Looking on the Bright Side:
Smoking Cessation, Stages of Change, and Message Framing

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Abstract

Current public health smoking cessation messages are often loss-framed; for example, cigarette package warnings emphasize costs of smoking. Principles of the transtheoretical model and prospect theory were used to investigate whether gain-framed messages, which emphasize the benefits of quitting, might be an effective alternative. Smokers ($N = 162$) in precontemplation, contemplation, preparation, and action stages of change were assigned randomly to either a loss- or gain-framed print message condition. Self-report questionnaires were used to assess stage, decisional balance, and self-efficacy prior to and following message exposure. Attention and receptivity to the messages were also assessed. Results showed that smokers are more attentive and receptive to gain-framed messages. Receptivity also depends on stage. Precontemplators are less receptive than smokers in contemplation, preparation, or action to loss- and gain-framed messages. Neither attention nor receptivity impact stage movement, decisional balance, or self-efficacy.

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Premature death due to tobacco use is the most important public health problem facing Canadians today (Ellison, Morrison, de Groh, & Villeneuve, 2000). In 1995, 194,072 admissions to hospital in Canada were attributed to tobacco (Single, Rehm, Robson, & Truong, 2001). Each year, at least 45,000 deaths in Canada are caused by smoking (Health Canada, 2003). In fact, tobacco kills three times more Canadians than alcohol, AIDS, illicit drugs, car accidents, suicide, and murder combined (Saskatchewan Government, 2003). Clearly, smoking is a major health problem; consequently, research that helps reduce the prevalence of smoking is invaluable. Gains made through such research can benefit not only smokers, but also society in general. The present study focuses on the effects of health messages about smoking (e.g., warning labels on cigarette packages) on smoking cessation.

Smoking cessation is difficult, and solutions to the problem have not been easy. For some time, medical and behavioural science researchers devised pharmacological methods to help people quit smoking (Shiffman, 1993), including the transdermal “patch,” nicotine gum, and bupropion. In addition, they developed clinical treatment programs that incorporated a myriad of behaviour modification techniques (Bishop, 1994). Research in smoking cessation shifted when researchers recognized that the majority of smokers who wanted to quit smoking were not interested in attending formal treatment programs. Though they frequently integrated techniques developed by researchers into their smoking cessation efforts, smokers preferred to quit “on their own.”

Recognizing that people who preferred to quit independently were often successful at making that change, researchers directed their attention to these self-changers (e.g., Curry, 1993; Glasgow, Klesges, Mizes, & Pechacek, 1985; Prochaska, & DiClemente, 1983). As Curry (1993) aptly phrased it, self-help strategies served as “...an important bridge between the clinical and public health approach to smoking cessation” (p.790).

Stages of Change

Extensive research on self-changers has shown that change is a predictable process that can require months, and sometimes years, to complete. Stage theories have become increasingly popular in this research, particularly for health behaviours (Weinstein, Rothman, & Sutton, 1998). While continuum theories of health behaviour such as the *theory of reasoned action* (Fishbein & Ajzen, 1975) or the *theory of planned behaviour* (Ajzen & Madden, 1986) use a single prediction equation to predict behaviour change, stage theories, as used in the present context, categorize people into stages of change. The stages have relatively small differences among people in the same stage and relatively large differences between people in different stages. Stage theories are preferred because people in different stages have needs specific to their stage and temporal ordering of stages allows logical sequencing of treatments; hence they allow practitioners to better match treatments to individuals (Weinstein et al., 1998).

Prochaska and DiClemente (1983) developed the *transtheoretical model* of change by analyzing successful self-changers. Because the model is a stage model, it is often referred to as the *stages-of-change model*. Currently the most widely used stage model in health psychology (Weinstein et al., 1998), it was initially developed to examine smoking cessation; however, it has since been applied to wide variety of health behaviours (e.g., weight control, condom use, sunscreen use, and exercise acquisition).

The transtheoretical model proposes that change is a process governed by intention (Prochaska, Norcross, & DiClemente, 1994). With smoking cessation, the process involves five different stages: (a) precontemplation—not seriously considering quitting, (b) contemplation—seriously considering quitting within the next six months (but not within the next 30 days); (c) preparation—planning to quit within the next 30 days and have made a 24-

hour quit attempt in the past year; (d) action—quit within the last six months (and for at least 24 hours); and (e) maintenance—quit at least six months ago (Prochaska & DiClemente, 1983; DiClemente et al., 1991).¹

Although seemingly linear, most self-changers do not triumphantly move through the stages of change in such a fashion (Prochaska, DiClemente, & Norcross, 1992). A more accurate picture is that of an individual having some difficulty climbing an elongated spiral staircase. The individual usually begins to climb the staircase, but inevitably takes a few steps back down before, once again, proceeding back up. Most people fall back to the contemplation stage several times before successfully reaching the top (maintenance) stage.

The transtheoretical model incorporates two interrelated dimensions: stages of change and processes of change (DiClemente et al., 1991). The five stages of change represent a temporal dimension that determines *when* particular shifts in attitudes, intentions, and behaviours occur. The 10 processes of change represent activities and events that people use to facilitate their movement through the stages, i.e., the processes determine *how* these shifts occur (Prochaska et al., 1992). Five of the 10 processes are considered to be mainly cognitive and affective activities; they include consciousness-raising, dramatic relief, environmental reevaluation, self-reevaluation, and social liberation. The second five processes are considered to be mainly behavioural activities; they include counterconditioning, self-liberation, reinforcement management, helping relationships, and stimulus control. The model's name (transtheoretical) comes from the fact that the 10 processes are traditionally associated with distinct theoretical orientations (Prochaska, et al.,

¹ The model does not specify how to classify smokers who plan to quit within 30 days but have not made a previous 24-hour attempt.

1994)². For example, consciousness-raising (e.g., reading information about the effects of smoking) is a cognitive activity primarily associated with psychoanalytic theory, whereas stimulus control (e.g., avoiding smoking friends) is an activity primarily associated with behavioural theory.

People vary the processes of change that they use and the amount that they use them as a function of their stage (DiClemente et al., 1991). The general tendency is to use more cognitive processes in the earlier stages and more behavioural processes in the later stages. Ultimately, correctly matching processes to stages is believed to determine transition to a subsequent stage (Prochaska et al., 1992), which also suggests that interventions designed to prompt stage movement should include processes matched to an individual's stage. For example, smokers in the precontemplation stage of cessation may benefit more from information that tells them why they should quit, while those in the action stage may benefit more from information that tells them how they can quit.

In addition to the processes of change (an independent variable), the transtheoretical model features two outcome variables: decisional balance (the pros and cons of change) and self-efficacy (confidence in ability to change across problem situations). The decisional balance construct is based on Janis and Mann's (1977) conceptualization of decision making as a balance sheet of comparative potential gains and losses. According to Janis and Mann (1977), individuals weigh the potential gains and losses of a decision for themselves and for others before they make their decision; they also consider approval and disapproval of self and others. Using this concept, Velicer, DiClemente, Prochaska, and Brandenburg (1985) developed a simplified decisional balance measure that reliably predicts stages of change in smokers. The measure is made up of two orthogonal components: the pros and cons of

² The term *transtheoretical* could be objected to because individual theories make assumptions that are not necessarily consistent with each other; however, it is the name commonly used for this model.

smoking. The pro subscale contains items identified as basic reasons for smoking (e.g., smoking is a pleasurable activity), and the con subscale contains items associated with motives for quitting (e.g., smoking is a health hazard).³

Progress through the stages of change involves a decisional balance shift, such that individuals cognitively increase their pros for quitting and decrease their cons for quitting as they change their behaviour (Prochaska, Velicer, Rossi, Goldstein et al., 1994). For example, smokers who have no intention of quitting (in precontemplation stage) tend to rate the pros of smoking more highly than the cons; therefore, their overall decisional balance weighs in favour of smoking. On the other hand, smokers who have recently quit (in action stage) tend to rate the cons of smoking more highly than the pros; hence, their overall decisional balance weighs in favour of cessation. Noteworthy is that the decisional balance shift is initiated by an increase in pros for change (Prochaska, Velicer, Rossi, Goldstein, et al., 1994). That is, smokers start the process of quitting by cognitively increasing their reasons to quit. Also noteworthy is that pros appear to increase at twice the rate that the cons decrease. For most behaviours (including smoking cessation), the crossover in judgments that is required for action seems to occur during the contemplation stage, though for some it may not happen until the preparation stage.

It has been suggested (Prochaska, Velicer, Rossi, Goldstein, et al., 1994) that interventions that target an increase in the pros of changing behaviour should lead individuals to move from precontemplation to contemplation. Once there, interventions that target a decrease in cons of changing behaviour should help people move from contemplation to action. I could find no studies that targeted interventions in such a manner. While this

³ Note that pros and cons of smoking are comparable to cons and pros of smoking cessation.

suggestion seems worth pursuing, increasing the pros at the contemplation stage (which most people fall back to) also seems worthwhile. Perhaps increasing pros at this stage would help people move more quickly to the preparation stage. Alternatively, an increase in pros at the preparation and action stages might help prevent people from falling back to contemplation.

As noted above, in addition to the decisional balance construct, the transtheoretical model includes the concept of self-efficacy as an outcome variable in stage-change measurement. Self-efficacy, a psychological concept credited to Bandura (1986), refers to an individual's belief that he or she can successfully execute the behaviour or behaviours required to produce a desired outcome in a specific situation. Accordingly, the transtheoretical model purports that people are more likely to successfully quit smoking if they believe they can resist the temptation to smoke in challenging situations (DiClemente et al., 1991). Stage comparisons of self-efficacy for smoking cessation have shown significant differences in the precontemplation, contemplation, preparation, and action stages (DiClemente et al., 1991; Dijkstra, DeVries, & Bakker, 1996). As individuals move through the stages, their confidence to abstain from smoking in various challenging situations increases.

Applying the Transtheoretical Model

The transtheoretical model has been useful in confirming that people who are further along in the process of change are more likely to be successful in adopting health behaviours such as smoking cessation (Carbonari, DiClemente, & Sewell, 1999), getting breast cancer testing (Rakowski et al., 1998), and using safer sex practices (Bowen & Trotter, 1995; Stark et al., 1998). Yet, attempts to match an intervention to people's stage of change have not been as consistent (Sarafino, 2002). For example, Peterson and Aldana (1999) were successful in matching interventions to stages of change. In an attempt to improve exercise

behaviour, they assigned 527 adults to one of three groups: a stage-based intervention group, a generic intervention group, and a control group. Those in the stage-based intervention group were given messages that had been developed using the specific cognitive and behavioural processes theoretically appropriate for each stage (e.g., goal-setting information for people in the preparation stage and relapse prevention exercises for people in the action stage). Those in the generic intervention group were given messages that had been developed using information from the *Report of the Surgeon General* on physical activity. These messages focused on ideas such as the known benefits of exercise. Results showed significant differences in activity levels for the three groups over a 6-week period. The stage-based message group showed a 13% increase in activity, the generic message group showed a 1% increase in activity, and the control group showed an 8% decrease in activity.

Quinlan and McCaul (2000) matched interventions to stages of change; however, their results were not as successful. They attempted stage-matched and stage-mismatched interventions with smokers in the precontemplation stage. They provided information manuals to two groups of smokers who had no intention of quitting. The stage-matched intervention manuals contained outcome information about smoking cessation (e.g., “Why I Smoke,” “Effects of Smoking,” and “How Much It Costs to Smoke Cigarettes”), considered theoretically appropriate for smokers not thinking about quitting. The stage-mismatched intervention manuals contained action-oriented information (e.g., “Identifying Triggers,” “Plan of Action,” and “Using Your Buddy Effectively”), considered theoretically appropriate for smokers who have reached the action stage. Surprisingly, it was found that more participants who received the stage-mismatched intervention tried to quit smoking than did those in the stage-matched intervention. The researchers suggested that possible reasons for this finding included the fact that their sample consisted of young smokers with a light

smoking history. As a result, they may have been less committed to smoking and may have had more favourable attitudes toward trying to quit than many smokers. Also, when the sample was divided into those who had made a prior attempt and those who had not, it was found that smokers who had the strongest intention to quit were those with a prior quit attempt in the stage-mismatched intervention. This suggests that these particular precontemplators may have required only an extra push to progress in stage.

Health Messages

Health messages are persuasive appeals that can be framed to emphasize either the costs (losses) or benefits (gains) associated with a particular behaviour (Rothman & Salovey, 1997). For example, a message that warns people that failure to quit smoking might result in cancer emphasizes the potential losses of not taking specific action. Alternatively, a message that invites people to join a fitness club to improve physical fitness and increase energy emphasizes the potential gains that can be realized through exercise. Framed health messages are a common source of information for smokers. They abound, for example, on television, on cigarette packages, and in print media.

Prospect Theory

Prospect theory (Tversky & Kahneman, 1981) has commonly been used to explain decision making as it relates to message framing. According to prospect theory, people make decisions based on how alternatives are framed. The theory proposes that people are risk-seeking when they encounter information about losses, but risk-averse when they encounter information about gains. Tversky and Kahneman (1981) presented people with two situations (A and B) in which they could choose between two health programs designed to combat a disease expected to kill 600 people. In situation A, the first program choice was framed as definitely able to save 200 people (no risk involved), while the second program choice was

framed as having a one-third probability of saving all 600 and a two-thirds probability of saving none (risk involved). Though either choice was likely to have the same outcome, people preferred the first program, which was framed as a gain without risk. In situation B, the first program choice was framed as one in which 400 people would definitely die (no risk involved); the second program choice was framed as one in which there was a one-third probability that nobody would die and a two-thirds probability that all 600 would die (risk involved). Again, either program choice was likely to have the same outcome; however, this time people preferred the second program, which was framed as a loss with risk. In other words, though the objective features of both situations were identical, people's decisions differed, depending on how the situation was framed.

Health-Related Decisions

Although it is evident that people respond differently to loss- and gain-framed information, support for prospect theory has varied in the domain of health-related decisions (e.g., Banks et al., 1995; Finney & Iannotti, 2002; Rothman, Salovey, Antone, Keough, & Martin, 1993). Rothman and Salovey (1997) have suggested that one reason for these differing results is that the context in which people make health-related decisions differs from the context of the situations outlined in prospect theory. First, the situations presented in prospect theory were hypothetical. But personal health decisions are real-life decisions. Therefore, they are made in a different context, and that context varies from person to person. For example, if a man's father has died from prostate cancer, he may be more likely to think about cancer in terms of losses. Consequently, he may be more effectively influenced by loss-framed messages than a second man who has no familial history of cancer.

The formal probabilities that were specified in the development of prospect theory are another contextual difference between the situations in the prospect theory scenarios and

those in which personal health decisions are made (Rothman & Salovey, 1997). Such probabilities are rarely available to people. For example, smokers may be aware that their lives are likely to be shortened if they continue to smoke, but the numerous probabilities likely include increased chances of a shorter lifespan, of heart disease, of specific and varying cancers, and so on. For most smokers, the sum of these probabilities likely results in an overall understanding that smoking is not wise, but that is not the same clear probability situation outlined in prospect theory. Thus, the context in which a health decision is made must be considered when incorporating the assumptions of prospect theory into predictions and explanations of health-related decisions. Readiness to quit smoking may represent a context that influences the way health messages are interpreted and acted upon. If so, those in different stages of smoking cessation may be differentially affected by framed messages as a function of their stage. For example, individuals who are seriously considering cessation within 6 months (contemplation stage) may be thinking in terms of what they can gain if they quit; hence, they may be optimally influenced by gain-framed messages. Other factors individual to the smoker may provide additional contextual differences.

With respect to health-related decisions, Rothman and Salovey (1997) have proposed that the influence of loss- and gain-framed messages is determined by at least three important stages in the decision-making process: attention to the message, receptivity to the way the message is framed, and perceived function of the advocated behaviour (i.e., prevention, detection, or recuperation).

Attention and receptivity. The idea that attention and receptivity are important in persuasion can perhaps best be understood through the *heuristic-systematic model* of persuasion (Chaiken, 1980). According to this model, two fundamental information-processing modes are used in message judgements: heuristic and systematic. The heuristic

processing mode involves the use of learned knowledge structures in the form of simple decision rules, or cognitive heuristics, to reach judgements. For example, a woman who decides to use hormone replacement therapy just because her doctor advised it, rather than because she has considered the merits of doing so would be using heuristic processing. She is using a cognitive heuristic “doctors are experts and experts know best” to make her decision, rather than carefully considering reasons to use or not use the therapy. She does not need to pay a great deal of attention to the detailed information in the message because the heuristic provides a shortcut. Systematic processing, on the other hand, is a comprehensive, analytic orientation in which people scrutinize and integrate information before making a judgement, and it occurs only when an individual possesses adequate levels of both cognitive capacity and motivation (Zuckerman & Chaiken, 1996). Systematic processing is more likely if an individual is involved or interested in an issue (Petty & Cacioppo, 1979). To use the previous example, a woman who carefully weighs the pros and cons of her doctor’s arguments to use hormone replacement therapy before making her decision is using systematic processing. Her interest in hormone replacement therapy may be motivated by high personal responsibility for her health decisions and, therefore, she expends more cognitive resources when making her decision. In this sense, one can think of systematic processing as requiring greater attention than heuristic processing.

Studies have shown that attitudes formed or changed as a result of effortful thinking are more predictive of behavioural intentions and actions than are attitudes formed or changed with little thinking (Petty, Heesacker, & Hughes, 1997). The message, “Buy a Carleton bumper sticker” could be processed heuristically only, but if the image it portrays is readily accepted, the decision to buy it is relatively easy. However, because smoking

cessation is a difficult behaviour change, messages about it would more likely require systematic processing.

In addition to attending to information in a message, people must be receptive to arguments within it if they are to be persuaded by it (Rothman & Salovey, 1997). If the information is discrepant with what they already believe, it is not likely to be well received, and this may affect their decision to accept or reject the message. According to Rothman and Salovey (1997) message receptivity may depend on prior knowledge or experience. For example, smokers might pay attention to information about gum disease contained in a cigarette package warning. But if the accompanying graphic image of rotting teeth does not fit with the smokers they know, they may reject the information because it does not match their experience. It is possible that people who either intend to quit smoking or who have actually quit are receptive to both loss- and gain-framed messages. However, intuitively, one might expect that smokers would be more receptive to, for example, a gain-framed message that suggests cessation offers a whiter, brighter smile (i.e., healthier teeth and gums) than a loss-framed message that suggests smoking causes rotting teeth and gum disease.

The heuristic-systematic model maintains that heuristic and systematic processing can co-occur (Zuckerman & Chaiken, 1998). Which mode predominates depends on people's capacity to engage in detailed processing and, of particular interest to the present study, their motivation (Chaiken, Giner-Sorolla, & Chen, 1996). Smokers who either intend to quit smoking (e.g., in contemplation or preparation) or who are especially health conscious may be more likely to systematically process messages on smoking cessation than those who have no intention of quitting or are less health conscious.

Function of health behaviour. The final stage in the decision to accept or reject a health message depends on the perceived function of the advocated health behaviour

(Rothman & Salovey, 1997). Health behaviours perform one of three functions: prevention, detection, or recuperation/treatment. Rothman and Salovey (1997) have suggested that prospect theory can be used to explain why detection behaviours (e.g., mammography) appear to be more influenced by loss-framed messages, whereas prevention behaviours (e.g. condom use) appear to be more influenced by gain-framed messages. They suggest that loss-framed messages are effective with detection behaviours because detection behaviours involve risk; that is, there is a chance that the individual may find out that something is wrong. Prevention behaviours, on the other hand, are aimed at maintaining a healthy status and do not generally involve risk. Recall that prospect theory proposes that a decision to accept or reject a message depends not only how the message is framed (i.e., in terms of losses or gains), but also the risk involved in the decision.

Despite the general effectiveness of gain-framed messages with prevention behaviours (e.g., Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999), some research indicates otherwise. For example, people provided with positive versus negative nutrition education messages showed no significant differences in attitudes or intention to change preventive dietary behaviours (van Assema, Martens, Ruiter, & Brug, 2001). Other researchers found that negative, but not positive, preventive health messages increased willingness to use condoms (Blanton et al., 2001).

In general, recuperation behaviours are thought to act like prevention behaviours, in that they should provide relatively certain, desirable outcomes. One exception might be a situation in which an individual has to choose between radiation and surgery for cancer treatment. Although recuperation behaviours do appear to be more effectively influenced by gain-framed messages (Rothman & Salovey, 1997), they have mainly been studied in lab-based, hypothetical situations.

It is not known whether smokers who intend to quit smoking perceive cessation as a preventive or recuperative behaviour; it may depend on the smoker. Individuals who consider themselves healthy, despite the fact that they smoke, may see cessation as a means to prevent disease. Alternatively, individuals who consider themselves unhealthy as a result of smoking may see cessation as a means to recuperate from disease. This latter thinking may be especially true for heavier smokers or for those who have smoked for a longer time, because they are more likely aware of the effects of smoking (e.g., have developed smokers' cough). Finally, smokers may see smoking cessation as performing both preventive and recuperative functions. If gain-framed messages are indeed more successful at targeting both preventive and recuperative functions, smokers who see quitting as serving either function should be equally positively influenced by gain-framed messages.

Current Smoking Cessation Messages

Health Canada currently espouses loss-framed messages on cigarette packages. Warning labels on these packages have been designed to emphasize the losses people are likely to incur if they continue to smoke, rather than the gains that they might make if they stop smoking (e.g., "Every cigarette you smoke increases your chance of getting lung cancer."). Some research shows that loss-framed messages involving fear appeals may be effective in influencing health relevant attitudes and behaviour if they are accompanied by efficacy messages (Strahan et al., 2002). However, Schneider et al. (2001) found gain-framed messages more effective than loss-framed messages in shifting smoking-related beliefs, attitudes and behaviours in the direction of avoidance and cessation. The context in which messages are received and interpreted may be important in this respect, making loss-framed messages ineffective for some smokers. The stage of change they are in (according to the transtheoretical model) may provide a specific context that influences the effectiveness of the

message. If so, gain-framed messages might be more appropriate for those in the contemplation and preparation stages, when pros for change are increasing. Alternatively, those in precontemplation might develop pros for cessation as a result of exposure to gain-framed messages, or those in action might find gain-framed messages help maintain their self-efficacy and reinforce their decision.

Worth noting is that advertisers (generally savvy in their knowledge of selling) of pharmacological intervention methods for smoking cessation have recently been promoting gain-framed messages to sell their products (e.g., television ads for Nicorette gum and the Nicoderm patch). Even if product sales do not guarantee use of those same products, they may reflect the fact that gain-framed messages hold some appeal for individuals who intend to quit smoking. If so, they may speak directly to people in contemplation and preparation stages, in which intention is fundamental. Again, they may reinforce the self-efficacy of those in the action stage by reminding them of what they have gained, or they may initiate change in precontemplators.

An additional point of interest is that gain- versus loss-framed messages have been found to affect consumer behaviour differently depending on market age (Chandy, Tellis, MacInnis, & Thaivanich, 2001). Market age refers to the length of time a product or service has been available and advertised in a particular market. If a product has only recently been introduced, it is considered a “young” market; if it has been around for some time (or longer than a newer product), it is considered an “old” market. Whereas loss-framed messages are more effective in young markets, gain-framed messages are more effective in older markets. Chandy et al. (2001) suggest one reason for this may be that consumers become irritated by repetition of loss-framed messages because they focus on things that are unpleasant to think about. In turn, they are less motivated to process the information in the messages. It seems

reasonable to think that smokers may be tired of loss-framed messages about smoking and, therefore, primed for gain-framed messages. In addition, attention may increase simply because gain-framed messages about smoking cessation are perceived as novel.

Problems with Loss-Framed Messages

There are good reasons to consider the idea that loss-framed messages may be detrimental to smoking cessation. First, according to prospect theory, smokers who encounter loss-framed information about smoking may be willing to accept the risks associated with smoking. If so, smokers who read warnings that suggest they have an increased chance of lung cancer may be willing to take a chance that it will not happen to them. Second, negative social support, such as nagging or policing smokers who are attempting to quit (Mermelstein et al., 1986), and self-punitive coping strategies have been deemed unhelpful (Shiffman, 1984). It may be that the similar negative slant of loss-framed messages makes them counter-productive. Third, defensiveness may impede individuals from being open to loss-framed messages (Rothman & Salovey, 1997). If people feel guilt, regret, or other negative feelings about the fact they are smoking, they may respond better to gain-framed messages because, rather than inviting defensiveness, they provide possibility and hope. The jokes that are made amongst smokers about the current health warnings on cigarette packages likely represent defensive behaviour. For example, some smokers purchase cardboard sleeves made to fit over cigarette packages designed to resemble particular name brands, but with messages such as, “Blah, blah, blah...” This reaction to the warning about the perils of second-hand smoke is hardly what Health Canada had intended, and it would likely be far less tempting to cover a gain-framed message with such a statement.

Potential Influence of Gain-framed Messages on Stages

Investigating the effectiveness of gain-framed messages for smoking cessation, particularly in relation to smokers' stage of smoking cessation, is worthwhile for several reasons. First, smokers in precontemplation (not interested in quitting) might develop interest in quitting in response to gain-framed messages. This may happen as a consequence of increased attention and receptivity for gain-framed messages. Second, smokers in contemplation (seriously thinking of quitting within 6 months) and preparation (seriously thinking of quitting within 30 days) might be more effectively influenced by gain- than loss-framed messages. This may happen because the pros of cessation (involved in decisional balance) are increasing for those in contemplation and preparation; consequently, they may be particularly influenced by positively-valenced messages. Third, smokers in action (quit within the last 6 months) may find that gain-framed messages serve as reminders that help them maintain their pros for cessation. If so, gain-framed messages may also reduce their chances of relapse. A final reason to investigate the effectiveness of gain-framed messages has to do with the relationship between ambivalence and preventive behaviours. Individuals who are low in ambivalence for preventive behaviours, such as eating a low-fat diet and using condoms, have been shown to be more persuaded by gain-framed messages than loss-framed messages (Broemer, 2002). This suggests that those in the action stage of smoking cessation (and likely less ambivalent about quitting) may be optimally influenced by gain-framed messages.

This research proposal does not deny possible effectiveness of loss-framed messages for smoking cessation. Rather, it suggests that gain-framed messages may be an effective alternative. A cigarette package label that carries a fact (rather than a warning) such as, "Not using tobacco can result in a healthier heart" might be more influential for some smokers

than one with a warning that reads, “Tobacco use can result in the clogging of arteries in your heart.”

The Present Study

This study will investigate the effectiveness of gain-framed smoking cessation messages for smokers in the precontemplation, contemplation, preparation, and action stages of smoking cessation. Smokers in these stages will be given either loss- or gain-framed messages to read, and potential message framing effects on stage movement, decisional balance, self-efficacy, attention, and receptivity will be analyzed. Participants will be contacted approximately 5 weeks after the study to assess potential longer-term stage movement effects. Three hypotheses are proposed.

Hypothesis 1: The first hypothesis is that there will be significant differences among smokers in precontemplation, contemplation, preparation, and action stages who are exposed to gain- versus loss-framed messages. More specifically, only the gain-framed messages are predicted to have the following effects.

1(a): Smokers in precontemplation and contemplation will be significantly more likely to move to contemplation and preparation, respectively.

1(b): Smokers in precontemplation, contemplation, and preparation will show a significant decrease in pros of smoking and increase in cons of smoking, such that their decisional balance will shift toward cessation.

1(c): Smokers in all stages are expected to show a significant increase in their overall self-efficacy for smoking cessation.

Hypothesis 2: Attention is expected to mediate potential effects of gain-framed messages. Thus, gain-framed messages should invite more attention than loss-framed messages. This is anticipated for two reasons. First, smokers may pay significantly more

attention to gain-framed messages simply because they are novel. Second, in contrast to the loss-framed messages, which indirectly target cessation, the gain-framed messages directly target cessation; thus, they may invite more attention from smokers who intend to quit.

Hypothesis 3: Receptivity to the messages is expected to mediate potential effects of gain-framed messages because they should be more readily accepted than loss-framed messages. Thus, receptivity should be greater to gain- than loss-framed messages.

In addition to these three hypotheses, participants' perceptions of the function of smoking cessation will be explored to see if they view cessation as primarily a prevention behaviour, a recuperation behaviour, or neither. As noted previously, recuperation behaviours are believed to be more effectively targeted with gain-framed messages (Rothman & Salovey, 1997). However, recuperation effects have mainly been studied in hypothetical situations. If smokers in the present study view cessation as recuperative behaviour, potential message effects may provide information about the influence of message framing on recuperation behaviour in a real-life situation.

Finally, behavioural interest in cessation, as measured by smokers' willingness to take an information sheet on smoking cessation, will be explored in relation to message framing and stages.

Method

Participants

The participants were 162 introductory psychology university students (106 females, 56 males, mean age = 20, $SD = 3.54$, range = 17–49 years). From the initial sample, 92.6% of the participants agreed to answer follow-up questions; the response rate of those 150 participants was 82.7%.

The majority of the participants (61%) had been smokers for 1 to 5 years, and 26% had been smokers for 5 to 10 years. The majority (63%) smoked 10 or fewer cigarettes per day. Of the 33% who considered themselves to be primarily social smokers, half reported that they smoked fewer than 30 cigarettes a month. Every participant had quit smoking for at least 24 hours during the past year. According to the Fagerstrom Test of Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991), most participants (61%) had very low nicotine dependence (scores of 0-2).

Participants represented four stages of smoking cessation (precontemplation, contemplation, preparation, and action). Recruited from mass testing (91 students) and from the psychology department's experimental credit sign-up board (71 students), they were invited to participate in exchange for course credit. Although the mass testing recruits had self-identified their stage of smoking cessation via the Health Questionnaire (see Appendix A), the sign-up recruits were identified only as either current smokers or smokers who had quit within the past six months (see sign-up sheet in Appendix A). Thus, to ensure an equal starting point, all participants were asked to identify their stage of smoking cessation when they were contacted and invited to participate (see Telephone Recruitment Script in Appendix A) in the present study, which occurred generally one day to one week before participation. Responses to the following questions were used to make the identification:

(1) Do you currently smoke, or have you quit within the past 6 months? (2) Would you say that you are or are not seriously thinking of quitting smoking? If participants answered affirmatively to question 2, they were asked the following question. (3) Would you say that you seriously plan to quit within the next 30 days or within the next 6 months? Participants were subsequently classified into the four stages outlined in Table 1.

Table 1
Definitions of the Stages of Change

Stage of change	Definition
Precontemplation	No intent to quit smoking within 6 months
Contemplation	Serious intent to quit smoking within 6 months but not within 30 days
Preparation	Serious intent to quit smoking within 30 days
Action	Has quit smoking for at least 24 hours but not longer than 6 months

The classification is an adaptation of the algorithm used in the stages-of-change questionnaire developed by DiClemente et al. (1991). To simplify the algorithm, data on whether smokers had made a 24-hour quit attempt in the past year were not used in the definition of the preparation stage. This decision was made for two reasons. First, the data collected in mass testing indicated that the all participants had made at least one 24-hour quit attempt in the past year. Given that information, and in order to reduce demand characteristics, it was decided not to ask students about previous quit attempts when inviting them to participate in the present study.

Materials

Message Conditions

The two conditions in the study were represented by framed print messages (see Appendix B). The content in the messages was taken from Web sites that provide smoking cessation information, such as the Canadian Cancer Society (www.cancer.ca), Health Canada (www.gosmokefree.ca), and the Centers for Disease Control and Prevention (www.cdc.gov/tobacco/how2quit.htm).

The loss-framed condition featured information describing physical, psychological, and social costs of smoking; the gain-framed condition featured analogous benefits of smoking cessation. In both conditions, messages were approximately 900 words long and included an equal number of individual messages within the larger message frame. Although the content of each overall message was similar, differences in available factual information were accommodated. For example, public health information asserts that smoking cessation results in the regrowth of lung cilia within 6 months, but information on how long it takes for smoking to destroy the lung cilia is not readily available to the public. In addition to this accommodation, in an effort to have strong messages, some arguments were less than identical in content. For example, an argument in the loss-framed condition read, “Smokers live with the annoying interruption of having to have a cigarette, the nagging craving for a cigarette when it’s not possible to have one, and the chore of having to find out where and with whom smoking is acceptable.” The analogous gain-framed argument read, “Quitting allows ex-smokers to enjoy non-smoking social events uninterrupted and to move freely through their day without having to bother with or even think about where and when they can smoke.” Even though these two arguments are not a mirror reflection of each other, they

were considered stronger arguments within the individual frames than they would have been if they had been written as exact opposites.

Measures

Some of the questionnaires described below represent pre-message measures; some represent post-message measures; and some represent both. The pre-message measures can be found in Appendix C, and the post-message measures can be found in Appendix D.

Demographics and smoking history. The General Information questionnaire (see Appendix C) was used to gather basic demographic information, including age, gender, and academic level. In addition, rudimentary smoking profiles were collected via a checklist of smoking habits. Participants were asked to indicate how long they had been smoking (or had smoked) on a 4-point scale (1= less than 1 year; 4 = more than 10 years); the amount they smoked (or had smoked) on a 5-point scale (1 = less than a pack a month; 5 = more than a pack a day); the number of times they had quit for more than 6 months on a 4-point scale (1 = never; 4 = more than 3 times); and, if they had quit smoking, how long it had been since they had quit (1 = not applicable; 5 = between 3 and 6 months).

Fagerstrom Test for Nicotine Dependence. The Fagerstrom Test for Nicotine Dependence (FTND; Heatherton et al., 1991) was used to measure physical dependence on nicotine (see Appendix C). The FTND is a 6-item scale that combines responses about smoking habits (e.g., number of cigarettes smoked, minutes to first morning cigarette, and smoking while ill). The minimum possible score on this measure is 0 and the maximum is 10; dependence is classified as very low (0-2), low (3-4), medium (5), high (6-7), and very high (8-10). Heatherton et al. (1991) reported a coefficient alpha for the FTND of .61; Cronbach's alpha for the current sample was .71.

Decisional balance. The decisional balance inventory (Velicer et al., 1985) was used to assess participants' pros and cons of smoking (see Appendix C for the pre-message version and Appendix D for the post-message version). Participants rated 20 items (10 pros and 10 cons) in terms of how important each statement was to their decision to smoke on a 5-point Likert scale, ranging from (1) *not important* to (5) *extremely important*. Example pro and con questions, respectively, included "Smoking cigarettes relieves tension," and "My cigarette smoking bothers other people." Once the pro and con scores, respectively, were summed, they were converted to standardized Z-scores; T scores were then calculated by multiplying the Z-scores by 10 and adding 50 to them (J. Fava, personal communication, January 8, 2004). Velicer et al. (1985) have reported good internal consistency for the pro and con subscales (Cronbach's $\alpha = .87$ and $.90$, respectively). Alpha reliabilities for the current sample were $.78$ for the pro scale and $.78$ for the con scale.

Self-efficacy. Self-efficacy was measured using the nine-item short form (Fava, Rossi, Velicer, & Prochaska, 1991) of the 20-item self-efficacy scale developed by Velicer, DiClemente, Rossi, and Prochaska (1990) (See Appendix C for the pre-message version and Appendix D for the post-message version). The short form self-efficacy scale provides an overall score that assesses an individual's level of confidence not to smoke in nine challenging situations. Participants indicated their level of confidence not to smoke in particular situations on a 5-point Likert scale ranging from (1) *not at all* to (5) *extremely confident*. Example situations included "With friends at a party," "When I am very anxious and stressed," and "When I first get up in the morning." Once self-efficacy scores were summed, they were converted to standardized Z-scores; T scores were then calculated by multiplying the Z-scores by 10 and adding 50 to them (J. Fava, personal communication, January 8, 2004). Good reliability and validity has been reported for the short-form version

of the self-efficacy scale (Fava, Velicer, & Prochaska., 1995). Cronbach's reliability coefficient in the current sample was .79.

Receptivity. Receptivity to the messages was assessed by having participants complete the sentence "If I continue smoking..." (in the loss-framed condition) or "If I were to quit smoking..." (in the gain-framed condition) with 10 individual statements that were taken from the messages, and then rate their personal acceptance of the sentence (see Appendix D, Message Ratings (L) and Message Ratings (G), respectively). Ratings were made using a 4-point scale, ranging from (1) *reject strongly* to (4) *accept strongly*. A sample loss-framed sentence read "If I were to continue smoking, it would paralyze and destroy my lungs' cilia, resulting in the misery of increased colds, asthma, and bronchitis for me." The alternative gain-framed sentence read "If I were to quit smoking, because the cilia in my lungs would return, I would be subjected to far fewer colds, asthma attacks, and bronchitis." This was a new measure, developed for this study; therefore, no reliability coefficient existed for it. The measure was based on Rothman and Salovey's (1997) suggestion that receptivity to messages is important for message effectiveness. Cronbach's alpha for the scale's reliability in the current sample was .80.

Attention. In part one of the attention measure (see Appendix D, Costs Questionnaire and Benefits Questionnaire, respectively), participants' attention was measured by their ability to accurately answer five multiple-choice questions derived from the information in the messages. The form of the questions was identical in both conditions; however, participants in the loss condition were asked loss-framed questions, and participants in the gain condition were asked gain-framed questions. For example, in the loss-framed condition, a question was "The average smoker dies about _____ years earlier than a similar non-smoker" (Possible answers: 6, 7, 8, or 9). in the gain-framed condition, the analogous

question was “The average non-smoker lives about _____ years longer than a similar smoker” (Possible answers: 6, 7, 8, or 9). Correct answers were summed, and this value was added to the score on the open-ended attention question (described below); the sum of these two attention measures served as an overall attention score.

In part two of the attention measure, an open-ended question was used. That is, participants were asked to list either as many costs of smoking or benefits of smoking cessation (dependent upon condition) as they could, based on the information that they had been given to read. Similar to the receptivity measure described above, the measure of attention was created specifically for this study and, hence, did not have a reliability coefficient. Its creation was based on Rothman and Salovey’s (1997) suggestion that attention is important for systematic processing of messages.

Two raters independently scored the responses. In general, one point was given for each cost/benefit listed. For example, benefits listed as “less chance of lung cancer, heart disease, and stroke; better looking teeth; nicer smelling breath, car, and house; more money; fewer colds and less asthma” were scored as 10. Initial agreement was reached on 89% of the scores. After discussion about the non-agreed-upon scores, 96% agreement was reached. The remaining 4% were decided by a third rater. Scores from this second part of the attention measure were added to scores on the first part (multiple-choice questions, described above) for an overall attention score.

The decision to measure attention by asking participants to recall information from the messages was based on the idea that attention during encoding is critical in later memory performance (Mulligan, 1998). Although it could be argued that recall of information does not isolate attention from memory, it is reasonable to assume that recall is influenced by attention. In addition, participants in the loss and gain conditions in the current study were

essentially given the same information, albeit framed differently. Thus, if recall differed for the two conditions, it seemed plausible that such differences reflected differential attention.

Smoking Questionnaire. The Smoking Questionnaire (see Appendix D) served several purposes. First, it identified participants' smoking status and intention to quit through three multiple-choice questions. Because the questionnaire was given towards the end of the study, this information could be used to evaluate stage movement that may have occurred as a result of the framed messages. The second purpose of the questionnaire was to find out whether participants thought the health behaviour function of smoking cessation was prevention, recuperation, both, or neither. Participants who viewed the function of smoking as both prevention and recuperation behaviour were asked to rank order the importance of both functions. The final purpose of the questionnaire was to ask participants if they would be willing to answer four questions related to smoking status (by phone or e-mail) approximately five weeks after their participation in the present study. This follow-up data was used to assess potential long-term effects of the messages.

Behavioural measure of interest in smoking cessation. A brief written list of Web sites and telephone quit-line counselling services for smoking cessation was made available to participants as the second last page in the questionnaires (see Appendix D, Would You Like to Quit?). Choosing to take this page of information was viewed as showing interest in smoking cessation.

Procedure

Students were invited to participate in a study on people's perceptions and evaluations of written information about smoking. If they agreed to participate, they were asked to verify their smoking status (stage), as described above. Upon arrival, participants were informed of the experimental procedure and asked to provide written informed consent

(see Appendix E); they were then randomly assigned to either a loss- or gain-framed message condition. Participants were categorized as smokers in either precontemplation ($n = 38$), contemplation ($n = 70$), preparation ($n=19$), or action ($n = 34$). One participant was unidentified for stage at testing time. In both conditions, participants completed a series of identical pre-measures. They then read either a loss- or gain-framed message (dependent on condition). Finally, they completed a series of analogous post-message measures.

The pre-message measures were used to assess demographics, smoking history, nicotine dependence, pros and cons of smoking (decisional balance), and self-efficacy. The post-message measures were used to assess attention to the message, receptivity to the message, and possible changes in the pros and cons of smoking (decisional balance), self-efficacy, and smoking status (stage) that might have occurred as a result of reading the framed information. In addition, five filler questionnaires (administered between the receptivity and attention measures) served to lengthen the time between the pretest and posttest measures (necessary for valid posttest measurement), and they disguised the true purpose of the study to participants.

Participants completed the questionnaires in a room across the hall from the researcher. They were informed that if they had questions or required clarification about the questionnaires, they could return to the researcher for answers at any time. They were told that the study was comprised of two packages of questionnaires. The first package of questionnaires included the pre-message measures (as ordered in Appendix C) and the messages, and participants were asked to complete them in the order that they appeared. They were asked to return the first package upon completion and told that they would be given the second package at that time. The second package included the remaining questionnaires (as ordered in Appendix D) and a mood neutralization task. The task consisted

of having participants rank order a series of humorous pictures in terms of the pictures' appeal to them (see Appendix D, Picture Choice). This task was intended to dampen any negative psychological effects that reading two pages of information that stressed the harmful effects of smoking might have caused.

Participants completed the questionnaires individually, in a group setting of up to five students. The majority of participants took 45 minutes to complete the questionnaires. Upon completion of the study, they were given a written debriefing (see Appendix E) and a receipt as proof of participation.

Willing participants were contacted either by phone or email to answer the follow-up questionnaire (see Appendix D) approximately six to eight weeks after their participation in the study.

Results

Preliminary analyses

The data were initially checked to ensure that assumptions of normality and homogeneity of variance had not been violated. Once verified, they were collapsed across the loss and gain groups and analyzed to confirm that they were theoretically valid, according to the stages of change model (e.g., that decisional balance and self-efficacy scores were as expected for the particular stages). Conversion of the decisional balance and self-efficacy raw scores to standardized T scores also ensured that the data were comparable with previous research. Finally, the data were collapsed across stages and analyzed to confirm that participants in the loss and gain groups did not significantly differ in age and gender, or on baseline measures of smoking history, nicotine dependence, decisional balance, and self-efficacy.

Validity of stage data. Table 2 shows the standardized T scores for the decisional balance and self-efficacy scores across the stages at baseline. Analysis of variance revealed significant differences among stages in cons of smoking, $F(3, 157) = 5.72, p = .001$, and in the difference score between the cons and pros, $F(3, 157) = 9.09, p = .001$. Findings with the pros of smoking and stages were marginally significant, $F(3, 157) = 2.44, p = .07$. The strong principle of progress (Prochaska, 1994)⁵ was evidenced by an increase of 10.1 T points or 1 SD in the cons of smoking between smokers in the precontemplation and preparation stages. The weak principle of progress was evidenced by a decrease of 7.3 T points or 0.73 SD in the pros of smoking between smokers in the precontemplation and preparation stages.

⁵ The strong principle of progress from precontemplation to action is a function of approximately a 1-standard-deviation increase in the pros of a healthy behaviour change. The weak principle of progress is a function of approximately one half of a standard deviation decrease in the cons of a healthy behaviour change.

Analysis of variance revealed significant differences among stages in self-efficacy, $F(3, 156) = 3.44, p = .02$. As noted in Table 2, with the exception of precontemplation, self-efficacy increased from contemplation to preparation, and from preparation to action.

Table 2

Standardized T Scores ($M = 50, SD = 10$) for Pros and Cons of Smoking and Self-Efficacy in Pretest Stages ($N = 161$)

Variable	Stage of Change			
	PC ($n = 38$)	C ($n = 70$)	PA ($n = 19$)	A ($n = 34$)
Pros of smoking	52.78 (10.29)	49.41 (9.81)	45.47 (9.82)	50.44 (9.62)
Cons of smoking	44.85 (10.17)	51.04 (9.19)	54.97 (10.50)	50.94 (9.32)
Self-efficacy	50.95 (10.69)	47.58 (9.50)	49.98 (7.39)	54.03 (10.48)

Note: Standard deviations appear in parentheses below mean values.

PC = precontemplation, C = contemplation, PA = preparation, and A = action.

Baseline characteristics within loss and gain groups. Baseline characteristics of the sample for the loss and gain groups are presented in Table 3. There were no significant between-group differences at baseline (all $ps > .10$) in age, gender⁶, smoking history; nicotine dependence, as assessed with the Fagerstrom Test for Nicotine Dependence (FTND); pros of smoking; cons of smoking; or self-efficacy.

⁶ Chi-square analysis revealed no significant differences in between-group gender proportions, $\chi^2(1, n = 162) = 1.75, p = .19$; small n precluded further analysis.

Table 3

Characteristics of Loss and Gain Groups at Baseline Reported as Means or Frequencies (N = 162)

Variable	Message Type	
	Loss (n = 81)	Gain (n = 81)
Age (SD)	19.80 (2.18)	20.23 (4.52)
Gender		
Males	24	32
Females	57	49
Smoking history		
Has been smoking for 1-5 years	52	46
Has been smoking for 5-10 years	19	23
Consider themselves primarily social smokers	22	31
Smoke 10 or fewer cigarettes a day	54	48
Previously quit smoking for at least 6 months	47	45
Made > 4 quit attempts in the past year	25	26
Fagerstrom Test of Nicotine Dependence score	2.37	2.21
Pros of smoking (SD)	50.08 (9.63)	49.92 (10.41)
Cons of smoking (SD)	50.31 (9.97)	49.69 (10.09)
Self-efficacy (SD)	48.93 (9.65)	51.08 (10.29)

Hypotheses

Stage, decisional balance, and self-efficacy. Significantly more precontemplators and contemplators in the gain condition than in the loss condition were expected to show stage progress. In the loss condition, 6 smokers (2 from precontemplation and 4 from contemplation) progressed one stage (to contemplation and preparation, respectively). In the gain condition, 1 smoker progressed two stages (from precontemplation to preparation); 8 smokers (3 from precontemplation and 5 from contemplation) progressed one stage (to contemplation and preparation, respectively); and 2 smokers regressed (from preparation to contemplation). Chi-square analysis indicated that the number of precontemplators and contemplators who had progressed in stage, regressed in stage, or stayed the same did not

significantly differ in the loss group compared with the gain group, $\chi^2 (2, n = 107) = 2.99, p = .22$.

Pre- and post-message decisional balance and self-efficacy means are presented in Table 4. Paired-samples t-tests were used, collapsed across the loss and gain conditions, to see if decisional balance and self-efficacy pretest and posttest scores differed simply as a result of reading information on smoking in general. Results were not significant (all $ps > .75$).

Table 4

Standardized T Scores ($M = 50, SD = 10$) of Pre- and Post-Message Pros and Cons of Smoking and Self-Efficacy

Variable	Loss ($n = 81$)				Gain ($n = 81$)			
	Pre-message		Post-message		Pre-message		Post-message	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Pros of smoking	50.08	9.63	50.36	9.97	49.92	10.41	49.64	10.08
Cons of smoking	50.31	9.97	50.22	10.10	49.69	10.09	49.78	9.96
Self-efficacy	48.93	9.65	49.26	9.69	51.08	10.29	50.74	10.31

Effects of the loss versus gain messages were assessed by looking at differences in the pre- and post-message scores on the decisional balance and self-efficacy measures. Analysis of variance, using change scores,⁷ indicated no significant decrease in pros of smoking after exposure to the gain versus loss messages, $F(1, 125) = .61, p = .44$, for the precontemplation, contemplation, and preparation stages (collapsed). There was also no significant increase in cons of smoking, $F(1, 125) = .26, p = .61$. Self-efficacy for all stages did not significantly increase after exposure to gain versus loss messages, $F(1, 159) = 1.50, p = .22$.

⁷ Due to the controversial nature of change scores, this analysis was also conducted with a repeated measures ANOVA; these results also revealed no significant differences.

Attention and Receptivity. Descriptive statistics for attention and receptivity are presented in Table 5. It was hypothesized that attention and receptivity would mediate potential effects of gain-framed messages. Because message type did not predict significant differences in decisional balance or self-efficacy, the proposed mediational analyses were not required.

Table 5

Descriptives for Attention and Receptivity at Posttest Stage in Loss and Gain Conditions

Message Type and Stages	Attention		Receptivity	
	Mean	SD	Mean	SD
Message type				
Loss ($n = 81$)	10.73	4.40	2.89	.59
Gain ($n = 81$)	12.17	4.73	3.21	.50
Stages				
Precontemplation ($n = 33$)	10.45	4.29	2.69	.51
Contemplation ($n = 66$)	11.48	4.80	3.09	.58
Preparation ($n = 29$)	12.72	5.03	3.14	.43
Action ($n = 34$)	11.26	4.09	3.21	.59
Stages within message type				
Loss				
Precontemplation ($n = 17$)	9.82	4.84	2.64	.55
Contemplation ($n = 34$)	11.12	4.15	2.88	.60
Preparation ($n = 14$)	11.50	5.75	3.05	.42
Action ($n = 16$)	10.19	3.10	3.01	.71
Gain				
Precontemplation ($n = 16$)	11.13	3.67	2.76	.46
Contemplation ($n = 32$)	11.87	5.44	3.32	.47
Preparation ($n = 15$)	13.87	4.12	3.23	.43
Action ($n = 18$)	12.22	4.68	3.39	.41

Analysis of variance was used to investigate relationships between message framing, and attention and receptivity. Results strongly supported greater acceptance of the gain-framed messages. As predicted, attention was significantly higher for the gain-framed messages than it was for the loss-framed messages, $F(1, 160) = 4.05, p = .05$. Also as

predicted, message receptivity was significantly greater for the gain-framed messages than it was for the loss-framed messages, $F(1, 160) = 13.96, p = .001$.

Exploratory analyses

Attention, receptivity, and stage. Although the proposed differences in decisional balance and self-efficacy were not borne out, exploratory analyses were conducted to investigate possible relationships between stages and attention and receptivity. An ANOVA, collapsed across message type, indicated no significant relationship between attention and stage. Receptivity, however, was significantly greater as a function of stage, $F(3, 157) = 5.32, p = .002$. Tukey post-hoc tests revealed that only precontemplation was significantly lower than each of the other stages. There was no message frame by stage interaction for receptivity.

Attention, receptivity, decisional balance, and self-efficacy. The higher attention and receptivity scores for the gain messages prompted additional exploratory analyses. Specifically, bivariate correlations were used to examine relationships within the loss and gain groups among attention, receptivity, and the pretest and posttest pros of smoking, cons of smoking, and self-efficacy (see Appendix F). Stability of the decisional balance and self-efficacy scores was evident in high pretest-posttest correlations (range, $r = .75-.89$). Only pretest correlations are reported here. Of note, there was a significant positive relationship between cons of smoking and receptivity in both conditions ($r = .36$ in loss; $r = .33$ in gain; $p < .01$). This fit conceptually because smokers who have higher cons of smoking tend to be closer to quitting; therefore, it makes sense that they would be more receptive to information about it. There was also a negative relationship between pros of smoking and receptivity, unexpectedly significant in the gain condition only ($r = -.05$ in loss; $r = -.27$ in gain, $p < .05$).

Prevention versus recuperation. Smokers' views on the primary function of smoking cessation (i.e., prevention, recuperation, or neither) were explored in relation to message framing and stage. Descriptives are shown in Table 6. Because there were no apparent effects of message framing on stage outcome variables, the potential relationship between message framing effects and perceived function of cessation could not be assessed. Still, smokers' responses to the question about the function of cessation provided some interesting information.

Table 6

Frequencies of Views on the Function of Cessation for Message Type and Pretest Stage (N = 157)

Message Type and Stage	Prevention	Recuperation	Neither
Message Type			
Loss (<i>n</i> = 78)	51%	41%	8%
Gain (<i>n</i> = 79)	38%	52%	10%
Stage			
Precontemplation (<i>n</i> = 36)	56%	28%	17%
Contemplation (<i>n</i> = 69)	39%	52%	9%
Preparation (<i>n</i> = 19)	37%	63%	0%
Action (<i>n</i> = 33)	49%	46%	6%

As noted in Table 6, the majority of smokers believed the primary function of cessation was either preventive or recuperative behaviour. Within this majority, chi-square analyses revealed no significant difference in the number of participants who cited prevention versus recuperation in the loss versus gain groups. Similarly, there were no significant differences across stages. Of interest, however, was that precontemplators were the most likely to view the primary function of cessation as neither preventive nor recuperative health behaviour. Also, precontemplators who did view cessation as health behaviour were more likely to cite prevention than recuperation as its primary function. On the other hand, all smokers in preparation viewed cessation as either prevention or

recuperation, but they were more likely to cite recuperation as the primary function. Their belief that cessation functions primarily as one of these two health behaviours (rather than neither) suggests smokers who are close to quitting may focus more on the health benefits of cessation (as opposed to, for example, monetary benefits) than smokers in other stages do. It is also worth noting that when views on the function of cessation were assessed within the loss and gain groups (collapsed across stages), similar to precontemplators, the loss group predominantly cited prevention as the primary function of cessation. Conversely, similar to smokers in preparation, the gain group predominantly cited recuperation as the primary function.

Behavioural interest in quitting. A smoking cessation information sheet was made available to participants to see whether their decisions to take it or not would be related to message framing or stage. Forty-six percent of the participants took the available smoking cessation information sheet, while 54% did not take it. These percentages were identical in the loss and gain conditions. Yet the decision to take or not take the information was stage-dependent. As shown in Table 7, smokers in precontemplation and action were much less likely to take the information than were smokers in contemplation and preparation. Chi-square analysis of posttest stage and behavioural interest in quitting was significant, $\chi^2(3, n = 162) = 14.27, p = .003$.

Table 7

Behavioural Interest in Quitting

Behaviour	Precontemplation (<i>n</i> = 33)	Contemplation (<i>n</i> = 66)	Preparation (<i>n</i> = 29)	Action (<i>n</i> = 34)
Took	24%	58%	59%	32%
Did not Take	76%	42%	41%	68%

Follow-up

Stage movement from pre-message through follow-up is presented in Table 8. Of the 124 participants who answered the follow-up questionnaire, 63 had read the loss-framed information and 61 had read the gain-framed information. Between pretest and follow-up, 11% ($n = 14$) of participants showed backward stage movement, 38% ($n = 47$) showed forward stage movement, and 50% ($n = 62$) showed no movement⁸. A nonparametric test of related samples (Sign test)⁹ of these pretest/follow-up differences in stage movement direction was significant, $Z (n = 123) = -4.1, p = .001$. In other words, the probability of obtaining 47 cases of progressive stage movement compared to 14 cases of regressive stage movement was greater than by chance alone.

Pretest/follow-up stage movement was also assessed in relation to behavioural interest in cessation (i.e., taking or not taking the available information sheet). Specifically, forward stage movement ($n = 47$), backward stage movement ($n = 14$), and no stage movement ($n = 62$) groups were compared. A greater proportion (55%) of those who had progressed in stage had taken the information, a greater proportion (64%) of those who had regressed in stage had taken the information, and a greater proportion (69%) of those who remained in pretest stage had not taken the information, $\chi^2 (2, n = 123) = 9.27, p = .01$. Separate chi-squares were then carried out to compare the forward-movement group to the no-movement group, $\chi^2 (1, n = 109) = 6.71, p = .01$, and the backward-movement group to the no-movement group, $\chi^2 (1, n = 76) = 5.55, p = .02$. As indicated in Table 8, message

⁸ One participant, unidentified for stage at pretest, showed no movement between posttest and follow-up stage.

⁹ The Sign test computes and classifies all cases as positive, negative, or tied; tied cases are dropped from the analysis. If the two remaining variables are similarly distributed, the number of positive and negative differences will not be significantly different.

framing did not appear to have any longer-term effects on smoking cessation rates in terms of stage movement.

Table 8

Stage Movement from Pre-message through Follow-up Reported as Number of Participants in Stages

Stage	Pre-message (<i>n</i> = 123)	Post-message (<i>n</i> = 124)	Follow-up (<i>n</i> = 124)	Loss	Gain
				Follow-up (<i>n</i> = 63)	Follow-up (<i>n</i> = 61)
Precontemplation	33	28	21	13	8
Contemplation	49	46	37	17	20
Preparation	14	23	21	10	11
Action	27	27	45	23	22

Discussion

The aim of this study was to investigate the effectiveness of gain-framed messages for smokers in different stages of cessation. The hypotheses were largely unsupported. Smokers in precontemplation and contemplation did not progress in stage in response to gain-framed messages. Similarly, gain-framed messages did not cause them to decrease their pros of smoking or increase their cons of smoking. Gain-framed messages also did not impact self-efficacy in any of the stages. Consequently, there were no stage outcome effects to warrant the proposed mediational analysis of attention and receptivity. Nevertheless, analyses showed that gain-framed messages did attract more attention than loss-framed messages, though not as a function of stage. In addition, overall, smokers were more receptive to gain- than loss-framed messages. Message receptivity to both message types was stage-dependent. Receptivity was lowest in precontemplation and higher in each subsequent stage; however only the precontemplation stage significantly differed from all other stages in this respect. Although smokers were more receptive to gain-framed messages overall, and smokers in higher stages were more receptive than those in precontemplation, these effects were largely independent.

Stages, Decisional Balance, and Self-efficacy

The lack of predicted stage movement in response to gain-framed messages may reflect the fact that, as noted, change can take months, or years, to happen (Prochaska et al., 1992). Therefore, the elapsed time between pretest and posttest stage identification may simply have been too brief for stage movement to occur. This also may explain the lack of differences in pretest and posttest decisional balance (pros and cons of smoking) and self-efficacy scores. In addition, even though participants did not have access to their pretest decisional balance or self-efficacy scores, and were instructed not to be concerned about their

previous responses, comments from some participants suggested that they were compelled to try to match their second set of responses to their first set.

Why the overall self-efficacy of smokers who read the gain-framed messages did not increase (and, in fact, decreased slightly) is unclear. Although high self-efficacy is believed critical for successful cessation (Velicer et al., 1990), it may be that it can only truly develop through skill development and the experience of success. This fits conceptually with the generally higher self-efficacy of smokers in action (Velicer et al., 1985), as indicated in Table 2. Also, as noted previously, people tend to use more cognitive processes in earlier stages and more behavioural processes in the later stages (DiClemente et al., 1991). The messages in the current study were intended to persuade smokers (cognitive process), but they did not provide them with skills training (behavioural process) for cessation. The latter would likely be more appropriate if one was directly targeting self-efficacy.

Attention

Overall, attention was significantly higher for gain-framed messages than it was for loss-framed messages. The greater attention to the gain-framed messages may have been a response to the novel framing; nonetheless, they attracted greater attention. Rothman and Salovey (1997) have suggested that greater attention is more likely to lead to systematic processing of information. If smokers who read the gain-framed messages systematically processed the information in them, it did not influence their decisional balance or self-efficacy in a significant way. These null effects may have been partly due to the addictive aspects of smoking. That is, addiction to smoking (particularly psychological addiction) is very difficult to break, and the one-time messages were simply not able to easily interfere with it. Alternatively, given Zuckerman and Chaiken's (1996) claim that people must be

sufficiently motivated to systematically process information, the smokers in the current study may not have been sufficiently motivated to do so.

Even though attention did not significantly differ as a function of stage, two points about the relationship between stage and attention are noteworthy. First, the attention pattern across stages for both message types was similar to the cons of smoking pattern across stages. Specifically, attention and cons of smoking scores increased from precontemplation through preparation, and then decreased in action (see Table 5 for attention and Table 2 for cons of smoking). Similar to typical decrease in cons of smoking in action (Velicer et al., 1985), the decreased attention in the action stage may reflect the fact that information about smoking becomes less important overall to ex-smokers. Second, as shown in Table 5, smokers in preparation paid more attention to both message types than smokers in all other stages. Although smokers in later stages of cessation tend to use more behavioural processes than cognitive processes (DiClemente et al., 1991), this implies that cognitive processes remain important at this critical stage of cessation. Given the significantly greater attention paid to gain-framed messages overall, it also intimates that adding gain-framed messages to the more commonly used loss-framed messages is sensible.

Receptivity

Smokers in this study who intended to quit or had quit were more receptive to both loss- and gain-framed messages than smokers who had no intention of quitting. However, clearly all smokers were more receptive to gain-framed messages than they were to loss-framed messages. Given that this greater receptivity did not affect stage movement, decisional balance, self-efficacy, or behavioural interest in cessation, it is difficult to say what effects this greater receptivity might have on the process of cessation. Greater receptivity may affect the cessation in ways that were not measured in the current study. The

fact that greater receptivity was confirmed for gain-framed messages lends credence to the idea that they could be effective for smoking cessation. Perhaps if smokers read gain-framed messages every day on their cigarette package, in the same way that they now read loss-framed messages, positive effects would be seen over time. Alternatively, other factors not accounted for in the current study (e.g., the influence of peer pressure or role models) may influence potential effects of receptivity.

The significant positive correlation between the cons of smoking and receptivity in both the loss and gain conditions indicates that smokers who place more importance on the cons of smoking (i.e., pros for cessation) are more receptive to information about smoking cessation in general. As noted previously, this makes conceptual sense. Also, it implies that these smokers are open to all information; therefore, it is sensible to provide not only loss-framed, but also gain-framed information. The significantly lower receptivity of smokers in precontemplation (compared to every other stage) to both message types, however, suggests that smokers who have less intention of quitting may be less receptive to any information on smoking.

The negative relationship between the pros of smoking and receptivity (significant only in the gain condition) also suggests that some smokers may not be as effectively targeted with gain-framed information. The sarcastic comment made by one precontemplator in reaction to the gain-framed messages (i.e., “Oh sure, now you’re going to tell me all the wonderful things I’m missing.”) further suggests that smokers who are less interested in quitting (and, consequently, evidence higher pros of smoking) may find gain-framed messages patronizing. This may be particularly true if these smokers feel defensive about their decision not to quit. On the other hand, the negative relationship of pros of smoking and receptivity for those who read the loss-framed messages may not have been significant

because it reflects a general social acceptance of information on the perils of smoking. This sentiment was expressed even by smokers who had no intention of quitting when they prefaced their lack of intention with comments such as, “I know it’s really bad and I should quit, but....” The cultural milieu of this particular sample may also be influential in this respect. This particular generation of smokers likely started smoking at a time when smoking was becoming, or had become, socially unacceptable. In addition, heavy social restrictions on where smoking is permitted (e.g., Ottawa bylaws) may have reinforced the idea that smoking is no longer readily tolerated.

Smokers’ Views on the Function of Cessation

Most smokers believed cessation primarily functions as prevention or recuperation behaviour. Still, message framing appeared to influence their responses to this question, albeit not significantly. As shown in Table 6, more smokers in the gain-framed condition cited recuperation (52%) than prevention (38%) as the primary function of cessation. The reverse was true in the loss condition; more smokers cited prevention (51%) than recuperation (41%) as the primary function of cessation. These responses were somewhat logical because the gain-framed messages emphasized potential recuperative health aspects of cessation. Thus, the messages implied that smokers had already compromised their health. Conversely, the loss-framed messages emphasized potential health costs of smoking. If smokers did not believe they had already compromised their health by smoking, they would more likely think of quitting as a means of preventing disease. Therefore, the message frames had primed participants to the question about the function of cessation.

What is noteworthy is that when prevention/recuperation views were considered in terms of stage (collapsed across loss and gain), smokers in preparation tended to cite recuperation (63%) over prevention (37%) as the primary function. Although there were no

significant differences in stage responses to the prevention/recuperation question, small participant numbers in particular stages (e.g., preparation) may have precluded these. Arguably, if the greater emphasis on recuperation on the part of smokers in preparation (compared to other stages) is a motivational factor, gain-framed messages may reinforce such motivation. Alternatively, gain-framed messages might stimulate motivation in other stages by offering a different way of thinking about cessation. The greater overall receptivity for the gain-framed messages, which emphasized recuperative health aspects of cessation, suggests that smokers are open to such thoughts. The fact that precontemplators were the most likely to cite neither prevention nor recuperation as the primary function of quitting further suggests that intent to quit may be at least partly motivated by concerns about health in general.¹⁰

Feedback on Message Influence

When contacted, a significant number of the 124 participants who availed themselves for follow-up had progressed in stage since pretest. Even though this movement did not appear to depend on the loss- versus gain-framed messages, some participants claimed that their movement was at least partially influenced by taking part in the study. On contact, one female smoker, who had read the gain-framed messages and who was in precontemplation at pretest and contemplation at posttest and follow-up, reported the following:

I went home after the study and talked to my husband about the information in the study. We agreed to try and quit together after my exams. That was about a month after your study. We lasted 3 weeks. Stress got to us. He got an infection and lost 30 lbs.; I think I put on 30 lbs. So we started smoking again. But we don't smoke in the house anymore, so we're not smoking as much, and we're going to try again in the summer, when school is over.

¹⁰ Some precontemplators who cited neither prevention nor recuperation penciled in that saving money would be the primary function of quitting.

Comments made by a male participant highlight the importance of addressing biopsychosocial aspects of smoking in persuasive messages aimed at cessation. This participant, who had read the gain-framed messages and who was in preparation at pretest and posttest, reported at follow-up that he quit smoking immediately after participating in the study. He said, “After the study I really thought about it. I knew about lung cancer and that kind of stuff, but I hadn’t really thought about all the ways it impacts your life. So I found that the information was really helpful.” Interestingly, one female, who had read the loss-framed messages and who was in contemplation at pretest and posttest, emailed this response: “I quit January 10th. [followed in uppercase letters, which supposedly signifies yelling in email, by] **BUT NOT BECAUSE OF THE STUDY.**”

Despite this last participant’s comment, it is possible that participation in the study contributed to smokers’ cessation motivation. Alternatively, the significant positive stage movement between pretest and follow-up may reflect a high interest on the part of this sample to quit smoking. That is, though specific data were not collected on this, when participants were questioned over the phone about their intent to quit, most claimed they did plan to quit, though not necessarily within the 6-month timeframe denoted as intent within the transtheoretical model. Thus, it is not surprising that, as Table 8 shows, even 12 of the smokers who were categorized as precontemplators at pretest had progressed in stage by follow-up, 6 to 8 weeks later. Whether the smokers who quit maintained their status is a question for another study.

Limitations

Several obvious methodological limitations apply to this study. First, the smokers in the sample were relatively young, and they were light smokers with short smoking histories. The benefit of studying such a group is that young smokers often become older smokers;

therefore findings from studies on cessation among the young could have a bigger effect on lifetime health and illness. The disadvantage of using a young sample is that findings are not necessarily generalizable to older, heavier smokers or to those who have been smoking for many years.

The second methodological limitation is that the attention and receptivity measures used in the study were not standardized measures. Hence, although they were believed to measure attention and receptivity and the results were positive, the validity of these particular results is questionable. Third, the study attempted to generalize from theory to lab with a one-time lab manipulation. Because it is more difficult to change attitudes this way than it would be in a direct intervention, this limited the possibility of finding effects. Fourth, the study was based on self-report questionnaires. Responses to such questionnaires reflect what an individual reports, but the accuracy of the responses cannot be verified. In addition, though participation in the study was voluntary, participants were given an experimental credit in exchange for their participation, and they may have completed the questionnaires in a hurried or thoughtless fashion, merely to obtain the credit.

Finally, the transtheoretical model is a longitudinal model designed to promote change in individuals (i.e., a treatment model). However, tests of hypotheses related to the transtheoretical model were cross-sectional. Findings from the cross-sectional research will not necessarily generalize to intervention studies with a single group of people. For example, one could argue that the greater receptivity of each of the other stages compared to precontemplation in the current study does not reflect a process that happens in stage movement; rather it only reflects receptivity of two different groups of people. In other words, it is not necessarily stage maturation that causes any difference in receptivity and, in fact, a third variable could be involved.

Conclusions and future directions

Despite the fact that gain-framed messages did not impact stage movement, decisional balance, self-efficacy, or behavioural interest in cessation, there are three reasons why pursuit of potential effects of gain-framed messages remains worthwhile. First, attention and receptivity are critical influences in message persuasiveness (Rothman & Salovey, 1997), and greater attention and receptivity to gain-framed messages were clearly apparent in the current study. These findings support previous findings that gain-framed messages are more effective than loss-framed messages in shifting smoking-related beliefs, attitudes, and behaviours toward avoidance and cessation (Schneider et al., 2001). It may be that attention and receptivity to messages mediate smoking-related beliefs, attitudes, and behaviours, or they may impact cessation in other unknown ways. Thus, what is required is further investigation of potential effects of gain-framed messages.

Second, it is important to note that the loss-framed messages did not affect the outcome measures in the current study either. This fits with prospect theory's predictions that people are risk-seeking when exposed to loss-framed information (Tversky & Kahneman, 1981). Therefore, given that public health campaigns will likely continue to target smoking, gain-framed messages should be included in such campaigns. Most smokers are well aware of the costs of smoking, but they may not have given as much thought to the benefits of quitting. Given that they are more receptive to gain-framed messages, it seems reasonable to provide this type of information in an effort to work with them rather than against them. This also seems reasonable since negative social support, such as nagging or policing smokers who are attempting to quit, has been deemed unhelpful to smokers (Mermelstein et al., 1986).

Third, as noted previously, smokers in the current study were exposed to the messages only once and that exposure was brief. Repeated exposure over time may be

required to generate the effortful thinking that is more predictive of behavioural intentions and actions (Petty et al., 1997). Future research should investigate this possibility; smokers who have a heavier smoking history should be included in such research. The idea that message framing differentially influences decisions for different health behaviours (Rothman & Salovey, 1997) also suggests it would be useful to attempt to replicate this study with other health behaviours (e.g., condom use or good dietary practices).

Future research should also further explore smokers' perceptions of the health function of cessation in relation to message framing. Gain-framed messages are typically more influential than loss-framed messages for preventive and recuperative behaviours (Rothman & Salovey, 1997). The current study suggests that smokers believe cessation functions as both. However, smokers who read gain-framed messages were more likely to cite recuperation as the primary function. It would be interesting to investigate the possibility that gain-framed messages reinforce or stimulate beliefs that recuperation is an important aspect of cessation. Such thinking may be central to cessation motivation. This intuitively follows the anecdotal claim made by many smokers who say the turnaround point in their cessation was when they abandoned the idea that quitting meant giving up a friend (their cigarettes), and they instead began to think that cessation would mean gaining a new friend (their health). Alternatively, persuasive appeals that emphasize prevention (i.e., loss-framed messages) and recuperation (i.e., gain-framed messages) may work either additively or synergistically in their influence on smokers' motivation to quit. If so, a combination of both message types may be most effective; therefore, this possibility should be studied. In conclusion, although some predicted specific effects of gain-framed messages were not found in the current study, findings that smokers pay more attention and are more receptive to them justify further exploration of their potential effects.

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Appendix A

Recruitment Documents

<i>Health Questionnaire (used in Mass Testing)</i>	55
<i>Sign-up sheet for Psychology Department</i>	56
<i>Telephone Recruitment Script</i>	58

Health Questionnaire

1. Are you currently a smoker? (Please circle your answer from the list.)
 - a. Yes, I currently smoke
 - b. No, I quit within the last 6 months
 - c. No, I quit more than 6 months ago
 - d. No, I have never smoked

2. In the last year, how many times have you quit smoking for at least 24 hours?
 - a. zero
 - b. once
 - c. 2-4 times
 - d. not applicable - I don't smoke

3. Are you seriously thinking of quitting smoking?
 - a. Yes, within the next 30 days
 - b. Yes, within the next 6 months
 - c. No, not thinking of quitting
 - d. Not applicable – I don't smoke

4. Have you ever been diagnosed with a chronic illness such as asthma, arthritis or diabetes?¹¹

Circle one: **No** **Yes**

If yes, please specify name of illness: _____

Date diagnosed: _____

Severity (circle one): **Mild** **Moderate** **Severe**

¹¹ This question was included for unrelated research about chronic illness.

Research on Smoking

Experiment title: Smoking Study

Experimenter's name: Ruth Sullivan

Experimenter's phone number: 520-2600, ext. 3781

Experiment location: A503 Loeb

Experiment number: 03-044

Faculty advisors: Dr. Mary Gick (520-2600, ext. 2664)
Dr. John Zelenski (520-2600, ext. 1609)

Do you currently smoke or have you quit within the last 6 months? If so, read on...

We are interested in exploring people's perceptions and opinions of written information about the effects of smoking and quitting smoking. We are looking for people who currently smoke or people who have quit smoking within the past 6 months.

If you choose to participate in our study, you will be asked to complete several questionnaires that include personal questions, including some about your smoking history. You will also be asked to read some information about smoking and to complete questionnaires related to your beliefs, personality, and opinions about smoking.

It takes approximately **one hour** to participate in our study. In exchange for your participation, you will receive **one (1) experimental credit**.

Please provide your initials, student number, phone number, and e-mail address on the sign-up sheet below. A researcher will contact you to arrange a day and time that is convenient for you to participate. Please note that, to participate, **you must either be a smoker or have quit within the past 6 months.**

Smoking Study

Please provide your initials, student number¹², phone number, and e-mail address on the sign-up sheet below. A researcher will contact you to arrange a day and time that is convenient for you to participate.

Initials	Student #	Telephone #	E-mail address

¹² The Psychology Department's regulations, which prohibit a request for student numbers were made subsequent to use of this sign-up sheet.

Telephone Recruitment Script

Hi, my name is _____. I'm with a team of psychology researchers at Carleton University, following up on mass testing. Do you have a couple of minutes to talk?

1. If no,

Is there a better time for me to call?

a) If no,

Thank you and good-bye

b) If yes,

Find out when

Thank you and I will talk to you then (go to 2. for call-back script)

2. If yes,

Earlier this term, you completed a questionnaire package as part of the Psychology Department's mass testing. We would like to invite you to take part in a related study on smoking. If you decide to participate you would receive 1 experimental credit towards this term for PSYC 1001 or PSYC 1002. Would you like to know more about this?

a) If no,

Thank you and good-bye

b) If yes,

In this study we are interested in exploring people's perceptions and evaluations of written information about the effects of smoking and quitting smoking. If you decide to participate you will be asked to come in to the campus and complete several questionnaires related to your beliefs, your personality, and your opinions about smoking. You will also be asked to read some information about the effects of smoking and quitting smoking. The session takes approximately one hour. We will make every effort to arrange this session to accommodate your schedule. Does this sound like something that you would be interested in participating in?

3. a) If no,

Thanks and good-bye

b) If yes,

Great!

You indicated on the questionnaire that you answered for mass testing that you had no intention of quitting smoking (OR *you intended to quit within six months, you intended to quit within 30 days, you had quit within the last six months*)—is that still true?

Arrange time.

Appendix B

Message Conditions

<i>Costs of Smoking</i>	60
<i>Benefits of Smoking Cessation</i>	62

Instructions: Please take a few minutes to carefully read and think about the following information on the enormous costs of smoking.

Costs of Smoking

People who smoke have so much to lose. Physical costs, psychological costs, and social costs all threaten the smoker.

Smoking is related to approximately two dozen diseases; therefore, one clear cost is compromised health. No matter how much people smoke or what age they are, smoking damages their health. Overall, smokers not only feel worse physically, but they are also likely to die earlier; the average smoker dies about 8 years earlier than a similar non-smoker.

The physical health costs of smoking include an increase in heart and other circulatory diseases (e.g., stroke). Nicotine constricts the arteries, making it difficult for the heart to pump blood through them. The carbon monoxide in tobacco smoke causes fat to clog the arteries and ruins the oxygen-carrying capacity of the blood. Overall, smokers are 70% more likely to die from coronary heart disease than non-smokers. Smoking increases the risk of stroke by causing clogs and blood clots that cut off blood circulation to the brain. Overall, the risk of stroke is approximately 50% higher in smokers than in non-smokers. Thus, there is no question that smoking weakens people and makes them unhealthy.

Lung diseases are one of the most commonly recognized health costs of smoking. The lungs are home to cilia, which are tiny hair-like structures that help keep the lungs clean and free from disease. Smoking initially slows the cilia's movement, causing mucous to build up in airways and making it harder to breathe; a consequence is the characteristic "smoker's cough." Eventually smoking paralyzes and destroys the cilia, resulting in the misery of increased colds, asthma, and bronchitis. Smokers also have an increased chance of developing lung cancer. Once uncommon, smoking has made this disease the leading cancer killer in both men and women.

In general, smokers are twice as likely as non-smokers to develop non-cancerous respiratory problems such as chronic obstructive pulmonary disease (COPD, e.g., emphysema). In fact, over 90% of COPD cases are smoking induced. Emphysema, a type of COPD, destroys the elasticity of the lungs until its victims suffocate to death. Other negative effects related to poor respiration include chronic sinus congestion and fatigue.

Clearly smokers are never able to reach their full potential in terms of physical fitness. No matter how interested they are in participating in a fitness program or on a sports team, poor blood circulation, decreased lung capacity, and lower energy levels all make it impossible for them to be in great physical shape and unlikely that they will ever be the team's top players.

Smokers are not the only ones who lose; so do their family and friends. For example, should a female smoker become pregnant, she must live with the fact that both her pregnancy and baby will be compromised by smoking. Smokers must also accept the fact that they are negative role models, especially for individuals younger than themselves who look up to them. In addition, they must live with the guilt of exposing others to second-hand smoke.

For people who care about appearances, nasty costs of smoking include wrinkled skin and the appearance of premature aging. Other costs include yellow teeth; dirty fingers; and foul-smelling breath, hair, clothes, homes, and cars. Many non-smokers are offended by the smell that permeates from smokers, even when they aren't smoking.

Smoking also costs a lot of money. At \$8 a pack, a pack-a-day habit costs a smoker almost \$3000 a year—that's gotta hurt! It also means less money to spend on other things such as clothes, dinner out, concerts, trips, or even just groceries.

Another cost of smoking is time. Smokers are forced to specifically dedicate time in their day to smoking. For example, because they can't smoke in public buildings, they must spend time going elsewhere to smoke. In addition, their addiction to nicotine means that often they are using their time to do something that they have to do, rather than something that they truly want to do. Smokers have to expend time and energy day after day just to regulate their habit. They live with the annoying interruption of having to have a cigarette, the nagging craving for a cigarette when it's not possible to have one, and the chore of having to find out where and with whom smoking is acceptable. Inevitably, for most, smoking simply becomes a tiresome habit.

Smokers also suffer the social ostracism and isolation that has become progressively worse in our society as non-smokers assert their rights. For example, many smokers find themselves having to stand outside, freezing, in the dead of winter so that they can have a cigarette.

Decreased self-esteem is another cost of smoking. Many smokers are ashamed of their inability to quit smoking. Not only do they feel inept and weak, but they also feel that non-smokers see them as lacking in intelligence, discipline, motivation and self-control.

In the end, smokers often feel as if they have a noose around their neck. Although aware of the physical damage they are doing to themselves and the social hassles of smoking, their addiction causes them to remain trapped and to feel a lack of control in their life. Many spend much of their time wishing they could quit their extremely unhealthy habit.

Instructions: Please take a few minutes to carefully read and think about the following information on the enormous benefits of quitting smoking.

Benefits of Smoking Cessation

People who quit smoking have so much to gain. Physical benefits, psychological benefits, and social benefits all await the smoker who quits.

The approximately two dozen diseases related to smoking start to reverse after a smoker quits, so no matter how much people smoke or what age they are, one clear benefit of quitting is improved health. Overall, ex-smokers not only feel better physically, but they are also likely to live longer; the average non-smoker lives about 8 years longer than a similar smoker.

Physical health benefits of smoking cessation include a reduction in heart and other circulatory diseases (e.g., stroke). Many people don't realize that if they quit smoking there is an almost immediate gain for their heart. In fact, their risk of heart attack decreases after just 2 days of abstinence and is cut in half after one year. Overall, non-smokers are 70% less likely to die from coronary heart disease than smokers. The smoker who quits decreases the risk of stroke by approximately 50% within 1 year, and to normal levels (people who have never smoked) within 5 years. Thus, there is no question that quitting makes a person stronger and healthier.

Healthier lungs are one of the most commonly recognized health benefits of smoking cessation. The lungs are home to cilia, which are tiny hair-like structures that help keep the lungs clean and free from disease. Although the cilia are destroyed by smoking, within 3 days of quitting, they begin to grow back, and within 6 months, normal cilia function is restored. The return of these cilia means ex-smokers are subjected to far fewer colds, asthma attacks, and bronchitis than smokers. People who quit smoking also cut their risk of dying from lung cancer in half within 10 years.

In general, non-smokers are only half as likely as smokers to develop non-cancerous respiratory problems such as chronic obstructive pulmonary disease (COPD, e.g., emphysema). Within 72 hours of not smoking, breathing is easier, and within 2 weeks to 3 months lung functioning increases up to 30%. Other positive effects include a decrease in chronic sinus congestion and an increase in energy.

For individuals who are interested in becoming physically fit, giving up cigarettes is clearly an excellent beginning. Improved blood circulation, increased lung capacity, and higher energy levels all make it possible for ex-smokers to get into great physical shape through fitness programs or to become top players on sports teams.

People who quit smoking are not the only ones who win; so do their family and friends. For example, should a female ex-smoker become pregnant, she can take comfort in the fact that both her pregnancy and baby will be much healthier than if she had continued to smoke. Ex-smokers can take satisfaction in the fact that they have become positive role models,

especially for individuals younger than themselves who look up to them. They also no longer have to be concerned about exposing others to second-hand smoke.

For people who care about appearances, pleasant benefits of smoking cessation include the fact that it prevents further wrinkling and the appearance of premature aging caused by smoking. Other benefits include whiter teeth; cleaner fingers; and better-smelling breath, hair, clothes, homes, and cars. Consequently, people who quit are much nicer for others to be around.

Quitting also saves a lot of money. At \$8 a pack, quitting a pack-a-day habit saves a smoker almost \$3000 a year—a nice bonus! That translates to more money to spend on other things, such as clothes, dinner out, concerts, trips, or even just groceries.

Another benefit of quitting is increased time. Time previously spent smoking and managing a habit becomes new-found time for ex-smokers—time that they can use in any way they choose. For example, they may decide to get an extra hour of sleep a day. Quitting also allows ex-smokers to enjoy non-smoking social events uninterrupted and to move freely through their day without having to bother with or even think about where and when they can smoke. Whatever they decide to do with their time, ex-smokers are free to spend more time doing things that they truly want to do instead of doing something that they have to do.

Ex-smokers are also free from the social ostracism and isolation that has become progressively worse in our society as non-smokers assert their rights. For example, they no longer have to stand outside, freezing, in the dead of winter to have a cigarette.

Increased self-esteem is another benefit of quitting. Many people remember the exact date that they quit because they are proud of their ability to quit smoking. Not only does their own sense of pride increase, but they also feel that others see them as intelligent, disciplined individuals who are able to set and attain goals.

In the end, smokers who quit feel incredibly liberated. Free from addiction, they can look forward to becoming physically healthy once again, and they no longer have to live with the social hassles of smoking. For the vast majority of quitters, quitting is the best single thing they have ever done to improve the length and quality of their lives.

Appendix C

Pre-message Measures

<i>General Information (Demographics and smoking history).....</i>	<i>65</i>
<i>Fagerstrom Test for Nicotine Dependence (FTND Scale)</i>	<i>66</i>
<i>Decisional Balance</i>	<i>67</i>
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General Information

Gender (Please check one): Female _____ Male _____

Age _____

Student status (Please check one): Full-time student _____ Part-time student _____

What year of university are you in? (Please circle one) 1st 2nd 3rd 4th

What is your first language? _____

Please answer the following questions by circling the number that best corresponds to your answer.

1. How long have you been or were you a smoker?

- 1 = less than 1 year
- 2 = between 1 and 5 years
- 3 = between 5 and 10 years
- 4 = more than 10 years

2. How much do you currently smoke, or how much did you smoke before you quit?

- 1 = less than 30 cigarettes per month
- 2 = between 1 and 5 cigarettes per day
- 3 = between 5 and 15 cigarettes per day
- 4 = between 15 and 25 cigarettes per day
- 5 = more than 25 cigarettes per day

3. How many times have you quit for more than 6 months?

- 1 = never
- 2 = once
- 3 = twice
- 4 = three or more times

4. If you have quit smoking, how long has it been since you had a cigarette?

- 1 = not applicable; I haven't quit
- 2 = 24 hours or less
- 3 = between 1 and 7 days
- 4 = between 8 and 30 days
- 5 = between 1 and 3 months

6 = between 3 and 6 months

FTND Scale

Instructions: Circle your answers to the questions below. If you were a smoker but have quit, please answer the questions according to your behaviour when you were a smoker.

1. How soon after you wake up do you smoke your first cigarette?
 - (a) within 5 minutes
 - (b) 6-30 minutes
 - (c) 31-60 minutes
 - (d) after 60 minutes
2. Do you find it difficult not to smoke in places where it is forbidden (e.g., in church, at the library, in movie theatres, etc.)?
 - (a) Yes
 - (b) No
3. Which cigarette would you most hate to give up?
 - (a) the first one in the morning
 - (b) any other one
4. How many cigarettes per day do you smoke?
 - (a) 10 or less
 - (b) 11-20
 - (c) 21-30
 - (d) 31 or more
5. Do you smoke more frequently during the first hours after awakening than during the rest of the day?
 - (a) Yes
 - (b) No
6. Do you smoke when you are ill, even if you are so ill that you are in bed most of the day?
 - (a) Yes
 - (b) No

Decisional Balance

The following statements represent different opinions about smoking. Please rate **HOW IMPORTANT** each statement is to your decision to smoke according to the following five point scale:

1 = Not important

2 = Slightly important

3 = Moderately important

4 = Very important

5 = Extremely important

1. Smoking cigarettes is pleasurable.	1 2 3 4 5
2. My smoking affects the health of others.	1 2 3 4 5
3. I am relaxed and, therefore, more pleasant when smoking.	1 2 3 4 5
4. Because I continue to smoke, some people I know think I lack character to quit.	1 2 3 4 5
5. Others close to me would suffer if I became ill from smoking.	1 2 3 4 5
6. Smoking cigarettes is hazardous to my health.	1 2 3 4 5
7. If I try to stop smoking, I'll be irritable and a pain to be around.	1 2 3 4 5
8. My family and friends like me better when I am happily smoking than when I am miserably trying to quit.	1 2 3 4 5
9. I'm embarrassed that I have to smoke.	1 2 3 4 5
10. I like myself better when I smoke.	1 2 3 4 5

1 = Not important

2 = Slightly important

3 = Moderately important

4 = Very important

5 = Extremely important

11. My cigarette smoking bothers other people.	1 2 3 4 5
12. Smoking helps me concentrate and do better work.	1 2 3 4 5
13. People think I'm foolish for ignoring warnings about cigarette smoking.	1 2 3 4 5
14. Smoking cigarettes relieves tension.	1 2 3 4 5
15. People close to me disapprove of my smoking.	1 2 3 4 5
16. I would be more energetic right now if I didn't smoke.	1 2 3 4 5
17. By continuing to smoke, I feel I am making my own decisions.	1 2 3 4 5
18. I'm foolish to ignore the warnings about cigarettes.	1 2 3 4 5
19. After not smoking for a while, a cigarette makes me feel great.	1 2 3 4 5
20. I like the image of a cigarette smoker.	1 2 3 4 5

Self-Efficacy

Listed below are situations that lead some people to smoke. We would like to know how **CONFIDENT** you are in your ability not to smoke in each situation. Please answer the questions below using the following five point scale.

1 = Not at all confident

2 = Not very confident

3 = Moderately confident

4 = Very confident

5 = Extremely confident

1. With friends at a party.	1	2	3	4	5
2. When I first get up in the morning.	1	2	3	4	5
3. When I am very anxious and stressed.	1	2	3	4	5
4. Over coffee while talking and relaxing.	1	2	3	4	5
5. When I feel I need a lift.	1	2	3	4	5
6. When I am very angry about something or someone.	1	2	3	4	5
7. With my spouse or close friend who is smoking.	1	2	3	4	5
8. When I realize I haven't smoked for a while.	1	2	3	4	5
9. When things are not going my way and I am frustrated.	1	2	3	4	5

Appendix D

Post-message Measures

Receptivity Measure

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Receptivity Questionnaire (L)

Instructions: You have just read some information on the costs of smoking. Some people are receptive to this type of information and some people are not. We are interested in what you think or how you feel about the information. Below are 10 statements based on the information that you read. For each of the 10 statements, complete the sentence "If I were to continue smoking..." with the statement, and then rate your personal acceptance of the sentence using the following scale.

Reject strongly	Reject a little	Accept a little	Accept strongly
1	2	3	4

If I were to continue smoking . . .

1. Nicotine would constrict my arteries, making it difficult for my heart to pump blood through them, and the carbon monoxide in tobacco smoke would cause fat to clog my arteries and ruin the oxygen-carrying capacity of my blood.	1	2	3	4
2. Smoking would paralyze and destroy my lungs' cilia, resulting in the misery of increased colds, asthma, and bronchitis for me.	1	2	3	4
3. Poor blood circulation, decreased lung capacity, and lower energy levels would all make it impossible for me to get into great physical shape.	1	2	3	4
4. I would have to accept the fact that I would be a negative role model, especially for individuals younger than myself who look up to me.	1	2	3	4
5. I would have to live with the guilt of exposing others to second-hand smoke.	1	2	3	4
6. I would have yellow teeth; dirty fingers; and foul-smelling breath, hair, clothes, home, and car, and many non-smokers would be offended by the smell that permeates from me, even when I wasn't smoking.	1	2	3	4
7. I would have a lot less money to spend on other things.	1	2	3	4
8. My addiction to nicotine would mean that often I would have to use my time to do something that I <u>have</u> to do instead of being able to do things that I truly <u>want</u> to do.	1	2	3	4
9. I would be ashamed of my inability to quit smoking, and I would feel that non-smokers see me as lacking in intelligence, discipline, motivation and self-control.	1	2	3	4
10. I would spend much of my time wishing I could quit my extremely unhealthy habit.	1	2	3	4

Receptivity Questionnaire (G)

Instructions: You have just read some information on the benefits of smoking cessation. Some people are receptive to this type of information and some people are not. We are interested in what you think or how you feel about the information. Below are 10 statements based on the information that you read. For each of the 10 statements, complete the sentence "If I were to quit smoking..." with the statement, and then rate your personal acceptance of the sentence using the following scale.

Reject strongly	Reject a little	Accept a little	Accept strongly
1	2	3	4

If I were to quit smoking . . .

1. I would cut my risk of heart attack after just 2 days of abstinence from smoking, and I would cut it in half after one year.	1	2	3	4
2. Because the cilia in my lungs would return, I would be subjected to far fewer colds, asthma attacks, and bronchitis.	1	2	3	4
3. My improved blood circulation, increased lung capacity, and higher energy levels would make it possible for me to get into great physical shape.	1	2	3	4
4. I could take satisfaction in the fact that I would become a positive role model, especially for individuals younger than myself who look up to me.	1	2	3	4
5. I would no longer have to be concerned about exposing others to second-hand smoke.	1	2	3	4
6. I would have whiter teeth; cleaner fingers; and better-smelling breath, hair, clothes, home, and car, and I'd be much nicer to be around.	1	2	3	4
7. I would have a lot more money to spend on other things.	1	2	3	4
8. I would be free to do more things that I truly <u>want</u> to do instead of having to spend time doing something that I <u>have</u> to do.	1	2	3	4
9. I would be proud of my ability to quit, and I'd feel that others see me as an intelligent, disciplined individual who can set and attain goals.	1	2	3	4
10. I would consider it the best single thing I had ever done to improve the length and quality of my life.	1	2	3	4

Costs Questionnaire

Using the information about smoking that you read earlier, choose the correct answer.

1. The average smoker dies about _____ earlier than a similar non-smoker.
 - a. 6 years
 - b. 7 years
 - c. 8 years
 - d. 9 years
2. Smokers are _____ to die from coronary heart disease than non-smokers.
 - a. 40% more likely
 - b. 50% more likely
 - c. 60% more likely
 - d. 70% more likely
3. The risk of stroke is approximately _____ in smokers than in non-smokers.
 - a. 40% higher
 - b. 50% higher
 - c. 60% higher
 - d. 70% higher
4. In general, smokers are _____ to develop non-cancerous respiratory problems as non-smokers.
 - a. twice as likely
 - b. three times as likely
 - c. four times as likely
 - d. five times as likely
5. Smoking is related to approximately _____ diseases.
 - a. 12
 - b. 24
 - c. 36
 - d. 48
6. List as many costs of smoking as you can recall from the information that you read earlier. Feel free to use the other side of the page if necessary.

Benefits Questionnaire

Using the information about smoking cessation that you read earlier, choose the correct answer.

1. The average non-smoker lives about _____ longer than a similar smoker.
 - a. 6 years
 - b. 7 years
 - c. 8 years
 - d. 9 years
2. Non-smokers are _____ to die from coronary heart disease than smokers.
 - a. 40% less likely
 - b. 50% less likely
 - c. 60% less likely
 - d. 70% less likely
3. The risk of stroke for smokers who quit decreases by approximately ____ within 1 year.
 - a. 50%
 - b. 60%
 - c. 70%
 - d. 80%
4. In general, non-smokers are _____ to develop non-cancerous respiratory problems as smokers.
 - a. one-quarter as likely
 - b. one-third as likely
 - c. half as likely
 - d. two-thirds as likely
5. Smoking is related to approximately _____ diseases.
 - a. 12
 - b. 24
 - c. 36
 - d. 48
6. List as many benefits of smoking cessation as you can recall from the information that you read earlier. Feel free to use the other side of the page if necessary.

Decisional Balance: T2

Although you completed this questionnaire earlier, kindly complete it again. Do not be concerned about whether your answers are the same as they were previously. Simply answer each question as honestly as possible.

The following statements represent different opinions about smoking. Please rate **HOW IMPORTANT** each statement is to your decision to smoke according to the following five point scale:

1 = Not important

2 = Slightly important

3 = Moderately important

4 = Very important

5 = Extremely important

1. Smoking cigarettes is pleasurable.	1 2 3 4 5
2. My smoking affects the health of others.	1 2 3 4 5
3. I am relaxed and, therefore, more pleasant when smoking.	1 2 3 4 5
4. Because I continue to smoke, some people I know think I lack character to quit.	1 2 3 4 5
5. Others close to me would suffer if I became ill from smoking.	1 2 3 4 5
6. Smoking cigarettes is hazardous to my health.	1 2 3 4 5
7. If I try to stop smoking, I'll be irritable and a pain to be around.	1 2 3 4 5
8. My family and friends like me better when I am happily smoking than when I am miserably trying to quit.	1 2 3 4 5

1 = Not important

2 = Slightly important

3 = Moderately important

4 = Very important

5 = Extremely important

9. I'm embarrassed that I have to smoke.	1	2	3	4	5
10. I like myself better when I smoke.	1	2	3	4	5
11. My cigarette smoking bothers other people.	1	2	3	4	5
12. Smoking helps me concentrate and do better work.	1	2	3	4	5
13. People think I'm foolish for ignoring warnings about cigarette smoking.	1	2	3	4	5
14. Smoking cigarettes relieves tension.	1	2	3	4	5
15. People close to me disapprove of my smoking.	1	2	3	4	5
16. I would be more energetic right now if I didn't smoke.	1	2	3	4	5
17. By continuing to smoke, I feel I am making my own decisions.	1	2	3	4	5
18. I'm foolish to ignore the warnings about cigarettes.	1	2	3	4	5
19. After not smoking for a while, a cigarette makes me feel great.	1	2	3	4	5
20. I like the image of a cigarette smoker.	1	2	3	4	5

Self-Efficacy: T2

Although you completed this questionnaire earlier, kindly complete it again. Do not be concerned about whether your answers are the same as they were previously. Simply answer each question as honestly as possible.

Listed below are situations that lead some people to smoke. We would like to know how **CONFIDENT** you are in your ability not to smoke in each situation. Please answer the questions below using the following five point scale.

1 = Not at all confident

2 = Not very confident

3 = Moderately confident

4 = Very confident

5 = Extremely confident

1. With friends at a party.	1	2	3	4	5
2. When I first get up in the morning.	1	2	3	4	5
3. When I am very anxious and stressed.	1	2	3	4	5
4. Over coffee while talking and relaxing.	1	2	3	4	5
5. When I feel I need a lift.	1	2	3	4	5
6. When I am very angry about something or someone.	1	2	3	4	5
7. With my spouse or close friend who is smoking.	1	2	3	4	5
8. When I realize I haven't smoked for a while.	1	2	3	4	5
9. When things are not going my way and I am frustrated.	1	2	3	4	5

Smoking Questionnaire

1. Are you currently a smoker? (Please circle your answer from the list.)
 - a. Yes, I currently smoke
 - b. No, I quit within the last 6 months
 - c. No, I quit more than 6 months ago
2. In the last year, how many times have you quit smoking for at least 24 hours?
 - a. Not applicable—I don't smoke
 - b. Zero
 - c. Once
 - d. 2-4 times
 - e. More than 4 times
3. Are you seriously thinking of quitting smoking?
 - a. Not applicable—I don't smoke
 - b. Yes, within the next 30 days
 - c. Yes, within the next 6 months
 - d. No, not thinking of quitting
4. Do you see quitting smoking as
 - a. a means to prevent disease that you may develop if you continue to smoke
 - b. a means to regain health that you may have already compromised by smoking
 - c. both a and b
 - d. none of the above
5. If you answered "c" to the previous question (# 4), which of the following do you see as the **primary function** of quitting smoking?
 - a. a means to prevent disease that you may develop if you continue to smoke
 - b. a means to regain health that you may have already compromised by smoking
6. Are you willing to be contacted in 5 weeks either by phone or by e-mail to answer a few follow-up questions related to this study on smoking? This would require less than 5 minutes of your time.

No _____ Yes _____

If yes, please provide telephone number: _____

e-mail address: _____

Would You Like to Quit?

The following Web sites and Help lines can provide information about smoking and tips to help you quit.

Web sites

- www.gosmokefree.ca
- www.cancer.ca
- www.cdc.gov/tobacco/how2quit.htm
- www.smokefree.gov
- www.quitnet.com
- www.nicorette.com
- www.whyquit.com

**** Please feel free to take **
this information sheet
if you are interested.**

Toll-free quit lines

1-877-513-5333 Ontario Smoker's Helpline

1-888-853-6666 Quebec Smoker's Helpline

Picture Choice

Use the lines next to the pictures below to rank order them in terms of their appeal for you. For example, if you were going to buy one as a poster, which one would you buy first, second, and third and so on?

<p># _____</p>	<p># _____</p>
<p># _____</p>	<p># _____</p>
<p># _____</p>	<p># _____</p>

Smoking Follow-up Questionnaire

Telephone Script

Hi, my name is _____. I'm with a team of psychology researchers at Carleton University, following up on a study about smoking that you participated in 5 weeks ago. Do you have a couple of minutes to talk?

1. If no,

Is there a better time for me to call?

a) If no,

Thank you and good-bye

b) If yes,

Find out when; Thank you and I will talk to you then (go to 2. for call-back script)

2. If yes,

Great! You may recall that when you participated in the study, we asked if you would be willing to answer a few follow-up questions, and you indicated that you would. Are you still willing to do this?

a) If no,

Thank you and good-bye

b) If yes,

I have four brief questions that should take only a couple of minutes of your time to answer.

Questions

1. Are you currently a smoker?
 - a. Yes, I currently smoke
 - b. No, I quit within the last 6 months
 - c. No, I quit more than 6 months ago
2. If you quit smoking since taking part in our study, when did you do so (date if possible)?

3. If you resumed smoking since taking part in our study, when did you do so (date if possible)? _____
4. Are you seriously thinking of quitting smoking?
 - a. Not applicable—I don't smoke
 - b. Yes, within the next 30 days
 - c. Yes, within the next 6 months
 - d. No, not thinking of quitting

Those are all my questions. Thanks very much for your time. Goodbye.

Appendix E

*Ethical Requirements**Informed Consent*.....83*Debriefing*84

Informed Consent

The purpose of an informed consent is to insure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Present study: Smoking Study

Research personnel: Ruth Sullivan (Principal Investigator, 520-2600, ext. 3781); Dr. Mary Gick (Faculty Sponsor, 520-2600, ext. 2664); Dr. John Zelenski (Faculty Sponsor, 520-2600, ext. 1609). Should you have any ethical concerns about this study please contact Dr. Shelley Parlow (Member, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 2691) or Dr. John Logan (Chair, Department of Psychology, 520-2600, ext. 2648).

Purpose: To explore people's perceptions and opinions of written information about the effects of smoking and quitting smoking, and to investigate how personality may be related to these perceptions and opinions.

Task requirements: You will be asked to complete several questionnaires that include personal questions, including some about your smoking history. You will be asked to read some information about smoking. You will also be asked to complete questionnaires related to your beliefs, your personality, and your opinions about smoking. Finally, we will ask if you are willing to be contacted in approximately 5 weeks, either by phone or by e-mail, to answer a few follow-up questions related to this study (requiring less than 5 minutes of your time).

Duration and locale: The experimental session will last approximately 45-60 minutes. Testing will take place in Room A500C of the Loeb Building, Carleton University. Testing may occur in small groups.

Potential risk/discomfort: While there are no known physical or psychological risks in this study, it is possible that some participants may experience minor distress when thinking about issues related to smoking.

Anonymity/confidentiality: The data collected in this experiment are confidential. All data are coded such that your name is not associated with the data. In addition, the coded data are made available only to the researchers associated with this project.

Right to withdraw: You have the right to withdraw from the experiment at any time without penalty. You also have the right to not answer specific questions.

Signature

I have read the above description of the Smoking Study and understand the conditions of my participation. My signature indicates that I agree to participate in the experiment.

Participant's Name (please print): _____

Participant's Signature: _____ Date: _____

Debriefing

The purpose of this study is to investigate the effects of messages on smokers. Messages can be thought of as information that is delivered to people in the form of a persuasive appeal or an argument. For example, the warning label on a cigarette package is a message for smokers. Different types of messages exist. Some messages are designed to emphasize the advantages of a specific behaviour; other messages are designed to emphasize the disadvantages of a specific behaviour.

In the current study, we are looking to see how people respond to messages that are framed in different ways. In addition, smokers can be categorized into different stages of readiness to quit smoking, depending on their intention to quit (Prochaska & DiClemente, 1983). We would like to know if responses to different messages are a function of people's commitment to smoking. For example, if you are more interested in quitting, might you be more influenced by a message that emphasizes the advantages of quitting? Alternatively, you might be more influenced by a message that emphasizes the disadvantages of continuing to smoke. We are also interested in how personality traits, such as optimism, procrastination, conscientiousness, need for cognition, and consideration of future consequences might influence readiness to quit smoking, and how personality might be affected by messages. For these reasons, we had you complete personality questionnaires that asked about these individual differences. We hope that the results of our study will provide some information that helps to illuminate these possibilities.

Finally, some people may have experienced some minor discomfort when thinking about the effects of smoking. We asked you to rate cartoons in order to alleviate any discomfort this may have caused.

We would like to thank you for participating in this research. Your time and efforts are greatly appreciated!

If you have any questions or comments about this research, please feel free to contact Ruth Sullivan (Principal Investigator, 520-2600, ext. 3781); Dr. Mary Gick (Faculty Sponsor, 520-2600, ext. 2664); or Dr. John Zelenski (Faculty Sponsor, 520-2600, ext. 1609). Should you have any ethical or other concerns about this study, please contact Dr. Shelley Parlow (Member, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 2691) or Dr. John Logan (Chair, Department of Psychology, 520-2600, ext. 2648).

If you have concerns about your smoking and would like more information about smoking or help with smoking cessation, you might wish to visit Health Canada's Web site at www.gosmokefree.ca. If you have any personal concerns about your general physical or emotional well-being that you would like to discuss with somebody, you might wish to contact Carleton University Health and Counselling Services, located in the Carleton Technology and Training Centre (across from the parking garage), 520-6674.

Appendix F

Additional Tables

<i>Table A1: Correlations among Attention, Receptivity, and Pretest and Posttest Pros of Smoking, Cons of Smoking, and Self-efficacy in the Loss Condition (n = 81)</i>	<i>86</i>
<i>Table A2: Correlations among Attention, Receptivity, and Pretest and Posttest Pros of Smoking, Cons of Smoking, and Self-efficacy in the Gain Condition (n = 81)</i>	<i>87</i>

Table A1

Correlations among Attention, Receptivity, and Pretest and Posttest Pros of Smoking, Cons of Smoking, and Self-efficacy in the Loss Condition (n = 81)

Scale	1	2	3	4	5	6	7	8
1. Pretest pros of smoking	1.00							
2. Posttest pros of smoking	.83**	1.00						
3. Pretest cons of smoking	-.01	-.11	1.00					
4. Posttest cons of smoking	-.08	-.08	.85**	1.00				
5. Pretest self-efficacy	-.19	-.28*	-.11	-.11	1.00			
6. Posttest self-efficacy	-.20	-.37**	-.07	-.07	.89**	1.00		
7. Attention	.15	.14	-.02	.08	-.25*	-.18	1.00	
8. Receptivity	-.05	-.02	.36**	.49**	-.07	.01	.13	1.00

** Correlation is significant at the .01 level (two-tailed).

* Correlation is significant at the .05 level (two-tailed).

Table A2

Correlations among Attention, Receptivity, and Pretest and Posttest Pros of Smoking, Cons of Smoking, and Self-efficacy in the Gain Condition (n = 81)

Scale	1	2	3	4	5	6	7	8
1. Pretest pros of smoking	1.00							
2. Posttest pros of smoking	.75**	1.00						
3. Pretest cons of smoking	.19	.03	1.00					
4. Posttest cons of smoking	-.02	.03	.78**	1.00				
5. Pretest self-efficacy	-.33**	-.29**	-.14	.02	1.00			
6. Posttest self-efficacy	-.29**	-.25*	-.10	.05	.89**	1.00		
7. Attention	-.01	-.02	-.01	-.04	-.21	-.18	1.00	
8. Receptivity	-.27*	-.22*	.33**	.48**	.10	.08	-.01	1.00

** Correlation is significant at the .01 level (two-tailed).

* Correlation is significant at the .05 level (two-tailed).