>
<td>82.5 (n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>83.9 (n=13)</td>
<td>77.1 (n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>91.1 (n=9)</td>
<td>91.7 (n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>85.7 (n=21)</td>
<td>85.4 (n=28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed

<sup>b</sup> 0-100 scale: 0 = not at all good, 100 = absolutely fantastic

As shown in Table 7.38, consistent with H11c, the mean rating of likelihood of exercise improving appearance was higher among precontemplators in the segregated condition (81.3) than the integrated condition (67.5), marginally significant at p = .06. Contrary to H11c, those in the contemplation stage reported lower perceived likelihood of improved appearance in the segregated condition (69.1 vs. 84.6, p = .05, two-tailed). Finally, consistent with H11c, there was no significant advantage of either presentation condition across the two last stages of change.
Table 7.38: Ratings of how likely to improve appearance by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>67.5</td>
<td>81.3</td>
</tr>
<tr>
<td></td>
<td>(n=20)</td>
<td>(n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>84.6</td>
<td>69.1</td>
</tr>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>87.8</td>
<td>88.3</td>
</tr>
<tr>
<td></td>
<td>(n=9)</td>
<td>(n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>84.3</td>
<td>78.2</td>
</tr>
<tr>
<td></td>
<td>(n=21)</td>
<td>(n=28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed  
<sup>b</sup> 0-100 scale: 0 = not at all likely, 100 = absolutely certain

As shown in Table 7.39, consistent with H11c, precontemplators in the segregated condition (3.9) reported a greater increase in intention to commence exercise as a result of reading the information than those in the integrated condition (3.3), p = .01. Contrary to H11c, the rating among contemplators was not higher in the segregated condition than the integrated condition (3.8 for both groups). Also consistent with H11c, the mean ratings did not differ between the two conditions for those in the later stages of change. Overall, participants’ mean rating of effect of the information on desire to commence exercising was 3.8, which equates to just under ‘increased a little.’
### Table 7.39: Stated effect of information on intention to exercise by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score $^b$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>3.3 (n=20)</td>
<td>3.9 (n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>3.8 (n=13)</td>
<td>3.8 (n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>3.8 (n=9)</td>
<td>4.2 (n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>3.9 (n=21)</td>
<td>3.8 (n=28)</td>
</tr>
</tbody>
</table>

$^a$ two-tailed  

$^b$ 1-5 scale: 1 = decreased a lot, 2 = decreased a little, 3 = no difference, 4 = increased a little, 5 = increased a lot

As shown in Table 7.40, consistent with H11c, the mean level of intention to commence exercise was higher among precontemplators in the segregated condition (51.3) than the integrated condition (34.0), $p = .02$. Contrary to H11c, contemplators in the segregated condition reported lower intention to commence exercise than those in the integrated condition (52.9 vs. 77.7, $p = .00$, two-tailed). Also consistent with H11c, there was no significant advantage of either presentation condition across the two last stages of change.
### Table 7.40: Stated intention to commence exercise by stage of change for exercise commencement

<table>
<thead>
<tr>
<th>Stage</th>
<th>Condition: mean score&lt;sup&gt;b&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Segregated</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>34.0</td>
<td>51.3</td>
</tr>
<tr>
<td></td>
<td>(n=20)</td>
<td>(n=8)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>77.7</td>
<td>52.9</td>
</tr>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=21)</td>
</tr>
<tr>
<td>Preparation</td>
<td>76.7</td>
<td>76.7</td>
</tr>
<tr>
<td></td>
<td>(n=9)</td>
<td>(n=6)</td>
</tr>
<tr>
<td>Action</td>
<td>66.7</td>
<td>67.1</td>
</tr>
<tr>
<td></td>
<td>(n=21)</td>
<td>(n=28)</td>
</tr>
</tbody>
</table>

<sup>a</sup> two-tailed  
<sup>b</sup> 0-100 scale: 0 = not at all likely, 100 = absolutely certain

**Interaction effect:** A composite score for perceived positive effects of exercise was calculated by summing the five cognitive measures (how good exercise is for health, likelihood of living longer due to exercise, likelihood of becoming healthier due to exercise, how good exercise is for appearance, and likelihood of appearance improving due to exercise) to test for the hypothesised interaction effect. As shown by Figure 7.4, the predicted interaction effect was demonstrated across three of the four stages. That is, as hypothesised, precontemplators in the segregated condition rated the benefits of exercise as higher than those in the integrated condition, and preparers and actors reported similar perceptions regardless of the information presentation condition. However, contrary to the hypothesis, contemplators in the integrated condition rated the benefits of exercise more highly than did those in the segregated condition.
**Figure 7.4: Effect of interaction between presentation effects and stage of change on perceived gains from exercise in Study 11**

**Analysis by Gender**

The data were analysed by gender, and there were no significant differences on all but one of the dependent variables between those in the segregated condition and those in the integrated condition for either male or female participants. The one significant difference was for males, who reported a greater effect of the information on intention to commence exercise in the segregated (2.5) than the integrated condition (2.2), p < .05.

**Discussion**

Study 11 provides strong support for the hypotheses in relation to the presentation of information about the positive consequences of a health-promoting behaviour (exercise). That is, as predicted, presenting information on these consequences in a segregated form was more effective in increasing perceived benefits of exercise among precontemplators than presenting the same information in an integrated form. Consistently across all six dependent variables, precontemplators in the segregated condition rated exercise as better for health and reported higher intentions to commence exercise than precontemplators in the integrated condition. The prediction for preparers
and actors (that there would be no presentation effects) was also supported. However, the prediction for contemplators was not supported, with those integrated version reporting higher perceived benefits of exercise than those in the segregated condition.

**General Discussion**

Across the four studies reported in this chapter, the presence of significant differences in the perceived severity of consequences across the stages of change, regardless of information presentation condition, is consistent with the large body of research on the stages of change and decisional balance.

Further, the results of this series of studies demonstrate the applicability of prospect theory and hedonic editing to the development of public health communications, and confirm the existence — and importance — of presentation effects in people's processing of health-related information. As hypothesised, segregated presentation was more effective than integrated presentation of the same information in increasing Precontemplators' and Contemplators' perceptions of the negative consequences of smoking, and Precontemplators' perceptions of the positive consequences of exercise.

As shown in Figures 2 and 3, the hypothesised interaction between presentation effects and stage of change was strongly supported for the perceived negative effects of smoking. However, for exercise, the hypothesised interaction was evident only across three of the four stages of change (with the integrated presentation appearing more effective among Contemplators). This may be due to differences in the way that people progress through the stages of exercise commencement versus smoking cessation, and could be investigated in future studies.

**Limitations:** As with any research, there are a number of limitations to the approach taken and these are now considered. The main limitations of the studies stem from the size, nature, and geographic homogeneity of the samples used.

- Sample sizes ranged from 70 to 252 participants per experiment, with a median of 60 participants per information presentation condition within each study. Cost considerations precluded the use of larger samples (larger samples could have been
obtained by using student participants, as in Chapter 6, but this would have limited the applicability of the findings to a younger, better-educated sample, among whom smoking and lack of exercise are less common and far less entrenched behaviours).

- Due to the size of the samples in some of the studies, small cell sizes resulted from grouping the participants into stages of change within each presentation condition. Thus, the effects of the stages may be underestimated.

- The use of convenience sampling means that the participants may not have been typical of smokers, or non-exercisers, in the general population. Particularly, there may be differences between smokers and non-exercisers who were willing to take part in such a study and those who were not. However, the proportion of people in each of the stages of change was consistent with research on stages of change for smoking cessation and exercise uptake among the general population (Plummer et al. 2001, Donovan et al. 1999, Prochaska et al. 1988, Prochaska, DiClemente, Velicer, Ginpil and Norcross 1985).

- All of the participants were recruited in the main shopping mall in the CBD of Perth, Western Australia. This may limit the ability to generalise the results to other populations, although there are no obvious demographic characteristics of the sample populations that would prevent any such generalisations.

Conclusion

The presence of presentation effects such as those reported in this chapter is an important finding for health promotion as the precontemplators, and to a lesser extent the contemplators, are those who most need to be persuaded of the negative consequences of smoking and the positive consequences of exercise. The absence of differences between the segregated and integrated versions in the preparation and action stages may reflect the fact that people in these groups are already motivated to separately evaluate each of the consequences. Moreover, the literature on decisional balance for smoking cessation supports this assertion.
The final chapter briefly reviews the findings of the studies reported in Chapters 5 – 7, and discusses the implications of the existence of presentation effects for the development of public health communications.
CHAPTER 8 : DISCUSSION AND CONCLUSIONS

This thesis utilised behavioural decision theory (BDT) to examine the influence of presentation effects on health behaviour decision-making. The three major areas of BDT considered were prospect theory and message framing; prospect theory and evaluations of multiple consequences in hypothetical decisions; and prospect theory and evaluations of multiple consequences in health behaviour change. The studies provided strong support for the existence and influence of presentation effects in health behaviour decision-making.

This chapter summarises the results of the studies conducted in each of these three areas, and discusses the findings in light of the previous literature. The chapter commences with a summary of the findings, followed by a discussion of the results. It then considers the implications of the reported findings for health behaviour communications. Finally, it discusses the limitations of the reported studies, draws conclusions, and provides recommendations for future research.

Summary of findings

Study 1 was designed to examine the perceived level of risk associated with physical inactivity in comparison to other health-related behaviours, in order to demonstrate that people underestimate these risks. This study was not related to presentation effects, but was conducted to provide additional background for the subsequent studies.

Prospect Theory and Message Framing

Study 2 examined the impact of message framing on requests for information about exercise. High school and university student participants were randomly allocated to experimental groups to read one of four versions of a brochure in which framing was manipulated by presenting information in terms of either do the behaviour (i.e., exercise regularly) or don’t do the behaviour, followed by positive consequences (benefits gained or lost) or negative consequences (incurred or avoided). No support was found for same behaviour, different consequences (consequence valence) framing or for gain
versus loss framing. The only significant effect was for operation framing: advocating behaviour that turns the consequences ‘on’ (i.e., “do this and you will” and “don’t do this and you will”) rather than behaviour that turns the consequences ‘off’ (i.e., “do this and you won’t” and “don’t do this and you won’t”). The effect was strong in the university student group compared with the high school student group.

Study 3 examined whether the absence of framing effects in many previous studies could be due to participants’ tendency to ‘reframe’ information into the form in which such information is usually presented. High school student participants were randomly allocated to receive anti-cannabis information framed either negatively (the way it is usually presented) or positively. Consistent with the hypothesis, participants in the negative frame condition recalled the messages as negatively framed, with no instances of participants reframing the messages they recalled into a positive form; whereas participants in the positive frame condition reframed a large proportion of the recalled messages into a negative form.

Prospect Theory and Evaluations of Multiple Consequences in Hypothetical Decisions

Study 4 was designed to investigate whether the preference for segregation of both positive and negative outcomes reported in a previous study (Linville & Fischer, 1991) was due to the presentation of the stimulus materials in a segregated format. In the present study, the stimulus materials were presented in an integrated form and it was hypothesised that this would result in a greater preference for the integration of outcomes. Consistent with the hypotheses, the majority preferences were the reverse of those in Linville and Fischer’s previous study. In both the gain and loss domains, as hypothesised, participants demonstrated a preference for integration (rather than segregation) of outcomes.

Study 5 was conducted to determine whether the findings in other decision domains regarding preferences for integration or segregation would also apply to health-related behaviour decisions and outcome preferences. The methodology of previous preference-elicitation studies was replicated and, based on prospect theory and the hedonic editing principles, it was predicted that majority preferences in this domain would (as for other domains) be for the integration of losses and segregation of gains.
Consistent with the hypothesis, the majority of participants chose the segregated gain (i.e., be told at each visit to a weight loss program that they had lost 0.5kg); and the integrated loss (i.e., have all three necessary dental fillings at once).

Study 6 was designed to further demonstrate that the difference in findings between Study 4 and the Linville & Fischer (1991) study was due to influence of stimulus presentation effects on stated preferences for combining or separating events. Participants were randomly allocated to either integrated presentation or segregated presentation of multiple outcomes and asked to state a preference for the temporal integration or segregation of these events. Consistent with the hypothesis, participants who read the integrated presentation were less likely to state a preference for having the events occur in a segregated form in several of the domains. Analysis of the open-ended responses provided an explanation for variations from the expected findings of previous studies in the academic domain; the responses suggested that the expected preference for segregation was overridden by students' anxiety about their assessment and consequent desire to know their results as quickly as possible.

Study 7 was conducted to determine the effect of pre-rating the individual events (pre-rating was used in the Linville & Fischer (1991) study) on the stated preference for integration or segregation. Participants were given the same scenarios and choice options as in studies 4, 5 and 6, with the addition of the pre-rating task. As hypothesised, pre-rating events resulted in statistically significant shifts in preferences – from a majority preference for integration to a majority preference for segregation – in three of the four domains. That is, having participants pre-rate the events, as they did in the Linville and Fischer (1991) study, resulted in majority preferences consistent with Linville and Fischer's findings.

Prospect Theory and Evaluations of Multiple Consequences in Health Behaviour Change

The four studies reported in Chapter 7 (studies 8 to 11) extended the presentation manipulations of multiple consequences to the decisions of smoking cessation and exercise uptake. Study 8 revealed no significant differences between participants in the integrated and segregated conditions on any of the dependent variables. One reason for
the absence of differences between the integrated and segregated conditions may have been the cognitive load placed on participants by the amount of information contained in the information leaflet. It is possible that participants did not read (or at least did not fully process) all of the information. Feedback from the interviewers supported this post hoc explanation. Further, it was hypothesised that a ceiling effect might have been created by the use of four extreme (potentially fatal) consequences. Participants may have felt that people were unlikely to contract more than one of the consequences, and could die from any one of them. Thus, the non-combinatory nature of the consequences may have eliminated any impact of the difference in presentation format.

Study 9 showed that participants who received segregated information about the health consequences of smoking rated smoking as more negative and their chances of dying as higher than those who received the same information in an integrated form. The effects of segregation of consequences were most evident among smokers in the earlier stages of smoking cessation. Further, the analysis of the open-ended responses offered preliminary support for the hypothesised greater effect of segregated messages. Participants in the segregated conditions were more likely to report thoughts about quitting, about smoking being bad for them, and about specific consequences of smoking.

Study 10 was designed to investigate decisively why Study 8 did not work; that is, whether the lack of a difference by format was due to the use of fatal consequences as the outcomes of interest. Thus, in Study 10, half the participants received information about non-fatal consequences, and the other half received information about fatal consequences. The predicted presentation effects were found for the non-fatal consequences but, as before, not for the fatal consequences. Thus, it was concluded that the greater effectiveness of the segregated presentation of the negative effects of smoking is limited to those short-term, non-fatal consequences that can occur in combination; the effects disappear when people are asked to consider long-term, fatal consequences (i.e., outcomes that are perceived to be mutually exclusive). Again, the consequences of segregation of consequences were most evident among smokers who were in the earlier stages of smoking cessation.
Study 11, on positive consequences of exercise behaviour, found that presenting information on these consequences in segregated form was more effective in increasing perceived benefits of exercise among precontemplators than presenting the same information in integrated form. Consistently, across all six dependent variables, precontemplators who received segregated information rated exercise as better for health and reported higher intentions to commence exercise than those who received integrated information. However, the prediction for contemplators was not supported, with those receiving the integrated information reporting higher perceived benefits of exercise than those receiving the segregated information (this apparent reversal was not expected and merits further research). The prediction for preparers and actors (that there would be no effect of presentation) was also supported.

Discussion

Prospect Theory and Message Framing

Numerous studies in health behaviour change – and particularly in cancer detection and prevention – have verified the existence of framing effects (e.g., Meyerowitz and Chaiken 1987; Lalor and Hailey 1990; Steffen et al. 1994; Detweiler et al. 1999). However, the inconsistent direction and magnitude of framing effects suggests that information presentation artifacts may be an explanation. The results of Studies 2 and 3 provide further evidence for the instability of framing effects. It appears from these studies that the instability of framing effects may be due to differences in the linguistic complexity of messages, the presence or absence of specific words, and the consistency with which information is presented in relation to previous information to which the participants have been exposed.

In Study 2, various formulations of framing were examined. We found no support for consequence-valence framing as in the dramatic example of “live” versus “die” (see, for example, McNeil et al. 1982), or for gain-loss framing (see, for example, Detweiler et al. 1999). However, there was evidence that “operation framing” had an effect in which the presentation of consequences was more effective than the removal of consequences. The posited explanation for this result relates to the linguistic complexity of the messages and the consequent difficulty which may be experience in processing them,
with less complex messages being more persuasive because they are better understood. Thus, linguistic complexity may explain many so-called “framing” effects and why inconsistent results are so often obtained.

However, this is not to say that message presentation is the sole determinant of message interpretation. Framing effects are also influenced by the norms, habits, and expectations of the decision-maker (Tversky and Kahneman 1986). The results of Study 3 support the contention that one reason for the absence of framing effects in previous studies is the tendency for some participants to reframe the information provided to them into a form that is consistent with prior messages about the behaviour, that is, with their expectations. Those who received information negatively framed, consistent with previous drug education messages, correctly recalled the information as presenting the negative consequences of cannabis use. Those who received it positively framed, in a form inconsistent with previous drug education messages, were more likely to incorrectly recall the information as being negatively framed.

**Prospect Theory and Evaluations of Multiple Consequences in Hypothetical Decisions**

Traditional theories of decision-making, such as the theory of rational choice (von Neumann and Morgenstein 1947; Savage 1954), assume that people make choices that maximize their well-being or utility in a given situation, within available resources and constraints. That is, people are assumed to be rational and to make rational choices using common knowledge. The foundation of theories of rational choice is invariance (Slovic, 1995); that is, rational choices must comply with the assumptions of: (a) *description invariance* – preferences should not depend on the description of options; and (b) *procedure invariance* – preferences should not depend on the method of elicitation.

However, empirical investigations of decision-making have shown many violations of both description invariance and procedure invariance. As Tversky and his colleagues assert, “different elicitation procedures highlight different aspects of options and suggest alternative heuristics, which give rise to inconsistent responses” (Tversky, Sattath and Slovic 1988, p. 373). In their comprehensive review, Payne et al. (1992) concluded that the failure of decisions to comply with description invariance and
procedure invariance is “the fundamental result of three decades of empirical investigation” in BDT research (Payne et al. 1992, p. 464). That is, people’s preferences are sensitive to both the framing of problems and the response mode used.

The four studies reported in Chapter 6 investigated presentation effects in the elicitation of preferences for the temporal integration or segregation of multiple outcomes across four domains of experiences (financial, academic, social and physical). Overall, these four studies provided support for the hypothesised existence of presentation effects in preference elicitation tasks. Specifically, the studies demonstrated that:

- presenting multiple consequences in a combined form and using events which would be allocated to the same mental account (such as three lottery wins) resulted in a majority preference for the integration of events for both gains and losses, across three domains, contrary to previously reported studies (description invariance);
- the underlying preference for the segregation of gains and the integration of losses (previously only tested on financial events) also applies to physical events, such as weight loss and dental treatment; that altering the presentation format from integrated to segregated results in a change of preferences for temporal separation; and that having participants pre-rate events can cause a reversal of majority preferences.

Prospect Theory and Evaluations of Multiple Consequences in Health Behaviour Change

Following from the fact that preferences are sensitive to both the presentation of the message and the response mode used, it has been argued that “beliefs and preferences are often constructed – not merely revealed – in the elicitation process” (Slovic 1995, p. 365). The way a problem is formulated (the script, presentation, and response mode) affects preferences in a non-normative way; preferences can be influenced by the choice of probability and outcome levels, combining gains and losses versus presenting them separately, whether risk is assured or transferred away, as well as context and framing effects (Hershey, Kunreuther and Schoemaker 1982).
Prospect Theory predicts that if consequences are presented in segregated form they will be perceived as more severe than if they are presented in integrated form. The important implication of Behavioural Decision Theory and Prospect Theory for health communications is that by manipulating the type and form of information about consequences, we may be able to decrease or increase, as appropriate, resulting attitudes and behaviours.

The studies reported in this section demonstrated the applicability of prospect theory and hedonic editing to the development of public health communications, and confirm the existence – and importance – of presentation effects in people's processing of health-related information. As hypothesised, segregated presentation was more effective than integrated presentation of the same information in increasing precontemplators' and contemplators' perceptions of the negative consequences of smoking, and precontemplators' perceptions of the positive consequences of exercise.

Implications

Numerous studies have shown that people's perceptions of risks can be influenced by aspects of information presentation, such as: whether risk is stated in terms of absolute or relative risk (Baron 1997; Malenka, Baron and Johansen 1993); the base rate provided (Baron, 1997; Yamagishi 1997); the use of lifetime versus 10-year risk estimates (Merrill, Kessler, Udler, Rasband and Feuer 1999); or the use of risk ladders or magnifier visual analog scales (Woloshin, Schwartz and Byram 1999). However, many of these manipulations can be seen as effectively providing additional information (e.g., risk ladders) or different information (e.g., the time period over which the risk is stated).

The presentation effects reported in this thesis occurred without the inclusion of any different or additional information. In each of the experiments reported in chapters 6 and 7, participants were provided with information that differed only in the way it was set out on the page (or pages). The presence of presentation effects, such as those observed in the studies in this thesis, is an important finding for health promotion, as it suggests that people's perceptions of the risks and benefits of health-related behaviours
are influenced not only by the content of the information provided to them but also by its form.

In the context of anti-smoking and pro-exercise communications, it is important to note that the major impact of presentation effects was on precontemplators and contemplators. People in these two stages are those who most need to be persuaded of the negative consequences of smoking and the positive consequences of exercise.

The findings in relation to the anti-smoking and pro-exercise information studies have specific implications for the development of health behaviour communications. If these findings are shown to be robust, then it is apparent that the effectiveness of health behaviour communications could be enhanced by presenting information about consequences in a segregated form. That is, simply by presenting each consequence individually and separately – without changing the information itself – the information could be made more persuasive. Although the studies used only print communications, it is likely that similar effects would be found with electronic media (including radio and television advertisements and web-based communications), with implications for the format of such communications.

This thesis provides support for the contention that preferences are constructed during presentation, and are not simply elicited. The construction of preferences has implications for many areas of decision-making, not least for public health. MacLean (1991) argues that if preferences are actually constructed during the process of informing, framing options, and eliciting responses, one implication, for example for medical practitioners, is that they may be influencing rather than eliciting patient’s treatment preferences during the process of ensuring ‘informed consent.’

Another implication of the findings is that, whereas the ability to construct preferences by information presentation manipulation may have positive health outcomes, there is also the potential for the misuse of presentation. As Payne and colleagues point out, “...a more proactive approach is to determine the types of processing one wishes to encourage and then design formats that facilitate such processing...[this] may be particularly relevant for public policy decision-makers, although obvious issues arise
concerning the degree to which processing should be guided” (Payne et al. 1992, p. 118).

Limitations

The specific limitations of each study were discussed in the relevant chapters. Thus, in the next section only those limitations that apply to the studies as a whole are considered:

- The studies which investigated the processing of persuasive information used pamphlets designed and produced by the author, using normal desktop computer equipment, and were of lower visual quality than professionally-produced pamphlets (e.g., they were not in full colour). However, if pamphlet quality affected the results, it would, in fact, be further evidence of a presentation effect (by a violation of description invariance).

- The use of a convenience sample of volunteer participants means that the participants may have differed from the general population. However, the studies reported herein were designed to test theories, not effects. Theory application studies, as opposed to effects application studies, are designed to test whether, under experimental conditions, the theory predicts outcomes that would not be anticipated by available alternative explanations (Calder 1999); in this case whether segregated presentation results in higher perceived (positive or negative) outcomes from a health behaviour. Thus it is the theory – not the exact effects – that are expected to apply to other settings. Additionally, as argued by Lynch (1999) there is no inherent bias in using a convenience sample. In order to suggest that a convenience sample would provide biased results we would need to establish “(a) a construct on which the sample is atypical and (b) the case for why this construct might interact with the experimental treatment manipulations” (Lynch, 1999; p. 371). For this reason, it is reasonable – and even desirable – to use convenience samples if having a homogeneous sample leads to a more powerful test of theory (Calder, 1999).

- All of the participants in Study 2 and one-third of the participants in Studies 4 to 7 were university students, who may be seen as a limited sample. However, the
construct on which the university students are likely to differ systematically from
the general population (Lynch’s point (a) above) is their level of education, and the
reason that this construct may interact with the experimental treatment
manipulations (Lynch’s point (b) above) is that better educated participants would
be expected to be less susceptible to presentation effects, rendering the hypothesis
tests in these studies more conservative.

- All of the adult participants were recruited in the main shopping malls in the CBDs
  of Perth, Western Australia, and Wollongong, New South Wales. This may limit
  the ability to generalise the effects to the national adult population but, as discussed
  above, does not limit the ability to generalise the theory. Future studies might
  consider undertaking similar studies in the general population.

- The sample sizes were small in some of the studies. This resulted in small cell sizes,
  particularly when grouping the participants into stages of change within each
  presentation condition. This reduced the power of the studies. Thus, the effects of
  the manipulations, particularly in relation to stages of change, may be
  underestimated.

- The small sample sizes limited the data analysis to univariate and bivariate rather
  than multivariate analyses. Thus, the results have not been adjusted for basic
demographic variables such as age, education level, or country of birth. Future
studies should be conducted with large enough sample sizes to enable such
adjustments.

Despite these limitations, the consistency of the effects across the studies provided
considerable evidence of the existence and impact of presentation effects. Nine of the
10 studies which directly investigated presentation effects found evidence of these
effects on decision-makers’ choices between options and evaluations of outcomes. The
only study that did not demonstrate differences between the presentation conditions was
in itself evidence of a presentation effect, in that participants appeared not to process the
information when it was presented in the form of a long body of text.
Conclusions

The fact that how information is presented matters, means that “decisions might be improved through rather straightforward, inexpensive changes to the information environments in which individuals make judgments and choices” (Payne et al. 1992, p. 117). That is, knowledge of information-processing effects can be used to make information more persuasive; for example, by presenting information in a segregated form.

The studies reported in this thesis represent the initial attempt to apply the findings of BDT research to public health communications. The results are promising and have implications for the design of more informative (and persuasive) health communications.

Future studies could examine the effects for different health behaviours, different communication media, and different target groups. Ideally, future studies will also extend the investigation to the applicability for public health of other areas of BDT research.


Courneya, K., Plotnikoff, R., Hotz, S. and Birkett, N. (2001). Predicting Changes in Exercise Stage Over Two Consecutive Six Month Periods: An Application of


Federal Office of Road Safety (1998). The History of Road Fatalities in Australia, Monograph 23, Canberra: FORS.


---

**References**

197


References


References


Nutrition & Physical Activity Program (2001). *Physical activity levels of Western Australian adults 1999*, Perth: Department of Health (Western Australia).


References


Appendix A: Study 1 Questionnaires
Thank you for agreeing to participate in our study.

The questions in this survey ask for your opinion on a range of issues; there are no right or wrong answers.

Your answers are confidential and anonymous. Please do not write your name on this survey form.

Following is a list of conditions, objects, and activities that may be dangerous to health in varying degrees. Please read the list carefully and think about the risks of dying, across all Australian society as a whole, from each of these causes.

Then rank the six items in order from 1 (the highest risk) to 6 (the lowest risk).

<table>
<thead>
<tr>
<th>Item</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicle accidents</td>
<td></td>
</tr>
<tr>
<td>Nuclear power</td>
<td></td>
</tr>
<tr>
<td>Physical inactivity</td>
<td></td>
</tr>
<tr>
<td>AIDS</td>
<td></td>
</tr>
<tr>
<td>Handguns</td>
<td></td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td></td>
</tr>
</tbody>
</table>
The following section asks you to consider the risks of dying, across all Australian society as a whole, from smoking.

1. think about all the possible ways someone might die from smoking (you may use the rest of this page to write these down)
2. turn over the page and answer the nine questions about the characteristics of risks associated with smoking

1. Do people face the risks of smoking voluntarily? If some of the risks are voluntarily undertaken and some are not, mark an appropriate spot towards the center of the scale.

<table>
<thead>
<tr>
<th>risk assumed voluntarily</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

2. To what extent is the risk of death from smoking immediate – or is death likely to occur at a later time?

<table>
<thead>
<tr>
<th>effect immediate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

3. To what extent are the risks of smoking known precisely by the persons who are exposed to those risks?

<table>
<thead>
<tr>
<th>risk level known precisely</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

4. To what extent are the risks of smoking known to science?

<table>
<thead>
<tr>
<th>risk level known precisely</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

5. If you are exposed to the risks of smoking, to what extent can you, by personal skill or diligence, avoid death?

<table>
<thead>
<tr>
<th>personal risk can't be controlled</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

6. Is the risk of smoking new and novel or old and familiar?

<table>
<thead>
<tr>
<th>new</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

7. Is the risk of smoking a risk which kills people one at a time (chronic risk) or a risk that kills large numbers of people at once (catastrophic risk)?

<table>
<thead>
<tr>
<th>chronic</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

8. Is the risk of smoking a risk that people have learned to live with and can think about reasonably calmly, or is it one that people have great dread for – on the level of a gut reaction?

<table>
<thead>
<tr>
<th>common</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

9. When the risk from smoking is realised in the form of a mishap or illness, how likely is it that the consequences will be fatal?

<table>
<thead>
<tr>
<th>certain not to be fatal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>
GROUP 2 – INTERCEPT – ONLY

DEMOGRAPHIC DETAILS (for statistical purposes)

A. 1. Male
   2. Female

B. Age ________ years

C. Country of birth:
   1. Australia
   2. Other (please specify) __________________________

D. If you were born overseas, how many years have you lived in Australia ______

E. In terms of cigarette smoking, would you describe yourself as:
   - A current smoker
   - An ex-smoker
   - A non-smoker (ie never smoked)

F. In terms of regular physical exercise, would you describe yourself as:
   - A committed exerciser (ie at least 45 mins a day, 5 days a week)
   - A regular exerciser (ie at least 30 mins a day, 3 days a week)
   - An irregular exerciser (ie less than 30 mins a day, 3 days a week)
   - A non-exerciser

G. What is your approximate monthly income AFTER TAX
   - less than $500
   - $500 - $749
   - $750 - $999
   - $1,000 - $1,249
   - $1,250 - $1,499
   - more than $1,500

H. What is your occupation? __________________________

I. What is your highest level of education?
   1. Primary School
   2. Year 10 Secondary School
   3. Year 12 Secondary School
   4. Trade certificate/diploma/more than year 12
   5. Tertiary qualification

J. What is your postcode? _______ _______ _______
Appendix B: Study 2 Questionnaires
PAMPHLET DEVELOPMENT QUESTIONNAIRE

Dear Student

We are developing some pamphlets concerning the importance of exercise. In order to make sure they are clear and effective, we are asking students to read and comment on an initial draft of the pamphlets.

Please take your time, read each question carefully, and answer as truthfully as you can.

Remember that it is your opinion we are interested in - this is not a test and there are no "correct" answers.

Thank you for helping us with the development of our exercise pamphlets.

Why Exercise?...........

Because...if you DO exercise regularly, you could:

- Get even more energy
- Feel good about yourself and your body
- Get or stay slim
- Get or stay fit
- Achieve or maintain your correct weight
- Have firm muscles and good body strength
- Get to enjoy the experience of regular physical activity

For more information on the benefits of regular exercise, talk to your family doctor, or contact the Department of Human Movement & Exercise Science at the University of Western Australia.
1. Following are a list of feelings. Please rate the extent to which you felt the following when you read the pamphlet:

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Extremely</th>
<th>Quite a lot</th>
<th>Quite a bit</th>
<th>A little bit</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>energetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hopeful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fearful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>helpless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disappointed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>indecisive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unmotivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What do you believe are the three most important reasons given in the pamphlet to exercise regularly?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. Having read the pamphlet, will you try to do more regular exercise? (please circle the number on the line that best describes your intentions)

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>definitely won't try</td>
</tr>
<tr>
<td>2</td>
<td>possibly may try</td>
</tr>
<tr>
<td>3</td>
<td>quite likely to try</td>
</tr>
<tr>
<td>4</td>
<td>very likely to try</td>
</tr>
<tr>
<td>5</td>
<td>will definitely try</td>
</tr>
</tbody>
</table>

Thank you very much for your assistance with the development of our exercise pamphlet.

As a thank you, we would like to offer you the following information sheets - please tick the box next to any items you would like to receive:

Please send me:

☐ "The Benefits of Exercise"
☐ "Physical Activity Guidelines"
☐ "Exercise Tips & Hints"
☐ "Stretching & Flexibility"
☐ "Reducing Your Fat Intake"

If you have ticked any of the boxes, please write your address in the space below:

________________________________________________________________________
PAMPHLET DEVELOPMENT QUESTIONNAIRE

Dear Student

We are developing some pamphlets concerning the importance of exercise. In order to make sure they are clear and effective, we are asking students to read and comment on an initial draft of the pamphlets.

Please take your time, read each question carefully, and answer as truthfully as you can.

Remember that it is your opinion we are interested in - this is not a test and there are no "correct" answers.

Thank you for helping us with the development of our exercise pamphlets.

THE UNIVERSITY OF WESTERN AUSTRALIA
Department of Human Movement & Exercise Science

Why Exercise?...........

Because...if you DO exercise regularly, you won't:

- Be tired and lacking in energy
- Feel bad about yourself and your body
- Become or remain fat
- Become or remain unfit
- Become or remain overweight
- Have weak muscles and poor body strength
- Experience pain and discomfort associated with occasional exercise

For more information on the benefits of regular exercise, talk to your family doctor, or contact the Department of Human Movement & Exercise Science at the University of Western Australia.
1. Following are a list of feelings. Please rate the extent to which you felt the following when you read the pamphlet:

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Extremely</th>
<th>quite a lot</th>
<th>quite a bit</th>
<th>a little bit</th>
<th>not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>energetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hopeful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fearful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>helpless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disappointed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>indecisive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unmotivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What do you believe are the three most important reasons given in the pamphlet to exercise regularly:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Having read the pamphlet, will you try to do more regular exercise?
(please circle the number on the line that best describes your intentions)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

definitely won't try  possibly may try  quite likely to try  very likely to try  will definitely try

Thank you very much for your assistance with the development of our exercise pamphlet.

As a thank you, we would like to offer you the following information sheets - please tick the box next to any items you would like to receive:

Please send me:

- [ ] "The Benefits of Exercise"
- [ ] "Physical Activity Guidelines"
- [ ] "Exercise Tips & Hints"
- [ ] "Stretching & Flexibility"
- [ ] "Reducing Your Fat Intake"

If you have ticked any of the boxes, please write your address in the space below:

_____________________________________________________________
PAMPHLET DEVELOPMENT QUESTIONNAIRE

Dear Student

We are developing some pamphlets concerning the importance of exercise. In order to make sure they are clear and effective, we are asking students to read and comment on an initial draft of the pamphlets.

Please take your time, read each question carefully, and answer as truthfully as you can.

Remember that it is your opinion we are interested in - this is not a test and there are no "correct" answers.

Thank you for helping us with the development of our exercise pamphlets.

Why Exercise?...........
Because...if you DON'T exercise regularly, you could:

- Be tired and lacking in energy
- Feel bad about yourself and your body
- Become or remain fat
- Become or remain unfit
- Become or remain overweight
- Have weak muscles and poor body strength
- Experience pain and discomfort associated with occasional exercise

For more information on the benefits of regular exercise, talk to your family doctor, or contact the Department of Human Movement & Exercise Science at the University of Western Australia.
1. Following are a list of feelings. Please rate the extent to which you felt the following when you read the pamphlet:

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Extremely</th>
<th>quite a lot</th>
<th>quite a bit</th>
<th>a little bit</th>
<th>not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>energetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hopeful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fearful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>helpless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disappointed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>indecisive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unmotivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What do you believe are the three most important reasons given in the pamphlet to exercise regularly:

3. Having read the pamphlet, will you try to do more regular exercise? (please circle the number on the line that best describes your intentions)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't try</td>
<td>possibly may try</td>
<td>quite likely to try</td>
<td>very likely to try</td>
<td>will definitely try</td>
</tr>
</tbody>
</table>

Thank you very much for your assistance with the development of our exercise pamphlet.

As a thank you, we would like to offer you the following information sheets - please tick the box next to any items you would like to receive:

Please send me:

- "The Benefits of Exercise"
- "Physical Activity Guidelines"
- "Exercise Tips & Hints"
- "Stretching & Flexibility"
- "Reducing Your Fat Intake"

If you have ticked any of the boxes, please write your address in the space below:

________________________________________________________________________

________________________________________________________________________
PAMPHLET DEVELOPMENT QUESTIONNAIRE

Dear Student

We are developing some pamphlets concerning the importance of exercise. In order to make sure they are clear and effective, we are asking students to read and comment on an initial draft of the pamphlets.

Please take your time, read each question carefully, and answer as truthfully as you can.

Remember that it is your opinion we are interested in - this is not a test and there are no "correct" answers.

Thank you for helping us with the development of our exercise pamphlets.

THE UNIVERSITY OF WESTERN AUSTRALIA
Nedlands, Western Australia 6907
Telephone +61 8 9380 2361
Facsimile +61 8 9380 1039

THE UNIVERSITY OF WESTERN AUSTRALIA
Department of Human Movement & Exercise Science

Why Exercise?...........

Because...if you DON'T exercise regularly, you won't:

- Get even more energy
- Feel good about yourself and your body
- Get or stay slim
- Get or stay fit
- Achieve or maintain your correct weight
- Have firm muscles and good body strength
- Get to enjoy the experience of regular physical activity

For more information on the benefits of regular exercise, talk to your family doctor, or contact the Department of Human Movement & Exercise Science at the University of Western Australia.
1. Following are a list of feelings. Please rate the extent to which you felt the following when you read the pamphlet:

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Extremely</th>
<th>quite a lot</th>
<th>quite a bit</th>
<th>a little bit</th>
<th>not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>energetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hopeful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fearful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>helpless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disappointed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>indecisive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lazy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unmotivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What do you believe are the three most important reasons given in the pamphlet to exercise regularly:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

3. Having read the pamphlet, will you try to do more regular exercise? (please circle the number on the line that best describes your intentions)

[ ] 1  [ ] 2  [ ] 3  [ ] 4  [ ] 5

definitely  possibly  quite likely  very likely  will definitely
won't try  may try  to try  to try  try

Thank you very much for your assistance with the development of our exercise pamphlet.

As a thank you, we would like to offer you the following information sheets - please tick the box next to any items you would like to receive:

Please send me:

☐ "The Benefits of Exercise"
☐ "Physical Activity Guidelines"
☐ "Exercise Tips & Hints"
☐ "Stretching & Flexibility"
☐ "Reducing Your Fat Intake"

If you have ticked any of the boxes, please write your address in the space below:

__________________________________________________________________________
Appendix C: Study 3 Questionnaires
1. Have you ever smoked a cigarette?
   □ Yes. . . . go to Q 2 (page 3)
   □ No. . . . . go to Q 7 (page 4)

2. About how many cigarettes have you smoked in the last 6 months?
   □ Less than 6
   □ 6-20
   □ 21-50
   □ more than 50

3. When did you last smoke a cigarette?
   □ In the last 24 hours
   □ Last week
   □ Last month
   □ More than a month ago

4. Over the next 6 months, do you think you will:
   □ increase the number of cigarettes you smoke
   □ smoke about the same number of cigarettes as you have in the last 6 months
   □ decrease the number of cigarettes you smoke
   □ don't know

5. Between now and when you turn 18, do you think you will:
   □ increase the number of cigarettes you smoke
   □ smoke about the same number of cigarettes
   □ decrease the number of cigarettes you smoke
   □ don't know

6. After you turn 18, do you think you will:
   □ increase the number of cigarettes you smoke
   □ smoke about the same number of cigarettes
   □ decrease the number of cigarettes you smoke
   □ don't know

GO TO QUESTION 10 (PAGE 4)
7. Over the next 6 months, do you think you will start smoking?
   Yes
   No
   Don't know

8. Between now and when you turn 18, do you think you will start smoking?
   Yes
   No
   Don't know

9. After you turn 18, do you think you will start smoking?
   Yes
   No
   Don't know

10. Do you think that smoking is:
    Very bad for you
    A little bit bad for you
    Neither bad for you nor good for you
    A little bit good for you
    Very good for you

11. Do you think that smoking is:
    A very dumb thing to do
    A bit of a dumb thing to do
    Neither a dumb nor a smart thing to do
    A bit of a smart thing to do
    A very smart thing to do

12. Have you ever drunk alcohol?
    Yes.....go to Q 13 (page 6)
    No......go to Q 18 (page 7)
13. About how many alcoholic drinks have you had in the last 6 months?
   - Less than 6
   - 6-20
   - 21-50
   - More than 50

14. When did you last drink alcohol?
   - In the last 24 hours
   - Last week
   - Last month
   - More than a month ago

15. Over the next 6 months, do you think you will:
   - Increase the number of alcoholic drinks you have
   - Drink about the same number of alcoholic drinks as you have in the last 6 months
   - Decrease the number of alcoholic drinks you have
   - Don't know

16. Between now and when you turn 18, do you think you will:
   - Increase the number of alcoholic drinks you have
   - Drink about the same number of alcoholic drinks
   - Decrease the number of alcoholic drinks you have
   - Don't know

17. After you turn 18, do you think you will:
   - Increase the number of alcoholic drinks you have
   - Drink about the same number of alcoholic drinks
   - Decrease the number of alcoholic drinks you have
   - Don't know

GO TO QUESTION 21 (PAGE 7)
23. Have you ever smoked cannabis (marijuana)?
   □ Yes......go to Q 24 (page 9)
   □ No......go to Q29 (page 10)

24. About how times have you smoked cannabis in the last 6 months?
   □ Less than 6
   □ 6-20
   □ 21-50
   □ More than 50

25. When did you last smoke cannabis?
   □ In the last 24 hours
   □ Last week
   □ Last month
   □ More than a month ago

26. Over the next 6 months, do you think you will:
   □ increase the amount of cannabis you smoke
   □ smoke about the same amount of cannabis as you have in the last 6 months
   □ decrease the amount of cannabis you smoke
   □ don’t know

27. Between now and when you turn 18, do you think you will:
   □ increase the amount of cannabis you smoke
   □ smoke about the same amount of cannabis
   □ decrease the amount of cannabis you smoke
   □ don’t know

28. After you turn 18, do you think you will:
   □ increase the amount of cannabis you smoke
   □ smoke about the same amount of cannabis
   □ decrease the amount of cannabis you smoke
   □ don’t know

GO TO QUESTION 32 (PAGE 10)
29. Over the next 6 months, do you think you will start smoking cannabis?

- Yes
- No
- Don't know

30. Between now and when you turn 18, do you think you will start smoking cannabis?

- Yes
- No
- Don't know

31. After you turn 18, do you think you will start smoking cannabis?

- Yes
- No
- Don't know

32. Do you think that smoking cannabis is:

- Very bad for you
- A little bit bad for you
- Neither bad for you nor good for you
- A little bit good for you
- Very good for you

33. Do you think that smoking cannabis is:

- A very dumb thing to do
- A bit of a dumb thing to do
- Neither a dumb nor a smart thing to do
- A bit of a smart thing to do
- A very smart thing to do

MARIJUANA AND YOU!

What is marijuana?

Marijuana (cannabis) is the most common illegal drug in Australia. It is made from the dried flowers and leaves of a plant called Cannabis Sativa. Marijuana is sometimes called "grass", "mull", "pot", or "dope".

Marijuana and the law

It is illegal to use, possess or supply marijuana in all Australian States and Territories. In Western Australia, maximum penalties range from a $2,000 fine (for use or possession) to a $100,000 fine or 25 years in prison or both (for supply).

Marijuana and your friends

Some people will tell you that it's OK to smoke marijuana, because "everyone is doing it". This is NOT true.

In Western Australia, less than 25% (1 in 4) people your age have ever tried marijuana and far less people currently use it.
What happens when you smoke marijuana?

Some people think that smoking marijuana helps them to enjoy themselves.

They may not realise the short-term things that can happen to them.

People who are using marijuana can experience feelings of anxiety, paranoia, and panic; and can experience a loss of memory, find it difficult to concentrate and pay attention, and have problems with coordination and motor skills.

If you smoke marijuana, you could experience these – and other – dangerous symptoms.

What are the long-term effects of smoking marijuana?

Research shows that regular smoking of marijuana can be very bad for long-term health and can cause a number of physical and psychological problems.

Regular marijuana smokers have a greater risk of developing respiratory diseases, chronic bronchitis, and lung cancer; and can suffer long-term or permanent damage to their memory, concentration, and cognitive (thinking) abilities.

If you smoke marijuana, you increase your risk of experiencing these – and other – long-term physical and psychological problems.

Adolescents and Smoking Marijuana

Research shows that people who start smoking marijuana when they are teenagers take on even greater risks.

They are more likely to get lower marks, and achieve less at school and work; and are more likely to become heavy users of marijuana, become addicted to marijuana, and use other illicit drugs.

If you start smoking marijuana when you are a teenager, you increase your risk of having these – and other – problems as you get older.

1. Please write down - in your own words - any thoughts, feelings, or mental pictures that came to your mind while you were reading the pamphlet.

2. What do you believe are the three most important reasons given in the pamphlet not to smoke cannabis?

   (i) 

   (ii) 

   (iii) 

3. Now that you have read the pamphlet, do you think that cannabis is:

   [ ] Very bad for you
   [ ] A little bit bad for you
   [ ] Neither bad for you nor good for you
   [ ] A little bit good for you
   [ ] Very good for you
4. Now that you have read the pamphlet, do you think that smoking cannabis is:

☐ A very dumb thing to do
☐ A bit of a dumb thing to do
☐ Neither a dumb nor a smart thing to do
☐ A bit of a smart thing to do
☐ A very smart thing to do

If you HAVE NEVER smoked cannabis:

5. Having read the pamphlet, will you try not to start smoking cannabis?
   (please circle the number on the line that best describes your intentions)

   1          2          3          4          5
   definitely won't try possibly may try quite likely to try very likely to try will definitely try

If you HAVE smoked cannabis:

6. Having read the pamphlet, will you try to stop smoking cannabis?
   (please circle the number on the line that best describes your intentions)

   1          2          3          4          5
   definitely won't try possibly may try quite likely to try very likely to try will definitely try
STUDY 3

VERSION: POSITIVE FRAME

ID Number ___ ___ ___ ___

Please FOLLOW THE INSTRUCTIONS written on the blackboard to fill in your ID number.

DO NOT write your name on this form.

A.  
   [ ] Male
   [ ] Female

B. Age ___________ yrs

C. Country of birth:  
   [ ] Australia  
   [ ] Other (please specify) __________________

D. If you were born overseas, how many years have you lived in Australia _____
1. Have you ever smoked a cigarette?
   [ ] Yes,... go to Q 2 (page 3)
   [ ] No,... go to Q7 (page 4)

2. About how many cigarettes have you smoked in the last 6 months?
   [ ] Less than 6
   [ ] 6-20
   [ ] 21-50
   [ ] more than 50

3. When did you last smoke a cigarette?
   [ ] In the last 24 hours
   [ ] Last week
   [ ] Last month
   [ ] More than a month ago

4. Over the next 6 months, do you think you will:
   [ ] increase the number of cigarettes you smoke
   [ ] smoke about the same number of cigarettes as you have in the last 6 months
   [ ] decrease the number of cigarettes you smoke
   [ ] don't know

5. Between now and when you turn 18, do you think you will:
   [ ] increase the number of cigarettes you smoke
   [ ] smoke about the same number of cigarettes
   [ ] decrease the number of cigarettes you smoke
   [ ] don't know

6. After you turn 18, do you think you will:
   [ ] increase the number of cigarettes you smoke
   [ ] smoke about the same number of cigarettes
   [ ] decrease the number of cigarettes you smoke
   [ ] don't know

GO TO QUESTION 10 (PAGE 4)
7. Over the next 6 months, do you think you will start smoking?
   □ Yes
   □ No
   □ Don’t know

8. Between now and when you turn 18, do you think you will start smoking?
   □ Yes
   □ No
   □ Don’t know

9. After you turn 18, do you think you will start smoking?
   □ Yes
   □ No
   □ Don’t know

10. Do you think that smoking is:
    □ Very bad for you
    □ A little bit bad for you
    □ Neither bad for you nor good for you
    □ A little bit good for you
    □ Very good for you

11. Do you think that smoking is:
    □ A very dumb thing to do
    □ A bit of a dumb thing to do
    □ Neither a dumb nor a smart thing to do
    □ A bit of a smart thing to do
    □ A very smart thing to do

12. Have you ever drunk alcohol?
    □ Yes………go to Q 13 (page 6)
    □ No………go to Q18 (page 7)
13. About how many alcoholic drinks have you had in the last 6 months?

☐ Less than 6
☐ 6-20
☐ 21-50
☐ more than 50

14. When did you last drink alcohol?

☐ In the last 24 hours
☐ Last week
☐ Last month
☐ More than a month ago

15. Over the next 6 months, do you think you will:

☐ increase the number of alcoholic drinks you have
☐ drink about the same number of alcoholic drinks as you have in the last 6 months
☐ decrease the number of alcoholic drinks you have
☐ don't know

16. Between now and when you turn 18, do you think you will:

☐ increase the number of alcoholic drinks you have
☐ drink about the same number of alcoholic drinks
☐ decrease the number of alcoholic drinks you have
☐ don't know

17. After you turn 18, do you think you will:

☐ increase the number of alcoholic drinks you have
☐ drink about the same number of alcoholic drinks
☐ decrease the number of alcoholic drinks you have
☐ don't know

18. Over the next 6 months, do you think you will start drinking alcohol?

☐ Yes
☐ No
☐ Don't know

19. Between now and when you turn 18, do you think you will start drinking alcohol?

☐ Yes
☐ No
☐ Don't know

20. After you turn 18, do you think you will start drinking alcohol?

☐ Yes
☐ No
☐ Don't know

21. Do you think that drinking alcohol is:

☐ Very bad for you
☐ A little bit bad for you
☐ Neither bad for you nor good for you
☐ A little bit good for you
☐ Very good for you

22. Do you think that drinking alcohol is:

☐ A very dumb thing to do
☐ A bit of a dumb thing to do
☐ Neither a dumb nor a smart thing to do
☐ A bit of a smart thing to do
☐ A very smart thing to do

GO TO QUESTION 21 (PAGE 7)
23. Have you ever smoked cannabis (marijuana)?
   - Yes, go to Q 24 (page 9)
   - No, go to Q 29 (page 10)

24. About how many times have you smoked cannabis in the last 6 months?
   - Less than 6
   - 6-20
   - 21-50
   - More than 50

25. When did you last smoke cannabis?
   - In the last 24 hours
   - Last week
   - Last month
   - More than a month ago

26. Over the next 6 months, do you think you will:
   - Increase the amount of cannabis you smoke
   - Smoke about the same amount of cannabis as you have in the last 6 months
   - Decrease the amount of cannabis you smoke
   - Don't know

27. Between now and when you turn 18, do you think you will:
   - Increase the amount of cannabis you smoke
   - Smoke about the same amount of cannabis
   - Decrease the amount of cannabis you smoke
   - Don't know

28. After you turn 18, do you think you will:
   - Increase the amount of cannabis you smoke
   - Smoke about the same amount of cannabis
   - Decrease the amount of cannabis you smoke
   - Don't know

GO TO QUESTION 32 (PAGE 10)
29. Over the next 6 months, do you think you will start smoking cannabis?

☐ Yes
☐ No
☐ Don't know

30. Between now and when you turn 18, do you think you will start smoking cannabis?

☐ Yes
☐ No
☐ Don't know

31. After you turn 18, do you think you will start smoking cannabis?

☐ Yes
☐ No
☐ Don't know

32. Do you think that smoking cannabis is:

☐ Very bad for you
☐ A little bit bad for you
☐ Neither bad for you nor good for you
☐ A little bit good for you
☐ Very good for you

33. Do you think that smoking cannabis is:

☐ A very dumb thing to do
☐ A bit of a dumb thing to do
☐ Neither a dumb nor a smart thing to do
☐ A bit of a smart thing to do
☐ A very smart thing to do

MARIJUANA AND YOU!

What is marijuana?

Marijuana (cannabis) is the most common illegal drug in Australia. It is made from the dried flowers and leaves of a plant called Cannabis Sativa. Marijuana is sometimes called "grass", "mall", "pot", or "dope".

Marijuana and the law

It is illegal to use, possess or supply marijuana in all Australian States and Territories. In Western Australia, maximum penalties range from a $2,000 fine (for use or possession) to a $100,000 fine or 25 years in prison or both (for supply).

Marijuana and your friends

Some people will tell you that it's OK to smoke marijuana, because "everyone is doing it". This is NOT true.

In Western Australia, more than 75% (3 in 4) people your age have never tried marijuana and far more people currently say no to marijuana.
What happens if you say no to marijuana?

Some people think that smoking marijuana helps them to enjoy themselves.

They may not realise the benefits of saying no to drugs and staying "straight".

People who say no to marijuana can enjoy themselves, stay calm and relaxed, and feel safe and in control, and are more likely to remember what they did, be able to concentrate on what they are doing, and stay in control of their bodies.

If you say no to marijuana, you could gain these – and other – essential benefits.

What are the long-term effects of saying no to marijuana?

Research shows that continuing to say no to marijuana can be very good for your long-term development and can help you stay physically and psychologically healthy.

People who say no to marijuana have an increased chance of having healthy lungs, having healthy airways, and staying free from some types of cancer; and an increased chance of keeping their memory, concentration, and cognitive (thinking) abilities.

If you say no to marijuana, you increase your chances of having good long-term physical and psychological health.

Adolescents Who Say "No" to Marijuana

Research shows that people who say no to marijuana when they are teenagers do better in life.

People who say no to marijuana when they are teenagers are more likely to get good grades, and achieve more at school and work; and are more likely to not use marijuana when they are older, not use other drugs when they are older, and stay drug-free throughout their lives.

If you say no to marijuana when you are a teenager, you are more likely to do well and stay in control of your life.

1. Please write down - in your own words - any thoughts, feelings, or mental pictures that came to your mind while you were reading the pamphlet.

2. What do you believe are the three most important reasons given in the pamphlet not to smoke cannabis?

   (i) 

   (ii) 

   (iii) 

3. Now that you have read the pamphlet, do you think that cannabis is:

   - Very bad for you
   - A little bit bad for you
   - Neither bad for you nor good for you
   - A little bit good for you
   - Very good for you
4. Now that you have read the pamphlet, do you think that smoking cannabis is:

☐ A very dumb thing to do
☐ A bit of a dumb thing to do
☐ Neither a dumb nor a smart thing to do
☐ A bit of a smart thing to do
☐ A very smart thing to do

If you HAVE NEVER smoked cannabis:

5. Having read the pamphlet, will you try not to start smoking cannabis?
   (please circle the number on the line that best describes your intentions)

   1  2  3  4  5
   definitely possibly quite likely very likely will definitely
   won't try may try to try to try try

If you HAVE smoked cannabis:

6. Having read the pamphlet, will you try to stop smoking cannabis?
   (please circle the number on the line that best describes your intentions)

   1  2  3  4  5
   definitely possibly quite likely very likely will definitely
   won't try may try to try to try try
Appendix D: Study 4 Questionnaires
Dear Student,

Thank you for agreeing to participate in our study.

The questions in this survey ask for your opinion on a range of issues; there are no right or wrong answers.

Your answers are confidential and anonymous. Please do not write your name on this survey form.

NB: Each participant received only three of the six scenarios (i.e., one in each domain).
Imagine you have not been doing very well in your course. You have three assignments which have just been graded, one for each of three different units, and you have failed all three. Would you rather:

| Have all three failed assignments handed back in the one day | OR | Have each failed assignment handed back on a separate day |

Imagine you have been doing very well in your course. You have three assignments which have just been graded, one for each of three different units, and you have achieved a distinction for all three. Would you rather:

| Have all three handed back in the one day | OR | Have each one handed back on a separate day |
Imagine you have a number of books on loan from the department which are overdue. They can be returned to your lecturer in your normal class time. Each one will incur a fine of $10. Would you rather:

| Return all three books, and pay all three fines, in the one day | OR | Return each one, and pay each fine, on a separate day |

Imagine you have entered the department's lotto syndicate, which has won 5th division ($10 each) 3 times. Would you rather:

| Find out about, and receive, all three winnings on the one day | OR | Find out about, and receive, each of the three winnings on a separate day |
Imagine you have done something which will really annoy three of your friends. Would you rather:

| Have them all find out, and all get mad, on the same day | OR | Have each of them find out, and each get mad, on a separate day |

Imagine you have done something which will make three of your close friends really happy. Would you rather:

| Tell them all, and have them all be pleased with you, on the same day | OR | Tell each of them, and have each of them be pleased with you, on a separate day |
DEMOGRAPHIC DETAILS (for statistical purposes)

A.  □ Male
    □ Female

B.  Age ________ years

C.  Country of birth:  □ Australia
    □ Other (please specify) ______________________

D.  If you were born overseas, how many years have you lived in Australia ______

E.  In terms of cigarette smoking, would you describe yourself as:
    □ A current smoker
    □ An ex-smoker
    □ A non-smoker (ie never smoked)

F.  In terms of regular physical exercise, would you describe yourself as:
    □ A committed exerciser (ie at least 45 mins a day, 5 days a week)
    □ A regular exerciser (ie at least 30 mins a day, 5 days a week)
    □ An irregular exerciser (ie less than 30 mins a day, 3 days a week)
    □ A non-exerciser

G.  What is your approximate monthly income AFTER TAX
    □ less than $500
    □ $500 - $749
    □ $750 - $999
    □ $1,000 - $1,249
    □ $1,250 - $1,499
    □ more than $1,500
Appendix E: Study 5 Questionnaires
Dear Student

Thank you for agreeing to participate in our study.

The questions in this survey ask for your opinion on a range of issues; there are no right or wrong answers.

Your answers are confidential and anonymous. Please do not write your name on this survey form.

NB: Each participant received only one of the two scenarios.
Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that you need to have three fillings. Would you rather:

| Have all three fillings done today, in the one visit | OR | Have each filling done separately (ie 3 visits) |

Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. Would you rather:

| Be told at the end of the program that you have lost 1.5 kilograms | OR | Be told at each visit that you have lost .5 kilograms |
DEMOGRAPHIC DETAILS (for statistical purposes)

A.  □ Male  
    □ Female

B.  Age _______ years

C.  Country of birth:  □ Australia  
    □ Other (please specify) ______________________

D.  If you were born overseas, how many years have you lived in Australia _______ 

E.  In terms of cigarette smoking, would you describe yourself as:
    □ A current smoker  
    □ An ex-smoker  
    □ A non-smoker (I never smoked)

F.  In terms of regular physical exercise, would you describe yourself as:
    □ A committed exerciser (ie at least 45 mins a day, 5 days a week)  
    □ A regular exerciser (ie at least 30 mins a day, 3 days a week)  
    □ An irregular exerciser (ie less than 30 mins a day, 3 days a week)  
    □ A non-exerciser

G.  What is your approximate monthly income AFTER TAX
    □ less than $500  
    □ $500 - $749  
    □ $750 - $999  
    □ $1,000 - $1,249  
    □ $1,250 - $1,499  
    □ more than $1,500
Appendix F: Study 6 Questionnaires
Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that you need a cavity filled in your back molar tooth, a tooth extracted, and an old filling replaced.

Assuming there is no difference in the total cost would you rather:

| Have all three procedures done on the same day in one visit | OR | Have each procedure done on separate days (i.e., 3 visits) |

Why did you choose that option?

__________

__________

__________

NB: Each participant received only four of the eight scenarios (two positive and two negative)
Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. In week 1 you lose 0.7 of a kilogram, week 2 you lose a further 0.3 of a kilogram, and week 3 you lose a further 0.5 of a kilogram.

Would you rather:

| Be told at the end of the program that you have lost 1.5 kilograms | OR | Be told at each visit how much weight you have lost |

Why did you choose that option?

Imagine you are enrolled in a B. Com. degree. On your economics assignment you receive a “Fail,” on your accounting assignment you receive a “Pass Conceded,” and on your marketing assignment you receive a “Pass Restricted.”

Would you rather:

| Have all three assignments handed back in the one day | OR | Have each assignment handed back on separate days |

Why did you choose that option?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Imagine you are enrolled in a B. Com. degree. On your economics assignment you receive a "Distinction," on your accounting assignment you receive a "Credit," and on your marketing assignment you receive a "High Distinction."

Would you rather:

<table>
<thead>
<tr>
<th>Have all three assignments handed back in the one day</th>
<th>OR</th>
<th>Have each assignment handed back on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?
__________________________________________________________________________________________________________________________________________________________
__________________________________________________________________________________________________________________________________________________________
__________________________________________________________________________________________________________________________________________________________

Imagine you have just returned three overdue items from the departmental library. The reference book you returned incurs a $15 fine, the software package you returned incurs a $25 fine, and the video tape you returned incurs a $10 fine.

You will receive the fine notices in the mail, and each fine can be paid over the phone. Would you rather:

<table>
<thead>
<tr>
<th>Receive all three notices, and pay all three fines, in the one day</th>
<th>OR</th>
<th>Receive each notice, and pay each fine, on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?
__________________________________________________________________________________________________________________________________________________________
__________________________________________________________________________________________________________________________________________________________
__________________________________________________________________________________________________________________________________________________________
Imagine you have had some good luck. You win $100 in a charity raffle, $25 in the department's Lotto syndicate, and a $70 voucher from the university book shop.

Would you rather:

<table>
<thead>
<tr>
<th>Find out about, and receive, all three winnings on the one day</th>
<th>OR</th>
<th>Find out about, and receive, each of the three winnings on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?

---

Imagine you have some problems with your friends. You have a serious argument with a close friend, you find out that a good friend is moving to Melbourne, and a new friend does not invite you to their birthday party.

Would you rather:

<table>
<thead>
<tr>
<th>Find out about all three problems on the same day</th>
<th>OR</th>
<th>Find out about each of the problems on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?

---
Imagine you have some good experiences with your friends. A friend invites you to a concert and pays for your ticket, you find out a good friend from high school will be in your tutorial class, and a new friend invites you to their birthday party.

Would you rather:

<table>
<thead>
<tr>
<th>Find out all the good news on the same day</th>
<th>OR</th>
<th>Find out about each thing on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?

DEMOGRAPHIC DETAILS (for statistical purposes)

A. □ Male □ Female

B. Age _______ years

C. Country of birth: □ Australia □ Other (please specify) ____________________

D. If you were born overseas, how many years have you lived in Australia ______

E. What is your approximate monthly income AFTER TAX
   □ less than $500
   □ $500 - $999
   □ $1,000 - $1,500
   □ $1,501- $2,000
   □ $2,001 - $2,500
   □ more than $2,500

F. Which statement best describes your smoking status:
   □ I am a regular smoker
   □ I am an occasional smoker
   □ I am an ex-smoker
   □ I have never been a smoker

G. Which statement best describes your exercise status:
   □ I am a committed exerciser
   □ I am a regular exerciser
   □ I am an irregular exerciser
   □ I am a non-exerciser
Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that:

- You need a cavity filled in your back molar tooth
- You need to have a tooth extracted
- You need to have an old filling replaced

Assuming there is no difference in the total cost, would you rather:

- Have all three procedures done on the same day in one visit

OR

- Have each procedure done on separate days (i.e., 3 visits)

Why did you choose that option?
Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you.

1. In week 1 you lose 0.7 of a kilogram
2. In week 2 you lose a further 0.3 of a kilogram
3. In week 3 you lose a further 0.5 of a kilogram

Would you rather:

- Be told at the end of the program that you have lost 1.5 kilograms
- Be told at each visit how much weight you have lost

Why did you choose that option?

Imagine you are enrolled in a B. Com. degree.

- On your economics assignment you receive a "Fail"
- On your accounting assignment you receive a "Pass Conceded"
- On your marketing assignment you receive a "Pass Restricted"

Would you rather:

- Have all three assignments handed back in the one day
- Have each assignment handed back on separate days

Why did you choose that option?
Imagine you are enrolled in a B. Comm. degree.

On your economics assignment you receive a "Distinction"  

On your accounting assignment you receive a "Credit"  

On your marketing assignment you receive a "High Distinction"

Would you rather:

| Have all three assignments handed back in the one day | OR | Have each assignment handed back on separate days |

Why did you choose that option?

Imagine you have just returned three overdue items from the departmental library.

| The reference book you returned incurs a $15 fine |
| The software package you returned incurs a $25 fine |
| The video tape you returned incurs a $10 fine |

You will receive the fine notices in the mail, and each fine can be paid over the phone. Would you rather:

| Receive all three notices, and pay all three fines, in the one day | OR | Receive each notice, and pay each fine, on separate days |

Why did you choose that option?
Imagine you have had some good luck.

- You win $100 in a charity raffle
- You win $25 in the department’s Lotto syndicate
- You win a $70 voucher from the university book shop

Would you rather:

<table>
<thead>
<tr>
<th>Find out about, and receive, all three winnings on the one day</th>
<th>OR</th>
<th>Find out about, and receive, each of the three winnings on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?

Imagine you have some problems with your friends.

- You have a serious argument with a close friend
- You find out that a good friend is moving to Melbourne
- A new friend does not invite you to their birthday party

Would you rather:

<table>
<thead>
<tr>
<th>Find out about all three problems on the same day</th>
<th>OR</th>
<th>Find out about each of the problems on separate days</th>
</tr>
</thead>
</table>

Why did you choose that option?
Imagine you have some good experiences with your friends.

A friend invites you to a concert and pays for your ticket

You find out a good friend from high school will be in your tutorial class

A new friend invites you to their birthday party

Would you rather:

Find out all the good news on the same day OR Find out about each thing on separate days

Why did you choose that option?

DEMographic DETAILS (for statistical purposes)

B.  □ Male  □ Female

B.  Age _______ years

C.  Country of birth:  □ Australia 

□ Other (please specify) ______________________

E.  If you were born overseas, how many years have you lived in Australia ______

F.  What is your approximate monthly income AFTER TAX

□ less than $500

□ $500 - $999

□ $1,000 - $1,500

□ $1,501 - $2,000

□ $2,001 - $2,500

□ more than $2,500

F.  Which statement best describes your smoking status:

□ I am a regular smoker

□ I am an occasional smoker

□ I am an ex-smoker

□ I have never been a smoker

G.  Which statement best describes your exercise status:

□ I am a committed exerciser

□ I am a regular exerciser

□ I am an irregular exerciser

□ I am a non-exerciser
Appendix G: Study 7 Questionnaires
Study 7

Version: Integrated (Students)

NB: Each participant received only four of the eight scenarios
(two positive and two negative)

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

1. You need a cavity filled in your back molar tooth

   1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. You need to have a tooth extracted

   2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. You need to have an old filling replaced

   3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

You lose 0.7 of a kilogram

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
</tbody>
</table>

You lose 0.3 of a kilogram

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
</tbody>
</table>

You lose a 0.5 of a kilogram

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

On your economics assignment you receive a "Fail"

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
</tr>
</tbody>
</table>

On your accounting assignment you receive a "Pass Conceded"

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
</tr>
</tbody>
</table>

On your marketing assignment you receive a "Pass Restricted"

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
<td>bad</td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

**On your economics assignment you receive a "Distinction"**

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**On your accounting assignment you receive a "Credit"**

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**On your marketing assignment you receive a "High Distinction"**

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

**You get fined $15 for late return of a reference book**

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You get fined $25 for late return of a software package**

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You get fined $10 for late return of a video tape**

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

You win $100 in a charity raffle

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You win $25 in the department's Lotto syndicate

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You win a $70 voucher from the university book shop

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

You have a serious argument with a close friend

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You find out that a good friend is moving to Melbourne

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A new friend does not invite you to their birthday party

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A friend invites you to a concert and pays for your ticket

You find out a good friend from high school will be in your tutorial class

A new friend invites you to their birthday party

Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that you need a cavity filled in your back molar tooth, a tooth extracted, and an old filling replaced.

Assuming there is no difference in the total cost, would you rather:

<table>
<thead>
<tr>
<th>Have all three procedures done on the same day in one visit</th>
<th>OR</th>
<th>Have each procedure done on separate days (i.e., 3 visits)</th>
</tr>
</thead>
</table>
Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. In week 1 you lose 0.7 of a kilogram, week 2 you lose a further 0.3 of a kilogram, and week 3 you lose a further 0.5 of a kilogram.

Would you rather:

| Be told at the end of the program that you have lost 1.5 kilograms | OR | Be told at each visit how much weight you have lost |

Imagine you are enrolled in a B. Com. degree. On your economics assignment you receive a "Fail," on your accounting assignment you receive a "Pass Conceded," and on your marketing assignment you receive a "Pass Restricted."

Would you rather:

| Have all three assignments handed back in the one day | OR | Have each assignment handed back on separate days |
Imagine you are enrolled in a B. Com. degree. On your economics assignment you receive a "Distinction," on your accounting assignment you have receive a "Credit," and on your marketing assignment you have receive a "High Distinction."

Would you rather:

<table>
<thead>
<tr>
<th>Have all three assignments handed back in the one day</th>
<th>OR</th>
<th>Have each assignment handed back on separate days</th>
</tr>
</thead>
</table>

Imagine you have just returned three overdue items from the departmental library. The reference book you returned incurs a $15 fine, the software package you returned incurs a $25 fine, and the video tape you returned incurs a $10 fine.

You will receive the fine notices in the mail, and each fine can be paid over the phone. Would you rather:

<table>
<thead>
<tr>
<th>Receive all three notices, and pay all three fines, in the one day</th>
<th>OR</th>
<th>Receive each notice, and pay each fine, on separate days</th>
</tr>
</thead>
</table>
Imagine you have had some good luck. You win $100 in a charity raffle, $25 in the department's Lotto syndicate, and a $70 voucher from the university bookshop.

Would you rather:

<table>
<thead>
<tr>
<th>Find out about, and receive, all three winnings on the one day</th>
<th>OR</th>
<th>Find out about, and receive, each of the three winnings on separate days</th>
</tr>
</thead>
</table>

Imagine you have some problems with your friends. You have a serious argument with a close friend, you find out that a good friend is moving to Melbourne, a new friend does not invite you to their birthday party.

Would you rather:

<table>
<thead>
<tr>
<th>Find out about all three problems on the same day</th>
<th>OR</th>
<th>Find out about each of the problems on separate days</th>
</tr>
</thead>
</table>
Imagine you have some good experiences with your friends. A friend invites you to a concert and pays for your ticket, you find out a good friend from high school will be in your tutorial class, and a new friend invites you to their birthday party.

Would you rather:

| Find out all the good news on the same day | OR | Find out about each thing on separate days |

DEMOGRAPHIC DETAILS (for statistical purposes)

A.  □ Male  □ Female

B.  Age ________ years

C.  Country of birth:  □ Australia  □ Other (please specify) _______________

D.  If you were born overseas, how many years have you lived in Australia ______

E.  What is your approximate monthly income AFTER TAX

   □ less than $500
   □ $500 - $999
   □ $1,000 - $1,500
   □ $1,501 - $2,000
   □ $2,001 - $2,500
   □ more than $2,500

F.  Which statement best describes your smoking status:

   □ I am a regular smoker
   □ I am an occasional smoker
   □ I am an ex-smoker
   □ I have never been a smoker

G.  Which statement best describes your exercise status:

   □ I am a committed exerciser
   □ I am a regular exerciser
   □ I am an irregular exerciser
   □ I am a non-exerciser
STUDY 7

VERSION: INTEGRATED (PARENTS)

NB: Each participant received only four of the eight scenarios (two positive and two negative)

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

1. How bad would it be if this happened to you?
   You need a cavity filled in your back molar tooth
   0 1 2 3 4 5 6 7 8 9 10
   not at all bad moderately bad absolutely devastating

2. How bad would it be if this happened to you?
   You need to have a tooth extracted
   0 1 2 3 4 5 6 7 8 9 10
   not at all bad moderately bad absolutely devastating

3. How bad would it be if this happened to you?
   You need to have an old filling replaced
   0 1 2 3 4 5 6 7 8 9 10
   not at all bad moderately bad absolutely devastating
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

1. How good would it be if this happened to you?
   
   Not at all good  Moderately good  Absolutely fantastic

You lose 0.7 of a kilogram

2. How good would it be if this happened to you?
   
   Not at all good  Moderately good  Absolutely fantastic

You lose 0.3 of a kilogram

3. How good would it be if this happened to you?
   
   Not at all good  Moderately good  Absolutely fantastic

You lose a 0.5 of a kilogram

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

1. How bad would it be if this happened to you?
   
   Not at all bad  Moderately bad  Absolutely devastating

You do an "Introduction to Computers" course and you fail

2. How bad would it be if this happened to you?
   
   Not at all bad  Moderately bad  Absolutely devastating

You play in the local bowls team and you don't get selected to play next year

3. How bad would it be if this happened to you?
   
   Not at all bad  Moderately bad  Absolutely devastating

You enter a painting in a local art competition and it comes last
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

You do an "Introduction to Computers" course and your final mark is a "Distinction"

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You play in the local bowls team and you win the " fairest and Best" award

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You enter a painting in a local art competition and your painting is awarded "Highly Commended"

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

You get fined $15 for late return of a library book

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You get fined $25 for late return of a software package

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You get fined $10 for late return of a video tape

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below, in terms of how good it would be for you if this event happened.

1. How good would it be if this happened to you?

- You win $100 in a charity raffle

   0 1 2 3 4 5 6 7 8 9 10
   not at all good  moderately good absolutely fantastic

2. How good would it be if this happened to you?

- You win $25 in a Lotto syndicate

   0 1 2 3 4 5 6 7 8 9 10
   not at all good  moderately good absolutely fantastic

3. How good would it be if this happened to you?

- You win a $70 voucher from a local store

   0 1 2 3 4 5 6 7 8 9 10
   not at all good  moderately good absolutely fantastic

Following is a list of events that could happen to you. Please rate each event on the scale below, in terms of how bad it would be for you if this event happened.

1. How bad would it be if this happened to you?

- You have a serious argument with a close friend

   0 1 2 3 4 5 6 7 8 9 10
   not at all bad  moderately bad absolutely devastating

2. How bad would it be if this happened to you?

- You find out that a good friend is moving to Melbourne

   0 1 2 3 4 5 6 7 8 9 10
   not at all bad  moderately bad absolutely devastating

3. How bad would it be if this happened to you?

- A new friend does not invite you to their dinner party

   0 1 2 3 4 5 6 7 8 9 10
   not at all bad  moderately bad absolutely devastating
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

A friend invites you to a concert and pays for your ticket

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You find out a good friend will be moving into your street

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A new friend invites you to their dinner party

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Imagine you have just been to the dentist for your annual check-up. The dentist tells you that you need a cavity filled in your back molar tooth, a tooth extracted, and an old filling replaced.

Assuming there is no difference in the total cost, would you rather:

| Have all three procedures done on the same day in one visit | OR | Have each procedure done on separate days (i.e., 3 visits) |
Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you. In week 1 you lose 0.7 of a kilogram, week 2 you lose a further 0.3 of a kilogram, and week 3 you lose a further 0.5 of a kilogram.

Would you rather:

| Be told at the end of the program that you have lost 1.5 kilograms | OR | Be told at each visit how much weight you have lost |

Imagine you decide to join in some community activities. You do an “Introduction to Computing” course and you fail, you play in the local bowls team and you don’t get selected to play next year, and you enter a painting in a local art competition and it comes last.

Would you rather:

| Find out about all three losses in the one day | OR | Find out about each loss on separate days |
Imagine you decide to join in some community activities. You do an “Introduction to Computers” course and your final mark is a “Distinction,” you play in the local bowls team and you win the “Fairest and Best” award, and you enter a painting in a local art competition and your painting is awarded “Highly Commended.”

Would you rather:

<table>
<thead>
<tr>
<th>Find out about all three awards in the one day</th>
<th>OR</th>
<th>Find out about each award on separate days</th>
</tr>
</thead>
</table>

Imagine you have just returned three overdue items from the library. The reference book you returned incurs a $15 fine, the software package you returned incurs a $25 fine, and the video tape you returned incurs a $10 fine.

You will receive the fine notices in the mail, and each fine can be paid over the phone. Would you rather:

<table>
<thead>
<tr>
<th>Receive all three notices, and pay all three fines, in the one day</th>
<th>OR</th>
<th>Receive each notice, and pay each fine, on separate days</th>
</tr>
</thead>
</table>
Imagine you have had some good luck. You win $100 in a charity raffle, $25 in a Lotto syndicate, and a $70 voucher from a local store.

Would you rather:

| Find out about, and receive, all three winnings on the one day | OR | Find out about, and receive, each of the three winnings on separate days |

Imagine you have some problems with your friends. You have a serious argument with a close friend, you find out that a good friend is moving to Melbourne, a new friend does not invite you to their dinner party.

Would you rather:

| Find out about all three problems on the same day | OR | Find out about each of the problems on separate days |
Imagine you have some good experiences with your friends. A friend invites you to a concert and pays for your ticket, you find out a good friend will be moving into your street, and a new friend invites you to their dinner party.

Would you rather:

| Find out all the good news on the same day | OR | Find out about each thing on separate days |

DEMOGRAPHIC DETAILS (for statistical purposes)

B.  
   □ Male   □ Female

B.  
   Age ______ years

C.  
   Country of birth:  
   □ Australia  
   □ Other (please specify) __________________________

E.  
   If you were born overseas, how many years have you lived in Australia _______

E.  
   What is the highest level of education you have completed?  
   Circle one number only
   
   Primary school only 1
   Some secondary school - no certificate completed 2
   Completed Year 10/10B Year 3
   Completed Year 12/12B Year 4
   Technical college (TAFE) certificate or diploma 5
   Graduate or postgraduate degree or diploma 6
   Other (please specify) _________________________ 7

F.  
   Which statement best describes your smoking status:  
   □ I am a regular smoker  
   □ I am an occasional smoker  
   □ I am an ex-smoker  
   □ I have never been a smoker

G.  
   Which statement best describes your exercise status:  
   □ I am a committed exerciser  
   □ I am a regular exerciser  
   □ I am an irregular exerciser  
   □ I am a non-exerciser
STUDY 7

VERSION: SEGREGATED (STUDENTS)

NB: Each participant received only four of the eight scenarios (two positive and two negative)

Following is a list of events that could happen to you. Please rate each event on the scale below, in terms of how bad it would be for you if this event happened.

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bad</td>
<td>bad</td>
<td>devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bad</td>
<td>bad</td>
<td>devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>moderately</td>
<td>absolutely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bad</td>
<td>bad</td>
<td>devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below, in terms of how good it would be for you if this event happened.

**You lose 0.7 of a kilogram**

1. How good would it be if this happened to you?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
---|---|---|---|---|---|---|---|---|---|---|---|
not at all | good | moderately | absolutely |
| bad | good | fantastic |

**You lose 0.3 of a kilogram**

2. How good would it be if this happened to you?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
---|---|---|---|---|---|---|---|---|---|---|---|
not at all | good | moderately | absolutely |
| bad | good | fantastic |

**You lose a 0.5 of a kilogram**

3. How good would it be if this happened to you?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
---|---|---|---|---|---|---|---|---|---|---|---|
not at all | good | moderately | absolutely |
| bad | good | fantastic |

Following is a list of events that could happen to you. Please rate each event on the scale below, in terms of how bad it would be for you if this event happened.

**On your economics assignment you receive a “Fail”**

1. How bad would it be if this happened to you?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
---|---|---|---|---|---|---|---|---|---|---|---|
not at all | bad | moderately | absolutely |
| bed | bad | devastating |

**On your accounting assignment you receive a “Pass Conceded”**

2. How bad would it be if this happened to you?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
---|---|---|---|---|---|---|---|---|---|---|---|
not at all | bad | moderately | absolutely |
| bed | bad | devastating |

**On your marketing assignment you receive a “Pass Restricted”**

3. How bad would it be if this happened to you?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
---|---|---|---|---|---|---|---|---|---|---|---|
not at all | bad | moderately | absolutely |
| bed | bad | devastating |
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

### On your economics assignment you receive a "Distinction"

1. **How good would it be if this happened to you?**
   - 0: Not at all good
   - 1: Bad
   - 2: Moderately bad
   - 3: Absolutely devastating

   - 9: Absolutely fantastic
   - 10: Moderately good

<table>
<thead>
<tr>
<th>Scale</th>
<th>Not at All Good</th>
<th>Bad</th>
<th>Moderately Bad</th>
<th>Absolutely Devastating</th>
<th>Absolutely Fantastic</th>
<th>Moderately Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

### On your accounting assignment you receive a "Credit"

2. **How good would it be if this happened to you?**
   - 0: Not at all good
   - 1: Bad
   - 2: Moderately bad
   - 3: Absolutely devastating

   - 9: Absolutely fantastic
   - 10: Moderately good

<table>
<thead>
<tr>
<th>Scale</th>
<th>Not at All Good</th>
<th>Bad</th>
<th>Moderately Bad</th>
<th>Absolutely Devastating</th>
<th>Absolutely Fantastic</th>
<th>Moderately Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

### On your marketing assignment you receive a "High Distinction"

3. **How good would it be if this happened to you?**
   - 0: Not at all good
   - 1: Bad
   - 2: Moderately bad
   - 3: Absolutely devastating

   - 9: Absolutely fantastic
   - 10: Moderately good

<table>
<thead>
<tr>
<th>Scale</th>
<th>Not at All Good</th>
<th>Bad</th>
<th>Moderately Bad</th>
<th>Absolutely Devastating</th>
<th>Absolutely Fantastic</th>
<th>Moderately Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

**You win $100 in a charity raffle**

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You win $25 in the department’s Lotto syndicate**

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You win a $70 voucher from the university book shop**

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

**You have a serious argument with a close friend**

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You find out that a good friend is moving to Melbourne**

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**A new friend does not invite you to their birthday party**

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

1. How good would it be if this happened to you?

   A friend invites you to a concert and pays for your ticket

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. How good would it be if this happened to you?

   You find out a good friend from high school will be in your tutorial class

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. How good would it be if this happened to you?

   A new friend invites you to their birthday party

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Imagine you have just been to the dentist in the Campus Medical Centre for your annual check-up. The dentist tells you that:

- You need a cavity filled in your back molar tooth
- You need to have a tooth extracted
- You need to have an old filling replaced

Assuming there is no difference in the total cost, would you rather:

- Have all three procedures done on the same day in one visit
- Have each procedure done on separate days (i.e., 3 visits)
Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you.

In week 1 you lose 0.7 of a kilogram
In week 2 you lose a further 0.3 of a kilogram
In week 3 you lose a further 0.5 of a kilogram

Would you rather:

| Be told at the end of the program that you have lost 1.5 kilograms | OR | Be told at each visit how much weight you have lost |

Imagine you are enrolled in a B. Com. degree.

On your economics assignment you receive a "Fail"
On your accounting assignment you receive a "Pass Conceded"
On your marketing assignment you receive a "Pass Restricted"

Would you rather:

| Have all three assignments handed back in the one day | OR | Have each assignment handed back on separate days |
Imagine you are enrolled in a B. Com. degree.

On your economics assignment you receive a "Distinction"

On your accounting assignment you receive a "Credit"

On your marketing assignment you receive a "High Distinction"

Would you rather:

| Have all three assignments handed back in the one day | OR | Have each assignment handed back on separate days |

Imagine you have just returned three overdue items from the departmental library.

The reference book you returned incurs a $15 fine

The software package you returned incurs a $25 fine

The video tape you returned incurs a $10 fine

You will receive the fine notices in the mail, and each fine can be paid over the phone. Would you rather:

| Receive all three notices, and pay all three fines, in the one day | OR | Receive each notice, and pay each fine, on separate days |
Imagine you have had some good luck.

- You win $100 in a charity raffle
- You win $25 in the department's Lotto syndicate
- You win a $70 voucher from the university book shop

Would you rather:

<table>
<thead>
<tr>
<th>Find out about, and receive, all three winnings on the one day</th>
<th>OR</th>
<th>Find out about, and receive, each of the three winnings on separate days</th>
</tr>
</thead>
</table>

Imagine you have some problems with your friends.

- You have a serious argument with a close friend
- You find out that a good friend is moving to Melbourne
- A new friend does not invite you to their birthday party

Would you rather:

<table>
<thead>
<tr>
<th>Find out about all three problems on the same day</th>
<th>OR</th>
<th>Find out about each of the problems on separate days</th>
</tr>
</thead>
</table>
Imagine you have some good experiences with your friends.

A friend invites you to a concert and pays for your ticket

You find out a good friend from high school will be in your tutorial class

A new friend invites you to their birthday party

Would you rather:

<table>
<thead>
<tr>
<th>Find out all the good news on the same day</th>
<th>OR</th>
<th>Find out about each thing on separate days</th>
</tr>
</thead>
</table>

DEMOGRAPHIC DETAILS (for statistical purposes)

C.  □ Male  □ Female

B.  Age _____ years

C.  Country of birth:  □ Australia
    □ Other (please specify) _______________________

F.  If you were born overseas, how many years have you lived in Australia _____

E.  What is your approximate monthly income AFTER TAX
    □ less than $500
    □ $500 - $999
    □ $1,000 - $1,500
    □ $1,501 - $2,000
    □ $2,001 - $2,500
    □ more than $2,500

F.  Which statement best describes your smoking status:
    □ I am a regular smoker
    □ I am an occasional smoker
    □ I am an ex-smoker
    □ I have never been a smoker

G.  Which statement best describes your exercise status:
    □ I am a committed exerciser
    □ I am a regular exerciser
    □ I am an irregular exerciser
    □ I am a non-exerciser
STUDY 7

VERSION: AGGREGATED (PARENTS)

NB: Each participant received only four of the eight scenarios (two positive and two negative)

Following is a list of events that could happen to you. Please rate each event on the scale below, in terms of how bad it would be for you if this event happened.

You need a cavity filled in your back molar tooth

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You need to have a tooth extracted

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You need to have an old filling replaced

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>Event</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>You lose 0.7 of a kilogram</td>
<td>0-10</td>
</tr>
</tbody>
</table>

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>Event</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>You lose 0.3 of a kilogram</td>
<td>0-10</td>
</tr>
</tbody>
</table>

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>Event</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>You lose 0.5 of a kilogram</td>
<td>0-10</td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>Event</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>You do an 'Introduction to Computers' course and you fail</td>
<td>0-10</td>
</tr>
</tbody>
</table>

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>Event</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>You play in the local bowls team and you don't get selected to play next year</td>
<td>0-10</td>
</tr>
</tbody>
</table>

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>Event</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>You enter a painting in a local art competition and it comes last</td>
<td>0-10</td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

**You do an "Introduction to Computers" course and your final mark is a "Distinction"**

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You play in the local bowls team and you win the "Fairest and Best" award**

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**You enter a painting in a local art competition and your painting is awarded "Highly Commended"**

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

You win $100 in a charity raffle

1. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You win $25 in a Lotto syndicate

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You win a $70 voucher from a local store

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how bad it would be for you if this event happened.

You have a serious argument with a close friend

1. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You find out that a good friend is moving to Melbourne

2. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A new friend does not invite you to their dinner party

3. How bad would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>moderately bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Following is a list of events that could happen to you. Please rate each event on the scale below it, in terms of how good it would be for you if this event happened.

1. How good would it be if this happened to you?

A friend invites you to a concert and pays for your ticket

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You find out a good friend will be moving into your street

2. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A new friend invites you to their dinner party

3. How good would it be if this happened to you?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>moderately good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Imagine you have just been to the dentist for your annual check-up. The dentist tells you that:

- You need a cavity filled in your back molar tooth
- You need to have a tooth extracted
- You need to have an old filling replaced

Assuming there is no difference in the total cost, would you rather:

| Have all three procedures done on the same day in one visit | OR | Have each procedure done on separate days (i.e., 3 visits) |
Imagine you have been on a 3-week weight loss program. Each time you attend a weekly meeting they weigh you.

- In week 1 you lose 0.7 of a kilogram
- In week 2 you lose a further 0.3 of a kilogram
- In week 3 you lose a further 0.5 of a kilogram

Would you rather:

| Be told at the end of the program that you have lost 1.5 kilograms | OR | Be told at each visit how much weight you have lost |

Imagine you decide to join in some community activities

- You do an "Introduction to Computers" course and you fail
- You play in the local bowls team and you don't get selected to play next year
- You enter a painting in a local art competition and it comes last

Would you rather:

| Find out about all three losses in the one day | OR | Find out about each loss on separate days |
Imagine you decide to join in some community activities

- You do an "Introduction to Computers" course and your final mark is a "Distinction".
- You play in the local bowls team and you win the "Fairest and Best" award.
- You enter a painting in a local art competition and your painting is awarded "Highly Commended".

Would you rather:

| Find out about all three awards in the one day | OR | Find out about each award on separate days |

Imagine you have just returned three overdue items from the library.

- The reference book you returned incurs a $15 fine.
- The software package you returned incurs a $25 fine.
- The video tape you returned incurs a $10 fine.

You will receive the fine notices in the mail, and each fine can be paid over the phone. Would you rather:

| Receive all three notices, and pay all three fines, in the one day | OR | Receive each notice, and pay each fine, on separate days |
Imagine you have had some good luck.

<table>
<thead>
<tr>
<th>Choose from:</th>
</tr>
</thead>
<tbody>
<tr>
<td>You win $100 in a charity raffle</td>
</tr>
<tr>
<td>You win $25 in a Lotto syndicate</td>
</tr>
<tr>
<td>You win a $70 voucher from a local store</td>
</tr>
</tbody>
</table>

Would you rather:

<table>
<thead>
<tr>
<th>Find out about, and receive, all three winnings on the one day</th>
<th>OR</th>
<th>Find out about, and receive, each of the three winnings on separate days</th>
</tr>
</thead>
</table>

Imagine you have some problems with your friends.

<table>
<thead>
<tr>
<th>Choose from:</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have a serious argument with a close friend</td>
</tr>
<tr>
<td>You find out that a good friend is moving to Melbourne</td>
</tr>
<tr>
<td>A new friend does not invite you to their dinner party</td>
</tr>
</tbody>
</table>

Would you rather:

<table>
<thead>
<tr>
<th>Find out about all three problems on the same day</th>
<th>OR</th>
<th>Find out about each of the problems on separate days</th>
</tr>
</thead>
</table>
Imagine you have some good experiences with your friends.

- A friend invites you to a concert and pays for your ticket
- You find out a good friend will be moving into your street
- A new friend invites you to their dinner party

Would you rather:

| Find out all the good news on the same day | OR | Find out about each thing on separate days |

DEMOGRAPHIC DETAILS (for statistical purposes)

D.  □ Male  □ Female

B.  Age ________ years

C.  Country of birth:  □ Australia  □ Other (please specify) ____________________

G.  If you were born overseas, how many years have you lived in Australia ______

E.  What is the highest level of education you have completed?
   Circle one number only

- Primary school only 1
- Some secondary school - no certificate completed 2
- Completed Year 10/3rd Year 3
- Completed Year 12/5th Year 4
- Technical college (TAFE) certificate of diploma 5
- Graduate or postgraduate degree or diploma 6
- Other (please specify) ____________________ 7

F.  Which statement best describes your smoking status:
   □ I am a regular smoker
   □ I am an occasional smoker
   □ I am an ex-smoker
   □ I have never been a smoker

G.  Which statement best describes your exercise status:
   □ I am a committed exerciser
   □ I am a regular exerciser
   □ I am an irregular exerciser
   □ I am a non-exerciser
Appendix H: Study 8 Questionnaires
A1. Are you a daily cigarette smoker?
   □ No  discontinue
   □ Yes

A2. On average, how many cigarettes do you smoke each day?  

A3. Gender (record)
   □ Male
   □ Female

A4. How old are you?
   Age _______ years

A5. Which one of the following statements best describes you:
   □ I am not thinking about quitting smoking
   □ I am thinking about quitting smoking, but have no plans to quit in the next month
   □ I am planning to quit smoking in the next 30 days
Smoking causes Stroke.

A stroke occurs when the blood supply to the brain is blocked, or when an artery within the brain bursts and bleeds. This prevents parts of the brain getting oxygen and those parts of the brain can die. Smoking significantly increases the risk of stroke. This may cause temporary or permanent disabilities, depending on where in the brain the stroke happens. The effects of stroke will depend on what area of the brain has been injured. A stroke can affect a person's thinking, memory, personality, speech, movement, vision, senses, balance, create weakness or numbness of the leg, arms and face on one side of the body, or create eating or swallowing difficulties. A stroke can kill.

D1. How convinced are you that smoking causes stroke?

☐ smoking definitely causes stroke
☐ smoking probably causes stroke
☐ smoking possibly causes stroke
☐ smoking probably doesn’t cause stroke
☐ smoking definitely doesn’t cause stroke

D2. How easy was the information about stroke to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ very hard to understand

D3. Out of 100 cigarette smokers, how many do you think will die from stroke as a result of their smoking?

_________ out of 100

Smoking causes Heart Attack.

A heart attack occurs when the blood supply to the heart muscle is blocked off, causing the heart to malfunction and damage to the heart muscle. Smoking significantly increases the risk of heart disease. Whether it is mild or severe, a heart attack is a serious medical emergency. There are number of long-term complications from heart attack. Twenty per cent of people die within the first hour of a heart attack, a further 10 per cent die in hospital and 5 per cent die within 3 months of leaving hospital. Unless properly treated, heart attacks are likely to re-occur. Even with the best treatment, some people die.

E1. How convinced are you that smoking causes heart attack?

☐ smoking definitely causes heart attack
☐ smoking probably causes heart attack
☐ smoking possibly causes heart attack
☐ smoking probably doesn’t cause heart attack
☐ smoking definitely doesn’t cause heart attack

E2. How easy was the information about heart attack to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ very hard to understand

E3. Out of 100 cigarette smokers, how many do you think will die from a heart attack as a result of their smoking?

_________ out of 100
Smoking causes cancers of the mouth, nose and throat.

These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth, the tonsil and soft palate. Smoking is an important risk factor for these cancers. Symptoms of mouth or throat cancer include a sore in the mouth that does not heal, any swelling, lump, or thickening in the mouth or neck, a persistent blocked nose, and a persistent ear ache. Cancers of the nasal areas may cause a range of other symptoms including breathing difficulty, headache, pain in the face or upper jaw, bleeding through the nose, and blocked sinuses. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance. Throat cancer may result in the need for a tracheotomy, which means that they will need to breathe through a hole in their throat.

F1. How convinced are you that smoking causes cancers of the mouth, nose and throat?

☐ smoking definitely causes cancers of the mouth, nose and throat
☐ smoking probably causes cancers of the mouth, nose and throat
☐ smoking possibly causes cancers of the mouth, nose and throat
☐ smoking probably doesn't cause cancers of the mouth, nose and throat
☐ smoking definitely doesn't cause cancers of the mouth, nose and throat

F2. How easy was the information about cancers of the mouth, nose and throat to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ quite hard to understand

F3. Out of 100 cigarette smokers, how many do you think will die from cancers of the mouth, nose and throat as a result of their smoking?

_________ out of 100

Thank you very much for participating in our study.
A6. Are you a daily cigarette smoker?

☐ No  discontinue
☐ Yes

A7. On average, how many cigarettes do you smoke each day? __________

A8. Gender (record)

☐ Male
☐ Female

A9. How old are you?

Age ________ years

A10. Which one of the following statements best describes you:

☐ I am not thinking about quitting smoking
☐ I am thinking about quitting smoking, but have no plans to quit in the next month
☐ I am planning to quit smoking in the next 30 days
SMOKING AND YOUR HEALTH

Smoking causes Emphysema.

In emphysema, the air sacs in the lungs are gradually destroyed until the lungs have difficulty absorbing enough oxygen. Thus it becomes harder to get your breath. These days, the most common cause of emphysema is cigarette smoking. In mild forms of this disease, breathlessness may occur walking up hills or stairs. In severe cases, breathlessness can occur walking slowly along flat ground and normal daily activities become more difficult as the disease gets worse. People with emphysema may have to carry around an oxygen bottle and wear an oxygen mask most of the day. They are more prone to chest infections and pneumonia and occasionally require admission to hospital for intensive treatment of their disease. Although a lot can be done to relieve symptoms, there is no cure for this condition.

C1. How convinced are you that smoking causes emphysema?

☐ smoking definitely causes emphysema
☐ smoking probably causes emphysema
☐ smoking possibly causes emphysema
☐ smoking probably doesn’t cause emphysema
☐ smoking definitely doesn’t cause emphysema

C2. How easy was the information about emphysema to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ very hard to understand

C3. Out of 100 cigarette smokers, how many do you think will die from emphysema as a result of their smoking?

____________ out of 100

Smoking causes Stroke

A stroke occurs when the blood supply to the brain is blocked, or when an artery within the brain bursts and bleeds. This prevents parts of the brain getting oxygen and those parts of the brain can die. Smoking significantly increases the risk of stroke. This may cause temporary or permanent disabilities, depending on where in the brain the stroke happens. The effects of stroke will depend on what area of the brain has been injured. A stroke can affect a person's thinking, memory, personality, speech, movement, vision, senses, balance, create a weakness or numbness of the legs, arms and face on one side of the body, or create eating or swallowing difficulties. A stroke can kill.

D1. How convinced are you that smoking causes stroke?

☐ smoking definitely causes stroke
☐ smoking probably causes stroke
☐ smoking possibly causes stroke
☐ smoking probably doesn’t cause stroke
☐ smoking definitely doesn’t cause stroke

D2. How easy was the information about stroke to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ very hard to understand

D3. Out of 100 cigarette smokers, how many do you think will die from stroke as a result of their smoking?

____________ out of 100
Smoking causes Heart Attack

A heart attack occurs when the blood supply to the heart muscle is blocked off, causing the heart to malfunction and damage to the heart muscle. Smoking significantly increases the risk of heart disease. Whether it is mild or severe, a heart attack is a serious medical emergency. There are number of long-term complications from heart attack. Twenty per cent of people die within the first hour of a heart attack, a further 10 per cent die in hospital and 5 per cent die within 3 months of leaving hospital. Unless properly treated, heart attacks are likely to re-occur. Even with the best treatment, some people die.

E1. How convinced are you that smoking causes heart attack?

☐ smoking definitely causes heart attack
☐ smoking probably causes heart attack
☐ smoking possibly causes heart attack
☐ smoking probably doesn’t cause heart attack
☐ smoking definitely doesn’t cause heart attack

E2. How easy was the information about heart attack to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ very hard to understand

E3. Out of 100 cigarette smokers, how many do you think will die from a heart attack as a result of their smoking?

_________ out of 100

Smoking causes cancers of the mouth, nose and throat

These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth; the tonsil and soft palate. Smoking is an important risk factor for these cancers. Symptoms of mouth or throat cancer include a sore in the mouth that does not heal, any swelling, lump, or thickening in the mouth or neck, a persistent blocked nose, and a persistent ear ache. Cancers of the nasal area may cause a range of other symptoms including difficulty eating and swallowing, and will have problems with their speech and changes to their appearance. Throat cancer may result in the need for a tracheotomy, which means that they will need to breathe through a hole in their throat.

F1. How convinced are you that smoking causes cancers of the mouth, nose and throat?

☐ smoking definitely causes cancers of the mouth, nose and throat
☐ smoking probably causes cancers of the mouth, nose and throat
☐ smoking possibly causes cancers of the mouth, nose and throat
☐ smoking probably doesn’t cause cancers of the mouth, nose and throat
☐ smoking definitely doesn’t cause cancers of the mouth, nose and throat

F2. How easy was the information about cancers of the mouth, nose and throat to understand?

☐ very easy to understand
☐ quite easy to understand
☐ quite hard to understand
☐ very hard to understand

F3. Out of 100 cigarette smokers, how many do you think will die from cancers of the mouth, nose and throat as a result of their smoking?

_________ out of 100
B1. In your opinion, how bad is smoking for your health?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B2. In your opinion, how likely is it that you will die earlier than you otherwise would if you continue to smoke?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die earlier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely certain to die earlier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

_________________________ out of 100

B4. Did reading this information lead you to think about quitting smoking?

(please tick one box below)

☐ made me think a lot about quitting
☐ made me think a little about quitting
☐ did not make me think about quitting

B5. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

☐ increased my desire to quit smoking a lot
☐ increased my desire to quit smoking a little
☐ made no difference to my desire to quit smoking
☐ decreased my desire to quit smoking a little
☐ decreased my desire to quit smoking a lot

B6. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

___________________________

___________________________

___________________________

___________________________

B7. On the following scales, please indicate how much you experienced the following feelings while reading the information:

(please tick a box next to each scale to indicate your feelings)

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Slighty</th>
<th>Quite</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxious</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horrified</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scared</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shocked</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tense</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thank you very much for participating in our study.
Appendix I: Study 9 Questionnaires
1. Are you a cigarette smoker?
   - No  discontinue
   - Yes

2. Gender (record)
   - Male
   - Female

3. How old are you?
   Age _______ years

4. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

Smoking reduces your blood’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

Cigarettes contain a chemical called tar. Tar is the substance that makes smokers’ teeth go yellow.

Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds.

Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than nonsmokers.

A1. In your opinion, how bad is smoking for your health?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all bad for my health

absolutely terrible for my health

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all likely to die early

absolutely certain to die early

A3. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot
A4. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are exactly the same as the ones you read previously.

Smoking reduces your fitness
Smoking reduces your body’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven’t thought about it much
- I haven’t thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

1 = definitely won’t reduce my fitness
10 = definitely will reduce my fitness

B3. How bad would it be for you if your smoking reduced your fitness?

1 = not at all bad
10 = absolutely devastating
C1. How much have you thought about smoking making your teeth go yellow in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven’t thought about it much
- [ ] I haven’t thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t make my teeth go yellow</td>
<td>definitely will make my teeth go yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking made your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D1. How much have you thought about smoking making you get more coughs and colds in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven’t thought about it much
- [ ] I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t make you get more coughs and colds</td>
<td>definitely will make you get more coughs and colds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How bad would it be for you if your smoking made you get more coughs and colds?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Smoking damages your skin.
Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

E1. How much have you thought about smoking damaging your skin in the past?
☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
1 2 3 4 5 6 7 8 9 10
definitely won’t damage my skin
definitely will damage my skin

e3. How bad would it be for you if your smoking damaged your skin?
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating

Thank you very much for participating in our study.
5. Are you a cigarette smoker?
   - No discontinue
   - Yes

6. Gender (record)
   - Male
   - Female

7. How old are you?
   Age ______ years

8. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment

STUDY 9

VERSION SLD: SEGREGATED/LINE DRAWING
SMOKING AND YOUR HEALTH

Smoking reduces your fitness
Smoking reduces your blood’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

H1. How much have you thought about smoking and your fitness in the past?
☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

H2. How likely do you think it is that your smoking will reduce your fitness?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t reduce my fitness</td>
<td>definitely will reduce my fitness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H3. How bad would it be for you if your smoking reduced your fitness?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C1. How much have you thought about smoking making your teeth go yellow in the past?
☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t make my teeth go yellow</td>
<td>definitely will make my teeth go yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking made your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D1. How much have you thought about smoking making you get more coughs and colds in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t make me get more coughs and colds</td>
<td>definitely will make me get more coughs and colds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How bad would it be for you if your smoking made you get more coughs and colds?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t damage my skin</td>
<td>definitely will damage my skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking damaged your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A1. In your opinion, how bad is smoking for your health?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all bad for my health
absolutely terrible for my health

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all likely to die early
absolutely certain to die early

A3. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

- increased a lot
- increased a little
- made no difference
- decreased a little
- decreased a lot

A4. Finally, what thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?


Thank you very much for participating in our study.
9. Are you a cigarette smoker?
   □ No  discontinue
   □ Yes

10. Gender (record)
    □ Male
    □ Female

11. How old are you?
    Age _______ years

12. Which one of the following statements best describes you:
    □ I am not thinking about quitting smoking
    □ I am thinking about quitting smoking, but not in the next fortnight
    □ I am thinking about quitting smoking in the next fortnight or so
    □ I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

Smoking reduces your body's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

Cigarettes contain a chemical called tar. Tar is the substance that makes smokers' teeth go yellow.

Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds.

Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than nonsmokers.

A1. In your opinion, how bad is smoking for your health?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. How much has reading this information increased or decreased your desire to quit smoking?
(please tick one box below)

- increased a lot
- increased a little
- made no difference
- decreased a little
- decreased a lot
A4. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?


We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.

- Smoking reduces your fitness
- Smoking reduces your body's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven't thought about it much
- [ ] I haven't thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?


B3. How bad would it be for you if your smoking reduced your fitness?


4 5 6 7 8 9 10


1 2 3 4 5 6 7 8 9 10
C1. How much have you thought about smoking making your teeth go yellow in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it a little
- [ ] I haven’t thought about it much
- [ ] I haven’t thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10

- definitely won’t make my teeth go yellow
- definitely will make my teeth go yellow

C3. How bad would it be for you if your smoking made your teeth go yellow?

[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10

- not at all bad
- absolutely devastating

D1. How much have you thought about smoking making you get more coughs and colds in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it a little
- [ ] I haven’t thought about it much
- [ ] I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10

- definitely won’t make me get more coughs and colds
- definitely will make me get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

[ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10

- not at all bad
- absolutely devastating
E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

1 2 3 4 5 6 7 8 9 10
1 definitely won’t damage my skin
10 definitely will damage my skin

E3. How bad would it be for you if your smoking damaged your skin?

1 2 3 4 5 6 7 8 9 10
1 not at all bad
10 absolutely devastating

Thank you very much for participating in our study.
13. Are you a cigarette smoker?
   □ No  discontinue
   □ Yes

14. Gender (record)
   □ Male
   □ Female

15. How old are you?
    Age ______ years

16. Which one of the following statements best describes you:
   □ I am not thinking about quitting smoking
   □ I am thinking about quitting smoking, but not in the next fortnight
   □ I am thinking about quitting smoking in the next fortnight or so
   □ I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

Smoking reduces your body's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

Cigarettes contain a chemical called tar. Tar is the substance that makes smokers' teeth go yellow.

Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds.

Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

A. In your opinion, how bad is smoking for your health?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all bad for my health</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. In your opinion, how likely is it that you will die earlier if you continue to smoke?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all likely to die early</td>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot
We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.

Smoking reduces your fitness
Smoking reduces your blood’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

1 definitely won’t reduce my fitness
2 3 4 5 6 7 8 9 10 definitely will reduce my fitness

B3. How bad would it be for you if your smoking reduced your fitness?

1 not at all bad
2 3 4 5 6 7 8 9 10 absolutely devastating
C1. How much have you thought about smoking making your teeth go yellow in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely</td>
<td>won’t make my teeth go yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking made your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D1. How much have you thought about smoking making you get more coughs and colds in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely</td>
<td>won’t make me get more coughs and colds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How bad would it be for you if your smoking made you get more coughs and colds?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

1 2 3 4 5 6 7 8 9 10
10 definitely will damage my skin
5 definitely won't damage my skin

E3. How bad would it be for you if your smoking damaged your skin?

1 2 3 4 5 6 7 8 9 10
10 absolutely devastating
5 not at all bad

Thank you very much for participating in our study.
17. Are you a cigarette smoker?
☐ No 
☐ Yes

18. Gender (record)
☐ Male
☐ Female

19. How old are you?
   Age _________ years

20. Which one of the following statements best describes you:
   ☐ I am not thinking about quitting smoking
   ☐ I am thinking about quitting smoking, but not in the next fortnight
   ☐ I am thinking about quitting smoking in the next fortnight or so
   ☐ I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

- Smoking reduces your fitness
  - Smoking reduces your blood's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

- 1: definitely won't reduce my fitness
- 10: definitely will reduce my fitness

B3. How bad would it be for you if your smoking reduced your fitness?

- 1: not at all bad
- 10: absolutely devastating
SMOKING AND YOUR HEALTH

C1. How much have you thought about smoking making your teeth go yellow in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t make my teeth go yellow</td>
<td>definitely will make my teeth go yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking made your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SMOKING AND YOUR HEALTH

D1. How much have you thought about smoking making you get more coughs and colds in the past?
- □ I have thought about it a lot
- □ I have thought about it quite a bit
- □ I have thought about it a little
- □ I haven’t thought about it much
- □ I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

1 2 3 4 5 6 7 8 9 10
definitely won’t make me get more coughs and colds
definitely will make me get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating

Smoking makes you get more coughs and colds.

Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds.
SMOKING AND YOUR HEALTH

Smoking damages your skin
Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't damage my skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>definitely will damage my skin</td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking damaged your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>
A1. In your opinion, how bad is smoking for your health?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. How much has reading this information increased or decreased your desire to quit smoking?
(please tick one box below)

- [ ] increased a lot
- [ ] increased a little
- [ ] made no difference
- [ ] decreased a little
- [ ] decreased a lot

A4. Finally, what thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

Thank you very much for participating in our study.
21. Are you a cigarette smoker?
   □ No  ______
   □ Yes

22. Gender (record)
   □ Male
   □ Female

23. How old are you?
   Age ______ years

24. Which one of the following statements best describes you:
   □ I am not thinking about quitting smoking
   □ I am thinking about quitting smoking, but not in the next fortnight
   □ I am thinking about quitting smoking in the next fortnight or so
   □ I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH...........

Smoking reduces your fitness

Smoking reduces your blood's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

1 2 3 4 5 6 7 8 9 10
1 definitely won't reduce my fitness
definitely will reduce my fitness

B3. How bad would it be for you if your smoking reduced your fitness?

1 2 3 4 5 6 7 8 9 10
1 not at all bad
absolutely devastating
SMOKING AND YOUR HEALTH

C1. How much have you thought about smoking making your teeth go yellow in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't make my teeth go yellow</td>
<td>definitely will make my teeth go yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking made your teeth go yellow?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D1. How much have you thought about smoking making you get more coughs and colds in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

[1] definitely won't make me get more coughs and colds
[2] definitely will make me get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

[1] not at all bad
[2] absolutely devastating
SMOKING AND YOUR HEALTH

Smoking damages your skin

Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than nonsmokers.

E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't damage my skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>definitely will damage my skin</td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking damaged your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>
A1. In your opinion, how bad is smoking for your health?

*(please circle one number below)*

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?

*(please circle one number below)*

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. How much has reading this information increased or decreased your desire to quit smoking?

*(please tick one box below)*

- [ ] increased a lot
- [ ] increased a little
- [ ] made no difference
- [ ] decreased a little
- [ ] decreased a lot

A4. Finally, what thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

---

Thank you very much for participating in our study.
Appendix J: Study 10 Questionnaires
1. Are you a cigarette smoker?
   - No  discontinue
   - Yes

2. On average, how many cigarettes do you smoke each day? __________

3. Gender (record)
   - Male
   - Female

4. How old are you?
   Age _______ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

Smoking reduces your blood's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

Cigarettes contain a chemical called tar. Tar is the substance that makes smokers' teeth go yellow.

Smokers have more coughs and colds than non-smokers. Smokers also take longer to recover from their coughs and colds.

Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

A1. In your opinion, how bad is smoking for your health?
   (please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?
   (please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?
   (please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to become ill</td>
<td>absolutely certain to become ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A5. In your opinion, how bad is smoking for your appearance?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all
bad for
my appearance

absolutely
terrible for
my appearance

A6. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.

Smoking reduces your fitness
Smoking reduces your blood's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't reduce my fitness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely will reduce my fitness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. How bad would it be for you if your smoking reduced your fitness?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C1. How much have you thought about smoking making your teeth go yellow in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

1 2 3 4 5 6 7 8 9 10
definitely won’t make my teeth go yellow
definitely will make my teeth go yellow

C3. How bad would it be for you if your smoking made your teeth go yellow?

1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating

D1. How much have you thought about smoking making you get more coughs and colds in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

1 2 3 4 5 6 7 8 9 10
definitely won’t make me get more coughs and colds
definitely will make me get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating
E1. How much have you thought about smoking damaging your skin in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

1 2 3 4 5 6 7 8 9 10
1 2 3 4 5 6 7 8 9 10
definitely will damage my skin
definitely won't damage my skin

e3. How bad would it be for you if your smoking damaged your skin?

1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating

Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   - No  discontinue
   - Yes

2. On average, how many cigarettes do you smoke each day? ________

3. Gender (record)
   - Male
   - Female

4. How old are you?
   Age ________ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

Smoking reduces your body's ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

Cigarettes contain a chemical called tar. Tar is the substance that makes smokers' teeth go yellow.

Smokers have more colds and colds than non-smokers. Smokers also take longer to recover from their coughs and colds.

Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

---

A1. In your opinion, how bad is smoking for your health?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all bad for my health

absolutely terrible for my health

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all likely to die early

absolutely certain to die early

A3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

___________ out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?

(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100

not at all likely to become ill

absolutely certain to become ill
A5. In your opinion, how bad is smoking for your appearance?

(please circle one number below)

[ ] 0  [ ] 10  [ ] 20  [ ] 30  [ ] 40  [ ] 50  [ ] 60  [ ] 70  [ ] 80  [ ] 90  [ ] 100

not at all bad for my appearance

absolutely terrible for my appearance

A6. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

[ ] increased a lot
[ ] increased a little
[ ] made no difference
[ ] decreased a little
[ ] decreased a lot

A4. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.

Smoking reduces your fitness.
Smoking reduces your blood’s ability to carry oxygen. This means that smoking makes you short of breath, more easily exhausted, and reduces your endurance.

B1. How much have you thought about smoking and your fitness in the past?

[ ] I have thought about it a lot
[ ] I have thought about it quite a bit
[ ] I have thought about it a little
[ ] I haven’t thought about it much
[ ] I haven’t thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

1 2 3 4 5 6 7 8 9 10

definitely won’t reduce my fitness

B3. How bad would it be for you if your smoking reduced your fitness?

1 2 3 4 5 6 7 8 9 10

not at all bad

absolutely devastating
C1. How much have you thought about smoking making your teeth go yellow in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

1 2 3 4 5 6 7 8 9 10
definitely won't make my teeth go yellow
definitely will make my teeth go yellow

C3. How bad would it be for you if your smoking made your teeth go yellow?

1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating

D1. How much have you thought about smoking making you get more coughs and colds in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

1 2 3 4 5 6 7 8 9 10
definitely won't make you get more coughs and colds
definitely will make you get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

1 2 3 4 5 6 7 8 9 10
not at all bad absolutely devastating
Smoking damages your skin
Smoking staves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't damage my skin</td>
<td>definitely will damage my skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking damaged your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   ☐ No  discontinue
   ☐ Yes

2. On average, how many cigarettes do you smoke each day? __________

3. Gender (record)
   ☐ Male
   ☐ Female

4. How old are you?
   Age ________ years

5. Which one of the following statements best describes you:
   ☐ I am not thinking about quitting smoking
   ☐ I am thinking about quitting smoking, but not in the next fortnight
   ☐ I am thinking about quitting smoking in the next fortnight or so
   ☐ I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

B1. How much have you thought about smoking and your fitness in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

1 2 3 4 5 6 7 8 9 10
definitely won’t reduce my fitness
definitely will reduce my fitness

B3. How bad would it be for you if your smoking reduced your fitness?

1 2 3 4 5 6 7 8 9 10
not at all bad
absolutely devastating
SMOKING AND YOUR HEALTH

Smoking makes your teeth go yellow
Cigarettes contain a chemical called tar. Tar is the substance that makes smokers' teeth go yellow.

C1. How much have you thought about smoking making your teeth go yellow in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

1 definitely won't make my teeth go yellow
2 3 4 5 6 7 8 9 10 definitely will make my teeth go yellow

C3. How bad would it be for you if your smoking made your teeth go yellow?

1 not at all bad
2 3 4 5 6 7 8 9 10 absolutely devastating
SMOKING AND YOUR HEALTH

D1. How much have you thought about smoking making you get more coughs and colds in the past?
   - I have thought about it a lot
   - I have thought about it quite a bit
   - I have thought about it a little
   - I haven't thought about it much
   - I haven't thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

1  2  3  4  5  6  7  8  9  10
definitely won't make me get more coughs and colds
definitely will make me get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

1  2  3  4  5  6  7  8  9  10
not at all bad absolutely devastating
SMOKING AND YOUR HEALTH

E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>
| definitely
won't damage
my skin | | | | | | | | | |
| definitely
will damage
my skin | | | | | | | | | |

E3. How bad would it be for you if your smoking damaged your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>
| not at all
bad | | | | | | | | | |
| absolutely
devastating | | | | | | | | | |
A1. In your opinion, how bad is smoking for your health?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. Out of 100 cigarette smokers, how many do you think will die as result of their smoking?

___________ out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to become ill</td>
<td>absolutely certain to become ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A5. In your opinion, how bad is smoking for your appearance?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my appearance</td>
<td>absolutely terrible for my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A6. How much has reading this information increased or decreased your desire to quit smoking?
(please tick one box below)

- [ ] increased a lot
- [ ] increased a little
- [ ] made no difference
- [ ] decreased a little
- [ ] decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   - No  discontinue
   - Yes

2. On average, how many cigarettes do you smoke each day? ________

3. Gender (record)
   - Male
   - Female

4. How old are you?
   Age ________ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

B1. How much have you thought about smoking and your fitness in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

B2. How likely do you think it is that your smoking will reduce your fitness?

1 2 3 4 5 6 7 8 9 10
definitely
definitely
won't
definitely
reduce my
reduce my
fitness
fitness

B3. How bad would it be for you if your smoking reduced your fitness?

1 2 3 4 5 6 7 8 9 10
not at all
absolutely
devastating
bad
SMOKING AND YOUR HEALTH

C1. How much have you thought about smoking making your teeth go yellow in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

C2. How likely do you think it is that your smoking will make your teeth go yellow?

1  2  3  4  5  6  7  8  9  10
1 = definitely won't make my teeth go yellow
10 = definitely will make my teeth go yellow

C3. How bad would it be for you if your smoking made your teeth go yellow?

1  2  3  4  5  6  7  8  9  10
1 = not at all bad
10 = absolutely devastating
D1. How much have you thought about smoking making you get more coughs and colds in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

D2. How likely do you think it is that your smoking will make you get more coughs and colds?

1 definitely won’t make me get more coughs and colds
2 3 4 5 6 7 8 9 10 definitely will make me get more coughs and colds

D3. How bad would it be for you if your smoking made you get more coughs and colds?

1 not at all bad
2 3 4 5 6 7 8 9 10 absolutely devastating
SMOKING AND YOUR HEALTH........

Smoking damages your skin
Smoking starves your skin of oxygen, and makes it dry and grey. Smokers also develop wrinkles around the eyes and mouth earlier than non-smokers.

E1. How much have you thought about smoking damaging your skin in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will damage your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t damage my skin</td>
<td>definitely will damage my skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking damaged your skin?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A1. In your opinion, how bad is smoking for your health?
   (please circle one number below)

   0 10 20 30 40 50 60 70 80 90 100

   not at all  absolutely  absolutely
   bad for terrible for terrible
   my health  my health  my health

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?
   (please circle one number below)

   0 10 20 30 40 50 60 70 80 90 100

   not at all  absolutely  absolutely
   likely to  certain to  certain to
   die early  die early  die early

A3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

   _______ out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?
   (please circle one number below)

   0 10 20 30 40 50 60 70 80 90 100

   not at all  absolutely  absolutely
   likely to  certain to  certain to
   become ill  die early  die early

A5. In your opinion, how bad is smoking for your appearance?
   (please circle one number below)

   0 10 20 30 40 50 60 70 80 90 100

   not at all  absolutely  absolutely
   bad for  terrible for  terrible
   my appearance  my appearance  my appearance

A6. How much has reading this information increased or decreased your desire to quit smoking?
   (please tick one box below)

   - increased a lot
   - increased a little
   - made no difference
   - decreased a little
   - decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

   Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   - No  [ ] discontinue
   - Yes  [ ]

2. On average, how many cigarettes do you smoke each day? ______

3. Gender (record)
   - Male  [ ]
   - Female  [ ]

4. How old are you?
   Age _______ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking  [ ]
   - I am thinking about quitting smoking, but not in the next fortnight  [ ]
   - I am thinking about quitting smoking in the next fortnight or so  [ ]
   - I am trying to quit smoking at the moment  [ ]
A1. In your opinion, how bad is smoking for your health?
(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely terrible for my health</td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?
(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely certain to die early</td>
</tr>
</tbody>
</table>

A3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

______ out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?
(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to become ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely certain to become ill</td>
</tr>
</tbody>
</table>

---

**SMOKING AND YOUR HEALTH**

Smoking causes Stroke. A stroke occurs when the blood and oxygen supply to the brain is blocked, or when an artery within the brain bursts and bleeds. A stroke produces sudden and unexpected brain injury which may cause temporary or permanent disabilities.

Smoking causes Heart Attack. A heart attack occurs when the blood supply to the heart muscle is blocked off, causing severe damage in the area. Twenty per cent of people will die within the first hour of a heart attack, with a further 10 per cent dying in hospital and 5 per cent dying within 3 months of leaving hospital.

Smoking causes Emphysema. In emphysema, the air sacs in the lungs are gradually destroyed so people have difficulty absorbing enough oxygen. Thus it becomes harder to breathe in and out, and normal daily activities become more difficult as the disease gets worse.

Smoking causes cancers of the mouth, nose and throat. These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance.
A5. In your opinion, how bad is smoking for your appearance?
(please circle one number below)

0 10 20 30 40 50 60 70 80 90 100
not at all bad for my appearance absolutely terrible for my appearance

A6. How much has reading this information increased or decreased your desire to quit smoking?
(please tick one box below)

[ ] increased a lot
[ ] increased a little
[ ] made no difference
[ ] decreased a little
[ ] decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?


We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.

Smoking causes Stroke
A stroke occurs when the blood and oxygen supply to the brain is blocked, or when an artery within the brain bursts and bleeds. A stroke produces sudden and unexpected brain injury which may cause temporary or permanent disabilities.

B1. How much have you thought about smoking and stroke in the past?

[ ] I have thought about it a lot
[ ] I have thought about it quite a bit
[ ] I have thought about it a little
[ ] I haven’t thought about it much
[ ] I haven’t thought about it at all

B2. How likely do you think it is that your smoking will increase your risk of a stroke?


B3. How bad would it be for you if your smoking increased your risk of a stroke?


4
### C1. How much have you thought about smoking and heart attack in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven't thought about it much
- [ ] I haven't thought about it at all

### C2. How likely do you think it is that your smoking will increase your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### C3. How bad would it be for you if your smoking increased your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>

---

### D1. How much have you thought about smoking and emphysema in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven't thought about it much
- [ ] I haven't thought about it at all

### D2. How likely do you think it is that your smoking will increase your risk of emphysema?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### D3. How bad would it be for you if your smoking increased your risk of emphysema?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>
Smoking causes cancers of the mouth, nose and throat.
These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance.

E1. How much have you thought about smoking and cancers of the mouth, nose and throat in the past?
☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

E2. How likely do you think it is that your smoking will increase your risk of cancers of the mouth, nose and throat?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking increased your risk of cancers of the mouth, nose and throat?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   - No    discontinue
   - Yes

2. On average, how many cigarettes do you smoke each day? _____

3. Gender (record)
   - Male
   - Female

4. How old are you?
   Age _____ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment

STUDY 10

VERSION HAM: HIGH/INTEGRATED/MALE
SMOKING AND YOUR HEALTH

A. In your opinion, how bad is smoking for your health?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely terrible for my health</td>
</tr>
</tbody>
</table>

B. In your opinion, how likely is it that you will die earlier if you continue to smoke?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely certain to die early</td>
</tr>
</tbody>
</table>

C. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

_________ out of 100

D. In your opinion, how likely is it that you will become ill because of your smoking?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to become ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely certain to become ill</td>
</tr>
</tbody>
</table>

Smoking causes Stroke. A stroke occurs when the blood and oxygen supply to the brain is blocked or when an artery within the brain bursts and bleeds. A stroke produces sudden and unexpected brain injury which may cause temporary or permanent disabilities.

Smoking causes Heart Attack. A heart attack occurs when the blood supply to the heart muscle is blocked off, causing severe damage in the area. Twenty per cent of people will die within the first hour of a heart attack, with a further 10 per cent dying in hospital and 5 per cent dying within 3 months of leaving hospital.

Smoking causes Emphysema. In emphysema, the air sacs in the lungs are gradually destroyed so people have difficulty absorbing enough oxygen. Thus it becomes harder to breathe in and out, and normal daily activities become more difficult as the disease gets worse.

Smoking causes cancer of the mouth, nose and throat. These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance.
A5. In your opinion, how bad is smoking for your appearance?

(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bad for my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>terrible for my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A6. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?

________________________
________________________
________________________
________________________
________________________
________________________
________________________

We would now like you to read the information about smoking again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.

Smoking causes Stroke

A stroke occurs when the blood and oxygen supply to the brain is blocked, or when an artery within the brain bursts and bleeds. A stroke produces sudden and unexpected brain injury which may cause temporary or permanent disabilities.

B1. How much have you thought about smoking and stroke in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

B2. How likely do you think it is that your smoking will increase your risk of a stroke?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. How bad would it be for you if your smoking increased your risk of a stroke?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C1. How much have you thought about smoking and heart attack in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven't thought about it much
- [ ] I haven't thought about it at all

C2. How likely do you think it is that your smoking will increase your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking increased your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D1. How much have you thought about smoking and emphysema in the past?

- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven't thought about it much
- [ ] I haven't thought about it at all

D2. How likely do you think it is that your smoking will increase your risk of emphysema?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How bad would it be for you if your smoking increased your risk of emphysema?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Smoking causes cancers of the mouth, nose and throat.

These cancers most often occur on the lip, the tongue, the floor of the mouth or the area at the back of the mouth. Following surgery, some people will have difficulties eating and swallowing, and will have problems with their speech and changes to their appearance.

E1. How much have you thought about smoking and cancers of the mouth, nose and throat in the past?
   - [ ] I have thought about it a lot
   - [ ] I have thought about it quite a bit
   - [ ] I have thought about it a little
   - [ ] I haven't thought about it much
   - [ ] I haven't thought about it at all

E2. How likely do you think it is that your smoking will increase your risk of cancers of the mouth, nose and throat?

   1 2 3 4 5 6 7 8 9 10
   - [ ] definitely won't increase
     my risk
   - [ ] definitely will increase
     my risk

E3. How bad would it be for you if your smoking increased your risk of cancers of the mouth, nose and throat?

   1 2 3 4 5 6 7 8 9 10
   - [ ] not at all
     bad
   - [ ] absolutely
     devastating

Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   - No  
   - Yes  
   - discontinue

2. On average, how many cigarettes do you smoke each day?  

3. Gender (record)
   - Male  
   - Female

4. How old are you?
   Age _______ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment

STUDY 10

VERSION HSF: HIGH/SEGREGATED/FEMALE
SMOKING AND YOUR HEALTH

B1. How much have you thought about smoking and stroke in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

B2. How likely do you think it is that your smoking will increase your risk of a stroke?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely</td>
<td>won’t increase</td>
<td>my risk</td>
<td>definitely</td>
<td>will increase</td>
<td>my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. How bad would it be for you if your smoking increased your risk of a stroke?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>

C1. How much have you thought about smoking and heart attack in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

C2. How likely do you think it is that your smoking will increase your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely</td>
<td>won’t increase</td>
<td>my risk</td>
<td>definitely</td>
<td>will increase</td>
<td>my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking increased your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>
SMOKING AND YOUR HEALTH..........

D1. How much have you thought about smoking and emphysema in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

D2. How likely do you think it is that your smoking will increase your risk of emphysema?

1 2 3 4 5 6 7 8 9 10
definitely won't increase definitely will increase my risk
my risk

D3. How bad would it be for you if your smoking increased your risk of emphysema?

1 2 3 4 5 6 7 8 9 10
not at all absolutely devastating
devastating

---

SMOKING AND YOUR HEALTH..........

E1. How much have you thought about smoking and cancers of the mouth, nose and throat in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

E2. How likely do you think it is that your smoking will increase your risk of cancers of the mouth, nose and throat?

1 2 3 4 5 6 7 8 9 10
definitely won't increase definitely will increase my risk
my risk

E3. How bad would it be for you if your smoking increased your risk of cancers of the mouth, nose and throat?

1 2 3 4 5 6 7 8 9 10
not at all absolutely devastating
bad
A1. In your opinion, how bad is smoking for your health?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

not at all bad for my health

absolutely terrible for my health

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

not at all likely to die early

absolutely certain to die early

A3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?

__________ out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

not at all likely to become ill

absolutely certain to become ill

A5. In your opinion, how bad is smoking for your appearance?

(please circle one number below)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

not at all bad for my appearance

absolutely terrible for my appearance

A6. How much has reading this information increased or decreased your desire to quit smoking?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?


Thank you very much for participating in our study.
1. Are you a cigarette smoker?
   - No discontinue
   - Yes

2. On average, how many cigarettes do you smoke each day? _________

3. Gender (record)
   - Male
   - Female

4. How old are you?
   - Age _______ years

5. Which one of the following statements best describes you:
   - I am not thinking about quitting smoking
   - I am thinking about quitting smoking, but not in the next fortnight
   - I am thinking about quitting smoking in the next fortnight or so
   - I am trying to quit smoking at the moment
SMOKING AND YOUR HEALTH

A stroke occurs when the blood and oxygen supply to the brain is blocked, or when an artery within the brain bursts and bleeds. A stroke produces sudden and unexpected brain injury which may cause temporary or permanent disabilities.

B1. How much have you thought about smoking and stroke in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

B2. How likely do you think it is that your smoking will increase your risk of a stroke?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. How bad would it be for you if your smoking increased your risk of a stroke?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>

SMOKING AND YOUR HEALTH

A heart attack occurs when the blood supply to the heart muscle is blocked off, causing severe damage in the area. Twenty per cent of people will die within the first hour of a heart attack, with a further 10 per cent dying in hospital and 5 per cent dying within 3 months of leaving hospital.

C1. How much have you thought about smoking and heart attack in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

C2. How likely do you think it is that your smoking will increase your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How bad would it be for you if your smoking increased your risk of a heart attack?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>absolutely devastating</td>
</tr>
</tbody>
</table>
SMOKING AND YOUR HEALTH

D1. How much have you thought about smoking and emphysema in the past?
- □ I have thought about it a lot
- □ I have thought about it quite a bit
- □ I have thought about it a little
- □ I haven’t thought about it much
- □ I haven’t thought about it at all

D2. How likely do you think it is that your smoking will increase your risk of emphysema?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t increase my risk</td>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How bad would it be for you if your smoking increased your risk of emphysema?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SMOKING AND YOUR HEALTH

E1. How much have you thought about smoking and cancers of the mouth, nose and throat in the past?
- □ I have thought about it a lot
- □ I have thought about it quite a bit
- □ I have thought about it a little
- □ I haven’t thought about it much
- □ I haven’t thought about it at all

E2. How likely do you think it is that your smoking will increase your risk of cancers of the mouth, nose and throat?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t increase my risk</td>
<td>definitely will increase my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E3. How bad would it be for you if your smoking increased your risk of cancers of the mouth, nose and throat?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad</td>
<td>absolutely devastating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A1. In your opinion, how bad is smoking for your health?  
(please circle one number below)  

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>absolutely terrible for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bad for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will die earlier if you continue to smoke?  
(please circle one number below)  

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely certain to die early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. Out of 100 cigarette smokers, how many do you think will die as a result of their smoking?  
________________ out of 100

A4. In your opinion, how likely is it that you will become ill because of your smoking?  
(please circle one number below)  

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to become ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely certain to become ill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A5. In your opinion, how bad is smoking for your appearance?  
(please circle one number below)  

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all bad for my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely terrible for my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A6. How much has reading this information increased or decreased your desire to quit smoking?  
(please tick one box below)  

- [ ] increased a lot  
- [ ] increased a little  
- [ ] made no difference  
- [ ] decreased a little  
- [ ] decreased a lot

A7. What thoughts and feelings went through your mind when you were reading the information about the health effects of smoking?  

__________________________

__________________________

__________________________

Thank you very much for participating in our study.
Appendix K: Study 11 Questionnaires
1. Are you currently a regular exerciser?

[NOTE: regular exercise is defined as a minimum of 30 minutes of moderate-intensity exercise, at least 3-4 days per week, where moderate-intensity is exercise that causes a slight, but noticeable, increase in breathing and heart rate]

☐ Yes  discontinue
☐ No

2. Gender (record)

☐ Male
☐ Female

3. How old are you?

Age ________ years

4. Which one of the following statements best describes you:

☐ I am not thinking about starting to exercise regularly
☐ I am thinking starting to exercise regularly, but not in the next fortnight
☐ I am thinking about starting to exercise regularly in the next fortnight or so
☐ I am trying to start exercising regularly at the moment

STUDY 11

VERSION AF: INTEGRATED/FEMALE
EXERCISE AND YOUR HEALTH..........

Regular exercise reduces your risk of heart disease. Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.

Regular exercise reduces your risk of Type 2 diabetes. Type 2 (adult) diabetes is the most common form of diabetes, and is most common after age 40. Type 2 diabetes' bodies gradually lose the ability to use insulin properly, so glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.

Regular exercise reduces your risk of obesity. Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.

Regular exercise reduces your risk of depression. Depression affects most of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress.

A1. In your opinion, how good is exercise for your health? (please circle one number below)
   0  10  20  30  40  50  60  70  80  90  100
   not at all good for my health  absolutely fantastic for my health

A2. In your opinion, how likely is it that you will live longer if you start exercising regularly? (please circle one number below)
   0  10  20  30  40  50  60  70  80  90  100
   not at all likely to live longer  absolutely certain to live longer

A3. In your opinion, how likely is it that you will become more healthy if you start exercising regularly? (please circle one number below)
   0  10  20  30  40  50  60  70  80  90  100
   not at all likely to become more healthy  absolutely certain to become more healthy

A4. In your opinion, how good is exercise for your appearance? (please circle one number below)
   0  10  20  30  40  50  60  70  80  90  100
   not at all good for my appearance  absolutely fantastic for my appearance

A5. In your opinion, how likely is it that your appearance will improve if you start exercising regularly? (please circle one number below)
   0  10  20  30  40  50  60  70  80  90  100
   not at all likely to improve my appearance  absolutely certain to improve my appearance
A6. How much has reading this information increased or decreased your desire to start exercising regularly?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot

A7. How likely are you to start exercising regularly?

0 10 20 30 40 50 60 70 80 90 100

not at all likely to start exercising

absolutely certain to start exercising

A8. What thoughts and feelings went through your mind when you were reading the information about the health benefits of exercise?

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

We would now like you to read the information about exercise again, and answer some questions about each of the messages.

The following messages are the same as the ones you read previously.
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of heart disease.

Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.

B1. How much have you thought about exercise and your risk of heart disease in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

B2. How likely do you think it is that regular exercise will reduce your risk of heart disease?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't reduce my risk</td>
<td>definitely will reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. How good would it be for you if regular exercise reduced your risk of heart disease?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of Type 2 diabetes.

Type 2 (adult) diabetes is the most common form of diabetes, and is most common after age 40. Type 2 diabetics' bodies gradually lose the ability to use insulin properly, so glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.

C1. How much have you thought about exercise and your risk of type 2 diabetes in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

C2. How likely do you think it is that regular exercise will reduce your risk of type 2 diabetes?

1 2 3 4 5 6 7 8 9 10

definitely will reduce my risk
definitely won't reduce my risk

C3. How good would it be for you if regular exercise reduced your risk of type 2 diabetes?

1 2 3 4 5 6 7 8 9 10

not at all good
absolutely fantastic
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of obesity
Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.

D1. How much have you thought about exercise and your risk of obesity in the past?
- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven’t thought about it much
- I haven’t thought about it at all

D2. How likely do you think it is that regular exercise will reduce your risk of obesity?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't reduce my risk</td>
<td>definitely will reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How good would it be for you if regular exercise reduced your risk of obesity?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of depression

Depression affects most of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress.

E1. How much have you thought about exercise and your risk of depression?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

E2. How likely do you think it is that regular exercise will reduce your risk of depression?

[ ] 1 2 3 4 5 6 7 8 9 10

definitely
won’t reduce
my risk

definitely
will reduce
my risk

E3. How good would it be for you if regular exercise reduced your risk of depression?

[ ] 1 2 3 4 5 6 7 8 9 10

not at all
good

absolutely
fantastic

Thank you very much for participating in our study.
1. Are you currently a regular exerciser?

[NOTE: regular exercise is defined as a minimum of 30 minutes of moderate-intensity exercise, at least 3-4 days per week, where moderate-intensity is exercise that causes a slight, but noticeable, increase in breathing and heart rate]

☐ Yes continue
☐ No

2. Gender (record)

☐ Male
☐ Female

3. How old are you?

Age _______ years

4. Which one of the following statements best describes you:

☐ I am not thinking about starting to exercise regularly
☐ I am thinking starting to exercise regularly, but not in the next fortnight
☐ I am thinking about starting to exercise regularly in the next fortnight or so
☐ I am trying to start exercising regularly at the moment

STUDY 11

VERSION AM: INTEGRATED/MALE
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of heart disease.
Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.

Regular exercise reduces your risk of Type 2 diabetes.
Type 2 (adult) diabetes is the most common form of diabetes, and is most common after age 40. Type 2 diabetes’ bodies gradually lose the ability to use insulin properly, as glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.

Regular exercise reduces your risk of obesity.
Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.

Regular exercise reduces your risk of depression.
Depression affects many of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress.

A1. In your opinion, how good is exercise for your health?

(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good for my health</td>
<td>absolutely fantastic for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A2. In your opinion, how likely is it that you will live longer if you start exercising regularly?

(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to live longer</td>
<td>absolutely certain to live longer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A3. In your opinion, how likely is it that you will become more healthy if you start exercising regularly?

(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to become more healthy</td>
<td>absolutely certain to become more healthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A4. In your opinion, how good is exercise for your appearance?

(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good for my appearance</td>
<td>absolutely fantastic for my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A5. In your opinion, how likely is it that your appearance will improve if you start exercising regularly?

(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all likely to improve my appearance</td>
<td>absolutely certain to improve my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A6. How much has reading this information increased or decreased your desire to start exercising regularly?

(please tick one box below)

☐ increased a lot
☐ increased a little
☐ made no difference
☐ decreased a little
☐ decreased a lot

A7. How likely are you to start exercising regularly?

0 10 20 30 40 50 60 70 80 90 100

not at all
likely to
start exercising

absolutely
certain to
start exercising

A8. What thoughts and feelings went through your mind when you were reading the information about the health benefits of exercise?

________________________________________

________________________________________

________________________________________

________________________________________

________________________________________

________________________________________
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of heart disease.

Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.

B1. How much have you thought about exercise and your risk of heart disease in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven’t thought about it much
- I haven’t thought about it at all

B2. How likely do you think it is that regular exercise will reduce your risk of heart disease?

1 2 3 4 5 6 7 8 9 10
definitely won’t reduce definitely will reduce my risk my risk

B3. How good would it be for you if regular exercise reduced your risk of heart disease?

1 2 3 4 5 6 7 8 9 10
not at all absolutely good fantastic
Regular exercise reduces your risk of Type 2 diabetes.
Type 2 (adult) diabetes is the most common form of diabetes, and is most common after age 40. Type 2 diabetics’ bodies gradually lose the ability to use insulin properly, so glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.

C1. How much have you thought about exercise and your risk of type 2 diabetes in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

C2. How likely do you think it is that regular exercise will reduce your risk of type 2 diabetes?

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10
---|---|---|---|---|---|---|---|---|---
definitely won’t reduce my risk | definitely will reduce my risk

C3. How good would it be for you if regular exercise reduced your risk of type 2 diabetes?

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10
---|---|---|---|---|---|---|---|---|---
not at all good | absolutely fantastic
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of obesity
Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.

D1. How much have you thought about exercise and your risk of obesity in the past?
☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

D2. How likely do you think it is that regular exercise will reduce your risk of obesity?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won’t reduce my risk</td>
<td>definitely will reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How good would it be for you if regular exercise reduced your risk of obesity?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of depression.

Depression affects most of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress.

E1. How much have you thought about exercise and your risk of depression?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

E2. How likely do you think it is that regular exercise will reduce your risk of depression?

1 2 3 4 5 6 7 8 9 10
definitely
won't reduce my risk
definitely will reduce my risk

E3. How good would it be for you if regular exercise reduced your risk of depression?

1 2 3 4 5 6 7 8 9 10
not at all good
absolutely fantastic

Thank you very much for participating in our study.
1. Are you currently a regular exerciser?

[NOTE: regular exercise is defined as a minimum of 30 minutes of moderate-intensity exercise, at least 3-4 days per week, where moderate-intensity is exercise that causes a slight, but noticeable, increase in breathing and heart rate]

☐ Yes discontinue
☐ No

2. Gender (record)

☐ Male
☐ Female

3. How old are you?

Age ________ years

4. Which one of the following statements best describes you:

☐ I am not thinking about starting to exercise regularly
☐ I am thinking starting to exercise regularly, but not in the next fortnight
☐ I am thinking about starting to exercise regularly in the next fortnight or so
☐ I am trying to start exercising regularly at the moment
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of heart disease.

Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.

B1. How much have you thought about exercise and your risk of heart disease in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

B2. How likely do you think it is that regular exercise will reduce your risk of heart disease?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely will reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B3. How good would it be for you if regular exercise reduced your risk of heart disease?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of Type 2 diabetes.

Type 2 (adult) diabetes is the most common form of diabetes, and it is most common after age 40. Type 2 diabetics' bodies gradually lose the ability to use insulin properly, so glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.

C1. How much have you thought about exercise and your risk of type 2 diabetes in the past?
- [ ] I have thought about it a lot
- [ ] I have thought about it quite a bit
- [ ] I have thought about it a little
- [ ] I haven't thought about it much
- [ ] I haven't thought about it at all

C2. How likely do you think it is that regular exercise will reduce your risk of type 2 diabetes?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't reduce my risk</td>
<td>definitely will reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C3. How good would it be for you if regular exercise reduced your risk of type 2 diabetes?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of obesity

Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.

D1. How much have you thought about exercise and your risk of obesity in the past?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

D2. How likely do you think it is that regular exercise will reduce your risk of obesity?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely won't reduce my risk</td>
<td>definitely will reduce my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. How good would it be for you if regular exercise reduced your risk of obesity?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all good</td>
<td>absolutely fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of depression

Depression affects most of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress.

E1. How much have you thought about exercise and your risk of depression?

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

E2. How likely do you think it is that regular exercise will reduce your risk of depression?

1 = definitely won't reduce my risk
2 = definitely will reduce my risk

E3. How good would it be for you if regular exercise reduced your risk of depression?

1 = absolutely fantastic
2 = very good
3 = good
4 = fair
5 = poor
6 = very poor
7 = terrible
8 = absolutely horrible
9 = completely awful
10 = absolutely the worst
A1. In your opinion, how good is exercise for your health?

(please circle one number below)

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

not at all good for my health

absolutely fantastic for my health

A2. In your opinion, how likely is it that you will live longer if you start exercising regularly?

(please circle one number below)

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

not at all likely to live longer

absolutely certain to live longer

A3. In your opinion, how likely is it that you will become more healthy if you start exercising regularly?

(please circle one number below)

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

not at all likely to become more healthy

absolutely certain to become more healthy

A4. In your opinion, how good is exercise for your appearance?

(please circle one number below)

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

not at all good for my appearance

absolutely fantastic for my appearance

A5. In your opinion, how likely is it that your appearance will improve if you start exercising regularly?

(please circle one number below)

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

not at all likely to improve my appearance

absolutely certain to improve my appearance

A6. How much has reading this information increased or decreased your desire to start exercising regularly?

(please tick one box below)

[ ] increased a lot
[ ] increased a little
[ ] made no difference
[ ] decreased a little
[ ] decreased a lot

A7. How likely are you to start exercising regularly?

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

not at all likely to start exercising

absolutely certain to start exercising

A8. What thoughts and feelings went through your mind when you were reading the information about the health benefits of exercise?

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Thank you very much for participating in our study.
1. Are you currently a regular exerciser?

[ ] Yes  [ ] No

NOTE: Regular exercise is defined as a minimum of 30 minutes of moderate-intensity exercise, at least 5 days per week for 6 months or more.

2. Gender (Record)

[ ] Male  [ ] Female

3. How old are you?

[ ] ____________ years

4. Which one of the following statements best describes your:

[ ] I am not thinking about starting to exercise regularly, but not in the next fortnight.
[ ] I am thinking about starting to exercise regularly, but not in the next fortnight or so.
[ ] I am thinking about starting to exercise regularly in the next fortnight or so.
[ ] I am trying to start exercising regularly at the moment.

STUDY 11

VERSION SM: SEGREGATED/MALE
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of heart disease.
Regular exercise prevents or delays the development of high blood pressure, reduces blood pressure in people with hypertension, and lowers blood cholesterol levels. So, exercise decreases your risk of developing heart disease.

B1. How much have you thought about exercise and your risk of heart disease in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven’t thought about it much
☐ I haven’t thought about it at all

B2. How likely do you think it is that regular exercise will reduce your risk of heart disease?

1 2 3 4 5 6 7 8 9 10
10 definitely will reduce my risk
9 definitely won’t reduce my risk

B3. How good would it be for you if regular exercise reduced your risk of heart disease?

1 2 3 4 5 6 7 8 9 10
10 absolutely fantastic
9 not at all good
**EXERCISE AND YOUR HEALTH**

Regular exercise reduces your risk of Type 2 diabetes

Type 2 (adult) diabetes is the most common form of diabetes, and is most common after age 40. Type 2 diabetics' bodies gradually lose the ability to use insulin properly, so glucose (sugar) builds up in the blood. Research shows that you can cut your risk of diabetes in half simply by walking 30 minutes a day.

**C1. How much have you thought about exercise and your risk of type 2 diabetes in the past?**

- I have thought about it a lot
- I have thought about it quite a bit
- I have thought about it a little
- I haven't thought about it much
- I haven't thought about it at all

**C2. How likely do you think it is that regular exercise will reduce your risk of type 2 diabetes?**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>definitely</td>
<td>won't reduce</td>
<td>my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely</td>
<td>will reduce</td>
<td>my risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**C3. How good would it be for you if regular exercise reduced your risk of type 2 diabetes?**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolutely</td>
<td>fantastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of obesity.

Exercise does not just burn up calories while you are doing it. Regular aerobic exercise resets the metabolic rate at a higher level, so that even in ordinary everyday life your body will burn off more calories.

D1. How much have you thought about exercise and your risk of obesity in the past?

☐ I have thought about it a lot
☐ I have thought about it quite a bit
☐ I have thought about it a little
☐ I haven't thought about it much
☐ I haven't thought about it at all

D2. How likely do you think it is that regular exercise will reduce your risk of obesity?


1 2 3 4 5 6 7 8 9 10 

definitely won't reduce
my risk
definitely will reduce
my risk

D3. How good would it be for you if regular exercise reduced your risk of obesity?


1 2 3 4 5 6 7 8 9 10

not at all
good absolutely
fantastic
EXERCISE AND YOUR HEALTH

Regular exercise reduces your risk of depression.

Depression affects most of us at some time in our lives, and can be debilitating. Research shows something as easy as a regular 30-minute walk can reduce, and even prevent, depression. Exercise also increases feelings of well-being and improves your ability to handle stress.

E1. How much have you thought about exercise and your risk of depression?
   - I have thought about it a lot
   - I have thought about it quite a bit
   - I have thought about it a little
   - I haven't thought about it much
   - I haven't thought about it at all

E2. How likely do you think it is that regular exercise will reduce your risk of depression?

   1 2 3 4 5 6 7 8 9 10
   definitely
   definitely
   won't reduce
   will reduce
   my risk
   my risk

E3. How good would it be for you if regular exercise reduced your risk of depression?

   1 2 3 4 5 6 7 8 9 10
   not at all
   absolutely
   good
   fantastic
A1. In your opinion, how good is exercise for your health?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
</table>

not at all good for my health

absolutely fantastic for my health

A2. In your opinion, how likely is it that you will live longer if you start exercising regularly?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
</table>

not at all likely to live longer

absolutely certain to live longer

A3. In your opinion, how likely is it that you will become more healthy if you start exercising regularly?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
</table>

not at all likely to become more healthy

absolutely certain to become more healthy

A4. In your opinion, how good is exercise for your appearance?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
</table>

not at all good for my appearance

absolutely fantastic for my appearance

A5. In your opinion, how likely is it that your appearance will improve if you start exercising regularly?
(please circle one number below)

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
</table>

not at all likely to improve my appearance

absolutely certain to improve my appearance

A6. How much has reading this information increased or decreased your desire to start exercising regularly?
(please tick one box below)

- increased a lot
- increased a little
- made no difference
- decreased a little
- decreased a lot

A7. How likely are you to start exercising regularly?

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
</table>

not at all likely to start exercising

absolutely certain to start exercising

A8. What thoughts and feelings went through your mind when you were reading the information about the health benefits of exercise?

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

Thank you very much for participating in our study.
Appendix L: Illustrations of the concepts

(by Austin Wyatt, aged 8)
BE STUPID

DRUNK

DO SILLY THINGS

Go Crazy

BEAR

SICK