An evaluation of the potential effectiveness of tobacco-related health messages

among Inuit in Nunavut, Canada: What types of messages work best at

promoting smoking cessation among Inuit smokers?

by

Mary-Jean Costello

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

Background. Inuit experience some of the highest rates of tobacco use and of tobacco-related diseases in Canada. Communication strategies, such as health warnings on tobacco products, are seen as a necessary means of informing the public of tobacco-related health risk and motivating smokers to want to quit smoking. However, there is little evidence to suggest how such strategies might be working among Inuit nor is there evidence to suggest how best to communicate tobacco-related health risk to and promote smoking cessation among Inuit smokers.

Objectives. (1) To systematically examine the effects of textual message frame (i.e., loss- vs. gain-framed), graphic type (i.e., gruesome vs. personal suffering), and narrative style (i.e., testimonial vs. didactic) on measures of message acceptance (i.e., personal relevance and perceived credibility), affective response, and potential message effectiveness. (2) To examine fear as a potential mediator of the relation between textual message frame and measures of potential message effectiveness, as well as of the relation between graphic type and measures of potential message effectiveness. (3) To examine the potential impact of the message spokesperson (i.e., Caucasian, middle-aged male/female vs. Inuit middle-aged male/female vs. Inuit Elder male/female) on measures of message acceptance and potential message effectiveness.

Experimental design. A repeated measures (i.e., within-subject) 2 x 2 x 2 factorial design was used to examine the effects of textual message frame, graphic type and narrative style. A separate ranking task assessed the potential impact of the message spokesperson.

Methods. Eligible participants (Inuit, aged 18 years of age or older, having smoked at least one cigarette in the previous 30 days and smoked over 100 cigarettes in their lifetime) were recruited in October 2012 from two communities in Nunavut (Iqaluit and Rankin Inlet). Participants

completed a survey, an experimental procedure (i.e., a health warning rating task) and a health

warning ranking task on a hand-held electronic device with a trained research assistant. With

data from the health warning rating task, a series of multinomial regression models using the

Generalized Estimating Equation (GEE) method were fitted to examine the effects of three

message characteristics on each of the outcome measures, controlling for known covariates.

Outcome measures were categorized into 3-levels: (1) extremely, (2) somewhat, and (3) not

really. The "not really" category was used as the comparison category for multinomial regression

models. Multinomial regression was also used to examine the potential mediating effects of fear

as it related to each of the measures of potential message effectiveness. With data from the health

warning ranking task, frequencies of participant choices as related to the message spokesperson

were examined. 129 participants were included in the analyses.

Results. Participants were, on average, 37.3 years of age (STD = 12.7) and smoked 13.0

cigarettes per day (STD = 8.9). Just over half were female (56.6%) and most had less than a high

school education (72.7%). Messages with gruesome images were more likely than those with

images of personal suffering to be rated as extremely relevant (OR = 2.23, CI: 1.56-3.20),

credible (OR = 2.46, CI: 1.67-3.62), emotionally arousing (OR = 3.40, CI: 2.27-5.08), and

potentially effective (OR = 2.56, CI: 1.69-3.86). Loss-framed messages were more likely than

gain-framed messages to be rated as extremely emotionally arousing (OR = 1.71, CI: 1.23-2.37),

but no more likely to be rated as extremely relevant (OR = 1.03, CI: 0.61-1.74), credible (OR =

1.06, CI: 0.81-1.39), or potentially effective (OR = 1.24, CI: 0.98-1.58). Testimonial messages

were no more likely than didactic messages to be rated as extremely relevant (OR = 0.90, CI:

0.60-1.35), credible (OR = 0.97, CI: 0.70-1.34), emotionally arousing (OR = 1.22, CI: 0.90-

1.67), or potentially effective (OR = 1.08, CI: 0.85-1.37). Fear appeared to partially mediate the

relation between textual message frame and all three indicators of potential message effectiveness suggesting loss-framed messages elicited greater feelings of fear, thereby enhancing the potential effectiveness of the message. There was also some evidence that fear partially mediated the relation between graphic type and some indicators of potential message effectiveness suggesting messages with gruesome images elicited greater feelings of fear, thereby enhancing the potential effectiveness of the messages. Finally, greater proportions of participants indicated health warnings with an Inuit Elder were most personally relevant (44.2%) and most credible (35.9%) compared to health warnings with middle-aged Inuit or Caucasian spokespersons. However, participants' choice of which health warning was potentially most effective was split relatively evenly between all options.

Conclusions. Findings from this study suggest health warnings accompanied by gruesome images are potentially more effective at communicating tobacco-related health risk and motivating cessation among Inuit compared to those with images of personal suffering. This provides some initial evidence that current communication strategies that use gruesome imagery, like some tobacco product health warnings in Canada, may be effective among Inuit populations. However, when a spokesperson is used in a communication campaign, Inuit Elders tend to be preferred. Together these findings suggest that an integrated communication strategy that includes complementary, targeted materials working synergistically alongside population-level approaches (like tobacco product warning labels) may work best among Inuit.

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DEDICATION

To our little honeydew,

for providing me with the extra bit of motivation I needed to finish.

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CHAPTER 1

INTRODUCTION

Inuit have the highest rates of tobacco use in Canada. In 2006, over half (58%) of Inuit aged 15 years and over smoked daily (Aboriginal Peoples Survey, 2006); more than three times the smoking rate of all Canadians during the same time (19%; Canadian Tobacco Use Monitoring Survey, 2006). Although the smoking prevalence among Canadians has declined substantially over the last 45 years (Reid, et al., 2012), it has remained high among Inuit and has undoubtedly contributed to the growing health disparities observed between Inuit and non-Inuit populations. In an attempt to address such disparities in Canada, there have been recent calls to persuade the health sector to adopt health disparity reduction as a priority for public health (e.g., Health Disparities Task Group, 2004).

In 2006, the Inuit population in Canada was estimated at approximately 50 500, constituting less than 1% of the Canadian population (Statistics Canada, 2007). The majority of the Inuit (78%) live in remote communities within the northernmost parts of Canada, collectively known as Inuit Nunangat, while the highest concentrations of Inuit (49%) live in Nunavut (Statistics Canada, 2007). Although Inuit make up only a small proportion of the Canadian population, they suffer from the highest burden of tobacco-related disease in the country. For example, lung cancer incidence rates among Inuit males and females are two and three times higher than that of all males and females in Canada, respectively (Circumpolar Inuit Cancer Review Working Group, 2008; Health Canada, 2011). While, lung cancer mortality rates are three and four time higher among male and female residents of Inuit regions compared to all males and females in Canada, respectively (Health Canada, 2011).

Although Canada is among the world leaders when it comes to implementing strict tobacco control policies, legislation, and supports for tobacco-related programs and services, the effects of these population-wide strategies among disadvantaged populations, communities and individuals are not well understood. The concern is, if such efforts do not take into consideration the needs of disadvantaged groups, they run the risk of increasing rather than decreasing tobacco-related health disparities. Health warnings on tobacco products are one population-wide strategy that aims to inform all Canadians of the health risk of smoking and promote behaviour change (e.g., quitting smoking). Even when accounting for tobacco addiction (e.g., cigarettes smoked per day, time-to-first cigarette, etc.), there is convincing evidence that tobacco warning labels have had a positive effect on promoting smoking cessation among the general population of Canadians (Hammond, et al., 2007; Hammond, et al., 2004; Hammond, et al., 2003); however, their impact among Inuit has not been studied.

The growing evidence suggesting the effects of health communication strategies designed for the general population may be *less* effective among some disadvantaged populations (e.g., Niederdeppe, et al., 2008; Viswanath, et al. 1996; Viswanath, et al., 2006a; 2006b) emphasizes the need for better understanding of how such strategies work among disadvantaged populations. Although recent evidence suggests health warnings may be at least as effective among those of lower socioeconomic status (SES) (Hammond, et al., 2012), health warnings on tobacco products may be *less* effective among Inuit due to potential differences in meaningful exposure to health warnings, opportunities and support for smoking cessation, and the ability of health warnings to motivate smokers to want to quit (Niederdeppe, et al., 2008). For example, Inuit in Canada typically have less than a high school education (Statistics Canada, APS, 2006), speak an Aboriginal language as their primary language (Statistics Canada, APS, 2006), and have

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traditionally relied on oral stories from respected community members (e.g., Elders) as sources for health information (McShane, et al., 2006). These factors may not only limit the likelihood that Inuit are exposed to health warnings in a meaningful way (e.g., due to literacy and language barriers), but may also limit the extent to which health warnings motivate smoking cessation among Inuit.

Furthermore, there is an underlying sense among Nunavummiut that tobacco-related health messages should include recognizable community members conveying their own experiences with tobacco (Costello, et al., 2011; Glacken, 2012) – characteristics that are not present in the current Canadian health warnings on tobacco products, but are emphasized in a recent Nunavut-based tobacco use awareness campaign which includes print materials (i.e., *"Tobacco has no place here"*). There is also a general sense among public health professionals in Nunavut that health communications targeted toward Inuit should be framed as positive messages (i.e., gain-framed) to avoid provoking feelings of despair and hopelessness among community members. Thus, it is presumable that the message characteristics that are commonly used to convey tobacco-related health information in the form of tobacco health warnings (e.g., loss-framed, didactic narratives, gruesome imagery, non-Inuit spokespersons, English and French languages only, etc.) may not be an effective means to communicate tobacco-related health risk and promote smoking cessation among Inuit.

Recently, the Government of Nunavut expressed a strong commitment to reduce the high smoking rates in the Territory, and specifically among Inuit who make up approximately 80% of the population. Within the context of a strategic plan for public health, the Government of Nunavut along with other community partners is implementing a comprehensive tobacco control strategy for the Territory. One key component of the strategy is to increase community

awareness about the health effects of smoking and promote cessation through a multi-media communication campaign. Although the campaign materials and messages were designed to meet the needs of Inuit identified through formative research (Costello, et al., 2011), there is little to no evidence as to whether the campaign messages may be effective.

This dissertation begins with a review of the literature to identify health communication practices that may be potentially effective at promoting smoking cessation among Inuit, followed by the rationale and research objectives for the present study. Next, the study methodology is presented including a description of the procedures, measures and sample. Results are presented and discussed as they pertain to each of the main research objectives, followed by a discussion of the strengths and limitations of the study.

CHAPTER 2

REVIEW OF THE LITERATURE

The purpose of this review is: (1) to identify message characteristics that may be particularly effective at communicating tobacco-related health risk and promoting cessation among Inuit smokers; (2) to identify key variables that may mediate the relation between these message characteristics and smoking cessation outcomes; and, (3) to suggest hypotheses for the present study.

2.1 Integrating Health Behaviour and Communication Theories

Classical theories of health behaviour, including the Health Belief Model (Becker, 1974; Janz & Becker, 1984), Protection Motivation Theory (Rogers, 1975), Social Cognitive Theory (Bandura, 1977), Precaution Adoption Process Model (Weinstein, 1988), and Theory of Planned Behaviour/Reasoned Action (Ajzen, 1991; Ajzen & Fishbein, 1980) identify specific attitudes, beliefs and behaviours that can be targeted when designing smoking cessation campaigns. However, the breadth of these models limits their practical guidance for informing health communication design. Theories of persuasion and communication such as Prospect Theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981), duel-processing models (e.g., Chaiken, 1980; Petty & Cacioppo, 1986), the Extended Parallel Process Model (EPPM; Witte, 1992; 1994), and Communication/Persuasion Model (McGuire, 1984; 1989) offer some insights into the practical design elements that can be applied to effectively communicate and shape the targeted attitudes, beliefs and behaviours.

The Communication/Persuasion Model (McGuire, 1984; 1989) may be particularly useful when designing health promotion communications and evaluating their impact. McGuire

suggests the impact of health communications can be influenced by five broad factors and several sub-factors which he calls "inputs." These include: (1) the source of the message (e.g., the communicator's credibility; expertise; trustworthiness; attractiveness; similarity and familiarity to the recipient); (2) the message characteristics (e.g., style; type of appeal; type of argument/information); (3) the channel by which the message is delivered (e.g., modality; directness; context); (4) the characteristics of the message recipient (e.g., demographics; ability; personality; lifestyle); and, (5) the behaviour being targeted by the message (e.g., attitude vs. action; cessation vs. promotion; immediate vs. delayed). Many of these "input" factors are reflected in the persuasion and communication theories listed earlier. McGuire further suggests a number of factors that can be measured to demonstrate the impact health promotion messages may have on the target audience which he calls "outputs." These include: being exposed to the message; attending to the message; demonstrating liking or interest in the message; comprehending the message (i.e., "learning about what and how"); agreeing with the message; and ultimately acting as the message recommends. These "outputs" reflect, to some extent, the mechanisms underlying the process of behaviour change described in many health behaviour models (e.g., attitudes, beliefs, intentions, behaviours), as well as the message acceptance factors typically measured in the persuasion/communication literature.

Much of the health communication research to date has focused on investigating three of the five "input" factors listed above, namely the nature of the targeted action (e.g., attitude, behaviour), the recipient's characteristics, and to some extent the message source (for a meta-analytic review see Keller & Lehmann, 2008). Typically, these factors are examined mutually exclusive of one another; however, some studies have examined the interactions between some message characteristics (e.g., message framing, type of targeted action) and characteristics of the

message recipients themselves (e.g., age, gender, race; see Keller & Lehmann, 2008). The study

of message characteristics, however, has received relatively less research attention compared to

the other "input" factors and some have criticized its study for not being systematic (e.g.,

Salovey, et al., 2002; Verlhiac, et al., 2011). In the anti-tobacco communication literature,

questions remain about the effectiveness of various characteristics of the message itself,

including the way in which the message-text is framed (e.g., gain- vs. loss-framed), the inclusion

of various types of graphics (e.g., gruesome vs. personal suffering), the narrative style presented

(e.g., testimonial vs. didactic), the characteristics of the message source (e.g., similar vs.

dissimilar spokesperson), and the optimal combination of these (and other message)

characteristics. In fact, public health professionals are often faced with very real, practical

questions about how messages should be designed to effectively communicate risk and promote

smoking cessation among their target audiences.

Although there is a need for further research on many other aspects of the message

content when it comes to communicating tobacco risk and promoting cessation (e.g., emphasis

on health vs. social risks; longer term vs. shorter term risks; risk-to-self vs. risk-to-others; etc.),

the present study will focus specifically on message characteristics that have received, in some

cases, less research attention in the area of tobacco smoking or are particularly relevant to

stakeholders in Nunavut (i.e., message-text framing, type of graphic, narrative style, and

spokesperson characteristics). Furthermore, the present study will investigate how messages can

be targeted to disadvantaged populations, like the Inuit. Health messages targeted to the

characteristics and needs of specific populations may work by increasing the receiver's perceived

personal relevance of the message, thereby enhancing the likelihood one will be motivated and

able to actively and thoughtfully process health information, presumably leading to adoption of

the recommended behaviour (Kreuter & Wray, 2003). Thus, it is reasonable to assume that targeted messages may be more effective at promoting smoking cessation among disadvantaged populations than mainstream messages. Targeting messages to populations with the highest rates of tobacco use may help to reduce tobacco-related health disparities in Canada. The next section provides a brief review of the theoretical and empirical evidence of the four message characteristics that may be particularly important to consider when designing tobacco-related health messages aimed at promoting smoking cessation among Inuit, and possibly other disadvantaged populations.

2.2 Message Framing

The effectiveness of health communications may be influenced by how the recommended behaviour and associated outcomes are framed. In general, health messages can be framed in terms of the positive or negative consequences of engaging or failing to engage in a particular behaviour (Rothman & Salovey, 1997). Gain-framed messages typically emphasize the benefits that can be achieved by engaging in a health-protective behaviour (e.g., "Quitting smoking improves healthy lung functioning"), while loss-framed messages typically emphasize the negative consequences associated with engaging in a risky behaviour (e.g., "Smoking cigarettes increases your risk of lung cancer"). Messages may also be framed by emphasizing the negative consequences that can be *avoided* by engaging in a health-protective behaviour (i.e., gain-framed; e.g., "Quitting smoking decreases your risk of lung cancer") or by emphasizing the positive benefits that may *not be achieved* by continuing to engage in a risky behaviour (i.e., loss-framed; e.g,. "Healthy lung functioning is reduced by smoking cigarettes"; O'Keefe & Jensen, 2007; Rothman & Salovey, 1997). In general, gain-framed messages have been found to

be more effective than loss-framed messages at promoting disease prevention behaviours, including sunscreen use, regular physical activity, and smoking cessation/non-initiation (for meta-analytic reviews see Gallaghar & Updegraff, 2012; O'Keefe & Jensen, 2007), while loss-framed messages appear to offer a slight advantage over gain-framed messages when promoting disease detection behaviours like breast cancer screening (for a meta-analytic review see O'Keefe & Jensen, 2009). However, when attitudes or intentions are measured as the main outcome variable, there appears to be little differences between gain- and loss-framed messages (Gallaghar & Updegraff, 2012).

2.2.1   *Theoretical Background*

Prospect Theory (Tversky & Kahneman, 1981) can help to explain why people may respond differently to messages that are framed in terms of gains or losses but are otherwise factually equivalent. According to Prospect Theory, people are more willing to accept risks and uncertainties when presented with information about loses but are less willing to do so when presented with information about gains (Tversky & Kahneman, 1981). That is, when messages are gain-framed, people are more motivated to choose a definite gain over a potentially uncertain gain, but when messages are loss-framed they are more motivated to accept risk or uncertainty so to avoid facing a potential loss. When applied to health behaviour, Prospect Theory suggests prevention behaviours such as smoking cessation typically involve minimal risk since they are associated with few losses and conceivably certain gains (e.g., achieving healthy lung functioning, preventing lung cancer, etc.). Meanwhile, detection behaviours such as mammography use are considered more "risky" behaviours because they are associated with the threat of a potential loss (e.g., detecting breast cancer). Consequently, Prospect Theory predicts

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gain-framed messages should be more effective at promoting prevention behaviours, such as smoking cessation, than loss-framed messages (Rothman & Salovey, 1997; Schneider, et al., 2001a; Strahan, et al., 2002). Underlying this prediction, however, are the assumptions: (1) that smokers perceive smoking cessation to be a "low-risk" behaviour whereby adopting the behaviour is associated with few perceived losses (which is not the case for the vast majority of smokers); and, (2) that smokers believe if they quit smoking they will avoid conceivably certain negative consequences (e.g., prevent lung cancer) and/or attain conceivably certain benefits (e.g., achieve healthy lung function).

Anti-smoking messages, such as those on tobacco product warning labels, are typically framed in terms of losses whereby the negative health consequences of smoking are emphasized. More specifically, the message is usually designed to elicit a feeling of fear directed toward a particular health outcome (Strahan, et al., 2002; Schneider, et al., 2001a). This particular type of loss-framed message, known as a fear appeal, often describes frightening things that may result if one does not adhere to the warning (Witte, 1992; 1994; Witte & Allen, 2000). Research suggests loss-framed messages targeting health behaviours (both prevention and detection) do, in fact, result in greater negative affective responses (e.g., Millar & Miller, 2000; Schneider, et al., 2001b; Verlhiac, et al., 2011) and are perceived as more threatening than gain-framed messages (e.g., Van't Riet, 2010a; Van't Riet, 2010b). In turn, fear appeals are generally associated with positive changes in attitudes, intentions and behaviours, whereby stronger fear appeals tend to elicit greater feelings of fear, perceived severity of threat, and perceived susceptibility of the threat (for a meta-analytic review see Witte & Allen, 2000). However, a recent review of the literature suggests that fear appeals that are too weak or too strong may elicit a boomerang effect

(Keller & Lehmann, 2008), while those that convey a moderate-level of fear result in more desirable effects.

The Extended Parallel Process Model (EPPM) can be used to explain not only when and why fear appeals are effective, but also when and why they sometimes fail (Witte, 1992; 1994). The model posits that people first evaluate the threat conveyed by a fear appeal then, if the threat is deemed serious and relevant, they will take action to reduce that fear. The course of action depends on whether people believe they are able to perform the recommended action (i.e., self-efficacy) and whether they believe the recommended action is an effective response to the threat (i.e., response efficacy). If people believe they can perform the recommended action and believe that the action is effective, then they will take action to control the cause of the threat (e.g., quit smoking to reduce their risk of lung cancer). However, if people doubt whether they can perform the recommended action or doubt that the recommended action is effective, then they will take action to control their fear towards the threat rather than to control the cause of the threat through mechanisms such as denial (e.g., "It won't happen to me"), defensive avoidance (e.g., "I'm not going to think about it"), or reactance (e.g., "I am being manipulated"). Finally, the EPPM also suggests if the fear appeal does not convey information about self- or response-efficacy, then past experiences and prior beliefs are used to determine efficacy. Thus, in order for fear appeals (or loss-framed messages more generally) to be effective, the EPPM suggests they should convey a strong sense of threat (high perceived seriousness and perceived relevance – i.e., severity and susceptibility), as well as information on how to perform the recommended action and evidence that the recommended action is effective (i.e., self-efficacy and response-efficacy).

2.2.2 Empirical Evidence

There are only a few known studies that explicitly examine the effects of message framing on tobacco smoking; however, their results are mixed (Goodall & Appiah, 2008; Noormohamed, unpublished; Schneider, et al., 2001a; Stewart, et al., 2003; Verlhiac, et al., 2011). In these studies, the effects of message framing appear to vary depending on the modality of message delivery (e.g., print vs. audio-visual), the receiver's characteristics (e.g., need for cognition; age group; smoking status), the way gain- and loss-framed messages are operationalized, and whether or not the messages are accompanied by pictures. Despite the heterogeneity of these studies, results are summarized below in order to draw conclusions and make hypotheses for the present study.

Schneider and colleagues (2001a) found that after being exposed to gain-framed audio-visual messages (e.g., audio warning stating, "If you quit you'll look and feel better right away" accompanied by a visual of a happy, healthy actor), young adults (both smokers and non-smokers) were more accepting of the message and less tempted to smoke to become part of a crowd than after being exposed to loss-framed messages (e.g., audio warning stating, "If you don't quit you won't look and smell better" accompanied with a visual image of a saddened actor smoking). Message framing had no significant effects on temptations to smoke as a result of negative affect (e.g., stress, anxiety) or temptations to smoke in positive social situations that facilitate smoking (e.g., when talking and relaxing). Among those who smoked, exposure to gain-framed messages was associated with fewer temptations to smoke when in positive social situations and when experiencing negative affect, as well as greater reductions in smoking behaviour compared to loss-framed messages. Overall, this study suggests exposure to gain-framed messages positively influences message acceptance and reduces smoking temptations and

behaviours, particularly among smokers; however, it is unclear whether the results could be generalized to print materials.

Stewart and colleagues (2003) found that after being exposed to gain-framed messages on printed brochures (e.g., "1 in 5 lives could be saved in the U.S. if people didn't smoke…"), adults who smoked had marginally greater intentions to quit than after being exposed to loss-framed messages (e.g., "1 in 5 deaths occur in the U.S. because people smoke…"). Furthermore, they found that among participants who demonstrated a lower need for cognition (i.e., those more likely to process information peripherally by attending to cues like message tone) gain-framed messages provoked greater intentions to quit, greater interest in quitting, more confidence in quitting and stronger beliefs that second-hand smoke bothers others compared to loss-framed messages. Among those who demonstrated a higher need for cognition (i.e., those more likely to process information centrally or systematically), intentions to quit were relatively unaffected by message framing; however, loss-framed messages provoked greater interest in quitting, more confidence in quitting and stronger beliefs about second-hand smoke. These findings demonstrate that gain-framed messages may be more effective at promoting smoking cessation among those who pay less attention to health information and rely on simple cues to formulate a response to that information, while loss-framed messages may be more effective among those who tend to pay careful attention to health information and evaluate that information more systematically.

Verlhiac and colleagues (2011) found that after being exposed to messages that emphasized a healthy behaviour (e.g., gain-framed action; "Not smoking cigarettes improves ear, nose, and throat [ENT] health" or "Not smoking cigarettes preserves ENT health"), young adults who smoked were more likely to intend to quit smoking than after being exposed to messages

that emphasized an unhealthy behaviour (e.g., loss-framed action; "Smoking cigarettes doesn't improve ENT health" or "Smoking cigarettes deteriorates ENT health"). However, when exposed to messages that emphasized an undesirable consequence of the behaviour (i.e., loss-framed outcome; e.g., "Smoking cigarettes deteriorates ENT health") participants were more likely to intend to quit smoking than after being exposed to a message that emphasized a desirable consequence (i.e., gain-framed outcome; e.g., "Not smoking improves ENT health"). When a loss-framed picture (e.g., picture of an unhealthy mouth) accompanied the message, intentions to quit smoking were similar for all argument styles suggesting the presence of loss-framed pictures overrides any message framing effects. Overall, this study suggests messages that emphasize the adoption of a healthy behaviour or a negative health outcome may have the greatest influence on intentions, however, when a picture of a negative health outcome is included, these effects may be eliminated.

Goodall and Appiah (2008) found that after being exposed to loss-framed print warnings (e.g., text warning stating, "Cigarettes cause mouth disease" accompanied by a picture of a mouth with yellow teeth and blackened gums), adolescents (both smokers and non-smokers) rated them more favourably, believed they were more effective at reducing smoking consumption, and believed they were more effective at improving one's ability to quit than after being exposed to gain-framed warnings (e.g., text warning stating "By not smoking you improve your health and appearance" accompanied by a positive image). There were no differences between gain- and loss-framed messages on attitudes towards smoking and intentions to smoke. However, after being exposed to loss-framed messages, smokers were less likely to intend to smoke, more likely to believe the warning was effective at improving one's ability to quit smoking, and more likely to believe the warning would be effective in helping a smoker quit

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than they were after being exposed to gain-framed warnings. There were no significant differences between gain- and loss-framed messages on smokers' attitudes toward the warning, attitudes toward smoking, and belief as to whether the warning would be effective at reducing smoking consumption. Overall, the authors conclude that loss-framed warnings positively influence adolescents' smoking-related attitudes and behavioural intentions; however, the study also demonstrates how the effects of message framing can differ depending on the sample studied and outcomes measured.

Finally, an unpublished study conducted by Noormohamed, found that after being exposed to gain-framed warnings (e.g., text warning stating, "Quitting smoking decreases your risk of blindness…" accompanied by an image of a blind person using a long cane) adult smokers perceived warnings to be more effective at conveying information about the benefits of quitting than loss-framed warnings (e.g., text warning stating, "Smoking increases your risk of blindness…" accompanied by the same image as above). No significant differences were found between gain- and loss-framed messages for thinking about health risks, encouraging smokers to quit smoking, or preventing youth from starting. For youth, there was no significant effect of message framing on any of the outcomes measured.

Overall, these studies produced mixed results. Three of the five studies provide some evidence in support of gain-framed messages, while two others provide evidence for loss-framed messages. Notably, the studies that provide evidence in support of loss-framed messages used messages that included graphic images of the negative consequences of smoking. This suggests the effects of loss-framed messages may be enhanced with the use of graphic imagery. However, one notable limitation of the literature on message framing and tobacco smoking is that study samples are predominately made up of well-educated, middle-class, White individuals. Thus, the

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question remains whether the effects of message framing are similar among disadvantaged populations, such as the Inuit.

2.2.3   *Message Framing and Health Disparities*

One review study examined whether message framing effects differ among disadvantaged populations when it comes to promoting detection behaviours (Schneider, 2006). In this review, Schneider (2006) found loss-framed messages to have a benefit over gain-framed messages when promoting *detection* behaviours among low income and minority populations; similar to what is observed among samples of mostly White or European American, middle-class samples. However, there were no studies identified in this review that examined the possible differential effects of message framing when promoting *prevention* behaviours. Thus, there appears to be a need for research to investigate the effects of message framing, particularly when promoting prevention behaviours, on disadvantaged populations to ensure current practices are not exacerbating health disparities.

The characteristics of the message source (e.g., spokesperson or model) and receiver may be particularly important to consider when investigating the effectiveness of message framing. For example, Hoffner and Ye (2009) found that the degree of the message receivers' perceived similarly to the model in the message influenced how they responded to gain- and loss-framed messages. Specifically, gain-framed messages tended to produce greater behavioural intentions (i.e., use sunscreen) among individuals who felt more similar to the model, while loss-framed messages tended to produce greater behavioural intentions for those who felt less similar to the model. This study suggests that when using gain-framed messages, it may be necessary to match model and receiver characteristics to ensure their effectiveness. However, when using loss-

framed messages, having a mismatch in model/receiver characteristics appears to produce more positive effects. Thus, contrary to what one might expect, this study suggests tobacco smoking messages that are loss-framed and accompanied by a White, middle-aged model may be more effective at promoting smoking cessation among disadvantaged groups (providing they perceived themselves as dissimilar to the model) than gain-framed messages accompanied by a White, middle-aged model. Thus, these findings point to the need of further research investigating how gain-framed messages may be used to help reduce tobacco-related health disparities.

2.2.4   *Implications for the Present Study*

Based on the theoretical and empirical evidence reviewed in this section, there is a need to systematically examine the effects of textual message frame in the context of tobacco smoking communications and specifically among disadvantaged populations, including the Inuit. From this review the following hypotheses are proposed for the present study:

Hypothesis 1a: Compared to loss-framed messages (text emphasizing the negative health consequences attained by smoking), gain-framed messages (text emphasizing the threats one can avoid by quitting smoking) will promote smoking cessation by producing: (i) greater message acceptance (i.e., personal relevance, credibility); (ii) lower levels of evoked fear (or negative affect more generally); (iii) greater motivation to talk to someone about the health effects of smoking; (iv) greater motivation to quit smoking; and, (v) greater perceptions of overall message effectiveness.

Hypothesis 1b: Evoked fear (or negative affect more generally) will mediate the relation

between textual message frame and motivation to talk to someone about the health

effects, motivation to quit smoking, and perceptions of overall message effectiveness.

2.3 Type of Graphic

It is well established in the literature on tobacco product health warnings that including

pictures alongside text-based messages is more effective at promoting smoking-related

knowledge, beliefs and cessation behaviours compared to text-based messages alone (for a recent

review see Hammond, 2011). This may be particularly true among individuals in lower income

countries (Thrasher, et al., 2007) and those with lower educational attainment (Hammond, et al.,

2012; Thrasher, et al., 2010) as pictures may help overcome barriers presented by low literacy

(Fong, et al., 2009; Hammond, et al., 2012; Thrasher, et al., 2010). However, the type of graphic

used alongside text-based messages may influence the effects of such communications strategies.

Two common types of graphics used when communicating tobacco risk and promoting smoking

cessation are gruesome images (i.e., pictures of damaged organs depicting the negative health

consequences of tobacco use) and images of personal suffering (i.e., faces of people suffering

from the negative health consequences of tobacco use). Typically, gruesome images aim to elicit

feelings of fear or disgust, while images of personal suffering aim to elicit feelings of sadness,

worry or empathy. The use of pictures to illicit such emotional responses is common practice

when communicating tobacco-related risk and promoting smoking cessation.

2.3.1 Theoretical Background

Although emotional appeals are commonly used in health communication and generally understood to enhance message acceptance and provoke positive changes in attitudes, intentions and behaviours, there is little evidence beyond fear appeals to demonstrate this relation. The use of graphic imagery depicting the negative health consequences of smoking is common practice when communicating tobacco-related risk via fear appeals. In the context of health warnings on tobacco products, research suggests more graphic images (i.e., gruesome images) evoke stronger feelings of fear and greater intentions to quit smoking, whereby fear mediates the effects of pictorial warnings on intentions to quit smoking (Kees, et al., 2010). However, such images are typically characterized as "disgusting" in nature (e.g., depicting rotting teeth, diseased lungs), thus, raising the question as to what role disgust plays in motivating smoking cessation. To date, little research has focused on the unique contribution of disgust in health behaviour change (Nabi, 2002). Similarly, there appears to be little research examining the unique roles of sadness and worry in mediating the effects of pictorial warnings (with images of personal suffering) on smoking cessation behaviours. As such, these areas may benefit from further study.

2.3.2 Empirical Evidence

Although there is an abundance of published research on the effectiveness of graphic versus text-only tobacco product warning labels, there is considerably less examining the effects of different types of graphic content (e.g., gruesome imagery vs. images of personal suffering). A recent review of the evidence on health warnings on tobacco products, including that from several unpublished studies commissioned by governmental bodies, found that shocking images (such as rotten teeth or throat cancer) were rated as most effective and were most likely to be recalled by smokers than other types of images (Hammond, 2011). Two recently published

studies (Hammond, et al., 2012; Thrasher, et al., 2012) conducted in Mexico provide further evidence on the effects of different graphic types in the context of tobacco product warning labels and are summarized below.

Thrasher and colleagues (2012; Experiment 2) found adults (both smokers and non-smokers) who were presented with cigarette package warning labels containing graphic imagery depicting damaged organs, testimonial content and toxic constituents rated the warnings as more credible, more relevant and more effective than the same warnings with images depicting human suffering. These findings were consistent across educational attainment level (low vs. high) except on the rating of relevance whereby those with low educational attainment found warnings with either graphic type to be similarly relevant. Importantly, the authors noted that daily smokers generally rated health warning labels with graphic imagery as less credible and less effective than nondaily smokers, although perceptions of relevance were similar. Overall, these findings suggest health warnings with graphic images of damaged organs may be most effective, but they raise the question of how well they work among those more highly addicted (i.e., daily smokers). The generalizability of these findings beyond the Mexican population studied is not known.

Similarly, Hammond and colleagues (2012) found participants (adult smokers, youth smokers and youth non-smokers) who were presented with pictorial health warnings were more likely to rate those with graphic images of the physical effects of tobacco use as more effective (measured as perceived overall effectiveness) than those with abstract imagery or symbols, and images of lived experiences (i.e., depicting the social, emotional or health impacts). No significant interaction between SES factors (including education) and pictorial themes were observed among adults. Moreover, they found graphic images depicting external health effects

(i.e., visible outside the body, e.g., foot or mouth) were rated as more effective than those depicting internal health effects (i.e., inside the body, e.g., heart or lungs), while images of lived experience depicting the impacts of smoking on others were rated as more effective than those depicting the impacts of smoking on one's self. Overall, these findings suggest graphic images of external health effects may be most effective at promoting smoking cessation; however, when using images of lived experience the negative social, emotional or health impact of smoking on others rather than on one's self should be emphasized. Similar to Thrasher, et al., (2012), it is unclear to what extent these findings can be generalized beyond the study context in Mexico.

Overall, results from these studies suggest tobacco-related health messages that contain gruesome imagery (e.g., images of damaged organs) are likely to be perceived as more credible, relevant and effective than those that contain images of lived experiences or human suffering. Furthermore, they suggest effects may be similar for both low-SES and high-SES populations meaning such practices may, at the very least, not further exacerbate disparities.

2.3.3   Type of Graphic and Health Disparities

Although Thrasher, et al. (2012) and Hammond, et al. (2012) both examined the possible differential effects that various types of pictorial warnings may have among high and low SES populations, few other studies have done so. Thus, there is little evidence to suggest whether various types of graphics (e.g., gruesome, personal suffering) may be more or less effective among other disadvantaged populations in other countries. However, the research to date suggests graphic images depicting the negative health consequences of smoking may also be effective among other disadvantaged populations, and possibly more so than images of personal suffering. As noted earlier, health messages that include images depicting the negative health

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consequences of smoking may help overcome barriers presented by low literacy among some disadvantaged populations (Fong, et al., 2009; Hammond, et al., 2012; Thrasher, et al., 2010). Such strategies may, therefore, help to reduce tobacco-related disparities between advantaged and disadvantaged populations.

2.3.4   Implications for the Present Study

Despite the volume of research in the area of pictorial health warning labels, there is still a need to systematically examine the effects of different graphic types used alongside of antismoking messages, especially among disadvantaged populations. Thus, from this review the following hypotheses are proposed for the present study:

Hypothesis 2a: Compared to messages with images of personal suffering (i.e., faces of people suffering from the negative health consequences of tobacco use), those with gruesome images (i.e., images of damaged organs depicting the negative health consequences of tobacco use) will promote smoking cessation by producing: (i) greater message acceptance (i.e., personal relevance, credibility); (ii) higher levels of evoked fear (or negative affect more generally); (iii) greater motivation to talk to someone about the health effects of smoking; (iv) greater motivation to quit smoking; and, (v) greater perceptions of overall message effectiveness.

Hypothesis 2b: Textual message frame and graphic type will interact whereby gain-framed/gruesome messages will have a more positive effect on the smoking cessation outcomes listed above compared to gain-framed/personal suffering, loss-framed/personal suffering and loss-framed messages/gruesome.

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Hypothesis 2c: Evoked fear (or negative affect more generally) will mediate the relation between the type of graphic and motivation to talk to someone about smoking, motivation to quit smoking, and perceptions of overall message effectiveness.

2.4 Form of Appeal

The effectiveness of health communications may be influenced by the form of appeal used to convey information about a specific health risk or behaviour. In general, the informational appeals used in health communications can be categorized as narrative (e.g., testimonials) or didactic (Kreuter, et al., 2007). Although the definition of narrative varies substantially in the literature, Kreuter and colleagues (2007, pg. 222) define narrative as, "a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed." Under this definition, entertainment education, journalism, literature, case histories, testimonials and storytelling are each considered types of narratives. Typically, narrative messages (or testimonials more specifically) aim to illicit emotional responses toward the message and its images, the plot or characters, or the message receiver him/herself (Dunlop, et al., 2008); however, this may be done more easily with auditory and/or visual stimulation rather than with print materials. On the other hand, didactic appeals typically present information in the form of reason and evidence to support a particular health claim (e.g., "Smoking is the leading cause of lung cancer. About 85% of lung cancers are caused by tobacco use."). This approach typically emphasizes the use of statistical facts, probabilities, logic and reason to persuade and motivate people to change their behaviour (Kreuter, et al., 2007; Hinyard & Kreuter, 2007).

For the most part, narrative appeals have been found to be more effective than didactic appeals at increasing message acceptance and changing attitudes related to a number of non-health topics (for reviews see Baesler & Burgoon, 1994; Taylor & Thompson, 1982); however, in the health and medical fields the evidence appears to be more mixed (for a review see Winterbottom, et al., 2008). In most cases, these studies have examined narrative and didactic messages as mutually exclusive approaches producing little evidence as to whether their combination may produce even greater results (Greene & Brinn, 2003; Hinyard & Kreuter, 2007; Thrasher, et al., 2012). Appeals used in anti-smoking messaging, such as those found on tobacco product warning labels, are typically in the didactic form; however, more recent versions of Canadian tobacco product warning labels have incorporated personal testimonies.

2.4.1   Theoretical Background

Dual-processing models of persuasion such as the elaboration likelihood model (ELM; Petty & Cacioppo, 1986) and heuristic systematic model (HSM; Chaiken, 1980) can be used to explain why narrative appeals may or may not influence health-related attitudes. Both models posit that people process information though one of two routes: the central/systematic route or the peripheral/heuristic route. They assume that one's level of involvement in the issue and cognitive ability determines which route is used to process information. Thus, those who are highly involved in the issue and/or motivated (e.g., current smokers with intentions to quit) and have sufficient cognitive resources and/or ability to process the information will likely do so through the central/systematic route by critically evaluating the message and forming their own opinions in response to the message. Whereas, those with lower involvement in the issue and/or motivation (e.g., non-smokers, or current smokers with no intentions to quit) or have fewer cognitive resources and/or ability to process the information will likely do so through the

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peripheral/heuristic route by relying on superficial cues, existing heuristics, and less thoughtful evaluation of the information provided. When applied to narrative communications, dual-processing models suggest that when the message receiver is highly involved in the narrative (e.g., perceive the messages as personally relevant) he/she will be more likely to critically evaluate the information presented in the narrative via the central/systematic route, and change their attitudes. Other related models such as the extended ELM (Slater, 2002) and the transportation-imagery model (Green & Brock, 2000, 2002) expand on duel-processing models to suggest narrative communications are persuasive because they reduce the receiver's tendency to counter argue the information presented in the message (e.g. engage in self-exempting beliefs), enhance the receiver's ability to identify with the characters in the message, and increase the receiver's insights into what it would be like to be the character in the message (i.e., transporting the receiver to the "narrative world"; Hinyary & Kreuter, 2007).

The potential impact of narrative communication may also be explained by Bandura's (1977) social cognitive theory. Bandura suggests that people learn by observing the attitudes and behaviours of others. Thus, narrative messages that include spokespersons modelling the desired behaviour (i.e., smoking cessation) may encourage people to change the attitudes and behaviours targeted in the message. Thus, the effectiveness of narrative communications may also be enhanced by including message spokespersons that are perceived to be credible role models of the targeted behaviour and/or have similar characteristics to the target audience.

2.4.2   Empirical Evidence

Only a few known studies explicitly examine the effects of narrative (e.g., personal testimonies) and didactic appeals on tobacco smoking using print materials (Hammond, et al.,

2012; Thrasher, et al., 2012; Western Opinion/NRG Research Group, 2006); others have investigated these forms of communication using television advertisements (e.g., Durkin, et al., 2009; Niederdeppe, et al., 2011). As expected results appear to vary depending on the modality of message delivery (e.g., print vs. audio-visual), as well as the receiver's characteristics (e.g., SES, age), the outcomes measured (e.g., message recall vs. perceived effectiveness vs. smoking cessation), the way narrative and didactic messages are operationalized, and whether or not the messages are accompanied by pictures. Despite the heterogeneity of these studies, results are summarized and hypotheses are suggested for the present study.

Thrasher and colleagues (2012; Experiment 1), found cigarette package warning labels containing didactic messages (i.e., conveying risk information—susceptibility, severity) alongside pictorial content and toxic constituents were perceived as more credible, more relevant, and more effective at conveying risk to adults than testimonials (i.e., a brief narrative describing a personal consequence of smoking, written as a quote from a person in the image, accompanied by their name and age). Educational attainment was explored as a moderating variable. Among those with higher educational attainment, warning label acceptance and impact was higher for didactic messages compared to testimonial forms; however, among those of lower education, there was little difference between didactic and testimonial forms. The authors suggest these findings, albeit unexpected, may reflect a need for clear and simple propositional language when communicating tobacco-related health risk especially in environments where early-stage tobacco control measures are only just beginning (e.g., low- and middle-income countries).

Conversely, Hammond and colleagues (2012) found, on average, that personal testimonies (as described in the previous paragraph) accompanied by an image of a spokesperson

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demonstrating personal suffering were rated as more effective (measured as perceived overall effectiveness) than versions of the same warning labels with standard, didactic messages. No significant interaction between message theme (e.g., testimonial vs. didactic) and education-level was found, that is, the effect did not vary depending on the participant's educational attainment level. The authors suggest warnings labels portraying personal testimonies alongside graphic images depicting tobacco-related disease may have the greatest impact among all segments of the population.

Findings from a qualitative study conducted in Canada to test various themes and execution styles for tobacco product labeling health warnings are consistent with Hammond et al.'s study findings (Opinion/NRG Research Group, 2006). This study found that messages depicting personal stories and struggles of real people were viewed positively and believed to be powerful among participants, especially among those who were of similar age to the message spokesperson. However, participants agreed they would prefer to see stories that demonstrated the day-to-day negative health effects of smoking, rather than the positively-framed, moralizing narratives that were presented in this study. Together these findings suggest personal testimonies depicting the negative effects of tobacco may work particularly well at promoting smoking cessation.

Although print materials were not tested, Niederdeppe and colleagues (2011) found emotional testimonial advertisements (ads) portraying the serious health effects of smoking (i.e., why-testimonial ads) viewed by participants as online videos were recalled at higher rates than ads that portrayed similar health risk information alongside graphic images (i.e., why-graphic ads). This finding was true across participants of all educational attainment levels, but particularly so among those who had less than 10 years of education (i.e., low education).

However, when measuring perceived effectiveness, ads with graphic images were perceived as more effective than those with emotional testimonials across all educational attainment levels. The authors conclude that although why-testimonial ads may be more memorable, why-graphic ads are perceived to be more effective although they offer little explanation as to why this may be the case. Although consistent with the findings from Thrasher, et al., the audio-visual nature of the ads examined in the study make it difficult to extrapolate findings to other print materials.

Durkin and colleagues (2009) also provide evidence for use of narrative forms of anti-tobacco messages, albeit also in the context of television ads. They found potential exposure to emotionally evocative/personal testimonial ads was associated with a greater likelihood of quitting among adult smokers two years later, compared to ads that were less emotional and didactic in nature. Socioeconomic status (SES; i.e., operationalized by measures of education and income) moderated this effect whereby low-SES, mid-SES, and undetermined-SES groups with greater potential exposure to emotionally evocative/personal testimonial ads were more likely to quit smoking compared to the high-SES group. The authors suggest extensive exposure to emotionally evocative/personal testimonials portraying the health effects of smoking may help to reduce SES disparities in smoking since they have greater effects among low-SES and mid-SES groups (i.e., those with the highest smoking rates and greatest proportion of smokers).

Although these studies produced mixed results, together they suggest exposure to narrative appeals, in the form of emotionally evocative/personal testimonies, may be associated with greater message recall, greater ratings of overall effectiveness, and greater reductions in smoking behaviour. However, the question remains as to whether narrative appeals may offer benefits over didactic appeals when promoting smoking cessation among other disadvantaged populations, such as the Inuit.

2.4.3   Form of Appeal and Health Disparities

Four of the five studies reviewed in this section examined how narrative and didactic appeals work among various SES groups (most commonly measured by educational attainment). Among lower SES groups, some studies found narrative messages produced more positive results compared to didactic messages (Durkin, et al., 2009; Niederdeppe, et al., 2011), while others found little difference between the two appeal styles (Hammond, et al., 2012; Thrasher, et al., 2012). However, it seems reasonable to assume narrative appeals may be more effective among some disadvantages populations, like the Inuit, who typically have lower levels of formal education and may not value arguments based on reason or statistical probabilities to the same degree as those with more education. Personal stories provided by way of narratives may be more convincing, especially among Inuit who have traditionally relied on oral stories from Elders as sources of health information (McShane, et al., 2006).

Furthermore, the perceived similarity of the message recipient to the message source (or spokesperson) may influence how people respond to testimonials (Kreuter, et al., 2007). Specifically, those who perceive themselves to be more similar to the message source may respond more positively to testimonials than those who perceive themselves as less similar. Perceived similarity may be based on a variety of actual or perceived characteristics, including age, gender, SES, group membership (e.g., smoker vs. non-smoker), life experience, or attitudes, beliefs and values. In fact, research on tailored health interventions suggests the more a health communication is tailored to an individual's needs and preferences, the more likely it is to be perceived as personally relevant, increasing the possibility of its persuasive effects (Dijkstra, 2008; Hawkins, et al., 2008; Noar, et al., 2007; Strecher, et al., 2008). Thus, it is reasonable to assume that testimonials conveying tobacco-related health risks and promoting smoking

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cessation using Caucasian, middle-aged spokespersons may not work as well among other non-Caucasian populations, like the Inuit. These findings point to the need of further research investigating how narrative messages may be used to help reduce tobacco-related health disparities.

2.4.4   *Implications for the Present Study*

Based on the theoretical and empirical evidence reviewed in this section, there is an apparent need to systematically examine the effects of narrative (i.e., testimonials) and didactic appeals in the context of tobacco smoking communications and specifically among disadvantaged populations, including the Inuit. From this review, the following hypotheses are proposed for the present study:

Hypothesis 3a: Compared to messages with didactic appeals (that emphasize reason and statistics), messages with narrative appeals (that emphasize emotionally evocative/personal testimonies) will promote smoking cessation by producing: (i) greater message acceptance (i.e., personal relevance, credibility); (ii) greater motivation to talk to someone about the health effects of smoking; (iii) greater motivation to quit smoking; and, (iv) greater perceptions of overall message effectiveness.

Hypothesis 3b: Form of appeal and textual message frame will interact whereby narrative (i.e., testimonial)/gain-framed messages will have a more positive effect on the smoking cessation outcomes listed above compared to didactic/loss-framed, didactic/gain-framed, and testimonial/loss-framed messages.

Hypothesis 3c: Form of appeal and type of graphic will interact whereby

testimonial/gruesome messages will have a more positive effect on the smoking cessation

outcomes listed compared to didactic/personal suffering, didactic/gruesome, and

testimonial/personal suffering messages.

Hypothesis 3d: Form of appeal, textual message frame, and type of graphic will interact

whereby testimonial/gain-framed/gruesome messages will have a more positive effect on

the smoking cessation outcomes listed above compared to all other combinations of the

message characteristics.

2.5 Spokesperson Characteristics

As identified in previous sections, the characteristics of a message spokesperson may

influence just how well other message characteristics work (i.e., textual message frame, type of

graphic, form of appeal) when communicating tobacco-related health risk and promoting

smoking cessation. Including a message spokesperson with similar characteristics of the target

audience (e.g., gender, age, aboriginal status, etc.) may increase one's perceptions of similarity to

the spokesperson, and possibly lead to higher perceptions of personal relevance and credibility of

the message itself. This, in turn, may lead to the message having more positive effects among the

target population and in cases where health disparities exist, reductions in health disparities. In

fact, research suggests targeted anti-smoking advertisements that include Indigenous

spokespersons may be particularly effective at promoting smoking cessation among their target

populations (e.g., Boyle, et al., 2010; Stewart, et al., 2011; Wilson, et al., 2005). However, it is

not known whether Inuit would find messages that include Inuit spokespersons more relevant,

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credible, or effective than messages that include non-Inuit spokespersons—as is the case with most mainstream anti-tobacco campaigns in Canada.

If Inuit perceive little to no difference between messages then it is reasonable to assume population-level communication strategies, like tobacco product health warnings, may be just as effective among Inuit smokers. Thus, efforts and resources may be best directed to translating and further disseminating mainstream health messages. However, if there are differences and Inuit perceive messages that include Inuit spokespersons as more relevant, more credible, and/or more effective, than this may suggest future efforts and resources should be dedicated to developing targeted messages, such as those used in a recent Nunavut-based tobacco use awareness campaign targeted toward Inuit, to be implemented alongside population-level strategies.

2.5.1   Implications for the Present Study

Based on the theoretical and empirical evidence reviewed thus far, it appears the characteristics message spokesperson may be a particularly important to consider when designing smoking cessation communications. Thus, the following hypotheses are proposed for the present study:

> *Hypothesis 4*. Compared to messages with non-Inuit spokespersons, those with Inuit spokespersons (peer or Elder) will promote smoking cessation by producing: (i) greater message acceptance (i.e., personal relevance, credibility), and (ii) greater motivation to quit smoking.

2.6 Summary

Based on the theoretical and empirical evidence reviewed, a conceptual model was developed to demonstrate the linkages between the variables of primary interest and guide current and future analytic strategies (see Figure 1). To narrow the scope, the current study was limited to understanding more immediate outcomes (i.e., message acceptance and behavioural intentions), as opposed to more distal outcomes (i.e., quit attempts and sustained quitting).

Figure 1. Conceptual Model

Message characteristics (i.e., independent variables):
- Textual message frame
- Graphic type
- Form of appeal (e.g., narrative style)
- Spokesperson characteristics

Exposure to warnings

Possible mediating variables:
- Emotional arousal (e.g., fear)

Possible moderating variables:
- Message credibility of the message
- Message relevance
- Perceptions of personal risk
- Reactance toward HWLs in general
- Daily vs. non-daily smoker
- Intentions to quit smoking

Message-specific outcomes:
- Makes you want to talk to someone about smoking/ quitting (Motivation-talk)
- Makes you want to quit smoking (Motivation-quit)
- Perceived overall effectiveness

Long-term behavioural outcomes:
- Quit attempts
- Sustained quitting

Other covariates:
Demographic
- Gender
- Age
- Education
- Employment status
- Primary language spoken/read
- Functional literacy
Smoking characteristics
- # CPD
- Time to first cigarette
- Previous quit attempts
- Other forms of tobacco used
Social environment
- # of friends/family who smoke
- # of friends/family who have quit
- Societal acceptance of smoking
Efficacy
- Self-efficacy in quitting
- Response efficacy of quitting
- Perceived social support
Health status
- Self-reported health status
Knowledge of health risks
- Lung cancer; heart disease; stomach

CHAPTER 3

STUDY RATIONALE

The overall purpose of the study is to examine the potential effectiveness of health communication messages, in the context of health warnings on tobacco products, among Inuit and systematically examine various message characteristics that may enhance their effectiveness. As identified by the literature review and consultations with stakeholders from the Government of Nunavut, the study will address several research objectives by systematically manipulating four key message variables: textual message frame, graphic type, narrative style, and the spokesperson's characteristics. The primary research objectives focus on examining *what* message characteristics (and their combination) may work best, while the secondary research objectives focus on *how* these messages might work (i.e. the underlying mechanisms that may drive these effects).

3.1 Primary Research Objectives

1. To determine whether pictorial health warning messages on cigarette packages with gain-framed text are more effective at promoting smoking cessation among Inuit compared to those with loss-framed text. (*Hypothesis 1a*)

2. To determine whether pictorial health warning messages on cigarette packages with gruesome images depicting the negative health effects of smoking are more effective at promoting cessation among Inuit compared to those with images of personal suffering. (*Hypothesis 2a*)

3. To determine whether pictorial health warning messages on cigarette packages with testimonial messages are more effective at promoting smoking cessation among Inuit compared to those with didactic messages. (*Hypothesis 3a*)

4. To determine the optimal combination of the above message characteristics (i.e., textual message frame; graphic type; narrative style) and more specifically:

   a) To determine whether gain-framed/gruesome messages are more effective at promoting smoking cessation among Inuit than gain-framed/personal suffering messages, loss-framed/personal suffering messages, or loss-framed/gruesome messages (i.e., 2-way interaction between message frame and graphic type). (*Hypothesis 2b*)

   b) To determine whether gain-framed/testimonial health messages are more effective at promoting smoking cessation among Inuit than loss-framed/didactic messages, gain-framed/didactic messages, and loss-framed/testimonial messages (i.e., 2-way interaction between message frame and narrative type). (*Hypothesis 3b*)

   c) To determine whether gruesome/testimonial messages are more effective at promoting smoking cessation among Inuit than personal suffering/didactic messages, gruesome/didactic messages, and personal suffering/testimonial messages (i.e., 2-way interaction between graphic type and narrative type). (*Hypothesis 3c*)

   d) To determine whether gain-framed/gruesome/testimonial messages are more effective at promoting smoking cessation among Inuit compared to all other combinations of the message factors (i.e., 3-way interaction between message frame, graphic type, and narrative type). (*Hypothesis 3d*).

5. To determine whether pictorial health warning messages on cigarette packages with testimonial messages from <u>Inuit spokespersons</u> (either an Elder or a peer) are more effective at promoting smoking cessation among Inuit compared to testimonial messages from <u>Caucasian spokespersons</u>. (*Hypothesis 4*)

3.2 Secondary Research Objectives

6. To determine whether evoked <u>fear</u> mediates the effects of <u>message frame</u> on smoking cessation indicators. (*Hypothesis 1b*)

7. To determine whether evoked <u>fear</u> mediates the effects of <u>graphic type</u> on smoking cessation indicators. (*Hypothesis 2c*)

8. To determine to what extent Inuit <u>understand</u> the nature and meaning of tobacco health warning messages that appear in English.

3.3 Study Implications

This study intended to provide evidence on the potential effectiveness of tobacco-related health messages, such as those found on tobacco product warning labels, among Inuit who smoke. It also intended to provide some initial evidence on the types of message characteristics that may work best at communicating health risk and promoting smoking cessation among Inuit populations, as well as some preliminary evidence of the underlying mechanisms that might explain how these message characteristics work. Such evidence may be used to design new generations of tobacco-related health messages for a Nunavut-based communication campaign. Finally, this study intended to serve as an initial step toward determining whether an integrated communication strategy that includes complementary, targeted materials (like those in the Nunavut-based tobacco use awareness campaign) working synergistically alongside population-

level approaches (like tobacco product warning labels) may work among Inuit. Evidence of this kind may also provide support for the pursuit of tailoring efforts among other disadvantages populations as well, including other Aboriginal populations.

CHAPTER 4

METHODS

4.1 Experimental Design

An experimental procedure using a 2 x 2 x 2 repeated measures (i.e., within-subject) factorial design was used to examine the potential effectiveness of three message characteristics: textual message frame (gain *vs.* loss), graphic type (faces of people suffering from negative health consequences *vs.* gruesome images of diseased organs), and narrative style (emotionally evocative/personal testimonial *vs.* didactic or factual statements). Two health effects were examined (i.e., stomach cancer and tuberculosis) for each of the eight experimental conditions resulting in 16 unique health messages. To isolate the impact of the three independent variables, all other message characteristics were held constant as much as possible (e.g., "harm-to-self" messages, layout, design, etc.).

4.2 Study Procedures

In October 2012, interviews were conducted in supermarkets in Iqaluit and Rankin Inlet, Nunavut and the Arctic College in Iqaluit, Nunavut. Trained research assistants administered the survey and experimental procedure using hand-held electronic tablets (i.e., iPads). Participation lasted 30-45 minutes and participants received a $50 gift card for use at a local supermarket. After providing informed, verbal consent (see Appendix A), participants began the study by responding to questions about their own tobacco use, attitudes towards smoking, knowledge of health effects, and perceptions of smoking-related health risk, followed by questions about their awareness of and response to health warning labels that appear on cigarette packages in Canada. Next, reading comprehension (in English) was tested using two brief tasks. The experimental

procedure was then administered whereby participants viewed eight of the 16 health warnings,

separately, and rated them each on ten measures. Participants were directed to attend to each

health warning and read it closely for as long as they wished. They then answered each of the ten

measures while the health warning remained on the screen. Next, participants were shown three

health warnings with different spokespersons, each presented all at the same time but in random

order, and asked to rank them based on three measures. Finally, socio-demographic

characteristics were collected at the end of the survey. The final interview script is presented in

Appendix B and health warning labels are presented in Appendix C. Ethical clearance for the

study was obtained from the Office of Research Ethics at the University of Waterloo and a

research licence was obtained from the Nunavut Research Institute. All work was consistent with

the ethical guidelines outlined by the Qaujigiartiit/Arctic Health Research Network and the Tri-

Council Policy Statement on research involving the First Nations, Inuit and Métis peoples of

Canada.

4.3 Randomization for the Experimental Procedure

Table 1 outlines the characteristics of each of the eight experimental conditions for each

set of health warnings, resulting in 16 unique health warnings. The final sets of health warnings

tested as part of this study are presented in Appendix C. A restricted randomization procedure

was used whereby participants viewed eight of the possible 16 health warnings. First,

participants were randomly assigned to view health warnings related to either the stomach cancer

or tuberculosis (i.e., Set A or Set B). Within that set, participants were randomized to view either

the loss- or gain-framed health warning message for each level of the two other factors; meaning

participants saw four of the eight health warnings from that set. Presentation order was

counterbalanced such that those who viewed a loss-framed message with an image of personal suffering would also see a gain-framed message with a gruesome image (and vice versa) for each level of "narrative style." Presentation order for the subsequent set of health warnings was determined by the first set such that those who viewed a loss-framed message with an image of personal suffering were automatically assigned to see the gain-framed version of that health warning (and vice versa). The first step of randomization was checked to confirm that the procedure occurred properly. Results suggested there were no differences in participant characteristics between those assigned to first view health warnings related to stomach cancer versus tuberculosis (see Appendix D for results).

Table 1. Experimental Conditions

		Set A: Stomach cancer		Set B: Tuberculosis	
		Loss-framed	**Gain-framed**	**Loss-framed**	**Gain-framed**
Didactic	**Personal suffering**	Condition 1a	Condition 2a	Condition 1b	Condition 2b
	Gruesome	Condition 3a	Condition 4a	Condition 3b	Condition 4b
Testimonial	**Personal suffering**	Condition 5a	Condition 6a	Condition 5b	Condition 6b
	Gruesome	Condition 7a	Condition 8a	Condition 7b	Condition 8b

4.4 Design and Development of Health Warning Labels

For the experimental procedure, two sets of eight unique health warnings were developed (i.e., 16 in total) meeting each of the characteristics outlined in Table 1. Health warnings in Set A described the association between smoking and stomach cancer, while health warnings in Set B described the association between smoking and tuberculosis. Each health warning was designed to represent one of the eight experimental conditions (e.g., a loss-framed message in a didactic narrative, accompanied by a gruesome image). Health warnings were also designed to resemble

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those currently found on Canadian cigarette packages (e.g., approximate size and layout, similar message characteristics, etc.). To isolate the impact of the three within-subject factors of interest, all other message characteristics were held as constant as possible (e.g., harm-to-self, layout, design, number of sentences/words, etc.).

To assess the effects of spokesperson characteristics, two sets of three unique health warnings were developed (i.e., 6 in total). These health warnings were composed of only testimonial, loss-framed messages that include a spokesperson from one of the following three demographic groups: (1) Caucasian, middle-aged (i.e., 40-55 years of age); (2) Inuit, middle-aged (i.e., 40-55 years of age); and, (3) Inuit Elder (i.e., over 55 years old). One set included only female spokespersons, while the other set included only male spokespersons. Testimonials varied to more accurately reflect something the spokesperson might say; however, all other message content (i.e., health effect, layout, design, number of sentences/words, etc.) remained as constant as possible.

To assess participants' understanding of English-only health warnings, two unique phrases were developed. One phrase focused on the negative health effects of smoking (i.e., loss-framed), while the other focused on the health benefits of quitting smoking (i.e., gain-framed). Both phrases were designed to resemble a "typical" message that might be found on a health warning label or other public health communication. The number of words and syllables per phase were kept as constant as possible.

4.4.1   Readability Assessments

The readability of all 22 health warnings and the two phrases was assessed to obtain an objective measure of how hard each message is to read in English. The assessments were based

on the average number of syllables per word and average number of words per sentence. Two methods that are particularly appropriate for use with shorter passages were applied: (1) The Gunning-Fog (i.e., Fog Index), and (2) an adaptation of the Fry method for short passages (i.e., <300 words). Both approaches produced an estimate of the grade level required by readers to understand the text. Results from both tests were averaged to form a final score for each health warning. Given that 88% of the Inuit adult population in Nunavut has literacy scores below the minimum desirable threshold required to function well in Canadian society (HRSDC & Statistics Canada, 2005) and about half have less than a high school education (Gionet, 2008), a final score between 5 and 8 was considered acceptable (i.e., grades 5 to 8).

4.5 Stakeholder Consultations

A Northern Advisory Committee (NAC) was established to provide guidance on the cultural and contextual appropriateness of all aspects of the study. The purpose of the committee was to represent key stakeholders' perspectives and provide valuable knowledge and feedback on the planning and implementation of the current study, as well as the interpretation and dissemination of its results. The NAC was made up of both Inuit and non-Inuit members from the Government of Nunavut's Health and Social Services Department, Pauktituutit, Nunavut Tunngavik Inc., and Qikiqtani Inuit Association /National Inuit Youth Council representing national, territorial, and regional districts. The committee was first consulted early in the developmental phase (August 2012) to provide feedback on the study protocols, survey questions and response options, as well as health warning content prior to pre-testing. Feedback from the NAC was important for the development of culturally and contextually appropriate study protocols, survey questions, response options and health warning content (both text and images).

It was also expected that the NAC would play an important role in the dissemination of the study results.

4.6 Pre-testing

Five interviews were conducted from September 12-14, 2012 in Iqaluit, Nunavut with a convenience sample to pre-test survey questions, as well as health warning messages and images. Interviews ranged in length from 30-60 minutes. One interview was incomplete due to participant time constraints. Four of the five participants were female: one 18-25 years old; one 26-39 years old; and, two 40-54 years old. The male participant was 18-25 years old. Interviews were conducted in three locations: in office space at a government building (n=2); in the lobby of a hotel (n=2); and, in a coffee shop (n=1). Four of the five interviews were conducted in English by the student researcher; one was conducted in Inuktitut by a trained research assistant. Cognitive interviewing techniques were used to detect potential problems with comprehension of survey questions and appropriateness of response options, as well as elicit insight into the participants' decision process when answering particular questions; a series of concurrent verbal probes were used (Willis, 1999). In addition, health warning labels were pre-tested using similar cognitive interviewing techniques whereby comprehension of the message and appropriateness of the image were also assessed. Experimental manipulation (i.e., whether the message was gain- vs. loss-framed messages) was also checked. Difficulties with translations from English to Inuktitut were noted in the Inuktitut interview. The interview script and health warning labels used for pre-testing are presented in Appendix E and F. Results from pre-testing led to changes in question wording and sequencing, response options, and deletion of redundant items. Changes to health warning labels were also made, including the wording for some health messages and

selection of more appropriate images to accompany the text. Summaries of pre-testing results are provided in Appendix G and H.

4.7 Measures

4.7.1 Socio-demographic

Socio-demographic measures included age (18-25; 26-40; >40), sex, education (grade 8 or less; some high school; grade 12 or more) and employment status (paid work, full-time; paid work, part-time or seasonal; not currently working; student, full-time or part-time). As proxy measures for functional literacy of the English language, participants were asked, "What language do you speak most often at home?" and "What language do you feel most comfortable reading in?" Self-reported health status was also assessed; participants indicated whether they would describe their health as: poor; fair; good; very good; or excellent.

4.7.2 Reading Comprehension

Functional literacy was also directly assessed using two separate tasks, just prior to the experimental procedure. Participants viewed two short phrases (e.g., "Smoking harms almost every organ in your body" and "Quitting smoking lowers your risk of premature death"); each presented separately and in random order. After reading the phrase, participants were asked to restate what the phrase meant to them, in their own words. Interviewers recorded whether the participant provided a correct response (i.e., provided an acceptable response that demonstrated some understanding of the phrase) or an incorrect response (i.e., provided an unacceptable response that demonstrated little understanding of the phrase). Next, participants were asked to rate on a scale of 1 to 10 how difficult the phrase was to understand (1=very easy; 10=very hard).

4.7.3   Smoking Characteristics

Smoking status was determined by the question, "Do you currently smoke cigarettes daily, weekly or monthly?" Frequency of cigarettes smoked was collected for each smoking status, but was calculated to represent the number of cigarettes consumed per day (CPD; Up to 5; 6-10; 11-15; more than 15). Daily smokers were asked, "About how long after you wake up from sleeping do you have your first cigarette?" and responses were categorized as: within 5 minutes; between 6-30 minutes; between 31-60 minutes; and, more than 60 minutes. All participants were asked whether they had used any other types of tobacco products in the past year, and if so, which ones (i.e., chew; snuff; snus; cigar; pipe; or other). Previous quit attempts were assessed by asking, "In the past year, have you stopped smoking for one day or longer because you were trying to quit?" (yes or no). Those who had made a quit attempt were then asked, "When you stopped smoking, were you trying to quit for good, or just quitting for a specific period of time?" to try and determine the motivation behind the quit attempt. Intentions to quit smoking in the future were assessed by asking, "Right now, would you say you were trying to quit…within the next month; within the next 6 months; sometime in the future, but beyond 6 months; or, not planning to quit at all?" Responses were dichotomized to represent those who were planning to quit sometime in the future versus those not planning to quit at all.

4.7.4   Quitting Beliefs and Social Norms

Although many theorists and researchers use different terms to describe the concepts of self-efficacy and response-efficacy, the following definitions were used in this dissertation. Self-efficacy was assessed by asking participants, "If you wanted to quit smoking <u>right now</u>, how hard would it be for you to quit smoking completely?" Response options were: not hard at all; a

little hard; somewhat hard; and, very hard. Response-efficacy was assessed by asking, "How certain are you that quitting smoking would lower your chances of getting a serious illness, like lung cancer?" Response options were: very certain; somewhat certain; neither certain nor uncertain; and, somewhat/very uncertain. The social norms around smoking and quitting were assessed using three questions. Participants were asked, "When you think about the people you spend the most of your time with (including your family, friends, and co-workers), how many of them currently smoke cigarettes, either daily or less than daily?" Response options were: all of them; most of them; some of them; a few of them/none. They were then asked to again think about the people they spend the most of their time with and estimate how many of them used to smoke but have since quit smoking. Participants provided a single point estimate of the number of people they knew who had quit smoking. Whether smoking was perceived as acceptable among loved ones was assessed by asking, "When you think about the people that care about you the most (including your close family and friends), would you say that…most of them are ok with you smoking cigarettes; some of them are ok with it, but some are not; or, most of them are not ok with it?"

4.7.5   Perceived Risk

Participants were asked, "Let's say you continue to smoke the amount that you do now. How would you compare your own chance of getting…lung cancer/stomach cancer/tuberculosis…in the future compared to someone who has never smoked?" Response options included: (1) just as likely; (2) a little more likely; (3) somewhat more likely; and, (4) much more likely. Responses were recategorized to represent three levels of perceived risk

where 1=low (i.e., 1), 2=moderate (i.e., 2-3), and 3=high (i.e., 4); similar to the approach taken by Costello, et al., (2012).

4.7.6   Knowledge of Health Effects

Knowledge of five known health effects of smoking and one false health effect (i.e., diabetes) was tested using the following set of questions: "Based on what you know or believe, does smoking cigarettes cause…lung cancer/diabetes/heart disease/throat cancer/stomach cancer/tuberculosis…in smokers? Response options were: yes; no; or, don't know. The purpose of including a false health effect (i.e., diabetes) was to measure and control for possible social desirability effects when responding to these types of questions.

4.7.7   Awareness of and Attitudes toward Health Warning Labels

Participants were asked nine questions about the information on and their reactions toward health warning labels that currently appear on cigarette packages in Canada which cover 75% of the front and back sides of the package. First, participants were asked how often, in the last month, they had _noticed_ warning labels on cigarette packages and had _closely read_ the warning labels on cigarette packages. Response options included: never; rarely; sometimes; often; and, very often. Next, they were asked to recall and describe the health warning that stands out to them the most and why it stands out to them. Responses to both questions were open-ended and were coded according to major themes (i.e., picture content, emotional response, etc.). Participants were then asked whether, in the last month, they had made any effort to _avoid_ looking at the warning labels by covering them up or by not buying packs with particular labels on them (response options: yes or no), followed by the extent to which warning labels made

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them think about the dangers of smoking cigarettes and made them _want to quit_ smoking

cigarettes (response options: not at all; a little; somewhat; or a lot). Potential reactance toward

health warnings was assessed by having participants indicate their degree of agreement with the

following statements: "Warning labels on cigarette packages make me angry because they tell

me things I already know" and, "Warning labels on cigarette packages are just another way that

the government tries to tell people what to do." Response options included: strongly agree;

agree; neither agree nor disagree; disagree; or strongly disagree, but were recategorized to

represent 3-levels of agreement [i.e., agree; neither agree nor disagree; and, disagree].

4.7.8 *Health Warning Ratings (i.e., Experimental Procedure)*

Participants rated eight of the 16 possible health warnings on 10 measures using a Likert

scale of 1 to 10 with verbal anchors at either end (i.e., 1=not at all; 10=extremely). Measures

included potential mediators and moderators of health warning impact, including affective

response (i.e., "Does this warning make you feel…uncomfortable; disgusted; worried; sad;

scared?"), credibility (i.e., "Do you think this warning is believable?") and personal relevance

(i.e., "Does this warning speak to you?"). The measures of affective response had high internal

consistency (Cronbach's alpha range: 0.80-0.93) and were averaged to create a single measure

representing an *affective response scale*. Potential effectiveness was assessed using three

questions measuring the extent to which the warning made participants want to: talk to someone

about the dangers of smoking; …quit smoking; and, whether they think the warning works or is

helpful (i.e., perceived effectiveness). These measures also had high internal consistency

(Cronbach's alpha range: 0.74-0.80) and were averaged to create a single measure representing a

potential effectiveness scale.

4.7.9   Health Warning Rankings (i.e., Spokesperson Characteristics)

Participants viewed three health warnings, all at the same time, each presenting a personal testimony from three different spokespersons (a middle-aged Caucasian man/woman; a middle-aged Inuit man/woman; an Inuit Elder man/woman) describing his/her experiences with smoking and lung disease. Female participants viewed health warnings that included female spokespersons, while male participants viewed health warnings that included male spokespersons. Participants were asked to choose which one: speaks to them the most; is the most believable; and, makes them want to quit smoking the most.

4.8 Sample

To minimize self-selection bias, every third person encountered at the recruitment site was invited to participate in the study (i.e., intercept technique; Sudman, 1980). The intent was to produce a relatively good cross-section of the population, not to produce a pure random or regionally representative sample. Eligible participants self-identified as Inuit, were 18 years of age or older, had smoked at least one cigarette in the previous 30 days and had smoked over 100 cigarettes in their lifetime. Of the 210 people approached, 144 were eligible and agreed to participate in the study (141 completes and 3 partials), meanwhile 59 declined the invitation to participate and 7 were ineligible. Based on guidelines provided by the American Association for Public Opinion Research (AAPOR, 2011), the response rate was estimated at approximately 70.5%.[1]

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[1] $RR3 = \dfrac{I}{(I + P) + (R + NC + O) + e(UH + UO)}$

Where, I=completed interviews; P=partial interviews; R=refusals; NC=non-contact; O=other; e=estimated proportion of cases of unknown eligibility that are eligible; UH=unknown households; UO=unknown other

More than half of the sample was recruited in Iqaluit (63.9%, n=92), while 36.1% (n=52) was recruited in Rankin Inlet. In Iqaluit, 78.3% (n=72) of the sample was recruited at the supermarket, while the remaining 21.7% (n=20) was recruited at the Arctic College. As a preliminary step, response distributions for each of the ten outcomes were examined for the entire sample to get a sense of how participants actually used the 10-point Likert scale. Twelve participants had very little to no variability in their responses to each of the ten outcomes across all eight health warnings tested. Given the pattern of responses for these 12 participants, it is possible they did not fully understand how to use the response scale and/or were not providing thoughtful responses; therefore, these 12 participants were excluded from the subsequent analyses. Three other participants provided responses for only one of the health warnings and did not finish the study, thus were also excluded since they had substantial amounts of missing data. In total, 129 participants were retained and used in the subsequent analyses. There were no significant differences in the key sociodemographic or smoking characteristics of participants included in the analyses versus those excluded, except that a greater proportions of those excluded tended to be over 40 years of age (p = 0.032; see Appendix I).

4.9 Analyses

4.9.1 Descriptive Analyses

Descriptive analyses were conducted using SPSS version 17.0. Sociodemographic and smoking-related characteristics were examined and compared across the two communities using Chi-square tests to compare frequencies and T-tests to compare means. Open-ended questions were coded according to major themes (i.e., picture content, emotional response, etc.) using NVivo9 and summarized to identify patterns of responses. Mean ratings for each of the ten

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continuous outcomes (i.e., uncomfortableness; disgust; worry; sad; fear; personal relevance; credibility; motivation to talk; motivation to quit; and, perceived effectiveness) and the two *scales* (i.e., *affective response* and *potential effectiveness*) were assessed for each of the health warnings tested. The distributions for each outcome were also examined; however, tests of normality (i.e., Kolmogorov-Smirnov and Shapiro-Wilk) indicated that in each case the distributions were significantly different from the standard normal distribution, thus the normality assumption for linear regression was violated (results not presented). Transforming data using the square root (reflect), logarithm (reflect), and inverse (reflect) did not satisfy the normality assumption. Categorical outcomes were then created to compare three groups of relatively equal size, whereby (1) 1-6 (i.e., not really); (2) 7-9 (i.e., somewhat); and, (3) 10 (i.e., extremely); decimal points were rounded to the nearest whole number. However, when tested, the proportional odds assumption for ordinal regression was also violated (results not presented). Therefore, subsequent multivariate analyses used multinomial regression to generate separate coefficients for each category of the outcome (i.e., the tertile cut-points described above) when examining each unordered outcome.

4.9.2   Model Building

Key socio-demographic and smoking characteristics were included alongside the three independent variables as covariates in each of the multivariate multinomial regression models tested. These included: community of recruitment, sex, age, education, functional literacy, CPD, and intentions to quit. The selection of covariates was based on *a priori* conceptual grounds and previous evidence of their influence on perceptions toward health warnings.

To identify the most suitable measure of functional literacy, a series of linear regression models (i.e., one for each of the six measures of functional literacy) were conducted to examine the amount of variance each measure accounted for when predicting each of the continuous outcomes. Whether participants could correctly restate the phrase "Quitting smoking lowers your risk of premature death" accounted for the highest proportion of the variance when predicting each of the ten continuous outcomes, compared to all other measures (results not presented). Thus, given its expected predictive value, this measure was included as a covariate to represent functional literacy in all subsequent multivariate models.

The presentation order in which health warnings were viewed by participants was also recorded (range 1-8). Order effects were tested for each of the ten continuous outcomes using linear regression. Three approaches were used to test for order effects. First, health warning presentation order was entered as a continuous variable to predict each of the ten outcomes, separately. Second, health warning presentation order was dichotomized to represent the health warning viewed first versus all others and entered into each of the models above. Third, health warning presentation order was dichotomized to represent the first versus last health warning viewed and again entered into each of the models above. Significant order effects existed for only two of the ten outcomes (i.e., uncomfortableness and motivation to talk to someone; results not presented); however, the decision to include presentation order as a covariate in all multivariate regression models was made.

Finally, although bivariate analyses found that the health effect depicted in the health warnings (i.e., stomach cancer and tuberculosis) was not significantly associated with any of the outcomes measured (results not presented); it was still included as a covariate in all subsequent multivariate regression models based on conceptual grounds. Therefore, the final list of

covariates included alongside the three independent variables in each multivariate multinomial

regression model was: community of recruitment, sex, age, education, functional literacy, CPD,

intentions to quit, health warning presentation order, and health effect.

4.9.3   *Health Warning Ratings: Bivariate and Multivariate Analyses*

Bivariate associations between each message characteristic (i.e., textual message frame;

graphic type; and narrative style) and each of the ten categorical outcomes and the two *scales*

were assessed using a series of Chi-square tests. Multinomial regression was used to model the

effects of each independent variable [i.e., textual message frame (1=loss-framed; 2=gain-

framed); graphic type (1=gruesome; 2=personal suffering); and narrative style (1=testimonial;

2=didactic)] on each of the ten categorical outcomes and the two *scales* (1=extremely;

2=somewhat; 3=not really) while adjusting for covariates (as listed above). "Not really" was

used at the reference category, producing separate coefficients for each of the following

contrasts: "extremely vs. not really" and "somewhat vs. not really." The third contrast (i.e.,

"extremely vs. somewhat") was calculated based on the theoretical relationship that exists

between the coefficients for logits with other pairings[2] (Agresti, 2002). Since data from health

warning ratings represent repeated measures (i.e., outcome measures were repeated for each of

the eight health warnings viewed), Generalized Estimating Equations (GEE; Hardin & Hilbe,

2003; Liang, et al., 1986) was used to account for correlations between these observations.

SAS/Callable SUDAAN (Version 11.0) was used to estimate multinomial regression models

using the GEE procedure. For each model, the logit function was used and the variance-

covariance matrix was specified as exchangeable. First-level units were the eight health warnings

for which participants provided ratings (i.e., observations; n=1016), while second-level units

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[2] $\log(\pi_1/\pi_2) = \log(\pi_1/\pi_3) - \log(\pi_2/\pi_3)$

were the participants themselves (n=129). Main effects were examined first for each outcome, followed by (in separate models) two-way and three-way interactions, while adjusting for the same covariates. Since many statistical test were performed, a significance level of $p < 0.01$ was used instead of $p < 0.05$ to control for multiple comparisons.

4.9.4 Health Warning Ratings: Mediational Analyses

The Baron and Kinney (1986) method was used to assess the extent to which fear mediated the effects of *graphic type* on each of the four categorical measures of potential effectiveness (i.e., motivation to talk to someone about the health effects of smoking, motivation to quit smoking, perceived effectiveness of the health warning and the *potential effectiveness scale*). First, a multinomial regression model was tested to determine the effect graphic type had on the categorical outcome; second, a separate linear regression model was tested to determine the effect graphic type had on evoked fear (continuous variable); and third, a multinomial regression model was tested to determine the effect evoked fear (continuous variable) had on the outcome, controlling for graphic type. According to this method, if all three steps demonstrate significance and the coefficient for graphic type decreases with the inclusion of fear in the model, then there is adequate evidence to suggest a mediational relation exists. The same methods were used to examine the potential mediating role of fear on the effects of *textual message frame* for each of the four measures of potential effectiveness. The potential mediating role of affective response more generally using the *affective response scale* was also examined using the same approach. All models were conducted using GEE in SAS/Callable SUDAAN (Version 11.0) to account for repeated measurement. Again, since many statistical tests were performed, a significance level of $p < 0.01$ was used to control for multiple comparisons.

4.9.5 *Health Warning Rankings: Descriptive Analyses*

Frequencies of health warning choice as it related to each of the spokespersons were calculated. Participants indicated which one of the three health warnings they thought was most personally relevant, most credible, and most effective. Response options also included "all of them" or "none of them." Chi-square tests were used to compare whether health warning choice differed by sex since males viewed health warnings with only male spokespersons and females viewed health warnings with only female spokespersons. Chi-square tests were also used to examine difference in health warning choice among those who chose a specific health spokesperson (i.e., those who chose all of them or none of them were excluded from this analysis). Since data did not represent repeated measures, these analyses were conducted using traditional multinomial logistic regression with SPSS 17.0.

CHAPTER 5

DESCRIPTIVE RESULTS

5.1 Sample Characteristics

5.1.1 Socio-demographic

Table 2 presents the socio-demographic characteristics of participants, by community. On average, participants were 37.3 years of age [range 18-71; standard deviation (SD)=12.7] and just over half were female. Almost three quarters of the sample had less than a high school education, while about half indicated they were currently not working. Just over half of the sample indicated they spoke Inuktitut most often at home [most of whom (97.1%) could also speak English] and three quarters indicated they were most comfortable reading English. When testing functional literacy using the reading comprehension tasks, approximately half of the sample could correctly restate the phrase, "Smoking harms almost every organ in your body" in their own words, while only 37.5% could correctly restate the phrase, "Quitting smoking lowers your risk of premature death." Participants rated the "quitting smoking" phrase as only slightly more difficult to understand compared to the "smoking harms" phrase. About one third indicated that their health was either fair or poor. There were no significant differences in the socio-demographic characteristics between the two communities, except for sex: a larger proportion of the sample in Rankin Inlet was female compared to the sample in Iqaluit.

Table 2. Socio-demographic Characteristics, by Community

	Iqaluit (n=82)		Rankin Inlet (n=47)		Overall (n=129)		Chi-square
	n	**%**	**n**	**%**	**n**	**%**	**p-value**
Sex							
Male	41	50.0	15	31.9	56	43.4	**0.046**
Female	41	50.0	32	68.1	73	56.6	
Age (years)							
18-25	23	28.4	11	24.4	34	27.0	0.256
26-40	21	25.9	18	40.0	39	31.0	
>40	37	45.7	16	35.6	53	42.1	
Missing	1		2		3		
Mean (SD)	37.6		36.8		37.3		0.745†
	(13.1)		(12.0)		(12.7)		
Education							
Grade 8 or less	15	23.2	13	28.3	32	25.0	0.167
Some high school	36	43.9	25	54.3	61	47.7	
Grade 12 or more	27	32.9	8	17.4	35	27.3	
Missing	0		1		1		
Employment status							
Paid work, full-time	15	18.5	15	31.9	30	23.4	0.093
Paid work, part-time or seasonal	7	8.6	8	17.0	15	11.7	
Not currently working	44	54.3	19	40.4	63	49.2	
Student, full- or part-time	15	18.5	5	10.6	20	15.6	
Missing	1		0		1		
Language spoken most often at home							
Inuktitut	48	59.3	20	45.5	68	54.4	0.139
English	33	40.7	24	54.5	57	45.6	
Missing	1		3		4		
Language most comfortable reading							
Inuktitut	9	11.1	10	19.2	19	15.0	0.266
English	63	77.8	32	67.3	95	74.8	
Both	9	11.1	4	11.5	13	10.2	
Missing	1		1		2		
Reading comprehension task #1: Smoking harms almost every organ in your body							
Re-stated phrase							
Correct	43	53.1	25	53.2	68	53.2	0.991
Incorrect	38	46.9	22	46.8	60	46.9	
Missing	1		0		1		
Mean difficulty of	4.0		4.4		4.2		0.493†
understanding (SD)	(2.8)		(3.4)		(3.0)		
Missing	1		2		3		
Reading comprehension task #2: Quitting smoking lowers your risk of premature death							
Re-stated phrase							
Correct	27	33.3	21	44.7	48	37.5	0.201
Incorrect	54	66.7	26	55.3	80	62.5	
Missing	1		0		1		
Mean difficulty of	4.8		5.0		4.8		0.746†
understanding (SD)	(3.2)		(3.1)		(3.2)		
Health status							
Poor	11	13.4	6	13.0	17	13.3	0.198
Fair	16	19.5	13	28.3	29	22.7	
Good	45	54.9	17	37.0	62	48.4	
Very good or better	10	12.2	10	21.7	20	15.6	
Missing	0		1		1		

†p-value represents significance of F-statistic using one-way ANOVA to compare means

5.1.2   Smoking Behaviours and Intentions

Table 3 presents smoking behaviours and intentions among participants, by community. Almost all participants were daily smokers and smoked, on average, 13.0 cigarettes per day (CPD; SD=8.9). Almost half of daily smokers had their first cigarette within the first five minutes of waking. In addition to smoking cigarettes, 13.2% (n=17) reported using other forms of tobacco including chewing tobacco and cigars. Over half the participants had tried to quit smoking in the past year; however, only half of those indicated they were trying to quit for good. Most participants indicated they planned to quit sometime in the future. There were no significant differences in the smoking characteristics between the two communities, except for smoking status and the use of other tobacco products: larger proportions of the sample in Rankin Inlet were non-daily smokers and had used other tobacco products in the past year compared the sample in Iqaluit.

Table 3. Smoking Behaviours and Intentions, by Community

	Iqaluit (n=82)		Rankin Inlet (n=47)		Overall (n=129)		Chi-square
	n	**%**	**n**	**%**	**n**	**%**	**p-value**
Smoking status							
Daily	80	97.6	40	85.1	120	93.0	**0.025**
Non-daily	2	2.4	7	14.9	9	7.0	
Missing	0		0		0		
Cigarettes smoked per day (CPD)							
Up to 5	14	17.3	9	20.0	23	18.3	0.956
6-10	25	30.9	12	26.7	37	29.4	
11-15	22	27.2	13	28.9	35	27.8	
More than 15	20	24.7	11	24.4	31	24.6	
Missing	1		2		3		
Mean (SD)	13.0 (8.3)		13.1 (9.9)		13.0 (8.9)		0.944[†]
Time to first cigarette (TTFC)							
Within 5mins	40	50.0	18	45.0	58	48.3	0.934
6-30 mins	20	25.0	10	25.0	30	25.0	
31-60	6	7.5	4	10.0	10	8.3	
More than 60mins	14	17.5	8	20.0	22	18.3	
Not applicable	2		7		9		
Used other types of tobacco in past year							
Yes	6	7.3	11	23.4	17	13.2	**0.009**
No	76	92.7	36	76.6	112	86.8	
Missing	0		0		0		
Made a quit attempt in the past year							
Yes	50	61.0	25	53.2	75	58.1	0.388
No	32	39.0	22	46.8	54	41.9	
Missing	0		0		0		
Trying to quit for good							
Yes	27	54.0	13	52.0	40	53.3	0.870
No	23	46.0	12	48.0	35	46.7	
Not applicable	32		22		54		
Plans to quit smoking							
Planning to quit	63	79.7	33	73.3	96	77.4	0.411
Not planning to quit	16	20.3	12	26.7	28	22.6	
Missing	3		2		5		

[†]p-value represents significance of F-statistic using one-way ANOVA to compare means

5.1.3 Quitting Beliefs, Perceived Risk and Social Norms

Table 4 presents participants' quitting beliefs, perceptions of risk, and social norms, by community. Approximately half of participants believed it would be hard to quit smoking, but most believed quitting would reduce their chances of developing a serious illness in the future. When participants compared themselves to a non-smoker, 43.0%, 32.7% and 25.5% perceived themselves as being at high risk of developing lung cancer, tuberculosis and stomach cancer, respectively. However, 22.3%, 29.8% and 24.5% perceived themselves at low risk of developing lung cancer, tuberculosis and stomach cancer, respectively. Notably, relatively large proportions of the sample did not know or refused to indicate whether they perceived themselves at risk of developing stomach cancer or tuberculosis. Almost three quarters of participants indicated most, if not all, of the people they spent the majority of their time with smoked cigarettes; however, just over three quarters knew at least one person who had successfully quit smoking. Over a third of participants indicated their close family and friends were generally accepting of their decision to smoke, while about a quarter indicated their close family and friends were generally not accepting of their decision to smoke. Differences existed between the two communities whereby a larger proportion of the sample in Iqaluit believed quitting smoking would likely reduce their chances of getting a serious illness and indicated their close family and friends were generally more accepting of their decision to smoke compared to those in Rankin Inlet.

Table 4. Quitting Beliefs, Perceptions of Risk and Social Norms, by Community

	Iqaluit (n=82)		Rankin Inlet (n=47)		Overall (n=129)		Chi-square
	n	**%**	**n**	**%**	**n**	**%**	**p-value**
Quitting beliefs							
Self efficacy							
Not hard at all	7	8.6	10	23.3	17	13.7	0.079
A little hard	15	18.5	10	23.3	25	20.2	
Somewhat hard	11	13.6	6	14.0	17	13.7	
Very hard	48	59.3	17	39.5	65	52.4	
Missing	1		4		5		
Response efficacy							
Very certain	31	37.8	20	43.5	51	39.8	**0.051**
Somewhat certain	30	36.6	8	17.4	38	29.7	
Neither certain or uncertain	7	8.5	10	21.7	17	13.3	
Uncertain	14	17.1	8	17.4	22	17.2	
Missing	0		1		1		
Perceptions of health risk							
Lung cancer							
Low risk	14	17.7	13	31.1	37	22.3	0.230
Moderate risk	30	38.0	12	28.9	42	34.7	
High risk	35	44.3	17	40.0	52	43.0	
Don't know/refused	3		5		8		
Stomach cancer							
Low risk	15	22.1	8	30.8	23	24.5	0.679
Moderate risk	35	51.5	12	46.2	47	50.0	
High risk	18	26.5	6	23.1	24	25.5	
Don't know/refused	14		21		35		
Tuberculosis							
Low risk	20	27.8	11	34.4	31	29.8	0.527
Moderate risk	26	36.1	13	40.6	39	37.5	
High risk	26	36.1	8	25.0	34	32.7	
Don't know/refused	10		15		25		
Social norms							
People around you who smoke							
All of them smoke	24	29.3	14	29.8	38	29.5	0.901
Most of them	36	43.9	20	42.6	56	43.4	
Some of them	13	15.9	6	12.8	19	14.7	
A few or less	9	11.0	7	14.9	16	12.4	
Missing	0		0		0		
People around you who quit							
None	12	18.2	11	28.9	23	22.1	0.360
1-3	34	51.5	19	50.0	53	51.0	
>3	20	30.3	8	21.1	28	26.9	
Missing	16		9		25		
People who are accepting of your smoking							
Most are ok with it	35	44.3	10	21.7	45	36.0	**0.040**
Some are ok/some are not	26	32.9	21	45.7	47	37.6	
Most are not ok with it	18	22.8	15	32.6	33	26.4	
Missing	3		1		4		

5.1.4 Knowledge of Health Effects

Table 5 presents participants' knowledge of smoking-related health effects, by community. Overall, knowledge was high for lung cancer, throat cancer, and heart disease but comparatively lower for tuberculosis and stomach cancer. Just over a third indicated diabetes was caused by smoking despite there being no evidence of a causal relation.[3] A larger proportion of those in Iqaluit indicated tuberculosis was caused by smoking compared to the sample in Rankin Inlet (p=0.048); no other significant differences existed between communities.

Table 5. Knowledge of Health Effects, by Community

	Iqaluit (n=82)		Rankin Inlet (n=47)		Overall (n=129)		Chi-square
	n	%	n	%	n	%	p-value
Lung cancer							
Yes	78	95.1	40	87.0	118	92.2	0.245
No	3	3.7	4	8.7	7	5.5	
Don't know	1	1.2	2	4.3	3	2.3	
Missing	0		1		1		
Heart disease							
Yes	72	87.8	35	76.1	107	83.6	0.063
No	5	6.1	2	4.3	7	5.5	
Don't know	5	6.1	9	19.6	14	10.9	
Missing	0		1		1		
Throat cancer							
Yes	74	90.2	37	80.4	111	86.7	0.225
No	4	4.9	3	6.5	7	5.5	
Don't know	4	4.9	6	13.0	10	7.8	
Missing	0		1		1		
Stomach cancer							
Yes	36	43.9	25	53.2	61	47.3	0.099
No	12	14.6	11	23.4	23	17.8	
Don't know	34	41.5	11	23.4	45	34.9	
Missing	0		0		0		
Tuberculosis							
Yes	61	74.4	25	53.2	86	66.7	**0.048**
No	9	11.0	10	21.3	19	14.7	
Don't know	12	14.6	12	25.5	24	18.6	
Missing	0		0		0		
Diabetes[†]							
Yes	30	36.6	18	39.1	48	37.5	0.816
No	22	26.8	10	21.7	32	25.0	
Don't know	30	36.6	18	39.1	48	37.5	
Missing	0		1		1		

[†]This health effect was included so to measure possible social desirability effects.

[3]Although some evidence suggests there is an association between smoking and an elevated risk of developing Type II diabetes (Willi, et al., 2007), there is no evidence to suggest the relation is causal. Smoking is, however, known to exacerbate symptoms of diabetes (Haire-Joshu, et al., 1999; Sherman, 2005).

5.2   Awareness of and Attitudes toward Health Warnings Labels

Table 6 presents participants' awareness of and attitudes toward health warning labels on cigarette packages, by community. Over two thirds of participants indicated they had noticed health warnings on cigarette packages either often or very often in the last month; however, only 42.1% indicated they often or very often read the labels closely. Notably, almost a third of participants indicated that they never or rarely read the labels with larger proportions of participants from Rankin Inlet indicating they never or rarely read them compared to those in Iqaluit.

Although almost half of participants said they tried to avoid looking at the labels by covering them up or not buying packs with particular labels on them, most said the labels make them think (at least a little) about the dangers of smoking and make them want to (at least a little) quit smoking. However, over a third said that seeing the labels make them want to smoke or smoke more cigarettes. Moreover, almost 40% agreed that the labels make them angry because they tell them things they already know, while almost half agreed that the labels are just another way the government tries to tell people what to do.

Table 7 provides a summary of the descriptive codes for open-ended responses to the health warning recall questions. Of the 129 participants, 91 provided at least one specific response when asked which health warning label stands out to them the most (72 recalled one warning label; 18 recalled two or more). Another 23 participants provided a non-specific response (e.g., "the pictures;" "sick/dying people;" "cancer;" "all of them"), while nine said they did not know and six did not provide an answer. Most participants described health warnings related to tongue cancer, lung disease (including lung cancer), and mouth disease (including rotting teeth and gum disease), although there was a wide range of responses. When asked why

such health warnings stood out to them, many described that they found them to be gross or disgusting, made them worried that it could happen to them, or reminded them of someone who had suffered from the disease or condition. More often than not, health warnings depicting tongue cancer and mouth disease were described as gross or disgusting, while those that depicted people suffering from the effects of smoking were described as making one worry that it could happen to them or reminding them of someone who had suffered from a similar health effect.

Table 6. Awareness of and Attitudes toward Health Warnings Labels, by Community

	Iqaluit (n=82)		Rankin Inlet (n=47)		Overall (n=129)		Chi-square
	n	**%**	**n**	**%**	**n**	**%**	**p-value**
Notice HWL							
Never	1	1.2	1	2.1	2	1.6	0.230
Rarely	8	9.9	8	17.0	16	12.5	
Sometimes	13	16.0	8	17.0	21	16.4	
Often	17	21.0	3	6.4	20	15.6	
Very often	44	51.9	27	57.4	69	53.9	
Missing	1		0		1		
Read HWL							
Never	6	7.4	11	23.4	17	13.2	**0.008**
Rarely	11	13.6	11	23.4	22	17.1	
Sometimes	28	34.6	7	14.9	35	27.1	
Often	17	21.0	5	10.6	22	17.1	
Very often	19	23.5	13	27.7	32	25.0	
Missing	1		0		1		
Avoid looking at HWL							
Yes	33	40.7	26	55.3	59	46.1	0.111
No	48	59.3	21	44.7	69	53.9	
Missing	1		0		1		
Think about HWL							
Not at all	9	11.0	8	17.4	17	13.3	0.242
A little	12	14.6	11	23.9	23	18.0	
Somewhat	22	26.8	7	15.2	29	22.7	
A lot	39	47.6	20	43.5	59	46.1	
Missing	0		1		1		
HWL make you want to quit							
Not at all	6	7.4	8	17.0	14	10.9	0.214
A little	17	21.0	13	27.7	30	23.4	
Somewhat	30	37.0	12	25.5	42	32.8	
A lot	28	34.6	14	29.8	42	32.8	
Missing	1		0		1		
HWL make you want to smoke or smoke more							
Not at all	53	67.1	24	52.2	77	61.6	0.339
A little	14	17.7	10	21.7	24	19.2	
Somewhat	10	12.7	9	19.6	19	15.2	
A lot	2	2.5	3	6.5	5	4.0	
Missing	3		1		4		
HWL make me angry because they tell me things I already know							
Agree	29	37.2	20	43.5	49	39.5	0.786
Neither agree nor disagree	13	16.7	7	15.2	20	16.1	
Disagree	36	46.2	19	41.3	55	44.4	
Missing	4		1		5		
HWL are just another way the government tries to tell people what to do							
Agree	38	48.7	22	50.0	60	49.2	0.139
Neither agree nor disagree	10	12.8	11	25.0	21	17.2	
Disagree	30	38.5	11	25.0	41	33.6	
Missing	4				7		

Table 7. Summary of Responses from Open-Ended Questions

Description of health warning content	Count frequency	Description of reactions to health warnings
Tongue cancer	18	**Gross or disgusting**; worried it could happen to me; looks painful; know someone who had tongue cancer; makes me think about tongue cancer; novel information
Lung disease	12	Already have trouble breathing; worried it could happen to me; know someone who had lung cancer; sad or upsetting
Mouth disease	12	**Gross or disgusting**
Face of young girl	11	Ugly; worried it could happen to me; **gross or disgusting**
Children/infants and second hand smoke	10	Worried about my children/grandchildren; sad or upsetting; not scary
Pregnant woman	8	Know pregnant women who smoke; used to smoke when pregnant and baby had negative health effect; not scary
Hole in throat	8	Know someone who had throat cancer; **gross or disgusting**
Heart disease	7	Worried it could happen to me; **gross or disgusting**; makes me think of quitting; already have heart troubles
Lung cancer – Barb Tarbox	4	Sad or upsetting; makes me think of quitting; worried it could happen to me
Stroke – man in wheel chair	4	Scares me; know someone who had a stroke
Man with tube in mouth	3	Scares me; know someone who had lung cancer
Bladder cancer	3	Novel information
Emphysema	2	Novel information
Eye disease/blindness	2	None
Old lady with breathing tubes	2	Know someone who had to breathe through tubes; makes me think of quitting
Death statistics	1	Novel information
Harmful chemicals	1	Novel information
Man with tube in throat	1	Worried it could happen to me; makes me think of quitting
Other	1	Novel information
	110	

5.3 Descriptive Responses to Health Warning Messages

For descriptive purposes, mean ratings for each outcome (using the continuous measures) are presented in Tables 8 and 9 for each health warning, by message characteristic. More detailed information for each health warning including sample sizes for each condition can be found in Appendix J. As previously stated, responses were not normally distributed, thus categorical responses were created for use in the subsequent multivariate analyses.

Table 8. Mean Ratings of Affective Response by Textual Message Frame, Graphic Type and Narrative Style for each Health Effect

Message characteristics					Ratings					
Health effect	Textual message frame	Graphic type	Narrative style	Ref. #	Uncomfortableness	Disgust	Worry	Sadness	Fear	Affective response scale[†]
Stomach cancer	Loss	Personal suffering	Didactic	1a	7.1	7.0	7.3	7.4	7.3	7.3
			Testimonial	5a	6.5	6.0	6.3	6.2	6.2	6.3
		Gruesome	Didactic	3a	8.0	8.1	7.3	7.6	7.5	7.8
			Testimonial	7a	8.0	8.3	7.8	7.8	7.8	7.9
	Gain	Personal suffering	Didactic	2a	5.7	5.2	5.9	5.7	5.9	5.6
			Testimonial	6a	6.1	5.6	6.3	6.5	6.6	6.2
		Gruesome	Didactic	4a	7.5	8.0	7.8	7.7	8.0	7.8
			Testimonial	8a	7.2	7.2	7.3	6.8	7.3	7.1
Tuberculosis	Loss	Personal suffering	Didactic	1b	6.5	6.3	6.6	6.3	6.4	6.4
			Testimonial	5b	6.8	6.4	6.9	6.8	7.0	6.8
		Gruesome	Didactic	3b	8.1	8.6	8.4	8.6	8.6	8.5
			Testimonial	7b	8.1	8.0	7.9	7.4	8.1	7.9
	Gain	Personal suffering	Didactic	2b	6.5	6.3	7.2	6.9	6.9	6.8
			Testimonial	6b	5.8	5.3	6.5	6.2	6.3	6.1
		Gruesome	Didactic	4b	7.2	7.5	7.2	6.5	6.8	7.0
			Testimonial	8b	7.4	7.3	7.6	7.7	7.7	7.5

[†]Scale represents the average mean of all five measures of affective response (i.e., uncomfortableness, disgust, worry, sadness, and fear)

Table 9. Mean Ratings of Personal Relevance, Credibility and Potential Effectiveness by Textual Message Frame, Graphic Type and Narrative Style for each Health Effect

Message characteristics					Ratings					
Health effect	Textual message frame	Graphic type	Narrative style	Ref. #	Personal relevance	Credibility	Motivation to talk	Motivation to quit	Perceived effectiveness	Effectiveness scale[†]
Stomach cancer	Loss	Personal suffering	Didactic	1a	7.0	8.1	7.0	7.8	7.7	7.5
			Testimonial	5a	5.8	7.4	6.3	6.7	6.7	6.6
		Gruesome	Didactic	3a	7.2	8.5	7.0	7.4	7.9	7.4
			Testimonial	7a	7.9	8.9	6.8	8.1	8.5	7.8
	Gain	Personal suffering	Didactic	2a	5.9	7.5	5.7	5.7	6.5	5.9
			Testimonial	6a	6.8	8.4	6.3	6.9	7.8	7.0
		Gruesome	Didactic	4a	7.7	8.9	7.5	8.3	8.6	8.1
			Testimonial	8a	6.6	8.2	7.1	7.3	7.8	7.4
Tuberculosis	Loss	Personal suffering	Didactic	1b	5.9	7.7	5.9	6.5	7.2	6.6
			Testimonial	5b	6.9	8.5	6.7	7.5	7.8	7.3
		Gruesome	Didactic	3b	7.8	9.0	7.9	8.5	8.9	8.5
			Testimonial	7b	7.2	8.7	7.5	7.7	8.3	7.9
	Gain	Personal suffering	Didactic	2b	6.5	8.0	7.0	7.6	7.4	7.3
			Testimonial	6b	6.3	7.5	6.3	7.1	6.8	6.8
		Gruesome	Didactic	4b	6.6	8.5	6.5	7.4	7.9	7.4
			Testimonial	8b	7.4	9.0	7.4	8.3	8.6	8.1

[†]Scale represents the average mean of all three measures of potential effectiveness (i.e., motivation to talk, motivation to quit, perceived effectiveness)

CHAPTER 6

HEALTH WARNING RATINGS: BIVARIATE AND MULTIVARIATE RESULTS

6.1 Bivariate Results

As previously noted, health warning ratings that were initially provided on a 1-10 response scale for each of the ten outcomes were recoded into 3-level categorical variables for the following analyses. The *affective response scale* and the *potential effectiveness scale* were also re-coded into 3-level categorical variables based on the average scores from the original continuous variables. Bivariate associations between each of the independent variables and these 12 outcomes were investigated using Chi-square tests. Results were largely consistent with findings from the multivariate analyses, thus will not be discussed further. Results are presented in Table 10 for descriptive purposes only.

Table 10. Frequencies for Ratings on Outcome Measures, by Independent Variable

	Textual message frame				Graphic type				Narrative style			
	Loss-framed		Gain-framed		Personal suffering		Gruesome		Didactic		Testimonial	
Outcome measures	n	%	n	%	n	%	n	%	n	%	n	%
Personal relevance												
Not really	185	37.0	209	41.7	227	45.5	167	33.3	197	39.4	197	39.3
Somewhat	134	26.8	120	24.0	121	24.2	133	26.5	123	24.6	131	26.1
Extremely	181	36.2	172	34.3	151	**30.3**	202	**40.2**	180	36.0	173	34.5
Perceive credibility												
Not really	91	18.1	105	20.8	126	25.1	70	13.9	97	19.3	99	19.6
Somewhat	126	25.0	109	21.6	120	23.9	115	22.8	120	23.9	115	22.8
Extremely	286	56.9	290	57.5	256	**51.0**	320	**63.4**	285	56.8	291	57.6
Uncomfortableness												
Not really	158	31.3	212	42.1	230	45.6	140	27.7	179	35.4	191	37.9
Somewhat	126	25.0	106	21.0	119	23.6	113	22.4	115	22.8	117	23.2
Extremely	221	**43.8**	186	**36.9**	155	**30.8**	252	**49.9**	211	41.8	196	38.9
Disgust												
Not really	162	32.0	213	42.2	256	50.8	119	23.5	176	34.7	199	39.5
Somewhat	121	23.9	107	21.2	105	20.8	123	24.3	117	23.1	111	22.0
Extremely	223	**44.1**	185	**36.6**	143	28.4	265	**52.3**	214	42.2	194	38.5
Worry												
Not really	165	32.5	183	36.2	210	41.7	138	27.2	170	33.7	178	35.0
Somewhat	131	25.8	139	27.5	132	26.2	138	27.2	128	25.4	142	28.0
Extremely	211	41.6	183	36.2	162	**32.1**	232	**45.7**	206	40.6	188	37.0
Sadness												
Not really	162	32.0	201	40.0	218	43.3	145	28.7	171	33.9	192	38.0
Somewhat	136	26.9	135	26.8	131	26.0	140	27.7	140	27.8	131	25.9
Extremely	208	**41.1**	167	**33.2**	154	**30.6**	221	**43.7**	193	38.3	182	36.0
Fear												
Not really	158	31.2	199	39.5	215	42.8	142	27.9	174	34.5	183	36.2
Somewhat	132	26.0	104	20.6	111	22.1	125	24.6	115	22.8	121	23.9
Extremely	217	**42.8**	201	**39.9**	176	**35.1**	242	**47.5**	216	42.8	202	39.9
Affective response scale												
Not really	150	30.2	194	39.0	213	43.2	131	26.1	165	33.3	179	35.9
Somewhat	196	39.4	181	36.4	184	37.3	193	38.5	188	37.9	189	38.0
Extremely	151	**30.4**	122	**24.5**	96	**19.5**	177	**35.3**	143	28.8	130	26.1
Motivation to talk												
Not really	192	38.5	210	41.8	225	45.1	177	35.3	196	39.3	206	41.0
Somewhat	119	23.8	121	24.1	119	23.8	121	24.1	118	23.6	122	24.3
Extremely	188	37.7	171	34.1	155	**31.1**	204	**40.6**	185	37.1	174	34.7
Motivation to quit												
Not really	158	31.1	175	34.4	197	38.7	136	26.8	167	32.8	166	32.7
Somewhat	104	20.5	93	18.3	97	19.1	100	19.7	93	18.3	104	20.5
Extremely	246	48.4	240	47.2	215	**42.2**	271	**53.5**	249	48.9	237	46.7
Perceived effectiveness												
Not really	129	25.6	149	29.5	179	35.5	99	19.6	139	27.5	139	27.6
Somewhat	130	25.8	126	25.0	125	24.8	131	26.0	125	24.8	131	26.0
Extremely	244	48.5	230	45.5	200	**39.7**	274	**54.4**	241	47.7	233	46.3
Effectiveness scale												
Not really	146	29.7	160	32.3	182	37.0	124	25.1	152	30.9	154	31.2
Somewhat	198	40.3	201	40.6	197	40.0	202	40.9	196	39.8	203	41.1
Extremely	147	29.9	134	27.1	113	**23.0**	168	**34.0**	144	29.3	137	27.7

Note: Percentages in bold identify a significant difference exists between both levels of the independent variable, for the corresponding outcome ($p < 0.01$).

6.2 Multivariate Results

Multinomial regression was used to model the effects of the three independent variables [i.e., textual message frame (1=loss-framed; 2=gain-framed); graphic type (1=gruesome; 2=personal suffering); and narrative style (1=didactic; 2= testimonial)] on each of the 10 categorical outcomes and the two *scales*, while adjusting for known covariates. Outcomes included those related to affective response (i.e., uncomfortable, disgust, worry, sadness, fear, and the *affective response scale*), message acceptance (i.e., personal relevance and perceived credibility), and potential message effectiveness (i.e., motivation to talk to someone, motivation to quit, perceived effectiveness, and the *potential effectiveness scale*) and were coded as 1=extremely, 2=somewhat, and 3=not really. The following covariates were included alongside the three independent variables in each regression model: community of recruitment, sex, age, education, functional literacy, CPD, intentions to quit, HWL presentation order and health effect. SAS/Callable SUDAAN (Version 11.0) was used to estimate each multinomial regression model using the GEE procedure to account for correlations between observations. A significance level of $p < 0.01$ was used to control for multiple comparisons.

It was expected that gain framed messages, messages that included gruesome pictures, and testimonial messages would elicit greater affective responses, receive higher ratings of acceptance, and be perceived as potentially more effective. Interactions between the three message characteristics (2-way and 3-way) were also expected and were examined in separate models for each outcome, while adjusting for the same covariates. Results are summarized in Table 11 and presented as final models for each outcome in Appendix K. Below, results are discussed as they relate to each of the independent variables.

6.2.1 Textual Message Frame

Overall, textual message frame was significantly associated with ratings of uncomfortableness ($p < 0.001$), sadness ($p < 0.001$), fear ($p = 0.004$) and ratings on the *affective response scale* ($p = 0.006$), while the association between textual message frame and ratings of disgust was marginally significant ($p = 0.022$). However, textual message frame was not significantly associated with ratings of worry ($p = 0.171$), personal relevance ($p = 0.989$), credibility ($p = 0.210$), motivation to talk to someone about smoking ($p = 0.153$), motivation to quit smoking ($p = 0.814$), perceived message effectiveness ($p = 0.064$), or ratings on the *potential effectiveness scale* ($p = 0.188$). Significant results are discussed in more detail below.

Comparing Extremely vs. Not Really Categories

Loss-framed messages were <u>more likely</u> than gain-framed messages to be rated as *extremely* uncomfortable (OR = 1.73, 95% CI: 1.32-2.27), sad (OR = 1.66, 95% CI: 1.31-2.09), and fearful (OR = 1.34, 95% CI: 1.06-1.70) rather than *not really*. They were also <u>more likely</u> than gain-framed messages to be rated as *extremely* on the *affective response scale* rather than *not really* (OR = 1.71, 95% CI: 1.23-2.37). There was also marginally associated between textual message frame and ratings of disgust whereby loss-framed messages were <u>more likely</u> to be than gain-framed messages to be rated as *extremely* disgusting (OR = 1.75, 95% CI: 1.18-2.61); however, the relation was not significant at $p < 0.01$.

Comparing Somewhat vs. Not Really Categories

Similarly, loss-framed messages were <u>more likely</u> than gain-framed messages to be rated as *somewhat* uncomfortable (OR = 1.62, 95% CI: 1.18-2.22) and fearful (OR = 1.64, 95% CI: 1.20-2.24), but not sad (OR = 1.26, 95% CI: 0.92-1.71) rather than *not really*. They were also

more likely than gain-framed messages to be rated as *somewhat* on the *affective response scale* rather than *not really* (OR = 1.48, 95% CI: 1.06-2.07). Again, loss-framed messages were marginally associated with higher ratings of disgust (OR = 1.59, 95% CI: 1.08-2.36), but the relation was not significant at $p < 0.01$.

Comparing Extremely vs. Somewhat Categories

Loss-framed messages were no more likely than gain-framed messages to be rated as *extremely* uncomfortable (OR = 1.06, 95% CI: 0.79-1.45), sad (OR = 1.32, 95% CI: 0.96-1.82), fearful (OR = 0.82, 95% CI: 0.54-1.23), or disgusting (OR = 1.09, 95% CI: 0.84-1.43) rather than *somewhat*. Not surprising then, loss-framed messages were also no more likely than gain-framed messages to be rated as *extremely* on the *affective response scale* (OR = 1.15, 95% CI: 0.81-1.64) rather than *somewhat*.

6.2.2   Graphic Type

Overall, graphic type was significantly associated with ratings for all of the outcome measures and the two *scales*. More specifically, graphic type was significantly associated with ratings of uncomfortableness ($p < 0.001$), disgust ($p < 0.001$), worry ($p < 0.001$), sadness ($p < 0.001$), fear ($p < 0.001$), personal relevance ($p < 0.001$), credibility ($p < 0.001$), motivation to talk to someone about smoking ($p < 0.001$), motivation to quit smoking ($p < 0.003$), perceived message effectiveness ($p < 0.001$), as well as ratings on the *affective response scale* ($p < 0.001$) and the *potential effectiveness scale* ($p < 0.001$). These results are discussed in more detail below.

Comparing Extremely vs. Not Really Categories

Messages with gruesome pictures were <u>more likely</u> than those with pictures of personal suffering to be rated as *extremely* uncomfortable (OR = 2.86, 95% CI: 2.03-4.02), disgusting (OR = 4.47, 95% CI: 3.05-6.56), worrisome (OR = 3.39, 95% CI: 2.08-5.51), sad (OR = 2.29, 95% CI: 1.73-3.02), and fearful (OR = 2.29, 95% CI: 1.71-3.07) rather than *not really*. They were also <u>more likely</u> than messages with pictures of personal suffering to be rated as *extremely* on the *affective response scale* rather than *not really* (OR = 3.40, 95% CI: 2.27-5.08). Furthermore, messages with gruesome pictures were <u>more likely</u> than those with pictures of personal suffering to be rated as *extremely* relevant (OR = 2.23, 95% CI: 1.56-3.20) and credible (OR=2.46, 95% CI: 1.67-3.62) rather than *not really*.

As for measures of potential effectiveness, messages with gruesome pictures were also <u>more likely</u> than those with pictures of personal suffering to be rated as *extremely* in terms of motivating one to talk to someone about smoking (OR = 1.70, 95% CI: 1.32-2.20), motivating one to quit smoking (OR = 2.03, 95% CI: 1.31-3.15) and for overall effectiveness (OR = 2.73, 95% CI: 1.91-3.91) rather than *not really*. They were also <u>more likely</u> than messages with pictures of personal suffering to be rated as *extremely* on the *potential effectiveness scale* rather than *not really* (OR = 2.56, 95% CI: 1.69-3.86).

Comparing Somewhat vs. Not Really Categories

Although not quite as large, the effects of graphic type when comparing the *somewhat* vs. *not really* categories were similar to those observed when comparing the *extremely* vs. *not really* categories. Messages with gruesome pictures were <u>more likely</u> than those with pictures of human suffering to be rated as *somewhat* uncomfortable (OR = 1.62, 95% CI: 1.12-2.35), disgusting (OR = 2.90, 95% CI: 1.85-4.54), worrisome (OR = 2.42, 95% CI: 1.42-4.11), sad (OR = 1.66,

95% CI: 1.21-2.28), and fearful (OR = 1.76, 95% CI: 1.24-2.49) rather than *not really*. They were also <u>more likely</u> than messages with pictures of personal suffering to be rated as *somewhat* on the *affective response scale* rather than *not really* (OR = 1.87, 95% CI: 1.31-2.67). Again, similar to the comparisons with the *extremely* category, messages with gruesome pictures were <u>more likely</u> than those with pictures of personal suffering to be rated as *somewhat* relevant (OR = 1.98, 95% CI: 1.32-2.95) and credible (OR = 1.85, 95% CI: 1.19-2.89) rather than *not really*.

As for measures of potential effectiveness, messages with gruesome pictures were <u>more likely</u> than those with pictures of personal suffering to be rated as *somewhat* in terms of overall effectiveness (OR = 1.96, 95% CI: 1.33-2.88) and on the *potential effectiveness scale* (OR = 1.64, 95% CI: 1.13-2.38), but were <u>no more likely</u> to be rated as *somewhat* in terms of motivating one to talk to someone about smoking (OR = 1.31, 95% CI: 0.99 – 1.74) or motivating one to quit smoking (OR = 1.45, 95% CI: 0.91-2.31) rather than *not really*.

Comparing Extremely vs. Somewhat Categories

Consistent with findings from the previous two comparisons, messages with gruesome pictures were <u>more likely</u> than those with pictures of personal suffering to be rated as *extremely* uncomfortable (OR = 1.75, 95% CI: 1.20-2.56), disgusting (OR = 1.55, 95% CI: 1.07-2.24), worrisome (OR = 1.40, 95% CI: 1.01-1.95), motivating in terms of making one want to quit smoking (OR = 1.40, 95% CI: 1.03-1.91), and effective (OR = 1.40, 95% CI: 1.07-1.85) rather than *somewhat*. They were also <u>more likely</u> than messages with pictures of personal suffering to be rated as *extremely* on the *affective response scale* (OR = 1.82, 95% CI: 1.22-2.70) and the *potential effectiveness scale* (OR = 1.56, 95% CI: 1.16-2.13) rather than *somewhat*.

However, inconsistent with findings from the previous two comparisons, messages with gruesome pictures were <u>no more likely</u> than those with pictures of personal suffering to be rated

as *extremely* sad (OR = 1.37, 95% CI: 0.99-1.92), fearful (OR = 1.30, 95% CI: 0.90-1.89), personally relevant (OR = 1.13, 95% CI: 0.86-1.48), or credible (OR = 1.32, 95% CI: 0.97-1.82) rather than *somewhat*. They were also <u>no more likely</u> than those with pictures of personal suffering to be rated as *extremely* in terms of motivating one to talk to someone about smoking (OR = 1.30, 95% CI: 0.96-1.72) rather than *somewhat*.

6.2.3 Narrative Style

Overall, narrative style was not significantly associated with ratings for any of the outcome measures or the two *scales*. More specifically, narrative style was not significantly associated with ratings of uncomfortableness (p = 0.357), disgust (p = 0.227), worry (p = 0.245), sadness (p = 0.194), fear (p = 0.707), personal relevance (p = 0.892), credibility (p = 0.855), motivation to talk to someone about smoking (p = 0.356), motivation to quit smoking (p = 0.843), perceived message effectiveness (p = 0.884), or ratings on the *affective response scale* (p = 0.404) and *potential effectiveness scale* (p = 0.658). As such, these results are not discussed further, but can be found in Appendix K for reference.

6.2.4 Interactions between Message Characteristics

Interactions between independent variables (i.e., textual message frame x graphic type; textual message frame x narrative style; graphic type x narrative style; and, textual message frame x graphic type x narrative style) were generally non-significant when tested alongside covariates in separate models from those presented above (see Appendix L). Thus, for the most part, they were excluded from the final models. However, one interaction (i.e., textual message frame x narrative style) did emerge as significant when predicting worry (p = 0.006; see

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Appendix K: Table K-3). Pairwise contrasts were explored to determine whether the significant interaction was due to a difference in the magnitude of the textual message frame effect for didactic vs. testimonial narratives, or if the textual message frame effect changes direction for didactic vs. testimonial narratives. Results suggest that the significant effect existed whereby loss-framed messages with a didactic narrative were <u>more likely</u> than those with a testimonial narrative to be rated as *extremely* worrisome rather than *somewhat* (OR = 1.83, 95% CI: 1.16-2.88), but were <u>less likely</u> than those with a testimonial narrative to be rated as *somewhat* worrisome rather than *not really* (OR = 0.40, 95% CI: 0.19-0.84). There was no significant difference between didactic vs. testimonial narratives for gain-framed messages (see Appendix K: Table K-3).

6.2.5   Other Covariates

As previously stated, each of the multinomial regression models discussed above contained the following covariates: community of recruitment, sex, age, education, functional literacy, CPD, intentions to quit, HWL presentation order and health effect. Of these, sex, age and quit intentions were at least marginally associated with some of the health warning ratings at a significance level of $p < 0.01$. Below, these associations are discussed in more detail. See Appendix K for results from the final models.

Sex

There was some evidence to suggest the associations between sex and ratings of personal relevance ($p = 0.014$) and motivation to quit ($p = 0.017$) were at least marginally significant at $p < 0.01$. More specifically, females were <u>more likely</u> than males to rate health warnings as *extremely* personally relevant (OR = 5.15, 95% CI: 1.74-15.26) and motivating in terms of

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making one want to quit smoking (OR = 3.86, 95% CI: 1.33-11.22) rather than *not really*.

Females were also <u>more likely</u> than males to rate the health warnings as *somewhat* personally

relevant (OR = 3.66, 95% CI: 1.17-11.51) and motivating in terms of making one want to quit

smoking (OR = 4.85, 95% CI: 1.64-14.33) rather than *not really*. However, when the *extremely*

vs. somewhat categories were compared, sex was not significantly associated with either of the

outcome measures. Sex was not significantly associated with any of the other health warning

ratings.

Age

　　There was also some evidence to suggest the associations between age and ratings of was

worry (p = 0.007), fear (p = 0.016), affective response (p = 0.001), and personal relevance (p =

0.019) were at least marginally significant at p < 0.01. Specifically, participants 26-40 years of

age were <u>more likely</u> than those 18-25 years of age to rate health warnings as *extremely*

worrisome (OR = 7.87, 95% CI: 1.89-32.83) and fearful (OR = 1.20, 95% CI: 9.33) rather than

not really. Participants 26-40 years of age were also <u>more likely</u> than those 18-25 years of age to

rate health warnings as *extremely* worrisome (OR = 3.22, 95% CI: 1.31-7.91) rather than

somewhat. Meanwhile, participants of both older age groups were <u>more likely</u> than 18-25 year

olds to rate health warnings as *extremely* fearful (26-40 years: OR = 5.56, 95% CI: 2.04-14.29;

>40 years: OR = 3.03, 95% CI: 1.04-9.09) and *extremely* on the *affective response scale* (26-40

years: OR = 5.88, 95% CI: 2.78-12.50; >40 years: OR = 3.85, 95% CI: 1.64-9.09) rather than

somewhat.

　　As for ratings of personal relevance, participants aged 40 years and older were <u>more</u>

<u>likely</u> than those 18-25 years old to rate health warnings as *extremely* or *somewhat* relevant (OR

= 9.13, 95% CI: 2.18-38.33 and OR = 4.57, 95% CI: 1.00-20.91) rather than *not really*. Age was not significantly associated with any of the other health warning ratings.

Quit Intentions

Quit intentions appeared to be associated with ratings of worry (p = 0.002), motivation to quit smoking (p=0.004), and ratings on the *potential effectiveness scale* (p = 0.004). More specifically, those who were planning to quit smoking were <u>more likely</u> than those not planning to quit smoking to rate health warnings as *extremely* or *somewhat* worrisome (OR = 8.97, 95% CI: 2.61-30.80 and OR = 3.03, 95% CI: 1.01-9.14) rather than *not really.* When the *extremely* and *somewhat* categories were compared, those who were planning to quit were also <u>more likely</u> than those not planning to quit to rate health warnings as *extremely* worrisome (OR = 2.94, 95% CI: 1.30-6.67) rather than *somewhat*.

As for ratings of potential effectiveness, those who were planning to quit smoking were <u>more likely</u> than those not planning to quit smoking to rate health warnings as *extremely* motivating both in terms of wanting to quit smoking (OR = 6.45, 95% CI: 1.91-21.81) rather than *not really*. They were also <u>more likely</u> than those not planning to quit to rate health warnings as *extremely* or *somewhat* on the *potential effectiveness scale* rather than *not really* (OR = 5.89, 95% CI: 2.10-16.48 and OR = 2.39, 95% CI: 1.05-5.40, respectively). When the *extremely* and *somewhat* categories were compared, those who were planning to quit were <u>more likely</u> than those not planning to quit to rate health warnings as *extremely* motivating in terms of making one want to quit smoking (OR = 3.03, 95% CI: 1.33-6.91) rather than *somewhat*, but not as *extremely* on the *potential effectiveness scale*. Quit intentions were not significantly associated with any of the other health warning ratings.

Table 11. Summary of Main Results from Multinomial Regression using GEE

Independent variables	Uncomfortable	Disgust	Worry	Sad	Fear	Affective response scale	Personal relevance	Perceived credibility	Motivation to talk	Motivation to quit	Perceived effectiveness	Effectiveness scale
Textual message frame (loss vs. gain)	+	.	.	+	+	+	.	.	.	.	.	.
Graphic type (gruesome vs. personal suffering)	+	+	+	+	+	+	+	+	+	+	+	+
Narrative type (didactic vs. testimonial)	.	.	.	.	.	.	.	.	.	.	.	.
Textual message frame x graphic type	.	.	.	.	.	.	.	.	.	.	.	.
Textual message frame x narrative type	.	.	*	.	.	.	.	.	.	.	.	.
Loss-framed (didactic vs. testimonial)			+/-									
Gain-framed (didactic vs. testimonial)			.									
Graphic type x narrative type	.	.	.	.	.	.	.	.	.	.	.	.
Textual message frame x graphic type x narrative type	.	.	.	.	.	.	.	.	.	.	.	.

+ = a significant positive association between independent variable and the outcome (p < 0.01)

- = a significant negative association between the independent variable and the outcome (p < 0.01)

∗ = a significant interaction was detected and explored further using pairwise contrasts (p < 0.01)

. = no evidence of a significant effect between the independent variable and the outcome (p > 0.01)

CHAPTER 7

HEALTH WARNING RATINGS: MEDIATIONAL RESULTS

The Baron and Kinney (1986) method was used to assess the extent to which fear mediated the effects of graphic type on each of the four categorical measures of potential effectiveness (i.e., motivation to talk to someone about the health effects of smoking, motivation to quit smoking, perceived effectiveness of the health warning and the *potential effectiveness scale*). First, a bivariate multinomial logistic regression model was tested to determine the effect graphic type had on the outcome; second, a separate bivariate linear regression model was tested to determine the effect graphic type had on evoked fear (continuous variable); and third, a multivariate multinomial logistic regression model was tested to determine the effect evoked fear (continuous variable) had on the outcome, controlling for graphic type. According to this method, if all three steps demonstrate significance then there is adequate evidence to suggest a mediational relation exists. The same steps were taken to examine the potential mediating role of fear on the effects of *textual message frame* for each of the four measures of potential effectiveness. The process was also repeated to examine the potential mediating role of affective response more generally using the *affective response scale*; however, the patterns of results were very similar to those produced when examining fear alone thus are not discussed but are presented in Appendices M and N. All models were conducted using GEE in SAS/Callable SUDAAN (Version 11.0) to account for repeated measurement. A summary of the results are presented in Table 12.

7.1 Graphic Type

7.1.1 Motivation to Talk to Someone

The relation between graphic type and motivation to talk to someone about the health effects of smoking was <u>partially mediated</u> by evoked fear, but only when comparing the *extremely* vs. *not really* categories. As Figures 2a illustrates, the standardized regression coefficients between graphic type and motivation to talk to someone decreased substantially when controlling for evoked fear. The other conditions of mediation were also met: (1) graphic type was a significant predictor of motivation to talk to someone; (2) graphic type was a significant predictor of evoked fear; and, (3) evoked fear was a significant predictor of motivation to talk to someone, when controlling for graphic type. However, when comparing the *somewhat* vs. *not really* categories, graphic type was not significantly associated with motivation to talk to someone but did appear to approach significance (see Figure 2b).

Figure 2a. Standardized regression coefficients for the relation between graphic type and motivation to talk to someone as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.
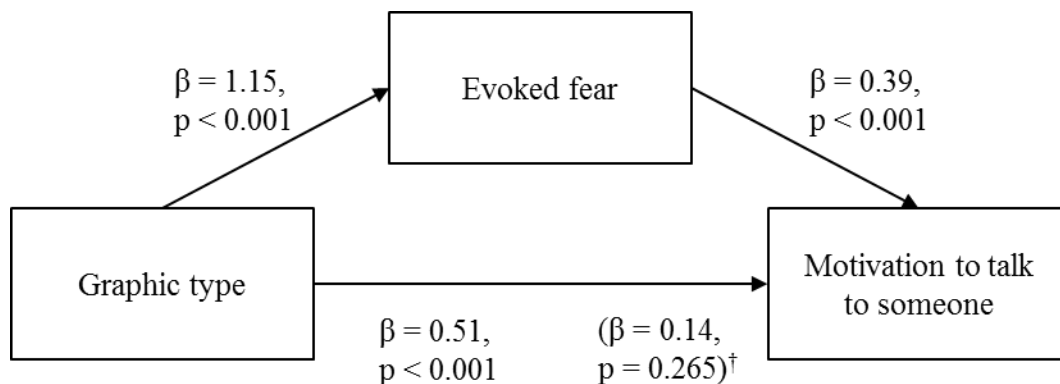
[†]The standardized regression coefficient between graphic type and motivation to talk to someone controlling for evoked fear is in parenthesis.

Figure 2b. Standardized regression coefficients for the relation between graphic type and motivation to talk to someone as mediated by evoked fear, when comparing the categories _Somewhat vs. Not really_.
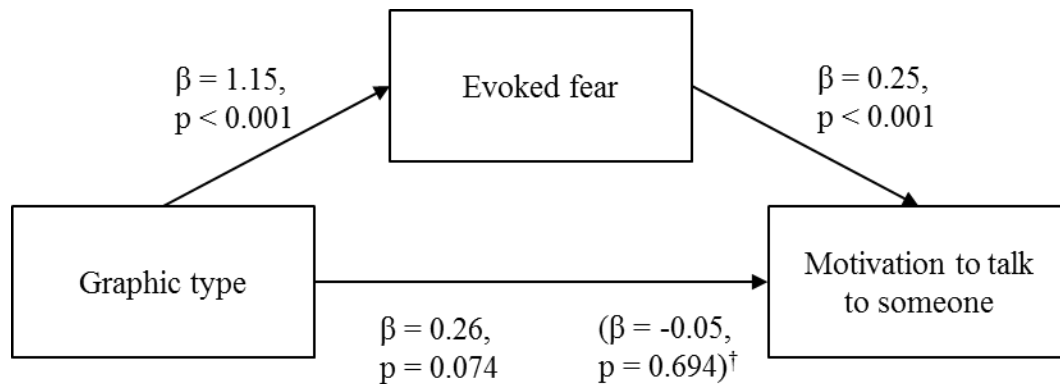
†The standardized regression coefficient between graphic type and motivation to talk to someone controlling for evoked fear is in parenthesis.

7.1.2 _Motivation to Quit Smoking_

The relation between graphic type and motivation to quit smoking was also partially mediated by evoked fear. As Figures 3a and 3b illustrate, the standardized regression coefficients between graphic type and motivation to quit decreased substantially when controlling for fear. The other conditions of mediation were also met: (1) graphic type was a significant predictor of motivation to quit; (2) graphic type was a significant predictor of evoked fear; and, (3) evoked fear was a significant predictor of motivation to quit, when controlling for graphic type.

Figure 3a. Standardized regression coefficients for the relation between graphic type and motivation to quit smoking as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.

$\dagger$The standardized regression coefficient between graphic type and motivation to quit smoking controlling for evoked fear is in parenthesis.

Figure 3b. Standardized regression coefficients for the relation between graphic type and motivation to quit smoking as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.
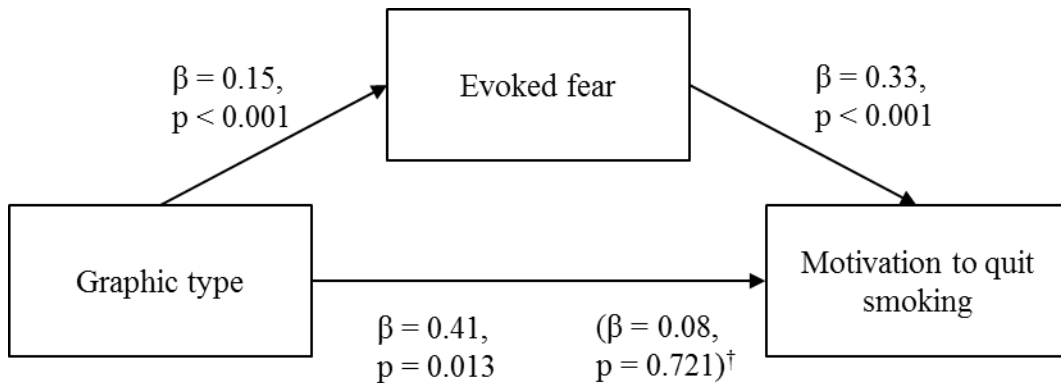
$\dagger$The standardized regression coefficient between graphic type and motivation to quit smoking controlling for evoked fear is in parenthesis.

7.1.3 *Perceived Effectiveness*

The relation between graphic type and perceived effectiveness was <u>not mediated</u> by evoked fear. Figures 4a and 4b illustrate that even though graphic type was a significant predictor of perceived effectiveness and evoked fear, and evoked fear was a significant predictor of perceived effectiveness, when controlling for graphic type, the standardized regression

coefficients between graphic type and perceived effectiveness actually increased when

comparing the *extremely vs. not really* categories and the *somewhat vs. not really* categories.

Figure 4a. Standardized regression coefficients for the relation between graphic type and perceived effectiveness as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.

$\beta = 0.15$, $p < 0.001$

$\beta = 0.44$, $p < 0.001$

Evoked fear

Graphic type

Perceived effectiveness

$\beta = 0.90$, $p < 0.001$ ($\beta = 1.11$, $p < 0.001$)[†]

[†]The standardized regression coefficient between graphic type and perceived effectiveness controlling for evoked fear is in parenthesis.

Figure 4b. Standardized regression coefficients for the relation between graphic type and perceived effectiveness as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.

$\beta = 0.15$, $p < 0.001$

$\beta = 0.38$, $p < 0.001$

Evoked fear

Graphic type

Perceived effectiveness

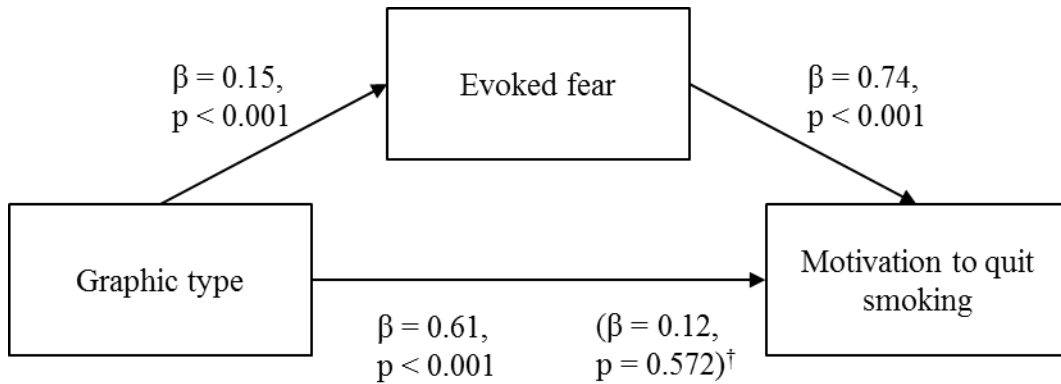$\beta = 0.62$, $p < 0.001$ ($\beta = 1.02$, $p < 0.001$)[†]
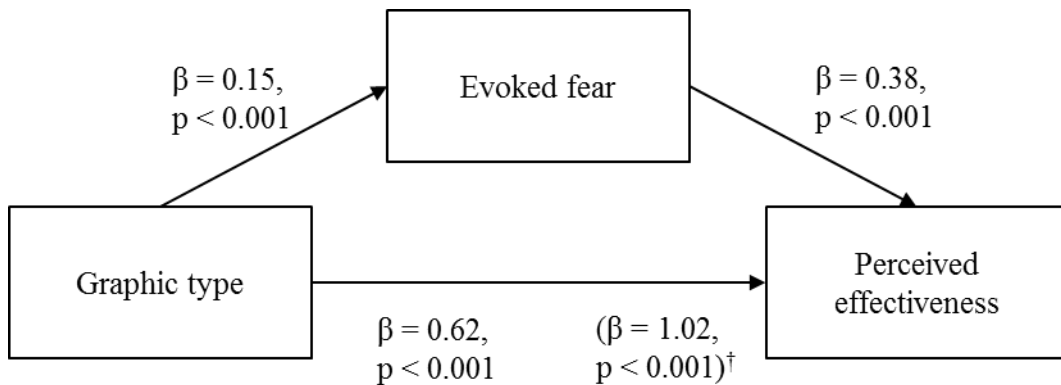
[†]The standardized regression coefficient between graphic type and perceived effectiveness controlling for evoked fear is in parenthesis.

7.1.4   Potential Effectiveness Scale

However, the relation between graphic type and the *potential effectiveness scale* was

partially mediated by evoked fear. As Figures 5a and 5b illustrate, the standardized regression

coefficients between graphic type and the *potential effectiveness scale* decreased substantially

when controlling for evoked fear. The other conditions of mediation were also met: (1) graphic

type was a significant predictor of ratings on the *scale*; (2) graphic type was a significant

predictor of evoked fear; and, (3) evoked fear was a significant predictor of ratings on the *scale*,

when controlling for graphic type.

Figure 5a. Standardized regression coefficients for the relation between graphic type and the *effectiveness scale* as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.
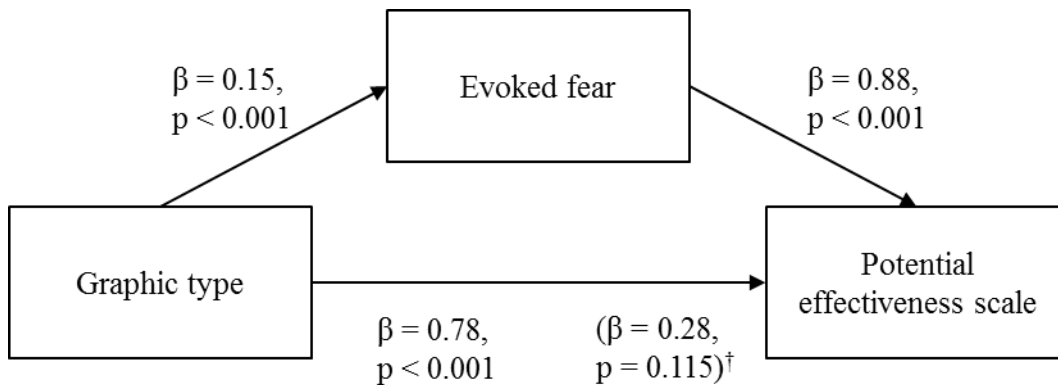
†The standardized regression coefficient between graphic type and the *effectiveness scale* controlling for evoked fear is in parenthesis.

Figure 5b. Standardized regression coefficients for the relation between graphic type and the *effectiveness scale* as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.

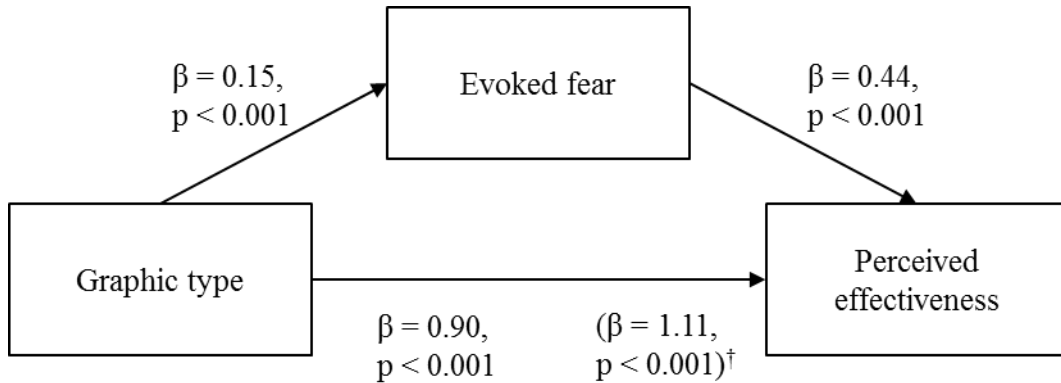†The standardized regression coefficient between graphic type and the *effectiveness scale* controlling for evoked fear is in parenthesis.

7.2 Textual Message Frame

7.2.1 *Motivation to Talk to Someone*

The relation between textual message frame and motivation to talk to someone about the health effects of smoking was <u>partially mediated</u> by evoked fear, but only when comparing the *extremely* vs. *not really* categories. As Figures 6a illustrates, the standardized regression coefficients between textual message frame and motivation to talk to someone decreased when controlling for evoked fear. The other conditions of mediation were also met: (1) message frame was a significant predictor of motivation to talk to someone; (2) message frame was a significant predictor of evoked fear; and, (3) evoked fear was a significant predictor of motivation to talk to someone, when controlling for message frame. However, when comparing the *somewhat* vs. *not really* categories, message frame was not significantly associated with motivation to talk to someone (see Figure 6b).

Figure 6a. Standardized regression coefficients for the relation between textual message frame and motivation to talk to someone as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.

$\beta = 0.45$, $p < 0.001$ Evoked fear $\beta = 0.40$, $p < 0.001$

Message frame   Motivation to talk to someone

$\beta = 0.18$, $p = 0.050$ $(\beta = 0.03$, $p = 0.769)^{\dagger}$
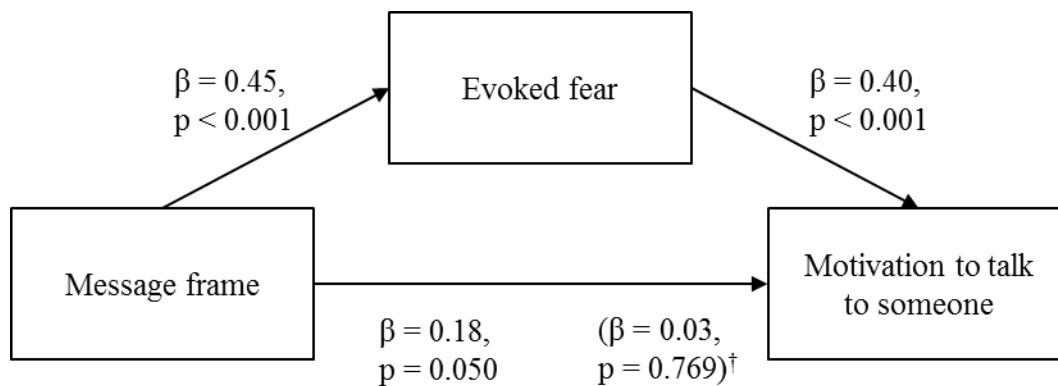
[†]The standardized regression coefficient between textual message frame and motivation to talk to someone controlling for evoked fear is in parenthesis.

Figure 6b. Standardized regression coefficients for the relation between textual message frame and motivation to talk to someone as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.
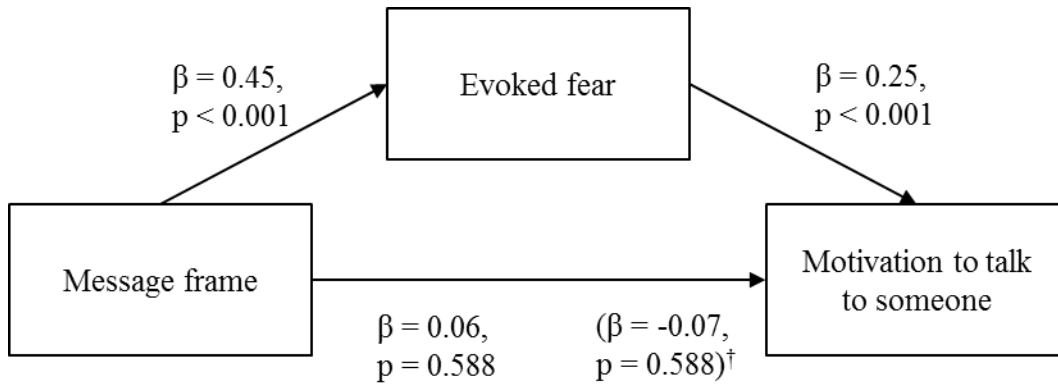
†The standardized regression coefficient between textual message frame and motivation to talk to someone controlling for evoked fear is in parenthesis.

7.2.2   *Motivation to Quit Smoking*

The relation between textual message frame and motivation to quit smoking was also partially mediated by evoked fear, but only when comparing the *extremely* vs. *not really* categories. As Figures 7a illustrates, the standardized regression coefficien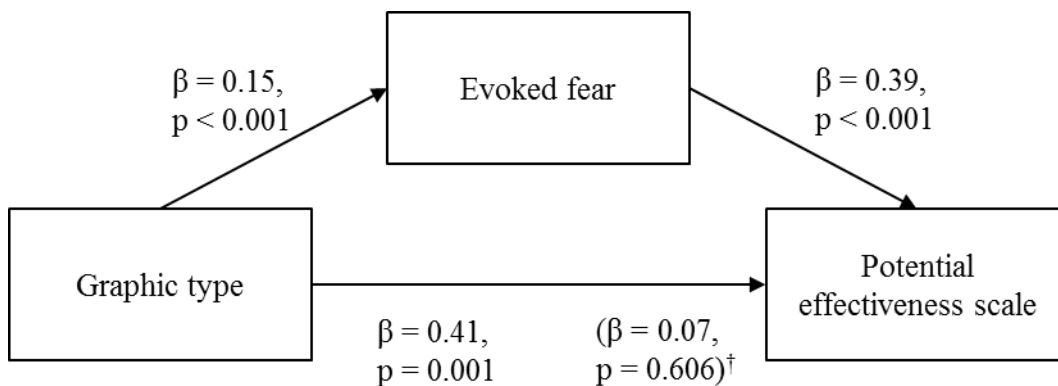ts between textual message frame and motivation to quit decreased when controlling for evoked fear. The other conditions of mediation were also met: (1) message frame was a significant predictor of motivation to quit; (2) message frame was a significant predictor of evoked fear; and, (3) evoked fear was a significant predictor of motivation to quit, when controlling for message frame. However, when comparing the *somewhat* vs. *not really* categories, textual message frame was not significantly associated with motivation to quit smoking (see Figure 7b).

Figure 7a. Standardized regression coefficients for the relation between textual message frame and motivation to quit smoking as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.

†The standardized regression coefficient between textual message frame and motivation to quit smoking controlling for evoked fear is in parenthesis.

Figure 7b. Standardized regression coefficients for the relation between textual message frame and motivation to quit smoking as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.
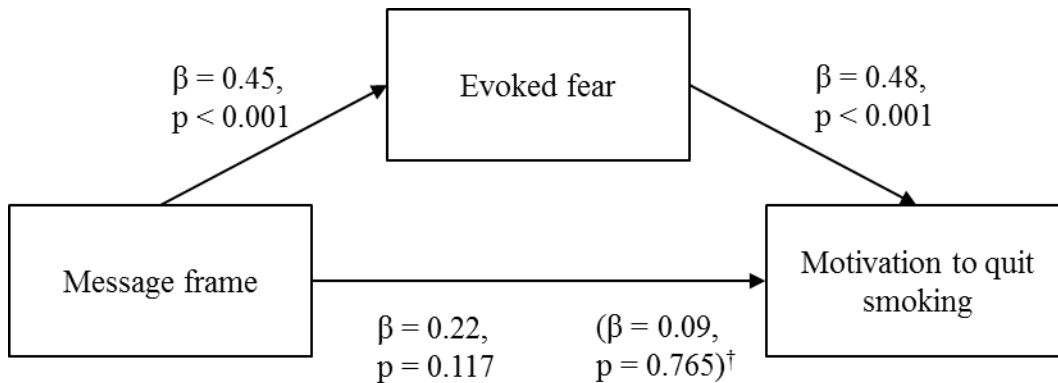
†The standardized regression coefficient between textual message frame and motivation to quit smoking controlling for evoked fear is in parenthesis.

7.2.3   Perceived Effectiveness

Similarly, the relation between textual message frame and perceived effectiveness was

partially mediated by evoked fear, but only when comparing the *extremely* vs. *not really*

categories. As Figures 8a illustrates, the standardized regression coefficients between textual

message frame and perceived effectiveness decreased when controlling for evoked fear. The

other conditions of mediation were also met: (1) message frame was a significant predictor of

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perceived effectiveness; (2) message frame was a significant predictor of evoked fear; and, (3) evoked fear was a significant predictor of perceived effectiveness, when controlling for message frame. However, when comparing the *somewhat* vs. *not really* categories, textual message frame was not significantly associated with perceived effectiveness (see Figure 8b).

Figure 8a. Standardized regression coefficients for the relation between textual message frame and perceived effectiveness as mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.

[†]The standardized regression coefficient between textual message frame and perceived effectiveness controlling for evoked fear is in parenthesis.

Figure 8b. Standardized regression coefficients for the relation between textual message frame and perceived effectiveness as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.
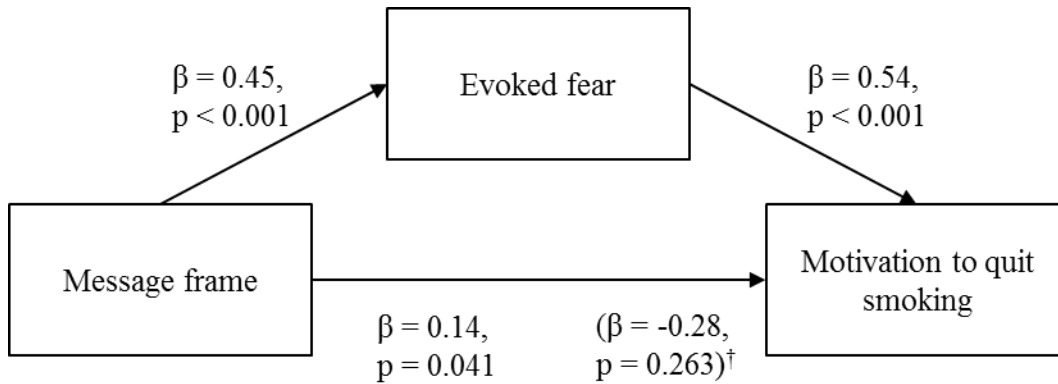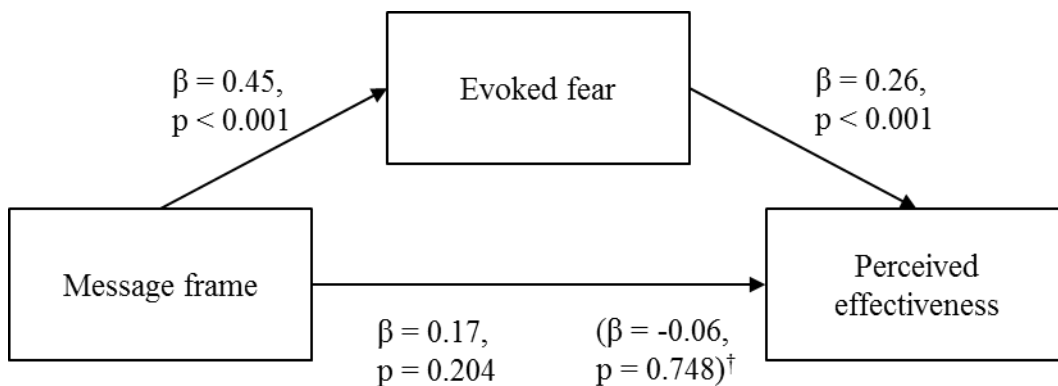

[†]The standardized regression coefficient between textual message frame and perceived effectiveness controlling for evoked fear is in parenthesis.

7.3.4 Potential Effectiveness Scale

The relation between textual message frame and the *potential effectiveness scale* was partially mediated by evoked fear, but only when comparing the *extremely* vs. *not really* categories. As Figures 9a illustrates, the standardized regression coefficients between textual message frame and the *potential effectiveness scale* decreased when controlling for evoked fear. The other conditions of mediation were also met: (1) message frame was a significant predictor of ratings on the *scale*; (2) message frame was a significant predictor of evoked fear; and, (3) evoked fear was a significant predictor of ratings on the *scale*, when controlling for message frame. However, when comparing the *somewhat* vs. *not really* categories, textual message frame was not significantly associated with ratings on the *scale* (see Figure 9b).

Figure 9a. Standardized regression coefficients for the relation between textual message frame and the *effectiveness scale* was mediated by evoked fear, when comparing the categories *Extremely vs. Not really*.
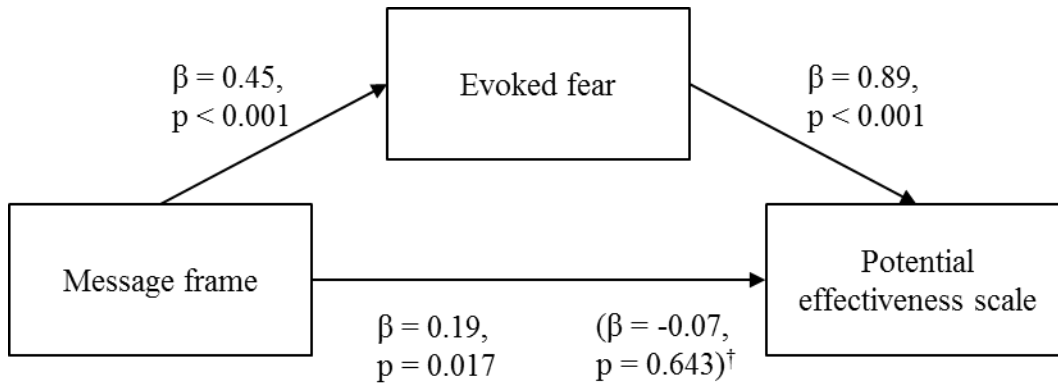
[†]The standardized regression coefficient between textual message frame and the *effectiveness scale* controlling for evoked fear is in parenthesis.

Figure 9b. Standardized regression coefficients for the relation between textual message frame and the *effectiveness scale* as mediated by evoked fear, when comparing the categories *Somewhat vs. Not really*.
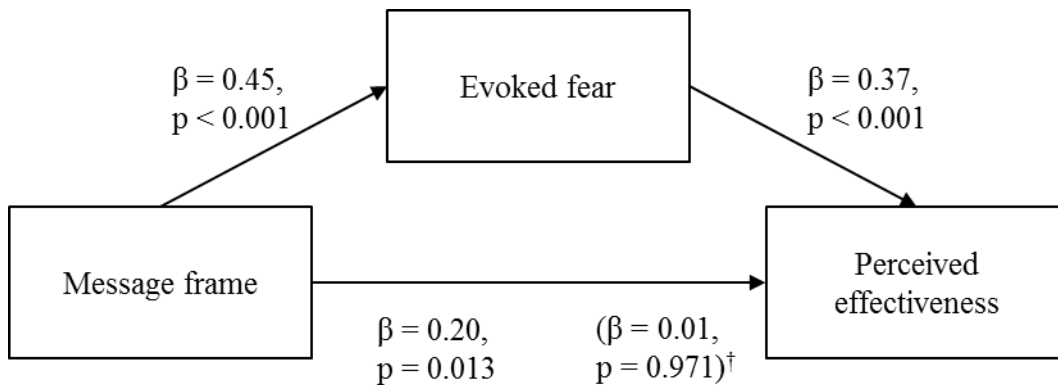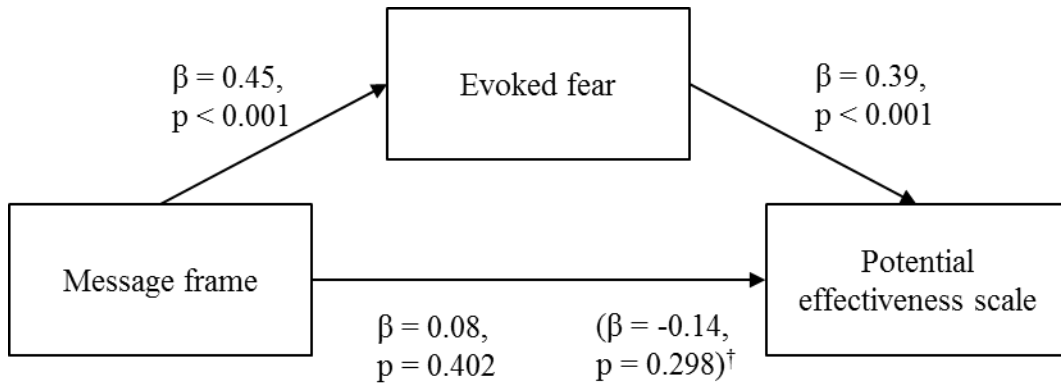

†The standardized regression coefficient between textual message frame and the *effectiveness scale* controlling for evoked fear is in parenthesis.

Table 12. Summary of the Mediational Effects

Independent variables	Fear				Affective response scale			
	Motivation to talk	Motivation to quit	Perceived effectiveness	Effectiveness scale	Motivation to talk	Motivation to quit	Perceived effectiveness	Effectiveness scale
Graphic type								
Extremely vs. not really	+	+	.	+	+	+	.	+
Somewhat vs. not really	.	+	.	+	.	+	.	+
Textual message frame								
Extremely vs. not really	+	+	+	+	+	.	.	+
Somewhat vs. not really	.	.	.	.	.	.	.	.

+ indicates there is evidence that fear mediates the relation between the independent variable and the outcome
. indicates there is no evidence that fear mediates the association between the independent variable and the outcome

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CHAPTER 8

HEALTH WARNING RANKINGS: DESCRIPTIVE RESULTS

Frequencies of health warning choice as it related to each spokesperson are presented in Table 13. Results from the ranking tasks indicated participants tended to choose health warnings with spokespersons representing Inuit Elders as most personally relevant and most credible (44.2% and 35.9%, respectively) compared to all other options. Notably, only 13.2% found all of the health warnings to be personally relevant, while almost a quarter found all of them to be credible. When asked which health warning makes them want to quit smoking the most, the choice was split relatively evenly between health warnings accompanied by a Caucasian middle-aged spokesperson, an Inuit middle-aged spokesperson and an Inuit Elder; meanwhile 17.3% said all of the health warnings made them want to quit smoking. Health warning choice did not differ significantly between males and females on any of the three measures suggesting females rated health warnings with female spokespersons similar to how males rated health warnings with male spokespersons. When comparing only those who chose a health warning with a specific spokesperson, there was also no significant difference in health warning choice between males and females for any of the three measures (results not shown).

Table 13. Frequencies for Ranking Task of Spokesperson Preference

	Females (n=73)		Males (n=56)		Overall (n=129)		Chi-square
	n	**%**	**n**	**%**	**n**	**%**	**p-value[†]**
Most personally relevant							
Inuit Elder spokesperson	32	43.8	24	42.9	57	44.2	0.814
Caucasian middle-aged spokesperson	17	23.3	18	32.1	35	27.1	
Inuit middle-aged spokesperson	11	15.1	6	10.7	17	13.2	
All of them	10	13.7	7	12.5	17	13.2	
None of them	2	2.7	1	1.8	3	2.3	
Missing	0		0		0		
Most credible							
Inuit Elder spokesperson	24	33.3	22	39.3	46	35.9	0.266
Caucasian middle-aged spokesperson	12	16.7	16	28.6	28	21.9	
Inuit middle-aged spokesperson	15	20.8	8	14.3	21	16.4	
All of them	20	27.8	11	19.6	31	24.2	
None of them	1	1.4	1	1.8	2	1.6	
Missing	1		0		1		
Makes you to want to quit smoking the most							
Inuit Elder spokesperson	22	30.1	14	25.9	36	28.3	0.241
Caucasian middle-aged spokesperson	15	20.5	21	38.9	36	28.3	
Inuit middle-aged spokesperson	19	26.0	10	18.5	29	22.8	
All of them	14	19.2	8	14.8	22	17.3	
None of them	3	4.1	1	1.9	4	3.1	
Missing	0		2		2		

[†]P-value corresponds to the Chi-square test comparing the difference in option choice between males and females

CHAPTER 9

DISCUSSION

This study was the first of its kind to examine the potential effectiveness of health communication messages, in the context of health warnings on tobacco products, among Inuit. It was also the first of its kind to systematically examine the message characteristics that may enhance their effectiveness among this population. Overall, findings from this study suggest: (1) health warnings with gruesome images were more efficacious among Inuit than those with images of personal suffering, and fear partially mediated the relation; (2) gain-framed messages were no more efficacious at promoting smoking cessation among Inuit than loss-framed messages; however, fear may have played a mediating role enhancing the efficacy of loss-framed messages; (3) personal testimonies were no more efficacious among Inuit than didactic messages, nor were they more likely to be perceived as more personally relevant, credible, or emotionally arousing; (4) messages that included Inuit Elders as spokespersons tended to be perceived as more personally relevant and more credible, but no more effective than other middle-aged Caucasian or Inuit spokespersons; and, (5) meaningful exposure among Inuit to current health warning labels on tobacco products may be enhanced by the use of graphic imagery. Each finding is discussed in more detail in the following sections.

9.1 Effects of Graphic Type on Potential Message Effectiveness

Messages with gruesome images were more likely to be rated as more motivating in terms of making one want to talk to someone about the health effects of smoking, making one want to quit smoking, and as more effective compared to messages with images of human suffering. These findings are consistent with what was hypothesized [Hypotheses 2a (iii) – (v)]

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and with findings previously reported in the literature (Hammond, 2011; Hammond, et al., 2012; Thrasher, et al., 2012a; Thrasher, et al., 2012b). Messages with gruesome images were also more likely to be rated as more personally relevant, more credible, and more emotionally arousing, including more uncomfortable, disgusting, worrisome, sad, and fearful, supporting Hypotheses 2a (i) and (ii). Many participants also recalled health warnings on tobacco products that tended to be more gruesome in nature (e.g., tongue cancer, mouth disease, etc.) and were described as gross or disgusting; consistent with findings from studies conducted among general populations (Hammond, et al., 2011). Furthermore, fear (and negative affect more generally) appeared to partially mediate the relation between graphic type and indicators of potential message effectiveness; providing support for Hypothesis 2c and consistent with findings from Kees and colleagues (2010). Together, these findings suggest health messages accompanied by gruesome images may be effective at communicating tobacco-related health risk and promoting cessation among Inuit by eliciting greater feelings of fear in the receiver.

As some researchers have suggested (Fong, et al., 2009; Hammond, et al., 2012; Thrasher, et al., 2010), graphic depictions of the negative health effects of smoking that accompany text messages on tobacco product warning labels may help to overcome barriers presented by low literacy rates among disadvantaged segments of the population. In fact, functional literacy was measured in this study and did not emerge as a significant predictor for ratings of emotional response, message acceptance or potential message effectiveness which possibly supports the notion that pictorial health warnings (as used in this study) may help overcome literacy barriers. However, the extent to which health warnings accompanied by gruesome pictures rather than pictures of personal suffering are more beneficial among those with lower literacy was not examined and may be worth exploring with further analyses.

9.2 Effects of Textual Message Frame on Potential Message Effectiveness

Gain-framed messages were no more likely to be rated as more motivating in terms of making one want to talk to someone about the health effects of smoking, making one want to quit smoking, or as more effective compared to loss-framed messages. These findings are contrary to what was hypothesized [Hypotheses 1a (iii) – (v)] and to findings previously reported in the literature (Schneider, et al., 2001a; Steward, et al., 2003). Specifically, Steward and colleagues (2003) found gain-framed messages were associated with greater intentions to quit among smokers, while Schneider and colleagues (2001a) found gain-framed messages were associated with greater reductions in smoking behaviour when compared to loss-framed messages. However, in both cases the health messages were not accompanied by a picture, which was the case in this study. In fact, Verlhiac and colleagues (2011) found that when a picture of a negative health outcome was included alongside a gain-framed or loss-framed message, the effect of textual message frame was eliminated. Since each health message tested in this study was accompanied by a picture portraying a negative health outcome (either a gruesome image of diseased organs or an image of personal suffering), this may explain why no significant effect of textual message frame was found. Furthermore, findings from Goodall and Appiah (2008) suggest that when the picture content is congruent with the message frame, loss-framed messages accompanied by negative images are perceived as more favourable and more effective than gain-framed messages (e.g., gain-framed message accompanied by a positive image, like healthy gums). Together these findings suggest the inclusion of a picture portraying the negative effects of smoking may override any effect of textual message frame. However, another explanation of these null effects are worth noting: some researchers suggest gain-framed messages may be more effective among those not intending to quit since they are novel, while loss-framed messages

may work better among those who are intending to quit who want to be reminded of the negative health effects (Cornacchione & Smith, 2012; Moorman & van den Putte, 2008; Wong & McMurray, 2002). Future analyses could examine how quit intentions may moderate the relation between textual message frame and ratings of message efficacy to test whether this may explain the null findings in this study.

Gain-framed messages were also no more likely to be rated as personally relevant or credible (i.e., indicators of message acceptance) compared to loss-framed messages. These findings are contrary to what was hypothesized [Hypothesis 1a (i)] and to findings reported by Schneider and colleagues (2001a) who found gain-framed messages positively influenced message acceptance among young adults. However, as noted earlier any effect of textual message frame on message acceptance may have been negated by the fact that gain-framed messages used in this study were accompanied by pictures of the negative health effects of smoking. Furthermore, it is possible that personal relevance may moderate the relation between textual message frame and ratings of message efficacy whereby those who perceive the message as more personally relevant may rate gain-framed messages as more efficacious (Hoffner & Ye, 2009). This hypothesis could be explored with further analyses of this data or in future studies.

However, loss-framed messages were rated as more emotionally arousing, including more uncomfortable, disgusting, sad and frightening compared to gain-framed messages; consistent with Hypothesis 1a (ii), research on fear appeals (Witte, 1992; 1994; Witte & Allen, 2000) and findings previously reported in literature on smoking cessation (Verlhiac, et al., 2011) and in other health prevention behaviours (e.g., seat belt use: Millar & Millar, 2000; salt consumption: Van't Riet, et al., 2010a). Furthermore, fear (and negative affect more generally) appeared to partially mediate the relation between textual message frame and indicators of potential message

effectiveness; providing evidence in support of Hypothesis 1b and suggesting loss-framed messages work by eliciting greater feelings of fear. Thus, these findings provide support for the use of fear appeals when communicating tobacco-related health risk and promoting cessation among Inuit; however, are at odds with the predisposition of health professionals in Nunavut who tend to believe Inuit are inundated with negative messages and more positive messaging would be better received.

9.3 Effects of Narrative Style on Potential Message Effectiveness

Testimonial messages were also no more likely than didactic messages to be rated as more motivating in terms of making one want to talk to someone, making one want to quit smoking, or perceived as more effective. These findings are contrary to what was hypothesized [Hypotheses 3a (iii) – (v)] and to findings previously reported in the literature (Durkin, et al., 2009; Hammond, et al., 2012; Opinion/NRG Research Group, 2006). Specifically, Hammond and colleagues (2012) found warning labels with personal testimonies and images of personal suffering were rated as more effective than didactic versions of the same warning labels. Findings from a qualitative study on tobacco warning labels further support this notion since messages depicting personal stories of real people were viewed more positively and believed to be more powerful (Opinion/NRG Research Group, 2006). Durkin and colleagues (2009) also provide evidence in support of personal testimonies in the context of television ads. However, findings from Thrasher et al. (2012) suggest educational attainment may moderate the effect of narrative style on perceived message effectiveness. Specifically, their findings suggest didactic messages may be more effective among those with higher educational attainment, but that there is little difference between testimonial and didactic forms of messages among those of lower

educational attainment. Perhaps then it is not surprising the effect of narrative style was non-significant in this study, especially since the level of educational attainment for this study sample was relatively low (compared to the other study samples) and great care was taken to ensure readability was accessible to those of low literacy for both narrative styles. However, further analyses could explore the role of education in moderating the relation between narrative style and ratings of message efficacy. Together, these findings would suggest that among Inuit populations either testimonial or didactic messages may work providing they are written in clear and simple language that is accessible to those with lower education and who often speak English as a second language.

Testimonial messages were also no more likely to be rated as more personally relevant, credible, or emotionally arousing compared to didactic messages, contrary to what was hypothesized [Hypothesis 3a (i) and (ii)]. Although it is still conceivable that Inuit may find testimonial messages from Elders more personally relevant, credible, and emotionally arousing given the history of oral storytelling in the culture (McShane, et al., 2006), this was not explicitly tested using an experimental design in this study. Instead, Caucasian spokespersons were used. This was to ensure the health warnings tested in the study closely resembled current tobacco product labeling practices where, typically, middle-aged Caucasian spokespersons appear alongside health messages. Thus, these findings suggest when a middle-aged Caucasian spokesperson appears alongside a health message, there appears to be little effect of narrative type. However, if an Inuit spokesperson was to accompany the message, it is still conceivable that testimonial messages may be perceived as more personally relevant, credible, emotionally relevant, and perhaps, even more effective than didactic messages given the perceived

similarities between the message receiver and the spokesperson (Kreuter, et al., 2007). Future research may wish to examine this association.

There was, however, evidence of a significant interaction between textual message frame and narrative, however, not in the same direction as was hypothesized in Hypothesis 3b. Specifically, loss-framed/testimonial messages were more likely than loss-framed/didactic messages to be rated as *somewhat* worrisome rather than *not really* but when the *extremely vs. somewhat* categories were compared, loss-framed/didactic messages were more likely than loss-framed/testimonial messages to be rated as *extremely* worrisome rather than *somewhat*. Unfortunately, the inconsistencies of these findings make them difficult to interpret and provide unclear evidence as to whether which combination may elicit stronger feelings of worry in the receiver. However, since this interaction was not significant for any other measure of emotional arousal, these finding should be interpreted with caution. There was no other evidence for significant interactions between the message characteristics providing no support for Hypothesis 3c (i.e., narrative type x graphic type) nor Hypothesis 3d (i.e., narrative type x graphic type x textual message frame).

9.4 Effects of Spokesperson Characteristics on Potential Messages Effectiveness

Among those who chose a health warning with a specific spokesperson, most tended to choose one with an Inuit Elder as most personally relevant and most credible, followed by one with a middle-aged Caucasian spokesperson and then one with a middle-aged Inuit spokesperson. This finding suggests, overall, testimonials from Inuit Elders may be perceived as more personally relevant and more credible among Inuit compared to other spokespersons, consistent with what was hypothesized [Hypothesis 4 (i)]. Given the role of Elders as teachers of

traditional knowledge within Inuit society including health knowledge (McShane, et al., 2006), it

is not that surprising their personal stories and advice would be well received among other

community members. Despite concerns that advice from Elders may not be as respected as it

once was, this finding provides some initial evidence that Elders may play an important role in

communicating tobacco-related health risk to their broader Inuit community. Thus, future

tobacco-related health communications may wish to engage Inuit Elders as spokespersons to

enhance their appeal by, perhaps, actively discussing the information found on current health

warnings with their community members.

However, when it came to choosing which health warning motivated participants to want

to quit smoking the most, relatively equal proportions chose each of the three health warnings;

contrary to what was hypothesized [Hypothesis 4 (ii)]. This finding suggests the use of a specific

spokesperson may have little effect on motivating an individual to want to quit smoking.

Although this may be the case, this finding may be more indicative of the fact health warnings

alone may not be enough to motivate one to want to quit smoking; other factors like having a

supportive environment may play a more significant role. These results, however, must be

interpreted with caution since the characteristics of the spokespersons were not manipulated

experimentally; meaning health warning choice could be explained by an unmeasured third

variable.

9.5 Meaningful Exposure to Current Health Warning Labels

Meaningful exposure to current health warning labels on tobacco products among Inuit

may be limited due to low levels of functional literacy of the English language and to high

proportions who indicated they did not read and/or avoided looking at them. Specifically,

participants appeared to have a difficult time understanding 'typical' tobacco health warning messages that were written entirely in English. Words and phrases such as "organ" and "premature death" were commonly misunderstood. This is concerning since many mainstream tobacco-related health communications use such words and phrases to describe the negative consequences of smoking. Translating English messages into Inuktitut, or other regional dialects, may help to prevent such misunderstandings. However, when great care is taken to ensure the readability of health warnings (as was the case in this study) and messages are accompanied by a picture (either gruesome images or images of personal suffering), functional literacy does not appear to be associated with ratings of message efficacy. Together, these findings draw attention to the need for simple, easy to understand language when communicating tobacco-related health risk accompanied by descriptive pictures, to ensure messages are accessible to the entire population, including those with lower education and lower literacy.

Furthermore, almost a third of participants said they never or rarely read health warning labels on cigarette packages, while almost half said they tried to avoid looking at them by covering them up or not buying packs with particular labels on them. Since there is no published evidence as of yet on the reactions of Canadian smokers toward new health warnings (i.e., those that began appearing on cigarette packages between March – June 2012), it is difficult to draw comparisons with the current findings. However, one might speculate that the rates of never/rarely reading health warnings may be higher among Inuit compared to the broader Canadian population since the health warnings appear only in English or French. Rates of avoidance, however, may be similar between both populations since more graphic warning labels may provoke one to cover up or avoid purchasing cigarettes packages with particular warning labels on them because they may find them disturbing. However, it is important to note that

avoidance of health warnings is not necessarily associated with undesirable smoking cessation outcomes. In fact, Hammond and colleagues (2004) found avoidance to be a good predictor of future quit attempts and cessation suggesting that avoiding health warnings may actually signify deeper cognitive processing (i.e., the warnings are bothering them enough to cover them up). Therefore, the fact that almost half of the sample indicated they avoided looking at health warnings on cigarette packages may be very encouraging.

9.6 Other Notable Findings

Although this study produced a number of novel findings, two others are worth highlighting in this dissertation. First, knowledge of smoking related health effects was high for lung cancer, throat cancer, and heart disease but comparably less so for tuberculosis and stomach cancer (i.e., the two health effects tested in this study). This suggests current efforts including population-level communications, such as health warnings on tobacco products, and Territory specific initiatives, such as the *Tobacco Has No Place Here* campaign, which emphasize the link between smoking cigarettes and lung cancer, throat cancer, and heart disease (among others) may be working to raise awareness among Inuit. However, it also suggests that future initiatives should help to raise awareness of other lesser known health effects, including tuberculosis which may be of particular relevance given the high prevalence among Inuit. Given that just over a third of participants indicated diabetes was caused by smoking (possibly representing a social desirability effect), it is worth noting that Inuit may benefit even further from improvements in knowledge of such effects. It is worth noting, however, that although knowledge of health effects was generally high among study participants, their perception of risk associated with developing lung cancer, stomach cancer, and tuberculosis was relatively low; although, comparable to other

populations in Canada and around the world (Costello, et al., 2012). Together, these findings suggest that despite recognizing the link between smoking and its negative health effects, the majority of smokers do not perceive themselves at "high risk" for developing lung cancer, for example, perhaps because they do not anticipate smoking for the long term (i.e., they underestimate their addiction and ability to quit). Therefore, although knowledge of health effects and perceptions of risk are central components in many health behaviour change theories (e.g., Health Belief Model, Theory of Planned Behavior, etc.) they are likely not enough to motivate and sustain smoking cessation. Thus, continued efforts to change beliefs, address nicotine dependence and provide supportive environments are necessary.

Second, there was evidence that Inuit exhibit some degree of reactance toward health warnings on cigarette packages. Specifically, over a third of participants agreed health warnings on cigarette packages make them angry because they tell them things they already know, while almost half agreed that they are just another way that the government tries to tell people what to do. Despite these beliefs, there is little evidence to suggest health warnings may be having a counter impact among Inuit since many also indicated health warnings make them think about quitting and want to quit. Instead, these beliefs may be more indicative of the fact many smokers do not like to be told what to do or how they should behave. Moreover, as the Extended Parallel Process Model (EPPM) posits, individuals may try to take control of their fear by engaging in reactance beliefs and behaviours if self-efficacy or response-efficacy are low. In this case, self-efficacy for quitting smoking appears to be low among Inuit with more than half of participants saying it would be very hard for them to quit smoking. Thus, efforts may be needed to enhance self-efficacy among Inuit, either by way of concurrent health communications or complementary

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initiatives, to ensure the effectiveness of health warnings is not undermined by reactance beliefs and behaviours.

9.7 Strengths and Limitations

This study had several strengths including the use of an experimental design to establish a cause-effect relation between message characteristics and response outcomes, as well as an automated experimental procedure that limited the potential of interviewer and data collection errors. Furthermore, this study was successful at engaging various stakeholders to address relevant practice-informed research questions, providing evidence to inform practice decisions for communicating tobacco health risk and promoting smoking cessation among Inuit populations. Despite these strengths, this study is also subject to some limitations related to its sample size and selection, measurement, and experimental stimuli. Each is discussed in more detail below.

9.7.1   *Sample Size and Selection*

Although almost 6-7% of the potentially eligible population was reached in this study,[4] the sample may have underpowered to detect small effects of experimental manipulations. A larger sample may have allowed for smaller differences between the experimental conditions to be detected. However, given that differences in key outcomes between conditions appear relatively small for those with non-significant results, it is likely that increasing the sample size may not have provided much of a benefit in this case. That said, an increase sample size may have provided greater power to detect significant interactions between the independent variables.

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[4] Total eligible population estimated at 2,128 (i.e., current smokers aged 18 years or older living in Iqaluit or Rankin Inlet; Aboriginal Peoples Survey, 2006).

Also, since participant recruitment was based in supermarkets, this may have biased the sample towards including a greater proportion of the population who tend to do the household shopping and/or are not working during the day, limiting the representativeness of the study sample. Although obtaining a pure representative sample was not an objective of this study, a good cross-section of the population was sought. In fact, this study was successful at recruiting almost equal proportions of males and females, with good representation of age groups. Word-of-mouth may have also driven potential participants to the recruitment locations (i.e., supermarkets) in both communities and some local press may have driven interested individuals to the supermarket in Iqaluit. This may have resulted in participants self-selecting to take part in the study and potentially biasing the sample toward those who were more interested in taking part in research and/or having stronger opinions about smoking. However, efforts to minimize self-selection bias were embedded within the recruitment protocol whereby every third person encountered was invited to participate in the study. Furthermore, given participants were randomly allocated to the experimental conditions, it is likely that self-selection had little impact on the differences observed between the experimental conditions. Finally, concerns with over representation of one segment of the population (i.e., the most socially disadvantaged) in Iqaluit led to a change in recruitment location to the Arctic College to capture a more representative cross-section of the population and limit further biasing the sample.

9.7.2 Response Rate Calculation

Although a standardized definition was used to calculate the response rate (i.e., AAPOR RR3), the estimated eligibility rate used as part of the denominator was higher than one might expect at 95.4%. It is possible some interviewers did not accurately record individuals who were

approached but declined to participate in the study because they did not smoke. This would artificially inflate the eligibility rate and potentially underestimate the response rate. However, if a more conservative eligibility rate were chosen then one would expect the response rate to be even higher.

9.7.3   Response Scales for Outcome Measures

Despite pre-testing the 1-10 response scale for the ten outcome measures used as part of the experimental procedure and introducing participants to proper use of the scale during the comprehension task (i.e., just prior to the experimental procedure), participants tended to choose the most extreme responses. This meant responses that were provided on the 10-point Likert scale were not normally distributed, violating a basic assumption of linear regression. As a result, all responses to outcome measures were collapsed into three categories. Collapsing continuous data into categorical data may place seemingly arbitrary divisions between categories; however, it was necessary since proceeding with linear regression with a violation of normality could have produced incorrect or misleading results. Furthermore, the proportional odds assumption of ordinal regression was also violated; therefore, multinomial logistic regression was used to generate separate coefficients for comparisons between each category of the outcomes. However, one disadvantage to using multinomial regression is that potentially important information about the inherent ordering of the responses is disregarded, thus, limiting the interpretability of the findings.

To cross-check the consistency of findings produced by multinomial regression and confirm their interpretation, both linear and ordinal regression were tested despite the violation of their respective assumptions. For the most part, the pattern of results produced by all three

approaches was very similar; however, the decision to proceed with multinomial regression ensured the most conservative results would be obtained. Although there was no reason to believe Inuit would use the 1-10 response scale any differently than other populations, conducting a more comprehensive pilot-test of the study and its measures prior to full study implementation may have uncovered this problem earlier. Future research should explicitly examine the use of such measurement scales with Inuit populations and possibly other disadvantaged populations prior to full-scale study implementation.

9.7.4   *Content of Experimental Stimuli*

The pictures that accompanied health messages as part of the experimental stimuli were all loss-framed (i.e., depicting the negative health effects of smoking). As noted earlier, this may have negated the potential effects of textual message frame due to the incongruencies between text-framing and picture-framing (i.e., if gain-framed messages were accompanied by a gain-framed picture, an effect in support of gain-framed messages may have been observed). However, given the experimental conditions under examination in this study, it proved to be very difficult (if not impossible) to come up with a gain-framed, gruesome image to satisfy this particular condition. Instead, loss-framed pictures were used in both the gain-framed and loss-framed conditions, which also tend to be more consistent with the current health warning label practices.

In addition, two relatively novel health effects were tested (i.e., tuberculosis and stomach cancer) so to control for (to some degree) previous exposure to or familiarity with the health warnings. Given that knowledge of both health effects (tested prior to the experimental procedure) was relatively low among this sample, we have some confidence that previous

exposure to or familiarity with these health warnings did not influence the results. Had more well-known health effects like lung cancer or cardiovascular disease been tested, we may not have observed the effects we did due to possible "wear-out" effects.

9.7.5   *Exposure to Experimental Stimuli*

Participants viewed each health warning on an iPad screen where they were directed to attend to each health warning and read it closely for as long as they wished. Health warnings remained on the screen as each of the 10 outcomes were measured, allowing participants to quickly reference the health warning when answering each question. Obviously, this procedure does not replicate the real-world, repeated exposures to health warnings on cigarette packages where one's attention may be more passively directed. This may have resulted in stronger initial reactions to the health warnings than otherwise might be observed in real-life. However, other similar studies have shown that results are generally consistent when health warnings were shown on a computer or shown on mocked up cigarette packages (Hammond, et al., 2012; Thrasher, et al., 2012a; Thrasher, et al., 2012b). Moreover, this study makes use of a similar methodology reported by Hammond and colleagues (2012) and is consistent with conventional methodology for evaluating the media campaign concepts and materials.

Also, it is possible that the comprehension task, whereby two health messages were presented prior to the health warnings rating task, may have primed participants to the textual message frame manipulation as part of the experimental procedure. However, reasonable efforts were taken to reduce the possibility that priming may have influenced the study results, that is, both a gain-framed and loss-framed message was tested and their presentation order was randomized.

9.7.6 Lack of Follow-up

Although this study used an experimental design to assess the causal relation between exposure to various types of health warnings and ratings of efficacy at the time of exposure, one can only speculate these effects may translate into longer-term attitudinal or behavioural changes. Future research may wish to include adequate follow up periods to assess how exposure to such health warnings may impact changes in attitudes, beliefs and/or behaviours.

9.8 Research Implications

Findings from this study contribute to an existing body of research suggesting tobacco-related health warnings accompanied by gruesome imagery may be more effective than those accompanied by images of personal suffering. Furthermore, this study adds to this current body of knowledge by providing insight into Inuit perceptions toward health warnings on tobacco products and the message elements that may be most effective at communicating health risk and potentially motivating cessation among this population. Findings from this study also begin to describe how various message characteristics work. Specifically, loss-framed messages and those with gruesome images appear to work by eliciting stronger feelings of fear (or negative affect more generally) from the message receiver. As previously noted, emotional arousal may be an important precursor to changes in attitudes and beliefs, as well as subsequent health behaviour.

Although outside the initial scope of this study, further analyses of this data could examine the possible moderating role of personal relevance, quit intentions, education and functional literacy on the relation between the warning label characteristics and indicators of potential message effectiveness. Specifically, ratings of personal relevance may moderate the relation between narrative style and ratings of message efficacy whereby those who perceive the

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message as more personally relevant may respond more positively to testimonial messages than those who perceive the message as less relevant. Education and functional literacy may also play important moderating roles as those with less education or lower functional literacy may respond more favourably to testimonial messages rather than didactic message. Furthermore, quit intentions may moderate the relation between textual message frame and indicators of potential message effectiveness whereby those with greater intentions to quit may respond more favourably to loss-framed messages, while those with no intentions to quit may respond more favourably to gain-framed messages. Each of these hypotheses could be explored further with the existing data and could provide further insight into which health warnings may work best among certain segments of this population.

Future studies on health warnings should continue to systematically examine the potential impact of various message characteristics, including spokesperson characteristics, reference of harm-to-self vs. harm-to-others, health vs. social effects, and long-term vs. short-term effects. Such research would provide even further evidence to inform the development of future health warnings and communications campaigns, not only in Nunavut but across Canada and around the world.

Future research should also continue to examine the potential impact health warnings and other mainstream communication strategies have among socially disadvantaged groups, including Aboriginal populations, low SES groups and immigrant groups, to ensure such population-level interventions are having the desired impacts. Investigation of the message characteristics that may be most appropriate to adapt for more targeted approaches is also necessary to ensure such health communication strategies are having an optimal impact among the populations most at need. Furthermore, comprehensive evaluations of the possible

synergistic effects of both mainstream and targeted health communication practices are also warranted.

9.9 Policy and Practice Implications

This study raises some concerns as to whether some disadvantaged populations, including Inuit, are truly exposed to tobacco product warning labels in a meaningful way. That is, many reported not reading health warnings, while others had difficultly reading 'typical' health messages that appear in English. Oftentimes, disadvantaged populations are the ones who could benefit from health warning messages the most. In this case, pictures that accompany text messages may play a particularly important role as they grab the receiver's attention and further describe the health information that is not easily understood from the text alone. In fact, messages with gruesome imagery appeared to be more efficacious at eliciting stronger emotional responses and perceptions of message effectiveness when compared to images of personal suffering. Therefore, future communication efforts in Nunavut, as well as national efforts, should consider using graphic imagery to portray the negative health effects of smoking. Such practices may help to reduce smoking disparities among Inuit and other disadvantaged populations.

When it comes to the message text, both loss- and gain-framed messages seem to work similarly well among Inuit, as do testimonial and didactic messages, when accompanied by an image portraying the negative health effects of smoking. Thus, future communication campaigns may wish to adopt either approach when designing messages and materials. Furthermore, this suggests that current tobacco product warning label practices that predominantly use loss-framed messages and a combination of testimonial and didactic messages are not further exacerbating disparities among Inuit. Targeting messages to include spokespersons that are more similar to the

target population (i.e., Inuit) may improve potential message effectiveness and should be subject to further research.

This study also provides some evidence to suggest Inuit attitudes toward and beliefs about smoking are not that different from those of the general population in Canada. Furthermore, the data suggests that like most Canadians many Inuit have tried to quit smoking and/or have plans to quit smoking in the future. As such, it is reasonable to believe that health communication and smoking cessation efforts that have worked with other Canadians are, at the very least, worth exploring among this population. However, efforts to target such approaches to meet the unique needs of the context and culture should not be overlooked. In fact, given that approximately 1 in 17 smokers in Canada are Aboriginal (Physicians for a Smoke-Free Canada, 2013), this alone justifies the need for targeted action at the Federal level to help reduce smoking among the Aboriginal population in Canada.

CHAPTER 10

CONCLUSIONS

Findings from this dissertation suggest health warnings accompanied by gruesome images are more effective at communicating tobacco-related health risks and motivating cessation among Inuit compared to those with images of personal suffering. The results provide some evidence that current communication strategies that use gruesome imagery, like some tobacco product health warnings in Canada, may be effective among Inuit populations. This finding is supported by the fact many participants recalled health warnings on tobacco products that they described as gross or disgusting. The use of graphic images may help to reduce communication inequalities across cultural/ethnic and socioeconomic subpopulations in Canada, including among Inuit, by enhancing meaningful exposure to tobacco-related health messages. However, when a spokesperson is used in a communication campaign, an Inuit Elder tends to be preferred. Together these findings suggest that an integrated communication strategy that includes complementary, targeted materials working synergistically alongside population-level approaches (like tobacco product warning labels) may work best among Inuit.

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APPENDICES

Appendix A. Information Letter

October 2012

You are being asked to participate in a study that is being conducted by staff from the Department of Health and Social Services at the Government of Nunavut and a student researcher from the University of Waterloo. The main purpose of this study is to understand how people respond to health messages related to tobacco use.

You are being asked to participant in an interview that should take about **1 hour**. We will begin by asking you some questions about tobacco use. Then we will show you some health messages and ask you some questions about how they make you feel.

Your participation in this study is completely voluntary. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by telling the interviewer you would like to stop. If you choose to stop, you will still receive a gift card in appreciation for your time. However, the amount will be pro-rated, so if you complete half of the interview, you will receive half of the dollar value of the gift card. All information you provide is considered confidential. Your responses will be combined with the responses from other participants and your name will not appear in any thesis or report resulting from this study. A unique identification code will be created to link your personal informational (name and telephone number) to your responses, however, your personal information and responses will be kept in separate files. This is done just in case we need to contact you to verify any of your responses and for no other reasons will your name or telephone number be linked to your responses. You may be re-contacted for a brief telephone interview at a later date to clarify any of your responses. Data collected during this study will be retained for **10 years** in a locked office at the University of Waterloo. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

If you have any questions about your participation, or would like additional information to assist you in reaching a decision, please feel free to contact me, Mary-Jean Costello at 1-519-789-4567 Ext. 36396, or Dianne Denton at (867) 975-5712.

This study is being conducted under the supervision of Dr. Paul McDonald from School of Public Health and Health Systems at the University of Waterloo. I would like to assure you that this study has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo and the Nunavut Research Institute. All work is consistent with the ethical guidelines outlined by the Qaujigiartiit/Arctic Health Research Network and the Tri-Council Policy Statement on research involving the First Nations, Inuit and Métis peoples of Canada. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

As a token of our thanks for participating in this study, we will be giving you a $50 gift card to spend at a local supermarket.

Yours sincerely,

Mary-Jean Costello, PhD Candidate
School of Public Health and Health Systems
University of Waterloo
(519) 884-4567 Ext. 36396
mjecoste@uwaterloo.ca

Dianne Denton, Tobacco Reduction Specialist
Health and Social Services Department,
Government of Nunavut
(867) 975-5712
DDenton@GOV.NU.CA

Appendix B. Final Interview Script

<table>
<tr><td colspan="3">

PROGRAMMER NOTES:

*Generate a unique participant ID
*Generate the time and date of the start of the survey
</td></tr>
<tr><td colspan="3">

PROGRAMMER NOTES:
*BEGIN PAGE 1…
</td></tr>
<tr><td colspan="3">

Hi, my name is _____[insert name] and I am working with the GN Health and Social Services Department and the University of Waterloo (in Ontario) on a research project. We are trying to find out what Inuit in Nunavut think about tobacco-related health messages, like those on cigarette packages. We are recruiting people to take part in an interview. It should take less than an hour. Would you be interested in learning more about how you could participate?

___Yes$_1$
___ No$_2$ → *"Ok. No problem. Thanks for your time."*
</td></tr>
<tr>
<td>000a</td><td>Eligible1</td>
<td>

Do you identify yourself as Inuit?

___Yes$_1$
___ No$_2$ → *"I'm sorry, at this time we are only interested in hearing from Inuit community members. But, thanks for your interest in the study."*
</td>
</tr>
<tr>
<td>000b</td><td>Eligible2</td>
<td>

Are you 18 years of age or older?

___Yes$_1$
___ No$_2$ → *"I'm sorry, you must be at least 18 years of age or older to participant in this study. But, thanks for your interest in the study."*
</td>
</tr>
<tr>
<td>000c</td><td>Eligible3</td>
<td>

Have you smoked at least one cigarette in the past 30 days?

___Yes$_1$
___ No$_2$ → *"I'm sorry, at this time we are only interested in hearing from people who currently smoke cigarettes. But, thanks for your interest in the study."*
</td>
</tr>
<tr>
<td>000d</td><td>Eligible4</td>
<td>

Have you smoked 100 or more cigarettes in your lifetime?

___Yes$_1$
___ No$_2$ → *"I'm sorry, at this time we are only interested in hearing from people who are established smokers. But, thanks for your interest in the study."*
</td>
</tr>
</table>

Great, it looks like you are eligible to participate in the study!

000e	Sex	**RECORD SEX AS OBSERVED** ___ Female$_1$ ___ Male$_2$
000f	AgeGrp	**RECORD AGE GROUP AS OBSERVED** ___ 18-25 years old$_1$ ___ 26-39 years old$_2$ ___ 40-54 years old$_3$ ___ 55 years or older$_4$
000g	IntervLocat	**RECORD THE LOCATION OF THE INTERVIEW** ___ Retail store$_1$ ___ Other$_2$ *(specify)*: _____
000h	IntervID	**RECORD INTERVIEWER INITIALS** **ENTER INITIALS** [__ __]

Would you prefer to conduct the rest of the interview in English or Inuktitut?

000i	IntervLang	**CHOOSE THE LANGUAGE OF THE INTERVIEW** ___ English$_1$ ___ Inuktituk$_2$

Here is a letter that provides more information about the study. Please take a minute to read it, or if you prefer, I can read it out loud to you."

<u>**NOTE TO INTERVIEWER:**</u>
***Go over information letter with the participant**

CONSENT:

1. Do you agree, on your own free will, to participate in this interview?

___ Yes, I agree to participate
___ No, I do not wish to participate ➔ *"Ok. No problem. Thanks for your time."*

2. Do you agree to be contact for a follow up interview, if necessary?

___ **Yes, I agree to be contacted for a follow up interview**
___ **No, I do not wish to be contacted for a follow up interview**

Ok. Great. Could I get your name and contact information for our records? This information will only be used if we need to follow up with you to clarify any of your responses, or to inform you of future research opportunities, if you agree to this.

NOTE TO INTERVIEWER:
*Record participant name and contact information on the PARTICIPANT LIST

Thanks for agreeing to participate. As I mentioned, I'll begin by ask you some questions about tobacco. Then I'll show you some health warnings and ask you some questions specifically about them. The whole thing should take less than an hour.

We'll start with a few questions about your tobacco use.

001	SmokStat	Do you currently smoke cigarettes daily, weekly or monthly?
		___ Daily$_1$ ___ Weekly$_2$ ___ Monthly$_3$ **IF RESPONSE = 1, THEN GO TO Q002a** **IF RESPONSE = 2, THEN GO TO Q002b** **IF RESPONSE = 3, THEN GO TO Q002c**
002a	CPD	About how many cigarettes do you smoke in a day? **ENTER NUMBER [__ __]** **→ GO TO Q002aa**
002aa	TTFC_CPD	About how long after you wake up from sleeping do you have your first cigarette? ___ Within 5 minutes$_1$ ___ Between 6 and 30 minutes$_2$ ___ Between 31 and 60 minutes$_3$ ___ More than 60 minutes$_4$

		→ SKIP TO Q003
002b	CPW	About how many cigarettes do you smoke in a week? **ENTER NUMBER** [__ __] **→ SKIP TO Q003**
002c	CPM	About how many cigarettes do you smoke in a month? **ENTER NUMBER** [__ __] **→ SKIP TO Q003**
003	Other-Tob	Have you used any other types of tobacco products in the past year? ___ Yes$_1$ ___ No$_2$ **IF RESPONSE = 1, THEN GO TO Q003a** **IF RESPONSE = 2, THEN GO TO Q004**
003a	Other-Tob_a	What other types have you used? **SELECT ALL THAT APPLY** ___ Chew$_1$ ___ Snuff$_2$ (i.e., a ground, dried powder that is inhaled through the nose) ___ Snus$_3$ (i.e., a moist powder that comes in the form of a pouch and is placed under the lip) ___ Cigar$_4$ ___ Pipe$_5$ ___ Other$_5$ *(specify)*: _____
Now, I'm going to ask you a few questions about quitting smoking.		
004	PrevQA	In the past year, have you stopped smoking for one day or longer because you were trying to quit? ___ Yes$_1$ ___ No$_2$ **IF RESPONSE = 1, THEN GO TO Q004a** **IF RESPONSE = 2, THEN GO TO Q005**

004a	PrevQA_a	When you stopped smoking, were you trying to quit for good, or just quitting for a specific period of time? ___ Trying to quit for good$_1$ ___ Just quitting for a specific period of time $_2$
005	Quit-Intent	Right now, would you say you were trying to quit…within the next month; within the next 6 months; sometime in the future, but beyond 6 months; or, not planning to quit at all? ___ Within the next month$_1$ ___ Within the next 6 months$_2$ ___ Sometime in the future, beyond 6 months$_3$ ___ Not planning to quit$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
006	Efficacy-Self	If you wanted to quit smoking <u>right now</u>, how hard would it be for you to quit smoking completely? ___ Not hard at all$_1$ ___ A little hard$_2$ ___ Somewhat hard$_3$ ___ Very hard$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
007	Efficacy-Resp	How certain are you that quitting smoking would lower your chances of getting a serious illness, like lung cancer? ___ Very certain$_1$ ___ Somewhat certain$_2$ ___ Neither certain nor uncertain$_3$ ___ Somewhat uncertain$_4$ ___ Very uncertain$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
Now, I'm going to ask you a few questions about the people around you who smoke.		
008	Norms-Smoke	When you think about the people you spend the most of your time with (including your family, friends, and co-workers), how many of them <u>currently smoke cigarettes</u>, either daily or less than daily?

		___ All of them$_1$ ___ Most of them$_2$ ___ Some of them$_3$ ___ A few of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
009	Norms-Quit	When you think about the people you spend the most of your time with (including your family, friends, and co-workers) how many of them <u>used to smoke</u> but have since quit smoking? **ENTER NUMBER** [__ __] ___ Refused$_{88}$ ___ Don't know$_{99}$
010	Norms-Accept	When you think about the people that care about you the most (including your close family and friends), would you say that most of them are ok with you smoking cigarettes? ___ Most of them are ok with it$_1$ ___ Some of them are ok with it, but some are not$_2$ ___ Most of them are <u>not</u> ok with it$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$
Now, I'm going to ask you about your health.		
011	HealthStat	In general, how would you describe your health? Is it…poor; fair; good; very good; or excellent? ___ Poor$_1$ ___ Fair$_2$ ___ Good$_3$ ___ Very good$_4$ ___ Excellent$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
Now, I'm going to read you a list of health effects and diseases that may or may _not_ be caused by smoking. Based on what you know or believe, does smoking cigarettes cause…		
012	KN-Lung	<u>Lung cancer</u> in smokers?

		___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
013	KN-Diabetes	Diabetes in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
014	KN-Heart	Heart disease in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
015	KN-Throat	Throat cancer in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
016	KN-Stomach	Stomach cancer in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
017	KN-Tuberc	Tuberculosis in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$

Now, I'm going to ask you some questions about how likely you think _you_ will get a serious illness or disease.

So, let's say you _continue to smoke_ the amount that you do now. How would you compare your own chance of getting…

018	PR-Lung	Lung cancer in the future compared to someone who has never smoked? ___ Just as likely$_1$ ___ A little more likely$_2$ ___ Somewhat more likely$_3$ ___ Much more likely$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
020	PR-Stomach	Stomach cancer in the future compared to someone who has never smoked? ___ Just as likely$_1$ ___ A little more likely$_2$ ___ Somewhat more likely$_3$ ___ Much more likely$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
021	PR-Tuberc	Tuberculosis in the future compared to someone who has never smoked? ___ Just as likely$_1$ ___ A little more likely$_2$ ___ Somewhat more likely$_3$ ___ Much more likely$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$

Now, I'm going to ask you some questions about the warning labels that appear on cigarette packages.

022	HWL-Notice	In the last month, how often have you _noticed_ warning labels on cigarette packages? ___ Never$_1$ ___ Rarely$_2$ ___ Sometimes$_3$

		___ Often$_4$ ___ Very often$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$ **IF RESPONSE = 1, THEN GO TO Q030** **ELSE GO TO Q023**
023	HWL-Read	In the last month, how often have you <u>*closely read*</u> the warning labels on cigarette packages? ___ Never$_1$ ___ Rarely$_2$ ___ Sometimes$_3$ ___ Often$_4$ ___ Very often$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
024	HWL-Recall_a	Please describe the one that stands out the most to you? **OPEN REPONSE [Max 200 characters]**
025	HWL-Recall_b	Why does this one stand out to you the most? **OPEN REPONSE [Max 200 characters]**
026	HWL-Avoid	In the last month, have you made any effort to avoid looking at the warning labels, let's say by covering them up or by not buying packs with particular labels? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
027	HWL-Think	How much, if at all, do warning labels make you think about the dangers of smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$

		___ Refused$_{88}$ ___ Don't know$_{99}$
028	HWL-Quit	How much, if at all, do warnings labels make you *want to quit* smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
029	HWL-Smk	How much, if at all, do warnings labels make you *want to smoke or smoke more* cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
For these next two questions, please tell me how much you agree or disagree with the following statements…		
054	HWL-React_a	Warning labels on cigarette packages make me angry because they tell me things I already know. ___ Strongly agree$_1$ ___ Agree$_2$ ___ Neither agree nor disagree$_3$ ___ Disagree$_4$ ___ Strongly disagree$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
055	HWL-React_b	Warning labels on cigarette packages are just another way that the government tries to tell people what to do. ___ Strongly agree$_1$ ___ Agree$_2$ ___ Neither agree nor disagree$_3$

		___ Disagree$_4$ ___ Strongly disagree$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
Now, I'm going to ask you a few questions about advertisements on the dangers of smoking.		
030	Media-Aware	Over the last 6 months, do you remember seeing or hearing any <u>local</u> advertisements about the dangers of smoking for people here in Nunavut? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$ **IF RESPONSE = 1, THEN GO TO Q031** **ELSE, GO TO Q035**
031	Media-Type	What exactly do you remember seeing or hearing? Was it… **SELECT ALL THAT APPLY** ___ Posters$_1$ ___ Movie trailers (at the cinema)$_2$ ___ YouTube videos$_3$ ___ Website$_4$ ___ Facebook page$_5$ ___ Radio ads or interviews$_6$ ___ Community events$_7$ ___ Other$_8$ *(specify)*: _____
032	Media-Describe	What do you remember most about the campaign message? **OPEN REPONSE [Max 200 characters]**
033	Media-Think	How much, if at all, did seeing or hearing these advertisements make you think about the dangers of smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$

		___ Don't know$_{99}$
034	Media-Quit	How much, if at all, did seeing or hearing these advertisements make you want to quit smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$

Ok, so that ends the first part of the study. Now, I'm going to show you two phrases and ask you to tell me what you think they mean. Here's the first one…

		PROGRAMMER NOTES: ***RANDOMIZE THE ORDER OF PRESENTATION FOR TWO PHRASES** **IF PHRASE=1,** **THEN SHOW PHRASE #1 AND GO TO Q035 AND Q036** **THEN SHOW PHRASE #2 AND GO TO Q037 AND Q038** **IF PHRASE=2,** **THEN SHOW PHRASE #2 AND GO TO Q037 AND Q038** **THEN SHOW PHRASE #1 AND GO TO Q035 AND Q036**
035	Comp1_a	**SHOW PHRASE 1** In your own words, please tell me what you think this phrase means. SELECT ONE, BUT DO NOT READ THESE OPTIONS OUT LOUD: ___ Correct response$_1$ ___ Incorrect response$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
036	Comp1_b	**SHOW PHRASE 1** On a scale of 1 to 10, where 1 means <u>very easy</u> and 10 means <u>very hard</u>, please tell me whether this phrase was easy or hard to understand.

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		1 2 3 4 5 6 7 8 9 10 Very easy In the middle Very hard Refused$_{88}$ Don't know$_{99}$
037	Comp2_a	**SHOW PHRASE 2** In your own words, please tell me what you think this phrase means. SELECT ONE, BUT DO NOT READ THESE OPTIONS OUT LOUD: ___ Correct response$_1$ ___ Incorrect response$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
038	Comp2_b	**SHOW PHRASE 2** On a scale of 1 to 10, where 1 means <u>very easy</u> and 10 means <u>very hard</u>, please tell me whether this phrase was easy or hard to understand. 1 2 3 4 5 6 7 8 9 10 Very easy In the middle Very hard Refused$_{88}$ Don't know$_{99}$
Ok, now I'm going to show you some health warning labels and ask you some questions specifically about them. I'll show you eight in total but one at a time, followed by some questions. You'll be asked to rate each warning on a scale of 1 to 10 where 1 means _not at all_ and 10 means _extremely_. Be sure to read the health warning carefully and try to think about the words and the picture when you answer these questions. Here's the first one…		
	CON1a_ CON2a_ CON3a_ CON4a_ CON5a_ CON6a_ CON7a_ CON8a_ CON1b_ CON2b_	<u>**PROGRAMMER NOTES:**</u> 1. **RANDOMIZE THE ORDER OF <u>2 HEALTH EFFECTS</u> (I.E., STOMACH CANCER OR TUBERCULOSIS).** 2. **RANDOMIZE ASSIGNMENT TO <u>1 OF 4 FOLDERS</u> OF HEALTH WARNING LABEL IMAGES.** 3. **RANDOMIZE THE ORDER OF ALL <u>4 HWL IMAGES</u> WITHIN THAT FOLDER.** 4. **PRESENTATION OF HWL IMAGES FOR THE OTHER HEALTH EFFECT IS <u>CONDITIONAL</u> ON THE FOLDER ASSISGNMENT FROM STEP 2.**

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	CON3b_ CON4b_ CON5b_ CON6b_ CON7b_ CON8b_	5. **PARTICIPANTS WILL BE SHOWN 8 HWL IMAGES FROM A TOTAL OF 16 IMAGES (I.E., 4 OF EACH HEALTH EFFECT).** 6. **Q039-Q048 WILL BE REPEATED FOR EACH HWL IMAGE.**
039	_Affect_uncomf	**SHOW HWL IMAGE** Does this warning make you feel <u>uncomfortable</u>? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
040	_Affect_disgust	**SHOW HWL IMAGE** Does this warning make you feel <u>disgusted</u> or grossed out? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
041	_Affect_worry	**SHOW HWL IMAGE** Does this warning make you feel <u>worried</u>? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
042	_Affect_sad	**SHOW HWL IMAGE** Does this warning make you feel <u>sad</u>? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
043	_Affect_fear	**SHOW HWL IMAGE** Does this warning make you feel <u>scared</u>?

		1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
044	_Relevant	**SHOW HWL IMAGE** Does this warning "<u>speak</u>" to you? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
045	_Credible	**SHOW HWL IMAGE** Do you think this warning is <u>believable</u>? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
046	_Motive-Talk	**SHOW HWL IMAGE** Does this warning make you <u>want to talk to someone</u> about the dangers of smoking? 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
047	_Motive-Quit	**SHOW HWL IMAGE** Does this warning make you <u>want to quit smoking?</u> 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
048	_Effective	**SHOW HWL IMAGE** Do you think this is a warning that works or is helpful?
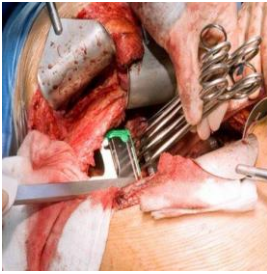
		1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely Refused$_{88}$ Don't know$_{99}$
	**That's great. We're almost done. Now, I'll show you three health warnings at the same time. I'd like you to read them each very carefully and then I'll ask you to choose the one you like the most. Please be sure to read them each very carefully. Here they are…**

	CONf_
	CONm_
		PROGRAMMER NOTES:
		1) **3 HWL IMAGES WILL BE SHOWN ALL AT ONE TIME, ON THE SAME SCREEN, BUT IN RANDOM ORDER**
		2) **IF SEX = FEMALE,**
		    a. **THEN RANDOMIZE ORDER OF ALL 3 HWL IMAGES IN <u>SET C</u> AND SHOW ALL TOGETHER ON SCREEN**
		    b. **ASK Q049-Q053**
		3) **IF SEX = MALE,**
		    c. **THEN RANDOMIZE ORDER OF ALL 3 HWL IMAGES IN <u>SET D</u> AND SHOW ALL TOGETHER ON SCREEN**
		    d. **ASK Q049-Q053**

049	_Relevant	**SHOW ALL 3 HWL IMAGES** Out of these three warnings, which one do you think "<u>speaks</u>" to you the most? **SELECT ALL THAT APPLY** ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
050	_Credible	**SHOW ALL 3 HWL IMAGES** Out of these three warnings, which one do you think is the most <u>believable</u>? **SELECT ALL THAT APPLY**

		___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
052	_Motive-Quit	**SHOW ALL 3 HWL IMAGES** Out of these warnings, which one makes you <u>want to quit smoking</u> the most? **SELECT ALL THAT APPLY** ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
Ok, now just a few final questions.		
056	Age	How old are you now (in years)? **ENTER NUMBER [__ __]**
057	Educ	What is the highest level of formal education you have completed? ___ Some elementary school$_1$ ___ Completed Grade 8$_2$ ___ Some secondary school$_3$ ___ Completed Grade 12$_4$ ___ Some college or trade school$_5$ ___ Completed college or trade school$_6$ ___ Some university$_7$ ___ Completed university$_8$ ___ Some post-graduate school$_9$ ___ Completed post-graduate school$_{10}$ ___ Refused$_{88}$ ___ Don't know$_{99}$

058	WorkStat	Please describe your current work status, would you say it is: ___ Paid work, full-time$_1$ ___ Paid work, part-time$_2$ ___ Paid work, seasonal$_3$ ___ Unemployed$_4$ ___ Retired$_5$ ___ Student, full-time$_6$ ___ Student, part-time$_7$ ___ Other$_8$ *(specify)*: _____ ___ Refused$_{88}$ ___ Don't know$_{99}$
059	Lang-Speak	What language do you speak most often at home? ___ Inuktitut$_1$ ___ Inuinnaqtun$_2$ ___ English$_3$ ___ French$_4$ ___ Other$_5$ *(specify)*: _____ ___ Refused$_{88}$ ___ Don't know$_{99}$
060	Other-Speak	Do you speak any other languages? ___Yes$_1$ ___ No$_2$ **IF RESPONSE = 1, THEN GO TO Q060a** **IF RESPONSE = 2, THEN GO TO Q061**
060a	Other-Speak_a	What other languages do you speak? **SELECT ALL THAT APPLY** ___ Inuktitut$_1$ ___ Inuinnaqtun$_2$ ___ English$_3$ ___ French$_4$ ___ Other$_5$ *(specify)*: _____

061	Lang-Read	What language do you feel most comfortable reading in? **SELECT ALL THAT APPLY** ___ Inuktitut$_1$ ___ Inuinnaqtun$_2$ ___ English$_3$ ___ French$_4$ ___ Other$_5$ *(specify)*: _____

Ok great. That ends the interview. Thanks so much for participating. As a token of our thanks, here is a gift card for $50.00. We also have some more information about some resources that are available if you decide you want to quit smoking. Please help yourself.

<u>NOTE TO INTERVIEWER</u>:
*Record the gift card # on the PARTICIPANT CONTACT LIST and have the participant initial that they received it

<u>PROGRAMMER NOTES</u>:
*Generate the time and date the survey ended

Appendix C. Final Health Warning Labels

SET A: Stomach cancer		
	Loss-framed	**Gain-framed**
Didactic — Personal suffering	**Condition 1a** 	**Condition 2a**
Didactic — Gruesome	**Condition 3a** 	**Condition 4a**
Testimonial — Personal suffering	**Condition 5a** 	**Condition 6a**
Testimonial — Gruesome	**Condition 7a** 	**Condition 8a**

SET B: Tuberculosis	
Loss-framed	**Gain-framed**

Didactic

Personal suffering

Condition 1b	**Condition 2b**

Smoking raises your chances of getting TB.

Smoking harms your lungs making it harder to fight off the germs that cause TB infection. Smokers who have TB infection are more likely to get TB disease.

Quitting lowers your chances of getting TB.

Quitting smoking allows your lungs to heal so they can fight off the germs that cause TB infection. If you have TB infection, quitting can help prevent TB disease.

Gruesome

Condition 3b	**Condition 4b**

Smoking raises your chances of getting TB.

Smoking harms your lungs making it harder to fight off the germs that cause TB infection. Smokers who have TB infection are more likely to get TB disease.

Quitting lowers your chances of getting TB.

Quitting smoking allows your lungs to heal so they can fight off the germs that cause TB infection. If you have TB infection, quitting can help prevent TB disease.

Testimonial

Personal suffering

Condition 5b	**Condition 6b**

"It's so much harder to breathe."

"My doctor said the treatment for my TB infection didn't work because I still smoked. Smoking had already damaged my lungs so much and now I have TB disease."

"It's so much easier to breathe."

"My doctor said the treatment for my TB infection worked because I quit smoking. My lungs were able to heal and now my chances of getting TB disease are lower."

Gruesome

Condition 7b	**Condition 8b**

"It's so much harder to breathe."

"My doctor said the treatment for my TB infection didn't work because I still smoked. Smoking had already damaged my lungs so much and now I have TB disease."

"It's so much easier to breathe."

"My doctor said the treatment for my TB infection worked because I quit smoking. My lungs were able to heal and now my chances of getting TB disease are lower."

SET C: Female Spokespersons – COPD		
White, middle-aged spokesperson	**Inuit, middle-aged spokesperson**	**Inuit, Elder spokesperson**
Condition 1c	**Condition 2c**	**Condition 3c**
"I was diagnosed with lung disease last year. I still have a really hard time breathing and a painful cough that won't go away. Now I just wish I had never started smoking." - Amanda	"My doctor said I had lung disease because I smoked. I have a hard time breathing and a painful cough that won't go away. I don't want others to go through the same suffering." - Yakone	"I see many of our people suffering from lung disease. They have a hard time breathing and a painful cough that won't go away. This is caused by smoking and we have to stop." - Ahnah

SET D: Male Spokespersons – COPD		
White, middle-aged spokesperson	**Inuit, middle-aged spokesperson**	**Inuit, Elder spokesperson**
Condition 1d	**Condition 2d**	**Condition 3d**
"I was diagnosed with lung disease last year. I still have a really hard time breathing and a painful cough that won't go away. Now I just wish I had never started smoking." - John	"My doctor said I had lung disease because I smoked. I have a hard time breathing and a painful cough that won't go away. I don't want others to go through the same suffering." - Tikanni	"I see many of our people suffering from lung disease. They have a hard time breathing and a painful cough that won't go away. This is caused by smoking and we have to stop." - Tulugaak

Phrase 1

Smoking harms almost every organ in your body.

Phrase 2

Quitting smoking lowers your risk of premature death.

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Appendix D. Randomization Check: Participant Characteristics by Health Warning Set

	Set A: Stomach Cancer (n=69)		Set B: Tuberculosis (n=75)		Chi-square
	n	**%**	**n**	**%**	**p-value**
Community					
Iqaluit	44	63.8	48	64.0	0.977
Rankin Inlet	25	36.2	27	27.0	
Sex					
Male	28	40.6	31	41.3	0.927
Female	41	59.4	44	58.7	
Age (years)					
18-25	22	32.8	12	16.7	0.086
26-40	18	26.9	24	33.3	
>40	27	40.3	36	50.0	
Missing	2		3		
Education					
Grade 8 or less	17	25.0	19	25.7	0.666
Some high school	31	45.6	38	51.4	
Grade 12 or more	20	29.4	17	23.0	
Missing	1		1		
Employment status					
Paid work, full-time	22	32.4	12	16.2	0.081
Paid work, part-time or seasonal	5	7.4	12	16.2	
Not currently working	31	45.6	40	54.1	
Student, full- or part-time	10	14.7	10	13.5	
Missing	1		1		
Language spoken most often at home					
Inuktitut	36	55.4	41	56.2	0.927
English	29	44.6	32	43.8	
Missing	4		2		
Language most comfortable reading					
Inuktitut	12	17.9	9	12.2	0.407
English	49	73.1	54	73.0	
Both	6	9.0	11	14.9	
Missing	2		1		
Smoking status					
Daily	63	91.3	72	96.0	0.245
Non-daily	6	8.7	3	4.0	
Missing	0		0		
Cigarettes smoked per day (CPD)					
Up to 5	12	18.2	12	16.0	0.831
6-10	21	31.8	22	29.3	
11-15	19	28.8	20	26.7	
More than 15	14	21.2	21	28.0	
Missing	3		0		

	Set A: Stomach Cancer (n=69))		Set B: Tuberculosis (n=75)		Chi-square
	n	%	n	%	p-value
Time to first cigarette (TTFC)					
Within 5mins	30	47.6	34	47.2	0.631
6-30 mins	17	27.0	16	22.2	
31-60	7	11.1	6	8.3	
More than 60mins	9	14.3	16	22.2	
Not applicable	2		3		
Made a quit attempt in the past year					
Yes	40	58.0	44	58.7	0.933
No	29	42.0	31	41.3	
Missing	0		0		
Plans to quit smoking					
Planning to quit	46	71.9	59	79.7	0.281
Not planning to quit	18	28.1	15	20.3	
Missing	1		1		

Appendix E. Pre-testing Interview Script

Q#	VarName	
000a	PartID	**RECORD THE PARTICIPANT ID** **ENTER ID** [__ __]
000b	InterDate	**RECORD THE DATE OF THE INTERVIEW** **ENTER DATE** __ __ / __ __ / 2012 DAY/ MTH / YR
000c	Sex	**RECORD SEX AS OBSERVED** ___ Female$_1$ ___ Male$_2$
000d	Age	**RECORD AGE GROUP AS OBSERVED** ___ 18-25 years old$_1$ ___ 26-39 years old$_2$ ___ 40-54 years old$_3$ ___ 55 years or older$_4$
		Thanks for agreeing to participate. I'm going to ask you some questions about smoking cigarettes. We'd like to find out whether we are asking the questions in a way that people understand clearly. We are NOT interested in whether you provide the right or wrong answer. Sometimes, it will seem like I'm asking the same question over and over again. Please be patient with me. I just need to double-check that the questions are working like we think they are. For some questions, I'll ask you how you came up with your answer. **Let's begin with a practice question:**
000f	Prac	How many windows are there in the house or apartment where you live? **[LET THEM COME UP WITH AN ANSWER]** **ENTER NUMBER** [__ __]
000fx	Prac_x	How did you come up with that answer? **OPEN RESPONSE:** _____ _____ _____

Ok, great. The questions I will be asking will be similar to this one, where I ask you about _how_ you understood the questions and came up with your answer.

I'm now going to ask you a few questions about smoking cigarettes.

001	SmokStat	Do you currently smoke cigarettes daily, weekly or monthly? ___ Daily$_1$ → **GO TO Q002a** ___ Weekly$_2$ → **GO TO Q002b** ___ Monthly$_3$ → **GO TO Q002c**
002a	CPD	About how many cigarettes do you smoke in a day? **ENTER NUMBER** [__ __] → **SKIP TO Q004**
002ax	CPD_x	How did you come up with that answer? **OPEN RESPONSE:** _____ _____ _____
002b	CPW	About how many cigarettes do you smoke in a week? **ENTER NUMBER** [__ __] → **SKIP TO Q004**
002bx	CPW_x	How did you come up with that answer? **OPEN RESPONSE:** _____ _____ _____
002c	CPM	About how many cigarettes do you smoke in a month? **ENTER NUMBER** [__ __] → **SKIP TO Q004**

002cx	CPM_x	How did you come up with that answer? **OPEN RESPONSE:** _____ _____ _____
004	PrevQA	In the past year, have you stopped smoking for one day or longer because you were trying to quit smoking? ___ Yes$_1$ ___ No$_2$ → **GO TO Q005**
004a	PrevQA_a	When you stopped smoking, where you trying to quit smoking for good, or just trying to quit for a specific period of time? ___ Permanetly$_1$ ___ Not permanetly$_2$
005	Quit-Intent	Right now, would you say you were trying to quit smoking…within the next month; within the next 6 months; sometime in the future, but beyond 6 months; or, not planning to quit at all? ___ Within the next month$_1$ ___ Within the next 6 months$_2$ ___ Sometime in the future, beyond 6 months$_3$ ___ Not planning to quit$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
006	Efficacy-Self	If you wanted to quit smoking right now, how easy or hard would it be for you to quit smoking? ___ Very easy$_1$ ___ Somewhat easy$_2$ ___ Neither easy nor hard$_3$ ___ Somewhat hard$_4$ ___ Very hard$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$

007	Efficacy-Resp	How certain are you that quitting smoking would reduce your risk of getting a serious illness, let's say lung cancer? ___ Very certain$_1$ ___ Somewhat certain$_2$ ___ Neither certain nor uncertain$_3$ ___ Somewhat uncertain$_4$ ___ Very uncertain$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
007x		What does "risk" mean to you in this question? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Can you think of one or two words that mean the same thing as "risk"?
Now, I'm going to ask you a few questions about the people around you who smoke.		
008	Norms-Smoke	When you think about the people you spend the most of your time with (e.g., family, friends, co-workers, etc.) how many of them currently smoke cigarettes, either daily or less than daily? ___ All of them$_1$ ___ Most of them$_2$ ___ Some of them$_3$ ___ A few of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
008x	Norms-Smoke_x	About how many people were you thinking of when you answered this question? **ENTER NUMBER** [__ __]

009	Norms-Quit	When you think about the people you spend the most of your time with (e.g., family, friends, co-workers, etc.) who <u>do not smoke</u>, how many of them used to smoke but have since quit smoking? ___ All of them$_1$ ___ Most of them$_2$ ___ Some of them$_3$ ___ A few of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
009x	Norms-Quit_x	In your own words, what do you think this question is asking? **OPEN RESPONSE:** _____ _____ _____
009y	Norms_Quit_y	Was this question hard to answer? ___ Yes$_1$ ___ No$_2$ **➔ SKIP TO Q009z** ___ Refused$_{88}$ ___ Don't know$_{99}$
009yy	Norms_Quit_yy	Why was this question hard to answer? **OPEN RESPONSE:** _____ _____ _____
009z	Norms-Quit_z	About how many people were you thinking of when you answered this question? **ENTER NUMBER** [__ __]

010	Norms-Accept	When you think about the people that care about you the most (e.g., close family and friends), would you say that they are ok with you smoking cigarettes? ___ They are totally ok with it$_1$ ___ They don't really care$_2$ ___ They are totally <u>not</u> ok with it$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$
010x	Norms-Accept_x	In your own words, what do you think this question is asking? **OPEN RESPONSE:** _____ _____ _____

Now, I'm going to read you a list of health effects and diseases that may or may <u>not</u> be caused by smoking. Based on what you know or believe, does smoking cigarettes cause…

012	KN-Lung	<u>Lung cancer</u> in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
012x	KN-Lung_x	How sure are you of your answer? **OPEN RESPONSE:** _____ _____ _____
012y	KN-Lung_y	Why are you sure/unsure? **OPEN RESPONSE:** _____ _____ _____

013	KN-Diabetes	Diabetes in smokers? ___ Yes₁ ___ No₂ ___ Refused₈₈ ___ Don't know₉₉
013x	KN-Diabetes_x	How sure are you of your answer? **OPEN RESPONSE:** _____ _____ _____
013y	KN-Diabetes_y	Why are you sure/unsure? **OPEN RESPONSE:** _____ _____ _____
016	KN-Stomach	Stomach cancer in smokers? ___ Yes₁ ___ No₂ ___ Refused₈₈ ___ Don't know₉₉
016x	KN-Stomach_x	How sure are you of your answer? **OPEN RESPONSE:** _____ _____ _____
016y	KN-Stomach_y	Why are you sure/unsure? **OPEN RESPONSE:** _____ _____ _____

017	KN-Tuberc	Tuberculosis in smokers? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
017x	KN-Tuberc_x	How sure are you of your answer? **OPEN RESPONSE:** _____ _____ _____
017y	KN-Tuberc_y	Why are you sure/unsure? **OPEN RESPONSE:** _____ _____ _____

Now, I'm going to ask you some questions about how likely you think _you_ will get a serious illness or disease.

So, let's say you _continue to smoke_ the amount that you do now. How would you compare your own chance of getting…

018	PR-Lung	Lung cancer in the future compared to someone who has never smoked? Would you say you are… ___ Just as likely$_1$ ___ A little more likely$_2$ ___ Somewhat more likely$_3$ ___ Much more likely$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
018x	PR-Lung_x	In your own words, what is this question asking? **OPEN RESPONSE:** _____ _____ _____

018y	PR-Lung_y	How did you come up with that answer? **OPEN RESPONSE:** _____ _____ _____
018x	PR-Lung_z	Was it difficult to respond to this question? And if so, why? **OPEN RESPONSE:** _____ _____ _____

Now, I'm going to ask you some questions about the warning labels that appear on cigarette packages.		
022	HWL-Notice	In the last month, how often have you <u>*noticed*</u> warning labels on cigarette packages? ___ Never$_1$ **→ SKIP TO Q029** ___ Rarely$_2$ ___ Sometimes$_3$ ___ Often$_4$ ___ Very often$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
023	HWL-Read	In the last month, how often have you <u>*closely read*</u> the warning labels on cigarette packages? ___ Never$_1$ ___ Rarely$_2$ ___ Sometimes$_3$ ___ Often$_4$ ___ Very often$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$

		Now, I'm going to ask you a few questions about media campaigns on the dangers of smoking.		
029	Media-Aware	Over the last 6 months, do you remember seeing or hearing any local media campaigns on the dangers of smoking for people here in Nunavut? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$ **IF RESPONSE = 2 OR 99, THEN GO TO Q034**
029x	Media-Aware_x	What does "media campaigns" mean to you in this question? **OPEN RESPONSE:** _____ _____ _____
029y	Media-Aware_y	What does "local" mean to you in this question? **OPEN RESPONSE:** _____ _____ _____
032	Media-Think	How much, if at all, did seeing or hearing this campaign make you think about the dangers of smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$

033	Media-Quit	How much, if at all, did seeing or hearing this campaign make you <u>want to quit smoking</u> cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
Ok, now I'm going to show you two phrases and ask you to tell me what you think this phrase means. Here's the first one...		
		SHOW PHRASE 1
034	Comp1_a	Please tell me what you think this phrase means. **OPEN RESPONSE:** _____ _____ _____ **RECORD:** ___ Correct response$_1$ ___ Incorrect response$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
035	Comp1_b	On a scale of 1 to 10, where 1 means <u>very easy</u> and 10 means <u>very hard</u>, please tell me how easy or hard this phrase is to understand. 1 2 3 4 5 6 7 8 9 10 Very easy In the middle Very hard

		Ok, now here is the second one…
		SHOW PHRASE 2
036	Comp2_a	Please tell me what you think this phrase means. **OPEN RESPONSE:** _____ _____ _____ **RECORD:** ___ Correct response$_1$ ___ Incorrect response$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
037	Comp2_b	On a scale of 1 to 10, where 1 means <u>very easy</u> and 10 means <u>very hard</u>, please tell me how easy or hard this phrase is to understand. 1 2 3 4 5 6 7 8 9 10 Very easy In the middle Very hard
		Ok, now I'm going to show you a health warning label and ask you some questions specifically about it. For each question, I'll ask you to give your answer based on a scale of 1 to 10 where 1 means _not at all_ and 10 means _extremely_. Please be sure to read the warning label very carefully. Here it is…
	WL_	**SHOW HWL 1a**
038	_Affect_uncomf	Please tell me whether this warning makes you feel <u>uncomfortable</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
039	_Affect_disgust	Please tell me whether this warning makes you feel <u>disgusted</u> or <u>grossed out</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely

040	_Affect_worry	Please tell me whether this warning makes you feel <u>worried</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
041	_Affect_sad	Please tell me whether this warning makes you feel <u>sad</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
042	_Affect_fear	Please tell me whether this warning makes you feel <u>scared</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
043	_Relevant	Please tell me whether this warning is <u>relevant</u> to you. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
043x	_Relevant_x	What does "relevant" mean to you in this question? **OPEN RESPONSE:** _____ _____ _____
044	_Credible	Please tell me whether you thing this warning is <u>believable</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
045	_Motive-Talk	Please tell me whether this warning makes you <u>want to talk to someone</u> about the health risks of smoking, or about quitting smoking. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
046	_Motive-Quit	Please tell me whether this warning makes you <u>want to quit smoking</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely

047	_Effective	Please tell me whether you think this is an <u>effective</u> warning. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
047x	_Effective_x	What does "effective" mean to you in this question? **OPEN RESPONSE:** _____ _____ _____
		Ok, that's great. Now, I'm going to show you three health warnings at the same time. I'd like you to read them each very carefully and then I'll ask you to choose the one you like the most. Here they are…
	WL_F_ OR WL_M_	**IF SEX = FEMALE, SHOW HWLs FROM SET C** **IF SEX = MALE, SHOW HWLs FROM SET D**
048	_Relevant	Out of these three warnings, which one do you think is most <u>relevant</u> to you? ___ #1_1 ___ #2_2 ___ #3_{3s} ___ All of them$_4$ ___ None of them$_5$
048x	_Relevant_x	What does "relevant" mean to you in this question? **OPEN RESPONSE:** _____ _____ _____
049	_Credible	Out of these three warnings, which one do you think is the most <u>believable</u>? ___ #1_1 ___ #2_2 ___ #3_3 ___ All of them$_4$ ___ None of them$_5$

050	_Similar	Out of these three warnings, which spokesperson (that is, the person in picture) do you feel you are most <u>similar to</u>? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
050x	_Similar_x	What is it about this spokesperson that makes you feel more similar to him/her? **OPEN RESPONSE:** _____ _____ _____
051	_Motive-Quit	Out of these warnings, which one makes you <u>want to quit smoking</u> the most? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
052	_Effective	Out of these warnings, which do you think is the most <u>effective</u> overall? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$

		For the next two questions, please tell me how much you agree or disagree with the following statements?
053	HWL-React_a	Warning labels on cigarette packages make me angry because they tell me things I already know. ___ Strongly agree$_1$ ___ Agree$_2$ ___ Neither agree nor disagree$_3$ ___ Disagree$_4$ ___ Strongly disagree$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
054	HWL-React_b	Warning labels on cigarette packages are just another way that the government tries to tell people what to do. ___ Strongly agree$_1$ ___ Agree$_2$ ___ Neither agree nor disagree$_3$ ___ Disagree$_4$ ___ Strongly disagree$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
		Ok, now I'll ask you some questions about each of these three warning labels, individually. Here is the first one…
		IF SEX = FEMALE, SHOW HWL 1c **IF SEX = MALE, SHOW HWL 1d**
061a		How would you describe the person in this picture? Would you say they are… ___ White/Caucasian$_1$ ___ Inuit$_2$ ___ Aboriginal$_3$ ___ Or, some other ethnic background$_4$ *(specify)*: _____ **IF RESPONSE = 1 OR 4, THEN GO TO Q062a**

061ax		Does this person seem like they could be an Elder? ___ Yes$_1$ ___ No$_2$ ___ Don't know$_{99}$
062a		How old would you guess this person to be? ___ 18-25 years old$_1$ ___ 26-39 years old$_2$ ___ 40-54 years old$_3$ ___ 55 years or older$_4$
063a		Does the story here seem like something this person might say? ___ Yes$_1$ → **SKIP TO Q064a** ___ No$_2$ ___ Don't know$_{99}$
063ax		What changes would make it sound more like something this person might say? **OPEN RESPONSE [_____]**
064a		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?

		Here is the second one…
		IF SEX = FEMALE, **SHOW HWL 2c** IF SEX = MALE, **SHOW HWL 2d**
061b		How would you describe the person in this picture? Would you say they are… ___ White/Caucasian$_1$ ___ Inuit$_2$ ___ Aboriginal$_3$ ___ Or, some other ethnic background$_4$ *(specify)*: _____ **IF RESPONSE = 1 OR 4, THEN GO TO Q062b**
061bx		Does this person seem like they could be an Elder? ___ Yes$_1$ ___ No$_2$ ___ Don't know$_{99}$
062b		How old would you guess this person to be? ___ 18-25 years old$_1$ ___ 26-39 years old$_2$ ___ 40-54 years old$_3$ ___ 55 years or older$_4$
063b		Does the story here seem like something this person might say? ___ Yes$_1$ ➔ **SKIP TO Q064b** ___ No$_2$ ___ Don't know$_{99}$
063bx		What changes would make it sound more like something this person might say? **OPEN RESPONSE:** _____ _____ _____
064b		Is there anything about this warning that you don't understand or that doesn't make sense to you?

		OPEN RESPONSE: _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?
And, here is the third one…		
		IF SEX = FEMALE, SHOW HWL 3c **IF SEX = MALE, SHOW HWL 3d**
061c		How would you describe the person in this picture? Would you say they are… ___ White/Caucasian$_1$ ___ Inuit$_2$ ___ Aboriginal$_3$ ___ Or, some other ethnic background$_4$ *(specify)*: _____ **IF RESPONSE = 1 OR 4, THEN GO TO Q062c**
061cx		Does this person seem like they could be an Elder? ___ Yes$_1$ ___ No$_2$ ___ Don't know$_{99}$
062c		How old would you guess this person to be? ___ 18-25 years old$_1$ ___ 26-39 years old$_2$ ___ 40-54 years old$_3$ ___ 55 years or older$_4$
063c		Does the story here seem like something this person might say? ___ Yes$_1$ ➔ **SKIP TO Q064c** ___ No$_2$ ___ Don't know$_{99}$

063cx		What changes would make it sound more like something this person might say? **OPEN RESPONSE:** _____ _____ _____
064c		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** - Are there any words that you don't understand? - Are there any words or phrases you find confusing?

Ok, so now I'm going to show you some different warning labels. There are 8 in total. I'll show each of them to you separately and ask you about the information they contain. Please read each of them very carefully.

Here's the first one…

		SHOW HWL 1a
065a		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking? ___ Benefits of quitting$_1$ ___ Negative effects of smoking$_2$ ___ Not sure$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$

066a		Can you please describe the picture used in this warning? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Content: Can you tell what it is? • Emotional response: How does it make you feel?
067a		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?
Ok, here is the second one…		
		SHOW HWL 4a
065b		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking? ___ Benefits of quitting$_1$ ___ Negative effects of smoking$_2$ ___ Not sure$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$

066b		Can you please describe the picture used in this warning? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Content: Can you tell what it is? • Emotional response: How does it make you feel?
067b		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?
Ok, here is the third one…		
		SHOW HWL 5a
065c		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking? ___ Benefits of quitting$_1$ ___ Negative effects of smoking$_2$ ___ Not sure$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$

066c		Can you please describe the picture used in this warning?
		OPEN RESPONSE:
		_____
		_____
		_____
		PROMPTS:
		• Content: Can you tell what it is?
		• Emotional response: How does it make you feel?
067c		Is there anything about this warning that you don't understand or that doesn't make sense to you?
		OPEN RESPONSE:
		_____
		_____
		_____
		PROMPTS:
		• Are there any words that you don't understand?
		• Are there any words or phrases you find confusing?
Ok, here is the forth one…		
		SHOW HWL 8a
065d		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking?
		___ Benefits of quitting$_1$
		___ Negative effects of smoking$_2$
		___ Not sure$_3$
		___ Refused$_{88}$
		___ Don't know$_{99}$

066d		Can you please describe the picture used in this warning? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Content: Can you tell what it is? • Emotional response: How does it make you feel?
067d		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?
Ok, here is the fifth one…		
		SHOW HWL 2b
065e		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking? ___ Benefits of quitting$_1$ ___ Negative effects of smoking$_2$ ___ Not sure$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$

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066e		Can you please describe the picture used in this warning?
		OPEN RESPONSE:
		_____
		_____
		_____
		PROMPTS:
		• Content: Can you tell what it is?
		• Emotional response: How does it make you feel?
067e		Is there anything about this warning that you don't understand or that doesn't make sense to you?
		OPEN RESPONSE:
		_____
		_____
		_____
		PROMPTS:
		• Are there any words that you don't understand?
		• Are there any words or phrases you find confusing?
Ok, here is the sixth one…		
		SHOW HWL 3b
065f		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking?
		___ Benefits of quitting$_1$
		___ Negative effects of smoking$_2$
		___ Not sure$_3$
		___ Refused$_{88}$
		___ Don't know$_{99}$

066f		Can you please describe the picture used in this warning? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Content: Can you tell what it is? • Emotional response: How does it make you feel?
067f		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?
Ok, here is the second last one…		
		SHOW HWL 6b
065g		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking? ___ Benefits of quitting$_1$ ___ Negative effects of smoking$_2$ ___ Not sure$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$

066g		Can you please describe the picture used in this warning? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Content: Can you tell what it is? • Emotional response: How does it make you feel?
067g		Is there anything about this warning that you don't understand or that doesn't make sense to you? **OPEN RESPONSE:** _____ _____ _____ **PROMPTS:** • Are there any words that you don't understand? • Are there any words or phrases you find confusing?
And, here is the last one…		
		SHOW HWL 7b
065h		Would you say that his one is talking about the benefits of quitting smoking, or the negative effects of smoking? ___ Benefits of quitting$_1$ ___ Negative effects of smoking$_2$ ___ Not sure$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$

066h		Can you please describe the picture used in this warning?
		OPEN RESPONSE:
		_____ _____ _____
		PROMPTS: • Content: Can you tell what it is? • Emotional response: How does it make you feel?
067h		Is there anything about this warning that you don't understand or that doesn't make sense to you?
		OPEN RESPONSE:
		_____ _____ _____
		PROMPTS: • Are there any words that you don't understand? • Are there any words or phrases you find confusing?

Ok, so one last thing. I'm going to show you some pictures and ask you which one you think most looks like he/she could be Inuit.

Here's the first set…

		SHOW 3 PICTURES OF INUIT WOMEN
068a		Out of these three pictures, which one do you think most looks like he/she could be Inuit? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$

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Here's the second set…		
		SHOW 3 PICTURES OF INUIT WOMEN (ELDERS)
068b		Out of these three pictures, which one do you think most looks like he/she could be Inuit? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
Here's the third set…		
		SHOW 3 PICTURES OF INUIT MEN
068c		Out of these three pictures, which one do you think most looks like he/she could be Inuit? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
Here's the last set…		
		SHOW 3 PICTURES OF INUIT MEN (ELDERS)
068d		Out of these three pictures, which one do you think most looks like he/she could be Inuit? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
Ok great. That ends the interview. Thanks so much for participating. As a token of our thanks, here is a gift card for $50.00. We also have some more information about some resources that are available if you decide you want to quit smoking. Please help yourself.		

Appendix F. Pre-testing Health Warning Labels and Images

		SET A: Stomach cancer	
		Loss-framed	**Gain-framed**
Didactic	**Personal suffering**	**Condition 1a** Smoking <u>raises your risk</u> of stomach cancer. When you smoke, some of the harmful cigarette smoke may be swallowed. This can damage the lining of your stomach and cause stomach cancer.	**Condition 2a** Quitting <u>lowers your risk</u> of stomach cancer. When you quit smoking, you no longer swallow harmful cigarette smoke. This allows your stomach lining to heal and prevents stomach cancer.
	Gruesome	**Condition 3a** Smoking <u>raises your risk</u> of stomach cancer. When you smoke, some of the harmful cigarette smoke may be swallowed. This can damage the lining of your stomach and cause stomach cancer.	**Condition 4a** Quitting <u>lowers your risk</u> of stomach cancer. When you quit smoking, you no longer swallow harmful cigarette smoke. This allows your stomach lining to heal and prevents stomach cancer.
Testimonial	**Personal suffering**	**Condition 5a** "I wish I <u>had never smoked</u>." "When I was smoking, I had severe pains in my stomach. I was diagnosed with stomach cancer and had to have surgery to remove my stomach."	**Condition 6a** "It's a <u>good thing I quit</u> when I did." "When I quit smoking, the pains in my stomach went away. Quitting allowed my stomach to heal and meant I did not need surgery to remove my stomach."
	Gruesome	**Condition 7a** "I wish I <u>had never smoked</u>." "When I was smoking, I had severe pains in my stomach. I was diagnosed with stomach cancer and had to have surgery to remove my stomach."	**Condition 8a** "It's a <u>good thing I quit</u> when I did." "When I quit smoking, the pains in my stomach went away. Quitting allowed my stomach to heal and meant I did not need surgery to remove my stomach."

SET B: Tuberculosis		
	Loss-framed	**Gain-framed**
Didactic — **Personal suffering**	**Condition 1b** **Smoking <u>raises your risk</u> of tuberculosis.** Smoking harms your lungs. Having weak lungs makes it hard for you to fight off TB infection and disease.	**Condition 2b** **Quitting <u>lowers your risk</u> of tuberculosis.** Quitting smoking strengthens your lungs. Having healthy lungs helps you to fight off TB infection and disease.
Didactic — **Gruesome**	**Condition 3b** **Smoking <u>raises your risk</u> of tuberculosis.** Smoking harms your lungs. Having weak lungs makes it hard for you to fight off TB infection and disease.	**Condition 4b** **Quitting <u>lowers your risk</u> of tuberculosis.** Quitting smoking strengthens your lungs. Having healthy lungs helps you to fight off TB infection and disease.
Testimonial — **Personal suffering**	**Condition 5b** **"It's <u>so much harder</u> to breathe."** "Smoking had really damaged my lungs before I was diagnosed with tuberculosis. My body was just too weak to fight off the disease."	**Condition 6b** **"Now, it's <u>so much easier</u> to breathe."** "Quitting smoking helped my lungs to heal and protected me from getting tuberculosis. My body was better able to fight off the disease."
Testimonial — **Gruesome**	**Condition 7b** **"It's <u>so much harder</u> to breathe."** "Smoking had really damaged my lungs before I was diagnosed with tuberculosis. My body was just too weak to fight off the disease."	**Condition 8b** **"Now, it's <u>so much easier</u> to breathe."** "Quitting smoking helped my lungs to heal and protected me from getting tuberculosis. My body was better able to fight off the disease."

SET C: Female Spokespersons – COPD		
White, middle-aged spokesperson	**Inuit, middle-aged spokesperson**	**Inuit, Elder spokesperson**
Condition 1c	**Condition 2c**	**Condition 3c**
"I was diagnosed with COPD last year. It started with a deep cough that wouldn't go away. Now, I can't walk up the stairs without getting winded." - Amanda Watson	"The doctor told me I had COPD because I smoked. I had this cough that just kept on getting worse. Now, I can't walk next door without losing my breathe." - Yakone Tapatai	"I have seen many of our people suffer from smoking. They have a hard time breathing, and have a deep painful cough. This is caused by smoking." - Ahnah Seeteenak

SET D: Male Spokespersons – COPD		
White, middle-aged spokesperson	**Inuit, middle-aged spokesperson**	**Inuit, Elder spokesperson**
Condition 1d	**Condition 2d**	**Condition 3d**
"I was diagnosed with COPD last year. It started with a deep cough that wouldn't go away. Now, I can't walk up the stairs without getting winded." - John Watson	"The doctor told me I had COPD because I smoked. I had this cough that just kept on getting worse. Now, I can't go out on the land without losing my breathe." - Tikanni Tapatai	"I have seen many of our people suffer from smoking. They have a hard time breathing, and have a deep painful cough. This is caused by smoking." - Tulugaak Seeteenak

Phrase 1

Smoking harms almost every organ in your body.

Phrase 2

Quitting smoking lowers your risk of premature death.

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Pictures of Inuit women (middle-aged)		
#1	#2	#2

Pictures of Inuit women (Elders)		
#1	#2	#2

Pictures of Inuit men (middle-aged)		
#1	#2	#2

Pictures of Inuit men (Elders)		
#1	#2	#2
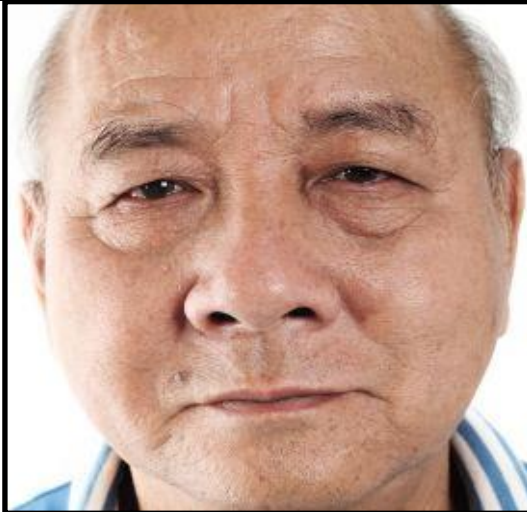
Appendix G. Pre-testing Results – Survey questions

Q#	Summary of results
001	**Original form of the survey question:** Do you currently smoke cigarettes daily, weekly or monthly? ___ Daily$_1$ ___ Weekly$_2$ ___ Monthly$_3$
	Probes: None.
	Results: This question was generally understood in both English and Inuktitut. Participants were easily able to provide an answer based on the response options provided.
	Suggested revisions: None. Retain as is.
002a	**Original form of the survey question:** About how many cigarettes do you smoke in a day? **ENTER NUMBER** [__ __]
	Probes: How did you come up with that answer? (To determine the overall cognitive strategy used)
	Results: Only one person was able to provide a specific number when asked this question. She seemed confident in her answer as she counted out how many cigarettes she smoked at various points throughout a regular day (e.g., "one first thing in the morning, then during breaks, then going home, and one before going to bed"). Some people (2 out of 5) had difficulty coming up with one number to answer this question and provided a range instead (i.e., 8-10, 7-8). These participants indicated that there smoking behaviour varied depending on who they were with, what they were doing, and where they were. As such, they felt more comfortable providing an estimated range rather than a discrete number. The other two participants estimated their answers based on how much of a cigarette pack they go through in a day (e.g., "half a pack" or "a pack a day").

	Suggested revisions: None. Retain as is. However, during interviewer training prepare interviewers for various answers. For example, if someone says they smoke between 8-10 cigarettes, than the interviewer should record 9. If someone says they smoke between 7-8 cigarettes, have them probe: "On most days, would you say it's closer to 7 or closer to 8." If someone says they smoke "half a pack" record 15, or if "a pack a day" then record 25.
004	In the past year, have you stopped smoking for one day or longer because you were trying to quit smoking? ___ Yes$_1$ ___ No$_2$
	Probes: None.
	Results: This question was generally understood in both English and Inuktitut. Participants were easily able to provide an answer based on the response options provided. As the interviewer, I found the word "smoking" at the end of the question too redundant and suggest removing it.
	Suggested revisions: In the past year, have you stopped smoking for one day or longer because you were trying to quit? ___ Yes$_1$ ___ No$_2$
004a	When you stopped smoking, where you trying to quit smoking for good, or just trying to quit for a specific period of time? ___ Permanetly$_1$ ___ Not permanetly$_2$
	Probes: None.
	Results: Among the three participants who had tried to quit smoking in the past year, two of the three had no problems answering this question in English. One participant actually indicated that when he quit he was not intending it to be permanent since he was only

	quitting because he was in jail during that time. The third participant who was asked the question in Inuktitut had more difficultly answering the question using the provided response options and instead mentioned that she had quit for two weeks because her co-worker was diagnosed with cancer. In this case, the problem appeared to be in the interpretation of the question. However, it was not clear how much translation may have played a role in this misinterpretation of the question. I think it might be worth retaining this question with some wording modifications.
	Suggested revisions: When you stopped smoking, were you trying to quit for good, or were you just quitting for a specific period of time? ____ Trying to quit for good$_1$ ____ Just quitting for a specific period of time $_2$
005	**Original form of the survey question:** Right now, would you say you were trying to quit smoking…within the next month; within the next 6 months; sometime in the future, but beyond 6 months; or, not planning to quit at all? ____ Within the next month$_1$ ____ Within the next 6 months$_2$ ____ Sometime in the future, beyond 6 months$_3$ ____ Not planning to quit$_4$ ____ Refused$_{88}$ ____ Don't know$_{99}$
	Probes: None.
	Results: This question was generally understood in both English and Inuktitut. Participants were easily able to provide an answer based on the response options provided.
	Suggested revisions: None. Retain as is.
006	**Original form of the survey question:** If you wanted to quit smoking right now, how easy or hard would it be for you to quit smoking? ____ Very easy$_1$

	___ Somewhat easy$_2$ ___ Neither easy nor hard$_3$ ___ Somewhat hard$_4$ ___ Very hard$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: This question was generally understood in both English and Inuktitut. Most chose the "somewhat hard" and "very hard" response option. One participant elaborated on her response by saying, "if I were committed [to quitting], then [would] be easier, but right now I'm not committed so would be harder." One participant indicated that the question was confusing because it sounded like two different questions [(e.g., how easy would it be to quit ("if I had support of partner willing to quit") AND how hard would it be to quit ("if I had no support or was surrounded by smokers")]. She said her response would change depending on what the question was really trying to get at. For example, it would be easier for her to quit if she had support of a partner willing to quit, but it would be harder if she had no support and was surrounded by smokers. This participant identified the question as a double-barrelled question and appeared to have alternate, yet reasonable, interpretation of the question as a whole. As such, the following wording changes are suggested.
	Suggested revisions: If you wanted to quit smoking <u>right now</u>, how hard would it be for you to quit smoking completely? ___ Not hard at all$_1$ ___ A little hard$_2$ ___ Somewhat hard$_3$ ___ Very hard$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$

007	**Original form of the survey question:**
	How certain are you that quitting smoking would reduce your risk of getting a serious illness, let's say lung cancer?
	___ Very certain$_1$ ___ Somewhat certain$_2$ ___ Neither certain nor uncertain$_3$ ___ Somewhat certain$_4$ ___ Very certain$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes:
	What does "risk" mean to you in this question? (To determine comprehension/interpretation of a specific term or concept) Can you think of one or two words that mean the same this as "risk"? (To determine comprehension/interpretation of a specific term or concept)
	Results:
	Most participants were able to answer this question easily; however, one participant had a hard time understanding what this question was asking and needed it repeated several times. When asked specifically what "risk" meant in this question, three participants were able to describe the concept of reducing one's "risk." For example, one participant described the concept of risk reduction as, "lowering my chance of getting an illness." However, two participants could not come up with another way of saying "risk." Since some participants appeared to have difficulty understanding the phrase "reduce your risk" the following revision is suggested.
	Suggested revisions:
	How certain are you that quitting smoking would lower your chances of getting a serious illness like lung cancer?
	___ Very certain$_1$ ___ Somewhat certain$_2$ ___ Neither certain nor uncertain$_3$ ___ Somewhat certain$_4$ ___ Very certain$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$

008	**Original form of the survey question:** When you think about the people you spend the most of your time with (e.g., family, friends, co-workers, etc.) how many of them currently smoke cigarettes, either daily or less than daily? ___ All of them$_1$ ___ Most of them$_2$ ___ Some of them$_3$ ___ A few of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: About how many people were you thinking of when you answered this question? (To determine the overall cognitive strategy used to arrive at the answer)
	Results: This question appeared to be well understood by participants; however, some participants needed a little extra time to come up with a number to answer the probing question. One participant elaborated on how why she initially gave an answer of 3, but then changed her answer to 12 after further clarification of the question: "I counted the three who live with me, but changed my answer when considering friends and coworkers." Most participants provided a discrete number, ranging from 5-12; however, one participant provided an estimate (i.e., "7 out of 10").
	Suggested revisions: When you think about the people you spend the most of your time with (including your family, friends, and co-workers) how many of them <u>currently smoke cigarettes</u>, either daily or less than daily? ___ All of them$_1$ ___ Most of them$_2$ ___ Some of them$_3$ ___ A few of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
009	**Original form of the survey question:** When you think about the people you spend the most of your time with (e.g., family,

	friends, co-workers, etc.) who <u>do not smoke</u>, how many of them used to smoke but have since quit smoking? ___ All of them$_1$ ___ Most of them$_2$ ___ Some of them$_3$ ___ A few of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: In your own words, what do you think this question is asking? (To test how the participant comprehends the question) Was this question hard to answer? And, why was this question hard to answer? (To determine level of difficulty, and likelihood of estimation/guessing) How many people were you thinking of when you answered this question? (To determine the overall cognitive strategy used to arrive at the answer)
	Results: Two participants had trouble understanding this question and found it to be too confusing or complicated. Some participants had trouble answering the question based on the response options provided. Three participants first provided a discrete number as an answer, then had to look back at the response options to figure out where their answer fit. This process appeared to be difficult for some people. Allowing participants to provide a discrete number in response to this question may help. In the Inuktitut version, the response options did not make sense to the interviewer and the participant.
	Suggested revisions: When you think about the people you spend the most of your time with (including your family, friends, and co-workers) how many of them <u>used to smoke but have since quit smoking</u>? **ENTER NUMBER** [__ __] ___ Refused$_{88}$ ___ Don't know$_{99}$
010	**Original form of the survey question:** When you think about the people that care about you the most (e.g., close family and friends), would you say that they are ok with you smoking cigarettes?

	___ They are totally ok with it$_1$ ___ They don't really care$_2$ ___ They are totally <u>not</u> ok with it$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: In your own words, what do you think this question is asking? (To test how the participant comprehends the question)
	Results: This question appeared to be well understood by most participants. One participant had trouble answering the question based on the response options provided indicating that, "some care, but some don't." This response did not fit into any of the response options. As such, the following revisions are suggested to accommodate this response option.
	Suggested revisions: When you think about the people that care about you the most (including your close family and friends), would you say that most of them are ok with you smoking cigarettes? ___ Most of them are ok with it$_1$ ___ Some of them are ok with it, but some are not$_2$ ___ Most of them are <u>not</u> ok with it$_3$ ___ Refused$_{88}$ ___ Don't know$_{99}$
012	**Original form of the survey question:** Based on what you know or believe, does smoking cigarettes cause… <u>Lung cancer</u> in smokers?
	Probes: How sure are you of your answer? Why are you sure/unsure? (To determine overall level of confidence)

	Results: All participants correctly indicated that smoking cigarettes caused lung cancer and most were very confident in their answer. Most participants indicated that they were confident in their answer because they had known people who had smoked and lung cancer or had died of lung cancer. One participant mentioned she had this information was on the "ads on cigarette packages." Another participant indicated that she had, "never used to believe it, [and] still not sure. [But,] just hearing from researchers and media that it is caused by smoking made me believe it."
	Suggested revisions: None. Retain as is.
013	**Original form of the survey question:** Based on what you know or believe, does smoking cigarettes cause… Diabetes in smokers?
	Probes: How sure are you of your answer? Why are you sure/unsure? (To determine overall level of confidence)
	Results: Most participants indicated that they did not know if smoking cigarettes caused diabetes. One participant justified her uncertainty by saying, "it may be one of the factors, but I would need to do a bit more research on diabetes [to know for sure]." Another participant justified her uncertainty by saying, "I get the fact that lung cancer is caused by smoking, but not sure about diabetes." Other participants indicated they thought/believed smoking cigarettes did cause diabetes; one participant indicated that she was 100% sure since her aunt had diabetes because she smoked, while another participant indicated that it is probably true because "every stick can kill you slowly."
	Suggested revisions: None. Retain as is. Question is meant to serve as a reliability check for other health effect questions.
016	**Original form of the survey question:** Based on what you know or believe, does smoking cigarettes cause… Stomach cancer in smokers?
	Probes: How sure are you of your answer? Why are you sure/unsure? (To determine overall level of confidence)

	Results: Most participants indicated that they did not know if smoking cigarettes caused stomach cancer (e.g., "never heard of it"). One participant was pretty sure smoking <u>was not</u> linked to stomach cancer, but was not completely sure because she had not really seen it before. Another participant indicated that she was pretty sure smoking <u>was</u> linked to stomach cancer "because smoking does affect all organs of your body."
	Suggested revisions: None. Retain as is.
017	**Original form of the survey question:** Based on what you know or believe, does smoking cigarettes cause… <u>Tuberculosis</u> in smokers?
	Probes: How sure are you of your answer? Why are you sure/unsure? (To determine overall level of confidence)
	Results: Most participants correctly indicated that smoking cigarettes was linked with tuberculosis. Three participants were very confident in their responses; one indicated that she was sure because her brother smoked and had TB, another said she was "very positive because TB virus can be spread by breathing and sharing cigarettes," and another said she was aware of it because she heard it on the local radio. Two participants were less certain about their responses; one said "I think so; kind of," while other said he "didn't think so."
	Suggested revisions: None. Retain as is.
018	**Original form of the survey question:** Let's say you <u>*continue to smoke*</u> the amount that you do now. How would you compare your own chance of getting… <u>Lung cancer</u> in the future compared to someone who has never smoked? Would you say you are… ___ Just as likely$_1$ ___ A little more likely$_2$ ___ Somewhat more likely$_3$ ___ Much more likely$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$

	Probes: In your own words, what is this question is asking? (To test how the participant comprehends the question) How did you come up with that answer? (To determine the overall cognitive strategy used) Was it difficult to respond to this question? And, if so, why? (To determine level of difficult)
	Results: Only one participant appeared to have difficulty understanding this question; however, some participants needed to have the question repeated, or needed some extra time to think about their answer. Most participants correctly understood the question to be asking them to compare their own chances of getting lung cancer to that of a non-smoker and most indicated that they were at a much greater risk. In the Inuktitut version, this question made little sense to the interviewer and the participant.
	Suggested revisions: None. Retain as is.
022	**Original form of the survey question:** In the last month, how often have you _noticed_ warning labels on cigarette packages? ___ Never$_1$ → **SKIP TO Q029** ___ Rarely$_2$ ___ Sometimes$_3$ ___ Often$_4$ ___ Very often$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: No one had difficulty understanding this question and the response options seemed appropriate. One participant indicated that she noticed the warning labels "all the time" but she easily replaced her response in the "very often" category. Another participant elaborated on her response by saying she had been noticing them lately because they had recently changed: "When they first came out I noticed them very often, but less often now."

	Suggested revisions: None. Retain as is.
023	**Original form of the survey question:** In the last month, how often have you *closely read* the warning labels on cigarette packages? ___ Never$_1$ ___ Rarely$_2$ ___ Sometimes$_3$ ___ Often$_4$ ___ Very often$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: No one had difficulty understanding this question and the response options seemed appropriate. One participant clarified her response by saying she noticed the warning labels very often but never read them closely because she "always covers them up."
	Suggested revisions: None. Retain as is.
029	**Original form of the survey question:** Over the last 6 months, do you remember seeing or hearing any <u>local</u> media campaigns on the dangers of smoking for people here in Nunavut? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$ **IF RESPONSE = 2 OR 99, THEN GO TO Q034**
	Probes: What does "media campaigns" mean to you in this question? (To determine comprehension/interpretation of a specific term/phrase) What does "local" mean to you in this question? (To determine comprehension/interpretation of a specific term)

	Results: People had various understandings of what the phrase "media campaigns" meant to them. Most commonly people mentioned radio ads, websites (like Facebook), posters, and one participant mentioned it could also mean T.V. ads. Another participant had an alternate understanding of the phrase and thought it meant something like a voting campaign, or town meetings. Most people had a good understanding of the term "local" reporting that it meant "where we are, where we live," "my community," and "in their community; here in Iqaluit, or other community in Nunavut." Based on these results, it is suggested that the term "media campaigns" be replaced with advertisements.
	Suggested revisions: Over the last 6 months, do you remember seeing or hearing any <u>local</u> advertisements about the dangers of smoking for people here in Nunavut? ___ Yes$_1$ ___ No$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$ **IF RESPONSE = 2 OR 99, THEN GO TO Q034**
032	**Original form of the survey question:** How much, if at all, did seeing or hearing this campaign make you <u>think about</u> the dangers of smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: Only two participants provided a response to this question. These two participants were the only ones who had reported seeing or hearing any local media campaigns in the last 6 months. These two participants appeared to understand the question well and easily provide an answer based on the response options given. Based on the findings from the previous question, the term "campaigns" will be replaced with

	"advertisements."
	Suggested revisions: How much, if at all, did seeing or hearing these advertisements make you <u>think about</u> the dangers of smoking cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
033	**Original form of the survey question:** How much, if at all, did seeing or hearing this campaign make you <u>want to quit smoking</u> cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$ ___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: As with the previous question, only two participants provided a response to this question. These two participants were the only ones who had reported seeing or hearing any local media campaigns in the last 6 months. These two participants appeared to understand the question well and easily provide an answer based on the response options given. Based on the findings from the two previous questions, the term "campaigns" will be replaced with "advertisements."
	Suggested revisions: How much, if at all, did seeing or hearing these advertisements make you <u>want to quit smoking</u> cigarettes? ___ Not at all$_1$ ___ A little$_2$ ___ Somewhat$_3$

	___ A lot$_4$ ___ Refused$_{88}$ ___ Don't know$_{99}$
034	**Original form of the survey question:** SHOW PHRASE 1 Please tell me what you think this phrase means. **OPEN REPONSE:** _____ _____ _____ **RECORD:** ___ Correct response$_1$ ___ Incorrect response$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: Overall, this question was well understood. Most participants re-stated what they thought the phrase meant in their own words. However, one participant – although she appeared to understand the phrase – indicated her disagreement with the phrase instead. There appeared to be some confusion as to what she was being asked to do in this question. To clarify, a few extra instructions may need to be added to the question. Further, both interviewers noted that there needs to be some instructions to the interview indicating he/she should not read the response options.
	Suggested revisions: In your own words, please tell me what you think this phrase means. **OPEN REPONSE:** _____ _____ _____ ***DO NOT READ THESE OPTIONS OUT LOUD***

	RECORD: ___ Correct response[1] ___ Incorrect response[2] ___ Refused[88] ___ Don't know[99]
035	**Original form of the survey question:** On a scale of 1 to 10, where 1 means <u>very easy</u> and 10 means <u>very hard</u>, please tell me how easy or hard this phrase is to understand. 1 2 3 4 5 6 7 8 9 10 Very easy In the middle Very hard
	Probes: None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. Most participants indicated that the phrase was "very easy" to understand although there was some variability in response (range: 1-4; mean = 1.8).
	Suggested revisions: Add "Refuse" and "Don't know" as response options. 1 2 3 4 5 6 7 8 9 10 Refused Don't know Very easy In the middle Very hard
036	**Original form of the survey question:** SHOW PHRASE 2 Please tell me what you think this phrase means. **OPEN REPONSE:** _____ _____ _____ **RECORD:** ___ Correct response[1] ___ Incorrect response[2] ___ Refused[88]

	___ Don't know$_{99}$	
	Probes: None.	
	Results: Overall, this question was well understood. Most participants re-stated what they thought the phrase meant in their own words. However, one participant – although she appeared to understand the phrase – indicated her agreement with the phrase instead. There appeared to be some confusion as to what she was being asked to do in this question. As with the previous question, a few extra instructions may need to be added to the question. Again, it was noted that there needs to be some instructions to the interview indicating he/she should not read the response options. One participant had difficulty pronouncing the term "premature" and did not appear to understand its meaning. The Inuktitut version of the phrase appeared not to make much sense to the participant or the interviewer.	
	Suggested revisions: SHOW PHRASE 2 In your own words, please tell me what you think this phrase means. **OPEN REPONSE:** _____ _____ _____ ***DO NOT READ THESE OPTIONS OUT LOUD*** **RECORD:** ___ Correct response$_1$ ___ Incorrect response$_2$ ___ Refused$_{88}$ ___ Don't know$_{99}$	
037	**Original form of the survey question:** On a scale of 1 to 10, where 1 means <u>very easy</u> and 10 means <u>very hard</u>, please tell me how easy or hard this phrase is to understand. 1 2 3 4 5 6 7 8 9 10 Very easy In the middle Very hard	
	Probes:	

	None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. Most participants indicated that the phrase was moderately hard to understand by choosing "in the middle" on the response scale, although there was some variability in response (range: 1-5; mean = 3.4).
	Suggested revisions: Add "Refuse" and "Don't know" as response options. 1 2 3 4 5 6 7 8 9 10 Refused Don't know Very easy In the middle Very hard
038	**Original form of the survey question:** Please tell me whether this warning makes you feel <u>uncomfortable</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. There was good variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"). Mean equals 4.6. The interviewer noted that the phrase "Please tell me whether…" got very redundant as she made her way through these questions. It is suggested that this phrase be removed, and the statement resemble more of a question.
	Suggested revisions: Does this warning make you feel <u>uncomfortable</u>? 1 2 3 4 5 6 7 8 9 10 Refused Don't know Not at all In the middle Extremely
039	**Original form of the survey question:** Please tell me whether this warning makes you feel <u>disgusted</u> or <u>grossed out</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes:

	None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. Some participants clarified their response by saying they were basing their response on solely the picture or text. May consider adding further instructions before these questions to say, "…try to think about the words and the picture when you answer these questions." There was good variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"). One participant had a hard time deciding if her response was closer to 7 or 8 on the scale. Mean equals 6.5.
	Suggested revisions: Does this warning make you feel <u>disgusted</u> or <u>grossed out</u>? 1 2 3 4 5 6 7 8 9 10 Refused Don't know Not at all In the middle Extremely
040	**Original form of the survey question:** Please tell me whether this warning makes you feel <u>worried</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. There was good variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"). Mean equals 6.8.
	Suggested revisions: Does this warning make you feel <u>worried</u>? 1 2 3 4 5 6 7 8 9 10 Refused Don't know Not at all In the middle Extremely
041	**Original form of the survey question:** Please tell me whether this warning makes you feel <u>sad</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes:

	None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. One participants clarified her response by saying it was the text that made her feel sad, not the picture. There was good variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"); mean equals 5.6.
	Suggested revisions: Does this warning make you feel <u>sad</u>? 1 2 3 4 5 6 7 8 9 10 Refused Don't know Not at all In the middle Extremely
042	**Original form of the survey question:** Please tell me whether this warning makes you feel <u>scared</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. There was good variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"); mean equals 6.0.
	Suggested revisions: Does this warning make you feel <u>scared</u>? 1 2 3 4 5 6 7 8 9 10 Refuse Don't know Not at all In the middle Extremely
043	**Original form of the survey question:** Please tell me whether this warning is <u>relevant</u> to you. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: What does "relevant" mean to you in this question? (To determine comprehension/interpretation of a specific term)
	Results:

	Most participants reported that the warning was "not at all" relevant to them. Responses ranged from 1 ("not at all") to 10 ("extremely"); mean equals 3.6. Although all participants provided a response to this question, most did not know what "relevant" meant when probed after the question was asked. Two participants were able to describe the term in their own words as, "does it apply to me or does it relate to me" and "talking to me" or "speak to you." Based on these findings, it is suggested that the term "relevant" be changed to "speaks" to clarify the meaning of the question.
	Suggested revisions: Does this warning "speak" to you? 1 2 3 4 5 6 7 8 9 10 Refuse Don't know Not at all In the middle Extremely
044	**Original form of the survey question:** Please tell me whether you thing this warning is <u>believable</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. There was some variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"); however, participants tended to respond based on the two extremes of the scale. Mean equals 5.0. One participant elaborated on her response saying that she did not find the warning at all believable because she felt that the picture did not go with the phrase. She suggested that if the picture was of a stomach and damaged lining than she would find the warning more believable.
	Suggested revisions: Do you think this warning is <u>believable</u>? 1 2 3 4 5 6 7 8 9 10 Refuse Don't know Not at all In the middle Extremely
045	**Original form of the survey question:** Please tell me whether this warning makes you <u>want to talk to someone</u> about the health risks of smoking, or about quitting smoking. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes:

	None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. There was some variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"); however, participants tended to respond based on the two extremes of the scale. Mean equals 4.8. One participant elaborated on her response saying that she thought this warning would make people want to talk to someone about smoking, "because not very many people are aware of the smoking consequences; it's a good way to talk to youth about smoking." Based on the interviewer's experience, it is suggested that the question be simplified by eliminating the phrase, "or about quitting smoking."
	Suggested revisions: Does this warning make you <u>want to talk to someone</u> about the dangers of smoking? 1 2 3 4 5 6 7 8 9 10 Refuse Don't know Not at all In the middle Extremely
046	**Original form of the survey question:** Please tell me whether this warning makes you <u>want to quit smoking</u>. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: None.
	Results: All participants seemed to understand this question and easily provide a response based on the response scale. There was some variability in the responses provided by participants ranging from 1 ("not at all") to 10 ("extremely"); mean response equals 6.2. One participant elaborated on her response saying that she felt the text might make her want to quit smoking, but that the picture didn't really say anything about the risk.
	Suggested revisions: Does this warning make you <u>want to quit smoking</u>? 1 2 3 4 5 6 7 8 9 10 Refuse Don't know Not at all In the middle Extremely

047	**Original form of the survey question:** Please tell me whether you think this is an <u>effective</u> warning. 1 2 3 4 5 6 7 8 9 10 Not at all In the middle Extremely
	Probes: What does "effective" mean to you in this question? (To determine comprehension/interpretation of a specific term)
	Results: Responses to this question where only provided on either extremes of the scale, ranging from 1 ("not at all") to 10 ("extremely"); mean equals 4.4. One participant refused to answer this question, highlighting the need to have a "Refuse" and "Don't know" response option for these types of questions. When probed, most participants did not know what "effective" meant in this question. Two participants were able to describe the term in their own words as, "is it useful" and "if this is helpful for me." Based on these findings, it is suggested that the term "effective" be changed to "works or is helpful" to clarify the meaning of the question.
	Suggested revisions: Do you think this is a warning that works or is helpful? 1 2 3 4 5 6 7 8 9 10 Refuse Don't know Not at all In the middle Extremely
048	**Original form of the survey question:** Out of these three warnings, which one do you think is most <u>relevant</u> to you? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
	Probes: What does "relevant" mean to you in this question? (To determine comprehension/interpretation of a specific term)
	Results: In this question, most people could explain what the term "relevant" meant. For example, participants understood it to mean which one, "is more meaningful," "speaks to me the most," "talks to me the most," and "relates to me." However, based on the

	difficulty with understanding this term from a previous question, it is suggested that "relevant" be replaced with "speaks to you." The response options "refused" and "don't know" should also be added to these questions. There was some variability in the response options: two participants chose HWL #1, two chose HWL #3, and one chose the option "all of them."
	Suggested revisions: Out of these three warnings, which one do you think "speaks" to you the most? SELECT ALL THAT APPLY: ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
049	**Original form of the survey question:** Out of these three warnings, which one do you think is the most <u>believable</u>? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
	Probes: None.
	Results: All participants appeared to understand this question. However, one participant had difficulty choosing between HWL #1 and HWL #3 for the one she felt was the most believable. As a result, the instructions should be updated to say, "Please choose all that apply." There was some variability in the response options: two participants chose HWL #3, one chose the option "all of them," and one chose both HWLs #1 and #3. The response options "refused" and "don't know" should also be added to these questions.

	Suggested revisions: Out of these three warnings, which one do you think is the most <u>believable</u>? SELECT ALL THAT APPLY: ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
050	**Original form of the survey question:** Out of these three warnings, which spokesperson (that is, the person in picture) do you feel you are most <u>similar to</u>? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
	Probes: What is it about this spokesperson that makes you feel more similar to him/her? (To determine comprehension/interpretation of a specific term/phrase)
	Results: All participants appeared to understand this question; however, their interpretation of the term "similar to" tended to focus on the spokesperson's story rather than the physical characteristics of the spokesperson. Most participants felt more similar to the spokesperson in HWL #3 and elaborated on their choice by saying, "I also had trouble breathing about a month ago," "we're taught to listen to our Elders," and "I don't really get deep coughs yet, so #1 and #2 don't really talk to me." One participant who chose HWL #1 explained she felt more similar to this spokesperson because you usually "see a lot Elders suffering from COPD or asthma." The last participant, who chose the "all of them" response option indicated that she felt similar to all the spokespersons because "we are all human." For most participants, their response was the same for question #048, suggesting people used a similar decision process to determine which warning was more "relevant" to them and which one they felt most "similar" too. Given the apparent overlap of these too concepts, it is suggested that this question be dropped from the survey.

	Suggested revisions: Drop this question.
051	**Original form of the survey question:** Out of these warnings, which one makes you <u>want to quit smoking</u> the most? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$
	Probes: None.
	Results: All participants appeared to understand this question and were easily able to select one of the response options. There was variability in the response options chosen: two participants chose HWL #3, one chose HWL #1, one chose the option "all of them," and another chose the option "none of them."
	Suggested revisions: Out of these warnings, which one makes you <u>want to quit smoking</u> the most? SELECT ALL THAT APPLY: ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
052	**Original form of the survey question:** Out of these warnings, which do you think is the most <u>effective</u> overall? ___ #1$_1$ ___ #2$_2$ ___ #3$_3$ ___ All of them$_4$ ___ None of them$_5$

	Probes: None.
	Results: All participants answered this question, but it was unclear whether they understood the term "effective" since its meaning was not probed further. Given the difficulty some people had understanding this term in a previous question, it is likely they did not understand the term in this question as well. Also, the interviewer noted that this question seemed a little redundant and did not appear to add any meaningful insights.
	Suggested revisions: Drop this question.
053	**Original form of the survey question:** Warning labels on cigarette packages make me angry because they tell me things I already know. ____ Strongly agree$_1$ ____ Agree$_2$ ____ Neither agree nor disagree$_3$ ____ Disagree$_4$ ____ Strongly disagree$_5$ ____ Refused$_{88}$ ____ Don't know$_{99}$
	Probes: None.
	Results: Most participants appeared to understand this question and were able to provide a response based on the options given. One participant had difficultly answering the questions because she felt the warnings did not make her feel angry, but just made her "feel grossed out." She suggested asking a question about whether warning labels on cigarette packages "make me feel guilty" might be more meaningful. There was good variability in participants' responses: two disagreed with the statement; one neither agreed nor disagreed, and one strongly agreed. Given that this question was intended to get at reactance to the warning labels, it is suggested that it be retained as is.
	Suggested revisions: None. Retain as is.

054	**Original form of the survey question:** Warning labels on cigarette packages are just another way that the government tries to tell people what to do. ___ Strongly agree$_1$ ___ Agree$_2$ ___ Neither agree nor disagree$_3$ ___ Disagree$_4$ ___ Strongly disagree$_5$ ___ Refused$_{88}$ ___ Don't know$_{99}$
	Probes: None.
	Results: All participants appeared to understand this question and were able to provide a response based on the options given. There was good variability in participants' responses: two disagreed with the statement; one neither agreed nor disagreed, and one agreed, and one strongly agreed.
	Suggested revisions: None. Retain as is.

Appendix H. Pre-testing Results – Health Warning Labels

HWL #	Original wording/image	Suggested revisions	Rational
1a, 2a, 3a, 4a, 1b, 2b, 3b, 4b	"risk"	"chances"	The term "risk" was changed to "chances" since pre-testing uncovered that some people had trouble understanding the term/concept of "risk." The term "chances" was suggested as an alternative word by some participants.
1a & 3a	**Smoking raises your risk of getting stomach cancer.** When you smoke, some of the harmful cigarette smoke may be swallowed. This can damage the lining of your stomach and cause stomach cancer.	**Smoking raises your chances of getting stomach cancer.** Smoking harms the lining of your stomach as cigarette smoke is swallowed. This can cause cancer and you may need surgery to take out your stomach.	Participants had mixed responses about whether the original warning was talking about the benefits of quitting or the negative effects of smoking. It appeared that perhaps the phrase "When you smoke…" may have been causing some confusion since it is a conditional state. The warning was revised to remove the conditional reference and to be more consistent with the TB warnings of the same condition.
2a & 4a	**Quitting lowers your risk of getting stomach cancer.** When you quit smoking, you no longer swallow harmful cigarette smoke. This allows your stomach lining to heal and prevents stomach cancer.	**Quitting lowers your chances of getting stomach cancer.** Quitting smoking allows the lining of your stomach to heal since cigarette smoke is not swallowed. This means you are less likely to get cancer and need surgery.	Most participants correctly identified that this warning as talking about the benefits of quitting smoking; however, one participant said it could be talking about both the benefits of quitting and the negative effects of smoking. Again, the conditional reference of "When you quit smoking…" may have been causing the confusion. This was removed and the warning was rephrased be more parallel to the previous condition.
5a & 7a	**"I wish I had never smoked."** "When I was smoking, I had severe pains in my stomach. I was diagnosed with stomach cancer and had to have surgery to remove my stomach."	**"I wish I had never started smoking."** "My doctor said smoking had damaged my stomach lining which caused my stomach pain. I found out it was cancer and had to have surgery to remove my stomach."	Participants had mixed responses about whether the original warning was talking about the benefits of quitting or the negative effects of smoking. Again, the conditional reference of "When I was smoking…" may have been causing the confusion. This was removed and the warning was rephrased.

Pre-testing also uncovered that some people had trouble understanding the term "diagnosed." This concept was |

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			replaced with the phrase, "My doctor said…" Upon further reflection, the phrase "I wish I had never smoked" could have been taken to mean that the person may have only every tried smoking once. Instead, to convey a longer term behaviour the phrase was revised to say, "I wish I had never started smoking."
6a & 8a	**"It's a <u>good thing I quit</u> when I did."** "When I quit smoking, the pains in my stomach went away. Quitting allowed my stomach to heal and meant I did not need surgery to remove my stomach."	**"It's <u>good I quit</u> when I did."** "My doctor said my stomach pain went away because I quit smoking. My stomach lining healed and now my chances of getting stomach cancer and needing surgery are lower."	Most participants correctly identified that this warning as talking about the benefits of quitting smoking; however, one participant was unsure. The warning was rephrased be more parallel to the previous condition.
1b, 2b, 3b, 4b, 5b, 6b, 7b, 8b	"tuberculosis"	"TB"	The term "tuberculosis" was changed to TB since it was uncovered in pre-testing people appeared more familiar with the short-form and some had difficulty with the full name. The importance of distinguishing between TB infection and disease and how these two conditions relate was also raised by one participant.
1b & 3b	**Smoking <u>raises your risk</u> of tuberculosis.** Smoking harms your lungs. Having weak lungs makes it hard for you to fight off TB infection and disease.	**<u>Smoking raises your chances</u> of getting TB.** Smoking harms your lungs making it harder to fight off the germs that cause TB infection. Smokers who have TB infection are more likely to get TB disease.	Participants had mixed responses about whether the original warning was talking about the benefits of quitting or the negative effects of smoking. This warning was revised to help distinguish the relations between smoking and TB infection and TB disease and hopefully clarify that it is meant to convey the negative effects of smoking.
2b & 4b	**Quitting <u>lowers your risk</u> of tuberculosis.** Quitting smoking strengthens your lungs. Having healthy lungs helps you to fight off TB	**<u>Quitting lowers your chances</u> of getting TB.** Quitting smoking allows your lungs to heal so they can fight off the germs that cause TB infection.	All participants correctly identified that this warning as talking about the benefits of quitting smoking. However, this warning was revised to help distinguish the relations between smoking and TB infection and TB disease.

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	infection and disease.	If you have TB infection, quitting can help prevent TB disease.	
5b & 7b	**"It's <u>so much harder</u> to breathe."** "Smoking had really damaged my lungs before I was diagnosed with tuberculosis. My body was just too weak to fight off the disease."	**"It's <u>so much harder</u> to breathe."** "My doctor said the treatment for my TB infection didn't work because I still smoked. Smoking had already damaged my lungs so much and now I have TB disease."	Participants had mixed responses about whether the original warning was talking about the benefits of quitting or the negative effects of smoking. This warning was revised to help distinguish the relations between smoking and TB infection and TB disease.
6b & 8b	**"Now, it's <u>so much easier</u> to breathe."** "Quitting smoking helped my lungs to heal and protected me from getting tuberculosis. My body was better able to fight off the disease."	**"It's <u>so much easier</u> to breathe."** "My doctor said the treatment for my TB infection worked because I quit smoking. My lungs were able to heal and now my chances of getting TB disease are lower."	All participants correctly identified that this warning as talking about the benefits of quitting smoking. However, this warning was revised to help distinguish the relations between smoking and TB infection and TB disease. Some correctly identified that this warning as talking about the negative effects of smoking; however, one said it was talking about the benefits of quitting and another said it was talking about both. This warning was revised to help distinguish the relations between smoking and TB infection and TB disease.
1a & 2a	Close up image of man lying in a hospital bed		Most participants described the person in the picture as a man lying down in a bed, possibly in a health centre or hospital. However, some said that the person didn't really look sick or like he's in that much pain. Some participants said the picture wasn't specific enough to the phrase (e.g., "it doesn't really say anything about the risk"). Another participant had a strong dislike for the person in the picture which may have distracted her from answering the warning specific questions. Generally the picture elicited feelings of sadness in participants; people felt sorry for him.
3a & 4a	Close up image of a stomach		Most participants were able to identify that the picture was of a stomach. Some people wondered whether it could be a lung, but eventually decided it was a stomach. One person said that

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			it looked like it could be of a surgery, or maybe someone checking a stomach for cancer. Although she identified the picture as a stomach right away, one person commented that a lot of people will probably ask what it is (e.g., "is it a healthy stomach?") Most people found the picture gross or disturbing. One participant said that she didn't like the picture and felt it was a bit too much. But later said, "it scares me but it would probably help me to quit."
5a & 6a	Close up image of woman lying in a hospital bed		Most participants described the person in the picture as a woman lying down in a bed, probably in a hospital or at home waiting to die. One participant said that the person looked pretty sick, but another said that it looked like she was smiling and she needed to look more serious. Some participants said the picture didn't really fit with the phrase and "doesn't really tell a story." Generally the picture elicited feelings of sadness in participants.
7a & 8a	Close up image of the inside of a stomach		Generally, participants had more difficulty describing what this picture was. One participant said it looked like someone was "going through a very painful procedure." Another participant said she had, "no idea what that is, but it's pretty nasty" and felt the picture was just too much. She further described that it looked like they were "doing something in the body; very similar to the other one." Another participant said it was a picture of someone "dissecting a lung." Only one participant said the picture was of a person having stomach cancer removed. Presumably, the participant came to this conclusion because of the description provided in the warning text. One participant said the picture did not really go with the phrase.

			Generally, participants described the picture as making them feel grossed out, sad or bad.
1b & 2b	Close up image of a man wearing an oxygen mask	Close up of man taking pills?	Most participants described the person in the picture as a man wearing an oxygen mask. One person elaborated by saying that he was wearing the "thing" because he was sick and probably having hard time breathing. One participant said she felt the man in the picture was saying to her, "Stop smoking or you'll look like me." Another participant said that the picture did not go with the phrase because TB patients don't use oxygen masks unless they are being transported.

Generally, participants described the picture as making them feel sad or uncomfortable. |
| 3b & 4b | An image of healthy and unhealthy lungs (from EU warnings) | | All participants described the picture as two different sets of lungs. One participant distinguished the two pairs as one being a non-smoker's lungs and the other a smoker's lungs. However, two other participant distinguished between the two pairs as one set having cancer and the other does not have cancer. One participant commented that the smoker's lungs were "pretty gross" but that she did not think the pink lungs were necessarily that healthy. One participant commented that the picture seemed be trying to educate more about emphysema or lung cancer than TB.

Generally, participants described the picture as gross, but some said it made them feel sad (e.g., "it's sad to know my lungs are like that now or will be"). |
| 5b & 6b | Close up image of a woman wearing an oxygen mask | Close up of woman man taking pills? | Most participants described the person in this picture as a woman wearing an oxygen mask. One participant described that there is "something wrong with her breathing; she's breathing oxygen." Another participant said that the picture was very similar to the other one as she is wearing the same |

			mask, but difference was that she's an older lady. One other participant said that she felt the picture was more relevant to this phrase because it was talking about how it's easier to breathe now that she quit; however, she felt the woman should be smiling without the mask on. Generally, participants described this picture as making them feel sad or that it conveyed hurt. One participant said it made her feel hopeful, however, it is unclear where she was referring just to the picture or to the picture paired with the phrase.
7b & 8b	An image of healthy and unhealthy lungs (dissected)		All participants described the picture as two different sets of lungs. One participant described one set as "healthy lungs" and the others "look like no good and full of cigarette 'mutt.'" Another participant asked for clarification, "Are these lungs?" then proceeded to say that the picture was very similar but different in colour to the other picture. One participant said that they were "too gross" and that some people will be too sensitive to this picture, especially Elders. However, said proceeded to say that "it might be good to show this to teach others about the health effects." Generally, participants described this picture as "nasty" or gross. Some felt it was too much, too gross. Some said it was sad, but it was not clear whether they were referring to the picture itself of the picture paired with the phrase.
1c & 1d	"I was diagnosed with COPD last year. It started with a deep cough that wouldn't go away. Now, I can't walk up the stairs without getting winded."	"I was diagnosed with lung disease last year. I still have a really hard time breathing and a painful cough that won't go away. Now I just wish I had never started smoking."	Most participants had trouble with the term COPD. One participant said that the "text is pretty good here" but had trouble with the term COPD. Another participant had trouble with understanding the word "diagnosed." All participants identified the spokespersons (male and female) as "White." Female participants estimated the age of

			the female spokesperson to be 26-54 years old: two of the younger participants estimated she was 26-39 years old, while the two older participants estimated she was 40-54 years old. The male participant estimated the age of the male spokesperson to be 40-54 years old. The male participant thought the story sounded like something the male spokesperson might say; however, the reactions from the female participants to the female spokesperson were mixed. One participant said it sounded like something the female spokesperson would say and another participant said it sounded "a little bit" like something she might say; however, two others said it did not sound like something she might say. When probed further, participants said that the female spokesperson looked depressed rather than sick from smoking and that adding more wrinkles and making her look frailer would help (e.g., "she looks too healthy for this phrase). Another participant suggested that the picture should include someone who is struggling to get up a set of stairs.
2c & 2d	"The doctor told me I had COPD because I smoked. I had this cough that just kept on getting worse. Now, I can't walk next door without losing my breathe."	"My doctor said I had lung disease because I smoked. I have a hard time breathing and a painful cough that won't go away. I don't want others to go through the same suffering."	Most participants had trouble with the term COPD. Another participant had trouble with understanding the word "diagnosed." All female participants identified the female spokesperson as Asian descent, including Chinese and Pilipino. They estimated her age to be between 18-39 years old; with most saying she was aged 26-39. The male participant identified the male spokesperson as Aboriginal and estimated his age as between 26-39 years old. The male participant thought the story sounded like something the male spokesperson might say; however, the

			reactions from the female participants to the female spokesperson were mixed. One participant said it sounded like something she would say; however, one did not know and two said it didn't sound like something she would say. When probed further, one participant said that the female spokesperson looked too young to be diagnosed with COPD. One other participant said that she did not understand the picture, while another said that the phrase did not fit the picture.
3c & 3d	"I have seen many of our people suffer from smoking. They have a hard time breathing, and have a deep painful cough. This is caused by smoking."	"I see many of our people suffering from lung disease. They have a hard time breathing and a painful cough that won't go away. This is caused by smoking and we have to stop."	The male participant identified the male spokesperson as Chinese, 55 years of age or older. He indicated that he thought the spokesperson could be an Elder. Responses from female participants about the female spokesperson were mixed: two identified the spokesperson as Asian, one as Aboriginal, and one said she thought the spokesperson was either Aboriginal or Chinese. All female participants indicated that they thought the spokesperson was 55 years of age or older and could be an Elder. Both male and female participants thought the story sounded like something the spokesperson would say.

Appendix I. Differences in Participant Characteristics for Those Included vs. Excluded

	Included (n=129)		Excluded (n=15)		Chi-square
	n	**%**	**n**	**%**	**p-value**
Community					
Iqaluit	82	63.6	10	66.7	0.813
Rankin Inlet	47	36.4	5	33.3	
Sex					
Male	56	43.4	3	20.0	0.081
Female	73	56.6	12	80.0	
Age (years)					
18-25	34	27.0	0	0	**0.032**
26-40	39	31.0	3	23.1	
>40	53	42.1	10	76.9	
Missing	3		2		
Education					
Grade 8 or less	32	25.0	4	28.6	0.570
Some high school	61	47.7	8	57.1	
Grade 12 or more	35	27.3	2	14.3	
Missing	1		1		
Employment status					
Paid work, full-time	30	23.4	4	28.6	0.466
Paid work, part-time or seasonal	15	11.7	2	14.3	
Not currently working	63	49.2	8	57.1	
Student, full- or part-time	20	15.6	0	0	
Missing	1		1		
Language spoken most often at home					
Inuktitut	68	54.4	9	69.2	0.355
English	57	45.6	4	30.8	
Missing	4		2		
Language most comfortable reading					
Inuktitut	19	15.0	2	14.3	0.241
English	95	74.8	8	57.1	
Both	13	10.2	4	28.6	
Missing	2		1		
Smoking status					
Daily	120	93.0	15	100.0	
Non-daily	9	7.0	0		
Missing	0		0		
Cigarettes smoked per day (CPD)					0.663
Up to 5	23	18.3	1	6.7	
6-10	37	29.4	6	40.0	
11-15	35	27.8	4	26.7	
More than 15	31	24.6	4	26.7	
Missing	3		0		

	Included (n=129)		Excluded (n=15)		Chi-square
	n	**%**	**n**	**%**	**p-value**
Time to first cigarette (TTFC)					0.525
Within 5mins	58	48.3	6	40.0	
6-30 mins	30	25.0	3	20.0	
31-60	10	8.3	3	20.0	
More than 60mins	22	18.3	3	20.0	
Not applicable	9		0		
Made a quit attempt in the past year					0.890
Yes	75	58.1	9	60.0	
No	54	41.9	6	40.0	
Missing	0		0		
Plans to quit smoking					0.275
Planning to quit	96	77.4	9	64.3	
Not planning to quit	28	22.6	5	35.7	
Missing	5		1		

Appendix J. Mean Ratings and Sample Sizes for each Health Warning Label

	SET A. Stomach Cancer							
	HWL #1a	**HWL #2a**	**HWL #3a**	**HWL #4a**	**HWL #5a**	**HWL #6a**	**HWL #7a**	**HWL #8a**
Textual message frame	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
Graphic type	Pers. suffering	Pers. suffering	Gruesome	Gruesome	Pers. suffering	Pers. suffering	Gruesome	Gruesome
Narrative type	Didactic	Didactic	Didactic	Didactic	Testimonial	Testimonial	Testimonial	Testimonial
Uncomfortable								
N	66	59	60	67	64	64	61	63
Mean (SD)	7.1 (3.0)	**5.7 (3.5)**	**8.0 (3.0)**	7.5 (3.4)	6.5 (3.3)	6.1 (3.4)	**8.0 (3.0)**	7.2 (3.3)
Disgusted								
N	66	61	61	67	63	64	63	63
Mean (SD)	7.0 (3.3)	**5.2 (3.4)**	8.1 (2.6)	8.0 (3.0)	6.0 (3.2)	5.6 (3.7)	**8.3 (2.9)**	7.2 (3.3)
Worried								
N	66	60	61	67	64	64	63	64
Mean (SD)	7.3 (3.3)	**5.9 (3.2)**	7.3 (2.9)	7.8 (3.2)	6.3 (3.4)	6.3 (3.2)	**7.8 (2.9)**	7.3 (3.0)
Sad								
N	66	60	60	67	63	64	63	64
Mean (SD)	7.4 (3.2)	**5.7 (3.4)**	7.6 (3.2)	7.7 (3.1)	6.2 (3.4)	6.5 (3.4)	**7.8 (3.0)**	6.8 (3.5)
Scared								
N	66	60	61	67	63	64	63	64
Mean (SD)	7.3 (3.3)	**5.9 (3.5)**	7.5 (3.0)	**8.0 (2.9)**	6.2 (3.4)	6.6 (3.3)	7.8 (3.0)	7.3 (3.3)
Relevant								
N	64	61	61	66	62	64	63	63
Mean (SD)	7.0 (3.2)	5.9 (3.3)	7.2 (2.8)	7.7 (3.0)	**5.8 (3.5)**	6.8 (3.2)	**7.9 (2.8)**	6.6 (3.2)
Credible								
N	65	61	61	66	62	64	62	63
Mean (SD)	8.1 (2.8)	7.5 (3.2)	8.5 (2.3)	**8.9 (2.4)**	**7.4 (3.2)**	8.4 (2.8)	**8.9 (1.7)**	8.2 (2.7)
Motivation to talk								
N	64	60	60	66	62	64	62	62
Mean (SD)	7.0 (3.4)	**5.7 (3.3)**	7.0 (2.9)	**7.5 (3.3)**	6.3 (3.3)	6.3 (3.4)	6.8 (3.4)	7.1 (3.1)
Motivation to quit								
N	66	62	61	66	65	63	62	65
Mean (SD)	7.8 (3.1)	**5.7 (3.3)**	7.4 (2.9)	**8.3 (3.1)**	6.7 (3.4)	6.9 (3.4)	8.1 (2.6)	7.3 (3.3)
Perceived effectiveness								
N	66	60	61	67	63	63	62	63
Mean (SD)	7.7 (2.9)	**6.5 (3.3)**	7.9 (2.6)	**8.6 (2.5)**	6.7 (3.2)	7.8 (3.0)	8.5 (2.3)	7.8 (2.7)

	SET B: Tuberculosis							
	HWL #1b	HWL #2b	HWL #3b	HWL #4b	HWL #5b	HWL #6b	HWL #7b	HWL #8b
Textual message frame	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
Graphic type	Pers. suffering	Pers. suffering	Gruesome	Gruesome	Pers. Suffering	Pers. suffering	Gruesome	Gruesome
Narrative type	Didactic	Didactic	Didactic	Didactic	Testimonial	Testimonial	Testimonial	Testimonial
Uncomfortable								
N	60	66	67	60	63	62	64	63
Mean (SD)	6.5 (3.2)	6.5 (3.4)	**8.1 (2.8)**	7.2 (3.1)	6.8 (3.1)	**5.8 (3.4)**	8.1 (2.8)	7.4 (3.2)
Disgusted								
N	60	65	67	60	63	62	63	63
Mean (SD)	6.3 (3.1)	6.3 (3.6)	**8.6 (2.5)**	7.5 (3.0)	6.4 (3.4)	**5.3 (3.4)**	8.0 (3.0)	7.3 (3.3)
Worried								
N	59	65	67	59	63	63	64	63
Mean (SD)	6.6 (3.1)	7.2 (3.2)	**8.4 (2.6)**	7.2 (3.1)	6.9 (3.1)	**6.5 (3.3)**	7.9 (2.7)	7.6 (3.0)
Sad								
N	60	65	67	59	63	62	64	62
Mean (SD)	6.3 (3.3)	6.9 (3.3)	**8.6 (2.4)**	6.5 (3.2)	6.8 (3.3)	**6.2 (3.3)**	7.4 (3.1)	7.7 (3.0)
Scared								
N	59	65	67	60	63	62	65	62
Mean (SD)	6.4 (3.3)	6.9 (3.5)	**8.6 (2.3)**	6.8 (3.4)	7.0 (3.3)	**6.3 (3.4)**	8.1 (2.6)	7.7 (3.0)
Relevant								
N	59	65	66	58	62	62	63	62
Mean (SD)	**5.9 (3.4)**	6.5 (3.5)	**7.8 (3.2)**	6.6 (3.3)	6.9 (3.2)	6.3 (3.3)	7.2 (3.2)	7.4 (3.1)
Credible								
N	58	65	67	59	63	64	65	62
Mean (SD)	7.7 (3.0)	8.0 (2.9)	**9.0 (2.2)**	8.5 (2.3)	8.5 (2.5)	**7.5 (3.0)**	8.7 (2.4)	**9.0 (2.0)**
Motivation to talk								
N	59	64	66	60	63	63	63	63
Mean (SD)	**5.9 (3.5)**	7.0 (3.6)	**7.9 (3.0)**	6.5 (3.2)	6.7 (3.5)	6.3 (3.1)	7.5 (3.0)	7.4 (3.1)
Motivation to quit								
N	61	66	67	60	63	63	63	63
Mean (SD)	**6.5 (3.2)**	7.6 (3.4)	**8.5 (2.7)**	7.4 (2.8)	7.5 (2.9)	7.1 (3.3)	7.7 (2.9)	8.3 (2.4)
Perceived effectiveness								
N	59	66	67	59	63	64	62	63
Mean (SD)	7.2 (3.1)	7.4 (3.0)	**8.9 (2.1)**	7.9 (2.6)	7.8 (3.0)	**6.8 (3.1)**	8.3 (2.4)	8.6 (2.2)

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Appendix K. Multivariate Multinomial Logistic Regression Models using GEE

Table K-1. Generalized Logit Model for Uncomfortable (Exchangeable, Robust)

		Generalized Logit Model for Uncomfortable [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	**<0.001**	**1.14**	**(1.07-1.21)**	1.04	(0.96-1.13)	**1.10**	**(1.02-1.18)**
Community	0.850						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		1.21	(0.54-2.75)	1.02	(0.49-2.16)	1.19	(0.60-2.38)
Sex	0.771						
Male		Ref.		Ref.		Ref.	
Female		1.28	(0.61-2.67)	1.24	(0.60-2.54)	1.03	(0.50-2.13)
Age	0.048						
18-25		Ref.		Ref.		Ref.	
26-40		1.18	(0.43-3.29)	0.61	(0.27-1.39)	1.96	(0.87-4.35)
>40		0.90	(0.34-2.36)	0.36	(0.17-0.79)	2.50	(1.12-5.56)
Education	0.020						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		1.53	(0.53-4.48)	0.73	(0.29-1.87)	2.08	(0.97-4.55)
Grade 12 or more		0.46	(0.14-1.50)	0.38	(0.15-0.99)	1.22	(0.44-3.33)
CPD	0.532						
5 or less		Ref.		Ref.		Ref.	
6-10		1.44	(0.45-4.56)	1.85	(0.72-4.79)	0.78	(0.31-1.96)
11-15		1.18	(0.43-3.25)	1.26	(0.52-3.09)	0.93	(0.38-2.33)
>15		1.21	(0.42-3.46)	0.78	(0.29-2.11)	1.56	(0.60-4.00)
Quit intentions	0.087						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		1.67	(0.77-3.60)	0.73	(0.35-1.50)	2.27	(0.99-5.26)
Functional literacy	0.204						
Correct		Ref.		Ref.		Ref.	
Incorrect		1.77	(0.80-3.92)	0.98	(0.46-2.10)	1.79	(0.88-3.70)
HWL health effect	0.191						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.96	(0.73-1.28)	0.77	(0.56-1.06)	1.25	(0.93-1.67)
HWL message frame	**<0.001**						
Gain-framed		**Ref.**		**Ref.**		Ref.	
Loss-framed		**1.73**	**(1.32-2.27)**	**1.62**	**(1.18-2.22)**	1.06	(0.79-1.45)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		**Ref.**	
Gruesome		**2.86**	**(2.03-4.02)**	**1.62**	**(1.12-2.35)**	**1.75**	**(1.20-2.56)**
HWL Narrative type	0.357						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.20	(0.92-1.57)	1.06	(0.75-1.49)	0.88	(0.65-1.20)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Table K-2. Generalized Logit Model for Disgust (Exchangeable, Robust)

	Overall p-value[†]	Extremely vs. Not really OR	Extremely vs. Not really 95% CI	Somewhat vs. Not really OR	Somewhat vs. Not really 95% CI	Extremely vs. Somewhat OR	Extremely vs. Somewhat 95% CI
HWL presentation order	0.368	1.06	(0.96-1.18)	1.01	(0.92-1.10)	1.05	(0.98-1.13)
Community	0.886						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		0.87	(0.36-2.06)	1.01	(0.50-2.02)	0.86	(0.47-1.57)
Sex	0.077						
Male		Ref.		Ref.		Ref.	
Female		1.93	(0.83-4.46)	2.42	(1.13-5.21)	0.79	(0.42-1.52)
Age	0.873						
18-25		Ref.		Ref.		Ref.	
26-40		1.37	(0.41-4.59)	1.28	(0.48-3.40)	1.06	(0.47-2.40)
>40		1.05	(0.34-3.27)	0.83	(0.34-2.03)	1.26	(0.53-2.99)
Education	0.333						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		2.41	(0.78-7.48)	2.09	(0.80-5.46)	1.15	(0.53-2.52)
Grade 12 or more		0.90	(0.26-3.16)	1.32	(0.48-3.66)	0.68	(0.27-1.73)
CPD	0.377						
5 or less		Ref.		Ref.		Ref.	
6-10		1.80	(0.56-5.73)	2.06	(0.74-5.73)	0.88	(0.35-2.18)
11-15		1.33	(0.46-3.90)	2.50	(0.92-6.85)	0.53	(0.22-1.26)
>15		1.39	(0.39-4.98)	1.38	(0.45-4.22)	1.10	(0.37-2.73)
Quit intentions	0.251						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.36	(0.85-6.55)	1.56	(0.72-3.39)	1.51	(0.68-3.33)
Functional literacy	0.294						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.32	(0.80-6.70)	1.60	(0.66-3.89)	1.45	(0.70-2.99)
HWL health effect	0.916						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		1.04	(0.69-1.56)	0.96	(0.66-1.40)	1.08	(0.77-1.52)
HWL message frame	0.022						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.75	(1.18-2.61)	1.59	(1.08-2.36)	1.09	(0.84-1.43)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		**Ref.**	
Gruesome		**4.47**	**(3.05-6.56)**	**2.90**	**(1.85-4.54)**	**1.55**	**(1.07-2.24)**
HWL Narrative type	0.227						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.35	(0.96-1.91)	1.22	(0.86-1.74)	0.90	(0.69-1.19)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Table K-3. Generalized Logit Model for Worry (Exchangeable, Robust)

| | | Generalized Logit Model for Worry [Odds Ratios (OR) and Confidence Intervals (CI)] | | | | | |
| | | Extremely vs. Not really | | Somewhat vs. Not really | | Extremely vs. Somewhat | |
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	**<0.001**	**1.10**	**(1.00-1.21)**	0.97	(0.88-1.07)	**1.13**	**(1.06-1.20)**
Community	0.454						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		0.57	(0.19-1.68)	0.51	(0.17-1.48)	1.13	(0.56-2.28)
Sex	0.028						
Male		Ref.		Ref.		Ref.	
Female		5.16	(1.50-17.73)	4.60	(1.34-15.83)	1.12	(0.48-2.58)
Age	**0.007**						
18-25		**Ref.**		Ref.		**Ref.**	
26-40		**7.87**	**(1.89-32.83)**	2.43	(0.67-8.87)	**3.22**	**(1.31-7.91)**
>40		0.99	(0.28-3.54)	0.49	(0.17-1.37)	2.03	(0.82-5.04)
Education	0.095						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		3.15	(0.74-13.43)	2.27	(0.53-9.72)	1.39	(0.56-3.43)
Grade 12 or more		0.65	(0.12-3.50)	1.01	(0.22-4.64)	0.64	(0.22-1.87)
CPD	0.133						
5 or less		Ref.		Ref.		Ref.	
6-10		0.55	(0.12-2.40)	1.08	(0.30-3.95)	0.50	(0.16-1.59)
11-15		4.66	(0.90-24.25)	6.98	(1.35-36.14)	0.67	(0.22-2.03)
>15		0.73	(0.20-2.69)	0.81	(0.20-3.18)	0.90	(0.26-3.04)
Quit intentions	**0.002**						
Not planning to quit		**Ref.**		**Ref.**		**Ref.**	
Planning to quit		**8.97**	**(2.61-30.80)**	**3.03**	**(1.01-9.14)**	**2.94**	**(1.30-6.67)**
Functional literacy	0.289						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.89	(0.77-10.90)	2.44	(0.65-9.16)	1.19	(0.55-2.55)
HWL health effect	0.033						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.59	(0.36-0.99)	0.50	(0.29-0.84)	1.20	(0.89-1.61)
HWL message frame	--						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.92	(0.95-3.89)	2.39	(1.18-4.83)	1.60	(1.08-2.38)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		**Ref.**	
Gruesome		**3.39**	**(2.08-5.51)**	**2.42**	**(1.42-4.11)**	**1.40**	**(1.01-1.95)**
HWL Narrative type	--						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.18	(0.88-1.58)	1.31	(0.80-2.15)	1.01	(0.69-1.48)
Interaction							
Frame x narrative	**0.006**	0.60	(0.22-1.63)	**0.30**	**(0.12-0.78)**	**0.51**	**(0.30-0.86)**
Loss-framed	**0.001**						
Testimonial		Ref.		**Ref.**		**Ref.**	
Didactic		0.78	(0.37-1.65)	**0.40**	**(0.19-0.84)**	**1.83**	**(1.16-2.88)**
Gain-framed	0.548						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.29	(0.76-2.21)	1.31	(0.80-2.15)	1.18	(0.73-1.90)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

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Table K-4. Generalized Logit Model for Sad (Exchangeable, Robust)

		Generalized Logit Model for Sad [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	0.758	1.02	(0.96-1.08)	1.02	(0.96-1.09)	1.00	(0.92-1.08)
Community	0.558						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		0.98	(0.46-2.09)	0.75	(0.39-1.44)	1.30	(0.69-2.44)
Sex	0.263						
Male		Ref.		Ref.		Ref.	
Female		1.76	(0.82-3.78)	1.69	(0.82-3.51)	1.04	(0.51-2.13)
Age	0.029						
18-25		Ref.		Ref.		Ref.	
26-40		3.63	(1.35-9.71)	0.99	(0.45-2.21)	3.70	(1.59-8.33)
>40		2.31	(0.78-6.79)	0.96	(0.43-2.14)	2.38	(0.92-6.25)
Education	0.094						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		2.34	(0.83-6.58)	1.12	(0.46-2.71)	2.08	(0.83-5.26)
Grade 12 or more		0.70	(0.19-2.63)	0.69	(0.26-1.83)	1.02	(0.32-3.23)
CPD	0.640						
5 or less		Ref.		Ref.		Ref.	
6-10		1.09	(0.31-3.78)	1.09	(0.41-2.88)	1.00	(0.37-2.63)
11-15		0.74	(0.25-2.20)	1.47	(0.55-3.92)	0.51	(0.19-1.37)
>15		0.81	(0.24-2.66)	0.86	(0.28-2.66)	0.94	(0.31-2.86)
Quit intentions	0.124						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.22	(0.92-5.34)	2.01	(0.97-4.15)	1.10	(0.51-2.38)
Functional literacy	0.397						
Correct		Ref.		Ref.		Ref.	
Incorrect		1.81	(0.75-4.36)	1.25	(0.57-2.72)	1.45	(0.68-3.13)
HWL health effect	0.828						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		1.07	(0.83-1.39)	0.99	(0.74-1.33)	1.09	(0.74-1.59)
HWL message frame	**<0.001**						
Gain-framed		**Ref.**		Ref.		Ref.	
Loss-framed		**1.66**	**(1.31-2.09)**	1.26	(0.92-1.71)	1.32	(0.96-1.82)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		Ref.	
Gruesome		**2.29**	**(1.73-3.02)**	**1.66**	**(1.21-2.28)**	1.37	(0.99-1.92)
HWL Narrative type	0.194						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.16	(0.96-1.40)	1.20	(0.94-1.54)	1.03	(0.79-1.35)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Table K-5. Generalized Logit Model for Fear (Exchangeable, Robust)

		Generalized Logit Model for Fear [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	0.043	1.07	(1.00-1.14)	0.99	(0.92-1.07)	1.09	(1.00-1.18)
Community	0.409						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		1.13	(0.52-2.46)	0.73	(0.41-1.33)	1.54	(0.70-3.33)
Sex	0.050						
Male		Ref.		Ref.		Ref.	
Female		2.55	(1.19-5.43)	1.51	(0.77-2.98)	1.69	(0.72-4.00)
Age	0.016						
18-25		Ref.		Ref.		Ref.	
26-40		3.34	(1.20-9.33)	0.61	(0.29-1.28)	5.56	(2.04-14.29)
>40		1.94	(0.73-5.20)	0.63	(0.31-1.31)	3.03	(1.04-9.09)
Education	0.039						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		2.36	(0.92-6.03)	1.35	(0.54-3.39)	1.75	(0.65-4.76)
Grade 12 or more		0.56	(0.18-1.71)	0.97	(0.38-2.50)	0.58	(0.15-2.22)
CPD	0.616						
5 or less		Ref.		Ref.		Ref.	
6-10		0.66	(0.22-2.01)	1.51	(0.58-3.91)	0.44	(0.14-1.33)
11-15		0.51	(0.18-1.43)	1.07	(0.43-2.65)	0.48	(0.15-1.47)
>15		0.65	(0.21-2.04)	0.90	(0.32-2.53)	0.71	(0.24-2.17)
Quit intentions	0.107						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.78	(1.07-7.19)	1.28	(0.68-2.43)	2.17	(0.71-6.67)
Functional literacy	0.108						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.47	(1.04-5.90)	1.74	(0.80-3.78)	1.43	(0.57-3.57)
HWL health effect	0.309						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.89	(0.70-1.14)	0.79	(0.57-1.08)	1.14	(0.80-1.61)
HWL message frame	**0.004**						
Gain-framed		**Ref.**		**Ref.**		Ref.	
Loss-framed		**1.34**	**(1.06-1.70)**	**1.64**	**(1.20-2.24)**	0.82	(0.54-1.23)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		Ref.	
Gruesome		**2.29**	**(1.71-3.07)**	**1.76**	**(1.24-2.49)**	1.30	(0.90-1.89)
HWL Narrative type	0.707						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.11	(0.82-1.50)	1.01	(0.71-1.44)	0.91	(0.63-1.32)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at p < 0.01.

Table K-6. Generalized Logit Model for Affective Response Scale (Exchangeable, Robust)

| | | Generalized Logit Model for Affective Response Scale [Odds Ratios (OR) and Confidence Intervals (CI)] | | | | | |
| | | Extremely vs. Not really | | Somewhat vs. Not really | | Extremely vs. Somewhat | |
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	**<0.001**	**1.14**	**(1.04-1.26)**	0.98	(0.90-1.05)	**1.18**	**(1.09-1.27)**
Community	0.652						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		1.05	(0.44-2.47)	0.83	(0.42-1.64)	1.27	(0.70-2.27)
Sex	0.246						
Male		Ref.		Ref.		Ref.	
Female		2.09	(0.85-5.13)	1.65	(0.80-3.41)	1.27	(0.64-2.50)
Age	**0.001**						
18-25		Ref.		Ref.		Ref.	
26-40		3.53	(0.88-14.12)	0.61	(0.24-1.54)	**5.88**	**(2.78-12.50)**
>40		2.33	(0.63-8.66)	0.60	(0.26-1.43)	**3.85**	**(1.64-9.09)**
Education	0.169						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		2.38	(0.76-7.46)	1.45	(0.56-3.76)	1.64	(0.68-4.00)
Grade 12 or more		0.56	(0.15-2.03)	0.78	(0.31-1.96)	0.71	(0.27-1.85)
CPD	0.079						
5 or less		Ref.		Ref.		Ref.	
6-10		1.63	(0.37-7.16)	1.48	(0.51-4.28)	1.10	(0.36-3.33)
11-15		1.04	(0.30-3.62)	1.06	(0.43-2.62)	0.98	(0.38-2.56)
>15		1.33	(0.34-5.28)	0.54	(0.19-1.53)	2.50	(0.96-6.25)
Quit intentions	0.186						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.65	(0.91-7.72)	1.38	(0.69-2.76)	1.92	(0.86-4.35)
Functional literacy	0.128						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.71	(0.97-7.55)	2.11	(0.93-4.78)	1.28	(0.61-2.70)
HWL health effect	0.229						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.81	(0.54-1.21)	1.10	(0.81-1.50)	0.73	(0.52-1.03)
HWL message frame	**0.006**						
Gain-framed		**Ref.**		**Ref.**		Ref.	
Loss-framed		**1.71**	**(1.23-2.37)**	**1.48**	**(1.06-2.07)**	1.15	(0.81-1.64)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		**Ref.**	
Gruesome		**3.40**	**(2.27-5.08)**	**1.87**	**(1.31-2.67)**	**1.82**	**(1.22-2.70)**
HWL Narrative type	0.404						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.22	(0.90-1.67)	1.07	(0.82-1.42)	0.88	(0.68-1.14)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Table K-7. Generalized Logit Model for Personal Relevance (Exchangeable, Robust)

		Generalized Logit Model for Personal Relevance [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	0.616	0.98	(0.88-1.09)	0.95	(0.84-1.07)	1.03	(0.96-1.10)
Community	0.104						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		0.37	(0.13-1.06)	0.30	(0.10-0.93)	1.21	(0.58-2.51)
Sex	**0.014**						
Male		**Ref.**		**Ref.**		Ref.	
Female		**5.15**	**(1.74-15.26)**	**3.66**	**(1.17-11.51)**	1.40	(0.62-3.19)
Age	0.019						
18-25		Ref.		Ref.		Ref.	
26-40		2.56	(0.75-8.76)	1.29	(0.50-3.35)	1.97	(0.88-4.42)
>40		9.13	(2.18-38.33)	4.57	(1.00-20.91)	1.99	(0.70-5.65)
Education	0.478						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		3.09	(0.71-13.53)	2.11	(0.43-10.43)	1.46	(0.52-4.14)
Grade 12 or more		1.46	(0.30-6.97)	1.41	(0.29-6.90)	1.04	(0.29-3.75)
CPD	0.103						
5 or less		Ref.		Ref.		Ref.	
6-10		0.37	(0.07-1.97)	0.77	(0.15-4.10)	0.48	(0.17-1.33)
11-15		1.09	(0.19-6.27)	2.46	(0.37-16.47)	0.44	(0.16-1.24)
>15		0.26	(0.05-1.47)	0.66	(0.11-3.85)	0.39	(0.12-1.34)
Quit intentions	0.425						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		1.77	(0.63-5.01)	1.81	(0.71-4.67)	0.97	(0.41-2.29)
Functional literacy	0.230						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.69	(0.80-9.00)	1.57	(0.46-5.36)	1.72	(0.68-4.32)
HWL health effect	0.651						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		1.14	(0.72-1.82)	1.27	(0.74-2.17)	0.90	(0.68-1.21)
HWL message frame	0.989						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.03	(0.61-1.74)	1.04	(0.60-1.81)	0.99	(0.74-1.33)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		Ref.	
Gruesome		**2.23**	**(1.56-3.20)**	**1.98**	**(1.32-2.95)**	1.13	(0.86-1.48)
HWL Narrative type	0.892						
Testimonial		Ref.		Ref.		Ref.	
Didactic		0.90	(0.60-1.35)	0.90	(0.58-1.39)	1.00	(0.78-1.28)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at p < 0.01.

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Table K-8. Generalized Logit Model for Perceived Credibility (Exchangeable, Robust)

		Generalized Logit Model for Perceived Credibility [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	0.274	1.00	(0.94-1.07)	1.06	(0.97-1.15)	0.95	(0.88-1.03)
Community	0.139						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		1.31	(0.60-2.88)	1.94	(0.27-14.14)	2.00	(0.99-4.00)
Sex	0.251						
Male		Ref.		Ref.		Ref.	
Female		1.49	(0.67-3.29)	0.82	(0.35-1.95)	1.82	(0.87-3.85)
Age	0.168						
18-25		Ref.		Ref.		Ref.	
26-40		1.23	(0.41-3.69)	0.40	(0.13-1.20)	3.03	(1.18-7.69)
>40		1.35	(0.46-3.95)	0.63	(0.22-1.79)	2.13	(0.91-5.00)
Education	0.100						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		2.73	(0.97-7.73)	1.44	(0.42-4.97)	1.89	(0.76-4.76)
Grade 12 or more		0.84	(0.26-2.75)	1.01	(0.32-3.12)	0.83	(0.28-2.50)
CPD	0.931						
5 or less		Ref.		Ref.		Ref.	
6-10		0.78	(0.21-2.87)	0.81	(0.23-2.86)	0.96	(0.35-2.70)
11-15		0.68	(0.18-2.56)	0.79	(0.22-2.86)	0.86	(0.34-2.22)
>15		0.59	(0.16-2.26)	0.48	(0.12-1.87)	1.25	(0.43-3.70)
Quit intentions	0.163						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.12	(0.90-4.98)	1.20	(0.52-2.78)	1.75	(0.80-3.85)
Functional literacy	0.146						
Correct		Ref.		Ref.		Ref.	
Incorrect		1.81	(0.68-4.80)	0.84	(0.31-2.31)	2.13	(0.97-4.76)
HWL health effect	0.772						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.93	(0.73-1.19)	0.87	(0.60-1.28)	1.08	(0.79-1.45)
HWL message frame	0.210						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.06	(0.81-1.39)	1.30	(0.95-1.78)	0.82	(0.61-1.09)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		Ref.	
Gruesome		**2.46**	**(1.67-3.62)**	**1.85**	**(1.19-2.89)**	1.32	(0.97-1.82)
HWL Narrative type	0.855						
Testimonial		Ref.		Ref.		Ref.	
Didactic		0.97	(0.70-1.34)	1.02	(0.69-1.52)	1.06	(0.79-1.43)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at p < 0.01.

Table K-9. Generalized Logit Model for Motivation to Talk (Exchangeable, Robust)

		Generalized Logit Model for Motivation to Talk [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	0.112	1.06	(1.00-1.13)	1.05	(0.98-1.13)	1.01	(0.93-1.09)
Community	0.724						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		0.97	(0.43-2.18)	0.76	(0.33-1.73)	1.28	(0.62-2.63)
Sex	0.299						
Male		Ref.		Ref.		Ref.	
Female		1.44	(0.67-3.08)	1.97	(0.83-4.67)	0.73	(0.32-1.69)
Age	0.197						
18-25		Ref.		Ref.		Ref.	
26-40		2.31	(0.94-5.70)	0.79	(0.32-1.95)	2.94	(1.09-7.69)
>40		2.10	(0.75-5.88)	0.98	(0.39-2.47)	2.17	(0.75-6.25)
Education	0.226						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		1.50	(0.50-4.49)	2.45	(0.85-7.05)	0.61	(0.25-1.49)
Grade 12 or more		0.71	(0.20-2.53)	1.78	(0.59-5.35)	0.40	(0.13-1.22)
CPD	0.503						
5 or less		Ref.		Ref.		Ref.	
6-10		0.57	(0.17-1.86)	0.43	(0.12-1.60)	1.32	(0.38-4.55)
11-15		0.53	(0.18-1.51)	0.87	(0.28-2.69)	0.60	(0.20-1.82)
>15		0.88	(0.29-2.67)	1.00	(0.26-3.82)	0.88	(0.28-2.78)
Quit intentions	0.032						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.73	(1.24-6.03)	1.47	(0.70-3.06)	1.85	(0.95-3.70)
Functional literacy	0.507						
Correct		Ref.		Ref.		Ref.	
Incorrect		1.71	(0.67-4.36)	1.53	(0.61-3.83)	1.12	(0.49-2.56)
HWL health effect	0.375						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.84	(0.65-1.10)	1.04	(0.77-1.40)	0.81	(0.58-1.15)
HWL message frame	0.153						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.24	(1.00-1.55)	1.10	(0.85-1.43)	1.12	(0.85-1.49)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		Ref.		Ref.	
Gruesome		**1.70**	**(1.32-2.20)**	1.31	(0.99-1.74)	1.30	(0.96-1.72)
HWL Narrative type	0.356						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.14	(0.95-1.38)	1.01	(0.81-1.26)	0.88	(0.69-1.14)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at p < 0.01.

Table K-10. Generalized Logit Model for Motivation to Quit (Exchangeable, Robust)

	Overall p-value[†]	Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
		OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	**0.006**	**1.08**	**(1.00-1.17)**	0.98	(0.89-1.08)	**1.11**	**(1.03-1.18)**
Community	0.239						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		1.75	(0.62-4.94)	2.56	(0.85-7.77)	0.68	(0.32-1.47)
Sex	0.017						
Male		Ref.		Ref.		Ref.	
Female		3.86	(1.33-11.22)	4.85	(1.64-14.33)	0.79	(0.40-1.59)
Age	0.358						
18-25		Ref.		Ref.		Ref.	
26-40		3.56	(0.72-17.67)	2.79	(0.61-12.90)	1.27	(0.48-3.35)
>40		1.23	(0.35-4.37)	0.77	(0.25-2.41)	1.60	(0.65-3.96)
Education	0.132						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		1.34	(0.35-5.10)	1.34	(0.34-5.19)	1.00	(0.47-2.11)
Grade 12 or more		0.28	(0.06-1.28)	0.38	(0.08-1.69)	0.73	(0.25-2.09)
CPD	0.161						
5 or less		Ref.		Ref.		Ref.	
6-10		0.15	(0.03-0.77)	0.14	(0.03-0.69)	1.08	(0.43-2.76)
11-15		0.22	(0.05-1.06)	0.25	(0.05-1.18)	0.88	(0.39-2.00)
>15		0.22	(0.04-1.07)	0.12	(0.02-0.60)	1.79	(0.66-4.82)
Quit intentions	**0.004**						
Not planning to quit		**Ref.**		Ref.		**Ref.**	
Planning to quit		**6.45**	**(1.91-21.81)**	2.13	(0.67-6.75)	**3.03**	**(1.33-6.91)**
Functional literacy	0.605						
Correct		Ref.		Ref.		Ref.	
Incorrect		1.63	(0.42-6.29)	1.13	(0.34-3.70)	1.45	(0.68-3.07)
HWL health effect	0.378						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.90	(0.66-1.21)	0.74	(0.49-1.14)	1.21	(0.88-1.66)
HWL message frame	0.814						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.08	(0.78-1.51)	1.17	(0.72-1.88)	0.93	(0.70-1.24)
HWL graphic type	**0.003**						
Personal suffering		**Ref.**		Ref.		**Ref.**	
Gruesome		**2.03**	**(1.31-3.15)**	1.45	(0.91-2.31)	**1.40**	**(1.03-1.91)**
HWL Narrative type	0.843						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.03	(0.67-1.59)	1.10	(0.66-1.82)	1.06	(0.85-1.32)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Table K-11. Generalized Logit Model for Perceived Effectiveness (Exchangeable, Robust)

	Overall p-value[†]	Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
		OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	0.581	0.97	(0.90-1.04)	0.96	(0.88-1.04)	1.01	(0.95-1.08)
Community	0.305						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		1.13	(0.49-2.57)	0.68	(0.31-1.50)	1.67	(0.85-3.26)
Sex	0.990						
Male		Ref.		Ref.		Ref.	
Female		1.05	(0.46-2.41)	1.06	(0.44-2.57)	0.99	(0.47-2.11)
Age	0.573						
18-25		Ref.		Ref.		Ref.	
26-40		1.84	(0.64-5.28)	1.08	(0.43-2.68)	1.72	(0.71-4.16)
>40		2.33	(0.80-6.82)	1.41	(0.56-3.58)	1.67	(0.68-4.05)
Education	0.054						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		3.58	(1.28-9.98)	1.55	(0.55-4.37)	2.32	(0.96-5.59)
Grade 12 or more		1.42	(0.36-5.57)	1.30	(0.40-4.27)	1.09	(0.36-3.30)
CPD	0.826						
5 or less		Ref.		Ref.		Ref.	
6-10		0.69	(0.19-2.56)	0.63	(0.23-1.78)	1.09	(0.41-2.95)
11-15		0.79	(0.22-2.85)	1.04	(0.35-3.10)	0.76	(0.29-2.01)
>15		0.51	(0.15-1.76)	0.75	(0.23-2.45)	0.68	(0.25-1.87)
Quit intentions	0.083						
Not planning to quit		Ref.		Ref.		Ref.	
Planning to quit		2.50	(1.01-6.19)	2.23	(0.96-5.16)	1.13	(0.48-2.67)
Functional literacy	0.217						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.06	(0.78-5.42)	1.08	(0.42-2.76)	1.90	(0.83-4.34)
HWL health effect	0.497						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.86	(0.68-1.10)	0.88	(0.63-1.23)	0.98	(0.74-1.29)
HWL message frame	0.064						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.26	(1.03-1.55)	1.29	(0.97-1.72)	0.97	(0.76-1.24)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		**Ref.**	
Gruesome		**2.73**	**(1.91-3.91)**	**1.96**	**(1.33-2.88)**	**1.40**	**(1.07-1.85)**
HWL Narrative type	0.884						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.04	(0.79-1.38)	0.98	(0.71-1.35)	0.94	(0.74-1.20)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Table K-12. Generalized Logit Model for the Effectiveness Scale (Exchangeable, Robust)

		Generalized Logit Model for the Effectiveness Scale [Odds Ratios (OR) and Confidence Intervals (CI)]					
		Extremely vs. Not really		Somewhat vs. Not really		Extremely vs. Somewhat	
	Overall p-value[†]	OR	95% CI	OR	95% CI	OR	95% CI
HWL presentation order	**0.009**	**1.09**	**(1.01-1.18)**	0.98	(0.92-1.05)	**1.11**	**(1.03-1.20)**
Community	0.707						
Rankin Inlet		Ref.		Ref.		Ref.	
Iqaluit		0.71	(0.31-1.62)	0.78	(0.37-1.64)	0.92	(0.45-1.85)
Sex	0.518						
Male		Ref.		Ref.		Ref.	
Female		1.67	(0.66-4.24)	1.22	(0.56-2.69)	1.37	(0.68-2.78)
Age	0.156						
18-25		Ref.		Ref.		Ref.	
26-40		2.89	(0.92-9.04)	0.92	(0.39-2.21)	3.13	(1.23-7.69)
>40		2.78	(0.75-10.29)	1.23	(0.46-3.28)	2.27	(0.74-7.14)
Education	0.233						
Grade 8 or less		Ref.		Ref.		Ref.	
Some high school		2.44	(0.69-8.66)	2.56	(0.84-7.76)	0.95	(0.37-2.50)
Grade 12 or more		0.78	(0.18-3.35)	1.11	(0.36-3.37)	0.70	(0.20-2.56)
CPD	0.769						
5 or less		Ref.		Ref.		Ref.	
6-10		0.64	(0.15-2.74)	0.62	(0.22-1.80)	1.03	(0.33-3.23)
11-15		0.69	(0.16-2.96)	0.98	(0.31-3.16)	0.70	(0.26-1.92)
>15		0.51	(0.12-2.08)	0.51	(0.16-1.66)	1.00	(0.34-2.94)
Quit intentions	**0.004**						
Not planning to quit		**Ref.**		**Ref.**		Ref.	
Planning to quit		**5.89**	**(2.10-16.48)**	**2.39**	**(1.05-5.40)**	2.44	(0.69-9.09)
Functional literacy	0.330						
Correct		Ref.		Ref.		Ref.	
Incorrect		2.40	(0.74-7.82)	1.54	(0.58-4.04)	1.56	(0.63-3.85)
HWL health effect	0.219						
Tuberculosis		Ref.		Ref.		Ref.	
Stomach cancer		0.77	(0.56-1.07)	0.99	(0.73-1.34)	0.78	(0.53-1.15)
HWL message frame	0.188						
Gain-framed		Ref.		Ref.		Ref.	
Loss-framed		1.24	(0.98-1.58)	1.09	(0.85-1.40)	1.14	(0.87-1.49)
HWL graphic type	**<0.001**						
Personal suffering		**Ref.**		**Ref.**		**Ref.**	
Gruesome		**2.56**	**(1.69-3.86)**	**1.64**	**(1.13-2.38)**	**1.56**	**(1.16-2.13)**
HWL Narrative type	0.658						
Testimonial		Ref.		Ref.		Ref.	
Didactic		1.08	(0.85-1.37)	0.98	(0.78-1.22)	0.90	(0.62-1.32)

[†]P-value corresponds to the Wald F-statistic for each variable in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.
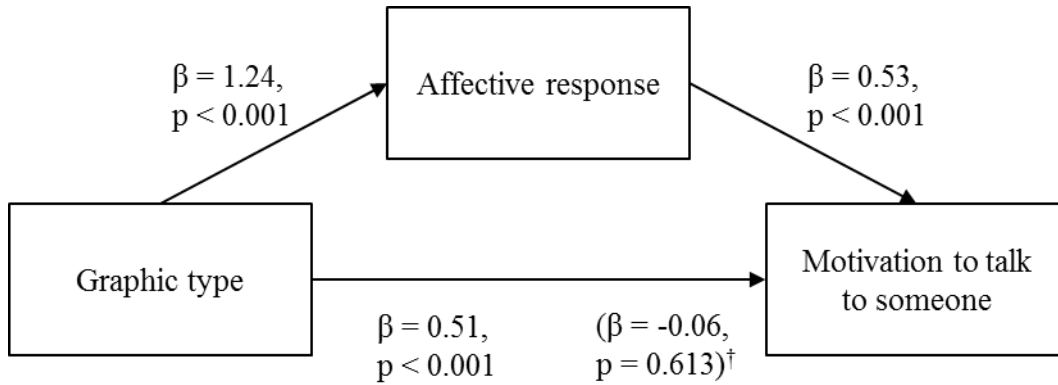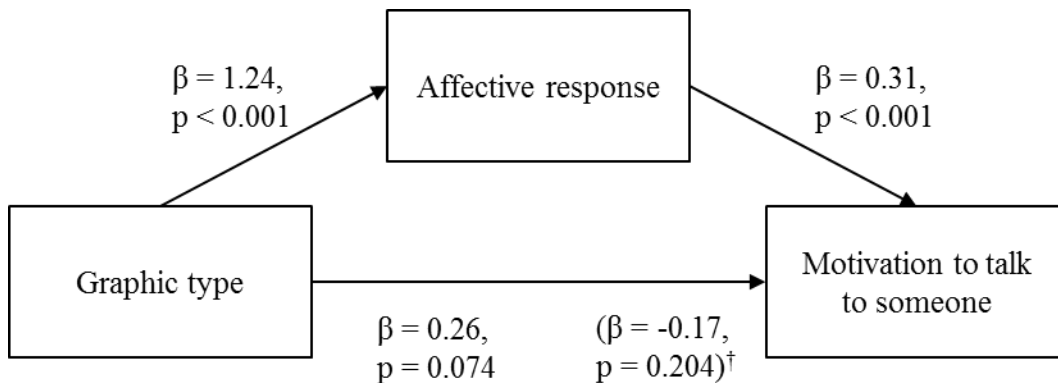
Appendix L. Summary of Results for Interactions between Message Characteristics

	Results from Generalized Logit Models when Interaction Terms were included alongside the Independent Variables and Covariates			
	Frame x graphic	**Frame x narrative**	**Graphic x narrative**	**Frame x graphic x narrative**
Outcome measure	Overall p-value[†]	Overall p-value	Overall p-value	Overall p-value
Uncomfortable	0.955	0.574	0.170	0.479
Disgust	0.658	0.174	0.551	0.618
Worry	0.841	**0.006**	0.998	0.655
Sad	0.798	0.148	0.696	0.579
Fear	0.606	0.697	0.171	0.413
Personal relevance	0.388	0.374	0.814	0.564
Credibility	0.678	0.095	0.698	0.513
Motivation to talk	0.814	0.885	0.336	0.906
Motivation to quit	0.831	0.355	0.854	0.473
Perceived effectiveness	0.135	0.709	0.544	0.277
Affective response scale	0.836	0.621	0.995	0.705
Effectiveness scale	0.775	0.215	0.602	0.472

[†]P-value corresponds to the Wald F-statistic for the corresponding interaction term in the multinomial regression model where "not really" was the reference category. Bolded figures are statistically significant at $p < 0.01$.

Appendix M. Results from analyses examining the potential mediating role of affective response on the effects of *graphic type* for each of the four main outcomes

Figure M-1a. Standardized regression coefficients for the relation between graphic type and motivation to talk to someone as mediated by affective response, when comparing the categories *Extremely vs. Not really*.


$\beta = 1.24$, $p < 0.001$

Affective response

$\beta = 0.53$, $p < 0.001$

Graphic type

$\beta = 0.51$, $p < 0.001$ $(\beta = -0.06$, $p = 0.613)^{\dagger}$

Motivation to talk to someone

[†]The standardized regression coefficient between graphic type and motivation to talk to someone controlling for affective response is in parenthesis.

Figure M-1b. Standardized regression coefficients for the relation between graphic type and motivation to talk to someone as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.

$\beta = 1.24$, $p < 0.001$

Affective response

$\beta = 0.31$, $p < 0.001$

Graphic type

$\beta = 0.26$, $p = 0.074$ $(\beta = -0.17$, $p = 0.204)^{\dagger}$

Motivation to talk to someone

[†]The standardized regression coefficient between graphic type and motivation to talk to someone controlling for affective response is in parenthesis.

Figure M-2a. Standardized regression coefficients for the relation between graphic type and motivation to quit smoking as mediated by affective response, when comparing the categories *Extremely vs. Not really*.
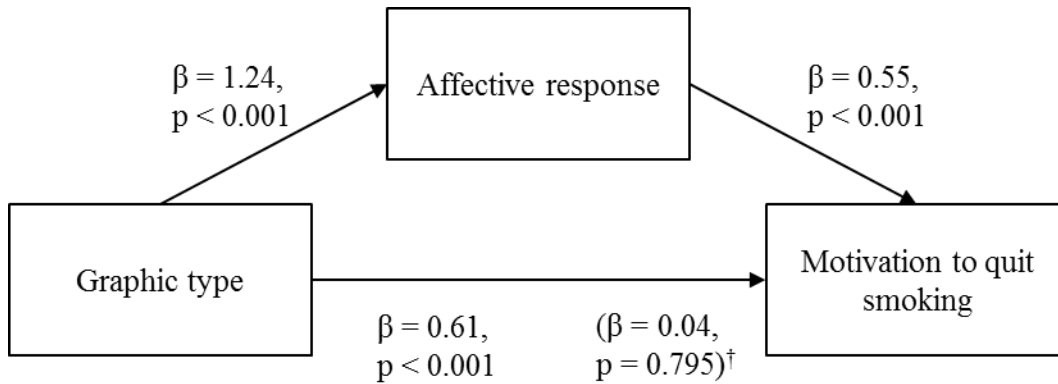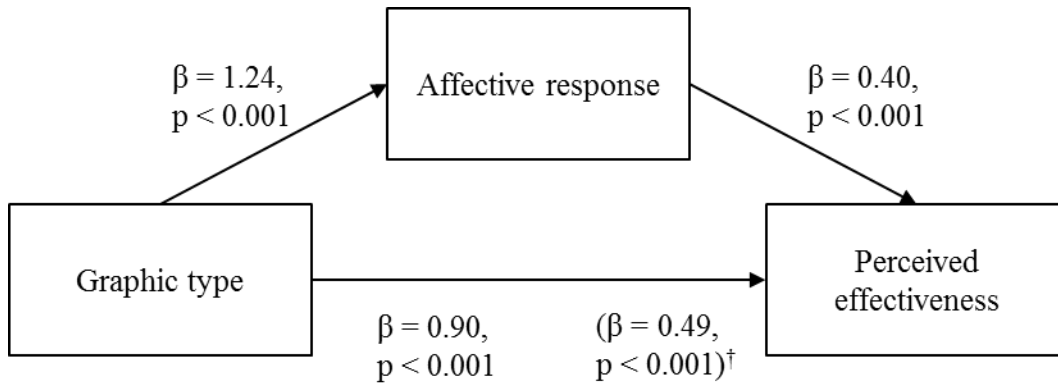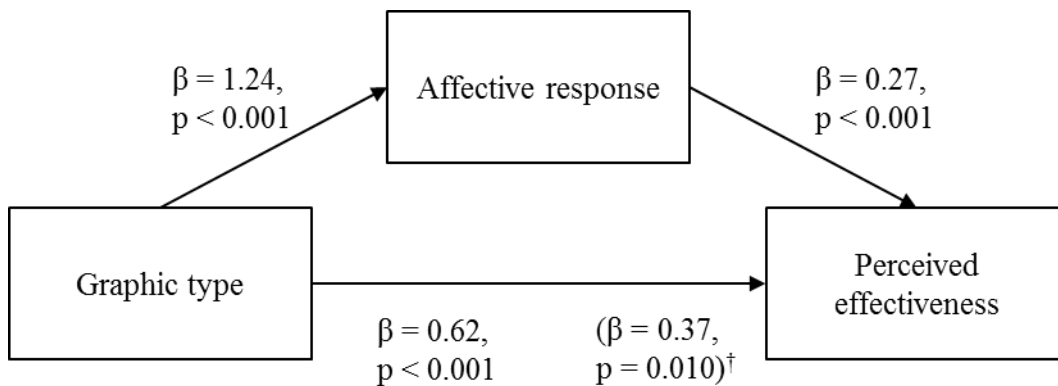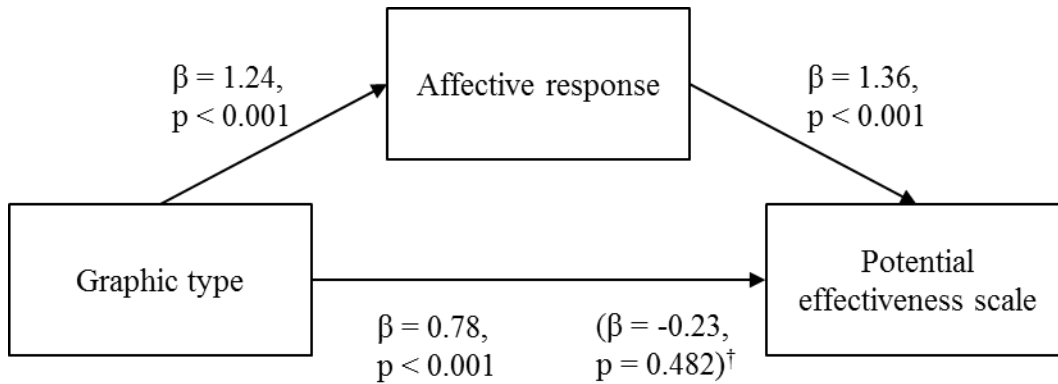

†The standardized regression coefficient between graphic type and motivation to quit smoking controlling for affective response is in parenthesis.

Figure M-2b. Standardized regression coefficients for the relation between graphic type and motivation to quit smoking as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.
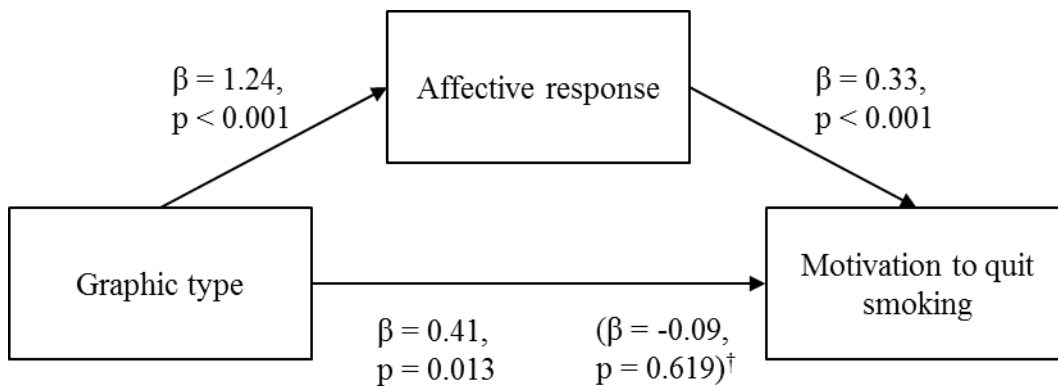
†The standardized regression coefficient between graphic type and motivation to quit smoking controlling for affective response is in parenthesis.

Figure M-3a. Standardized regression coefficients for the relation between graphic type and perceived effectiveness as mediated by affective response, when comparing the categories *Extremely vs. Not really*.


$\beta = 1.24$, $p < 0.001$ — Affective response — $\beta = 0.40$, $p < 0.001$

Graphic type → Perceived effectiveness

$\beta = 0.90$, $p < 0.001$ ($\beta = 0.49$, $p < 0.001)^{\dagger}$

[†]The standardized regression coefficient between graphic type and perceived effectiveness controlling for affective response is in parenthesis.

Figure M-3b. Standardized regression coefficients for the relation between graphic type and perceived effectiveness as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.

$\beta = 1.24$, $p < 0.001$ — Affective response — $\beta = 0.27$, $p < 0.001$

Graphic type → Perceived effectiveness

$\beta = 0.62$, $p < 0.001$ ($\beta = 0.37$, $p = 0.010)^{\dagger}$

[†]The standardized regression coefficient between graphic type and perceived effectiveness controlling for affective response is in parenthesis.
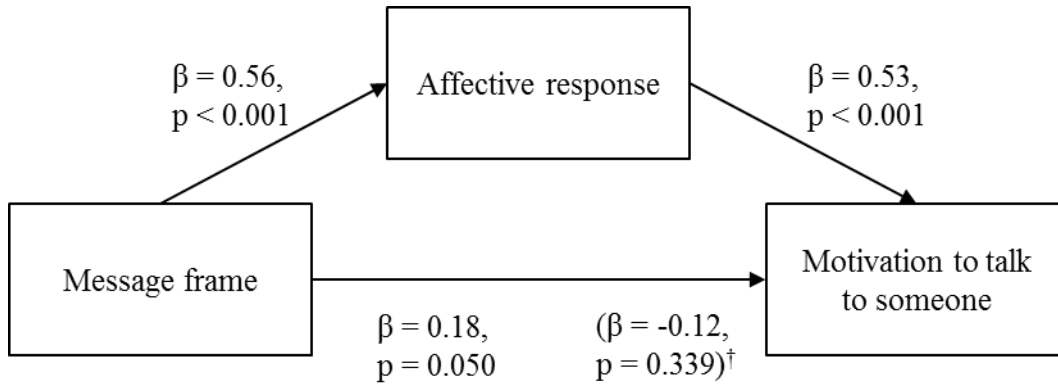
Figure M-4a. Standardized regression coefficients for the relation between graphic type and the *effectiveness scale* as mediated by affective response, when comparing the categories *Extremely vs. Not really*.

$\dagger$The standardized regression coefficient between graphic type and the *effectiveness scale* controlling for affective response is in parenthesis.
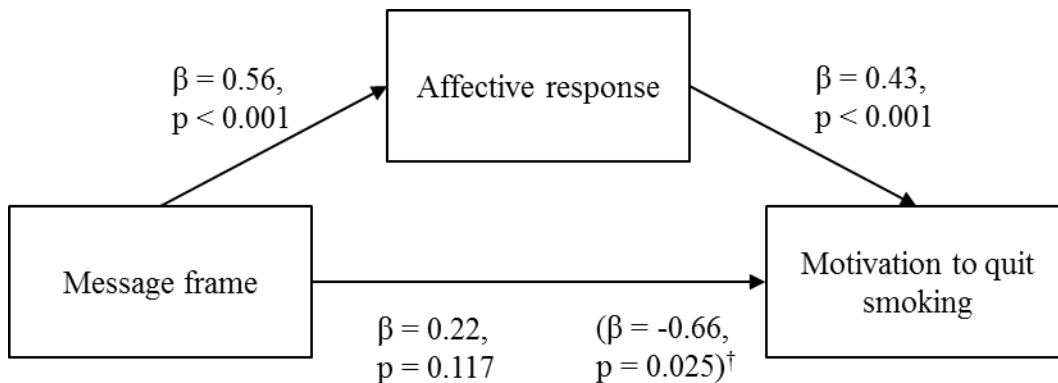
Figure M-4b. Standardized regression coefficients for the relation between graphic type and the *effectiveness scale* as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.
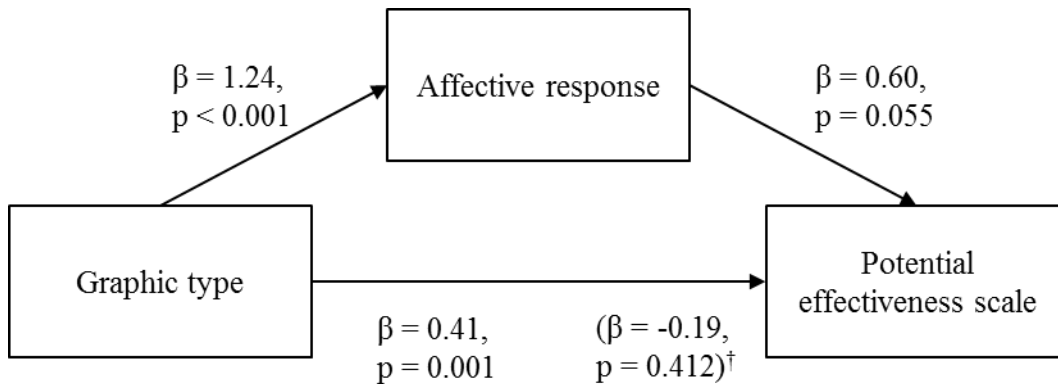
$\dagger$The standardized regression coefficient between graphic type and the *effectiveness scale* controlling for affective response is in parenthesis.

Appendix N. Results from analyses examining the potential mediating role of affective response on the effects of *textual message frame* for each of the four main outcomes
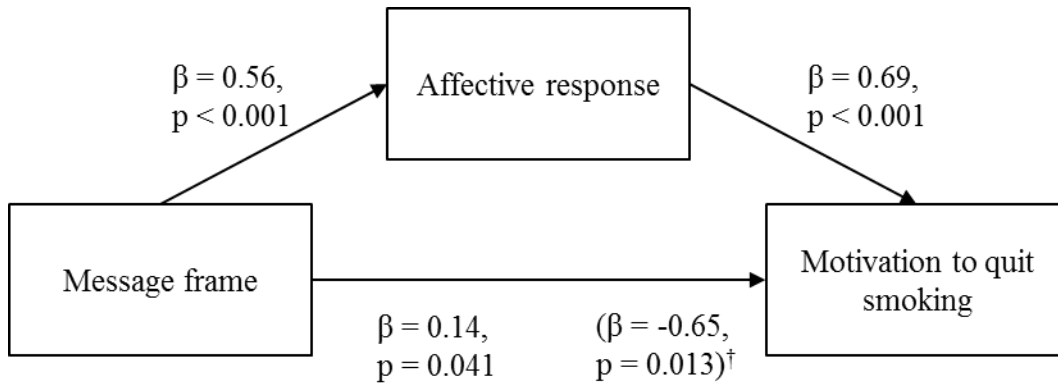
Figure N-1a. Standardized regression coefficients for the relation between message frame and motivation to talk to someone as mediated by affective response, when comparing the categories *Extremely vs. Not really*.

$\dagger$The standardized regression coefficient between textual message frame and motivation to talk to someone controlling for affective response is in parenthesis.

Figure N-1b. Standardized regression coefficients for the relation between textual message frame and motivation to talk to someone as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.

$\dagger$The standardized regression coefficient between textual message frame and motivation to talk to someone controlling for affective response is in parenthesis.
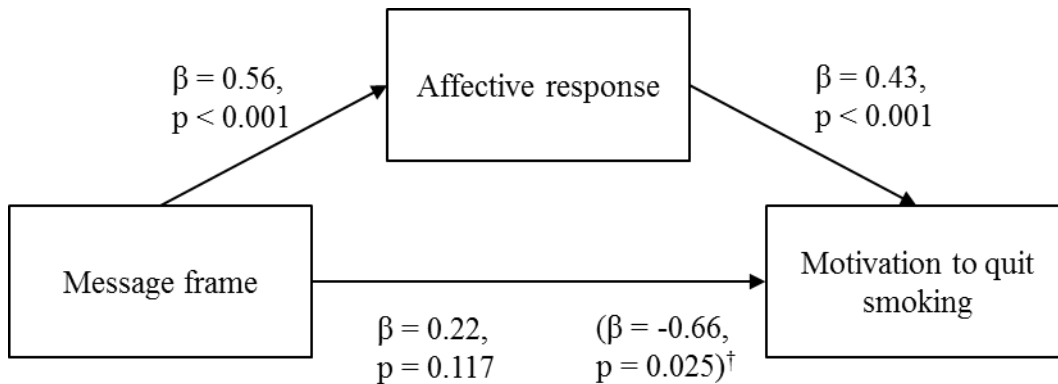
Figure N-2a. Standardized regression coefficients for the relation between textual message frame and motivation to quit smoking as mediated by affective response, when comparing the categories *Extremely vs. Not really*.
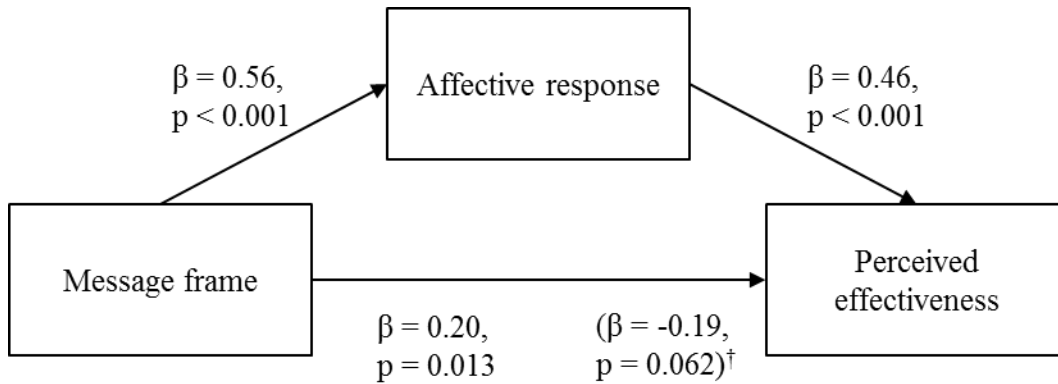

†The standardized regression coefficient between textual message frame and motivation to quit smoking controlling for affective response is in parenthesis.

Figure N-2b. Standardized regression coefficients for the relation between textual message frame and motivation to quit smoking as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.
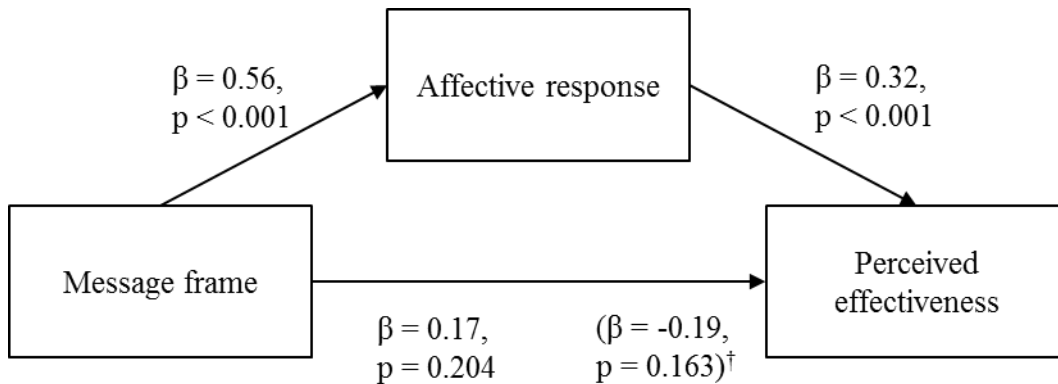

†The standardized regression coefficient between textual message frame and motivation to quit smoking controlling for affective response is in parenthesis.

Figure N-3a. Standardized regression coefficients for the relation between textual message frame and perceived effectiveness as mediated by affective response, when comparing the categories _Extremely vs. Not really_.
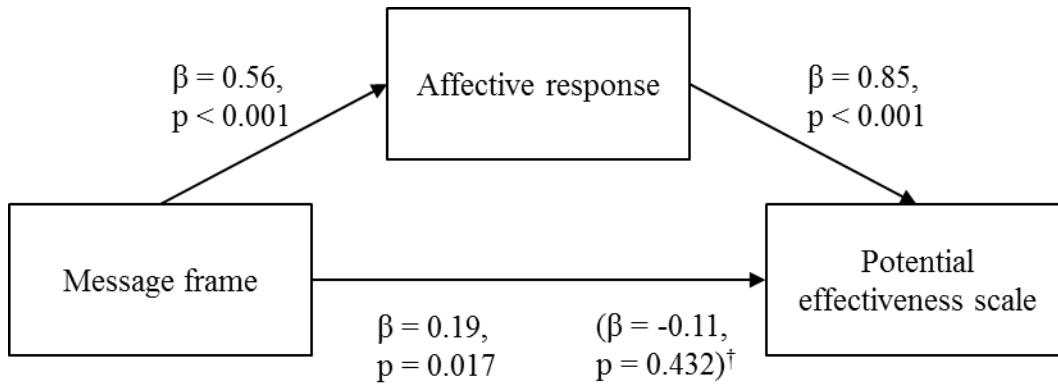

†The standardized regression coefficient between textual message frame and perceived effectiveness controlling for affective response is in parenthesis.

Figure N-3b. Standardized regression coefficients for the relation between textual message frame and perceived effectiveness as mediated by affective response, when comparing the categories _Somewhat vs. Not really_.
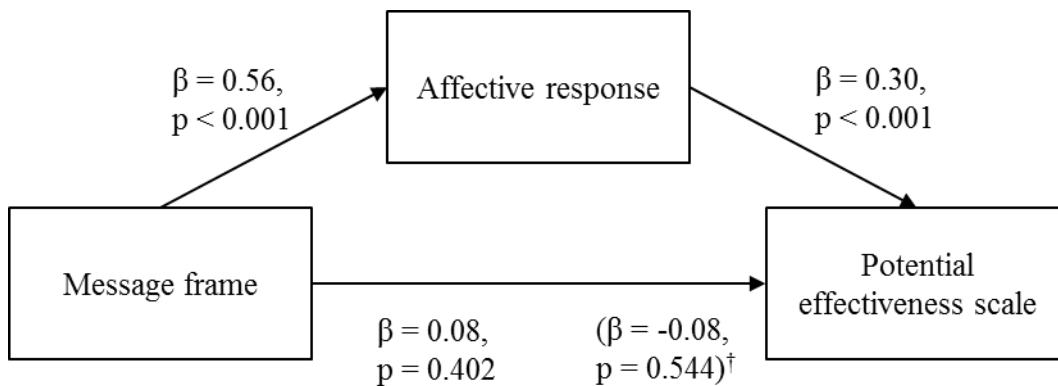

†The standardized regression coefficient between textual message frame and perceived effectiveness controlling for affective response is in parenthesis.

Figure N-4a. Standardized regression coefficients for the relation between textual message frame and the *effectiveness scale* was mediated by affective response, when comparing the categories *Extremely vs. Not really*.

$\beta = 0.56,$
$p < 0.001$

Affective response

$\beta = 0.85,$
$p < 0.001$

Message frame

Potential effectiveness scale

$\beta = 0.19,$
$p = 0.017$

$(\beta = -0.11,$
$p = 0.432)^{\dagger}$

[†]The standardized regression coefficient between textual message frame and the *effectiveness scale* controlling for affective response is in parenthesis.

Figure N-4b. Standardized regression coefficients for the relation between textual message frame and the *effectiveness scale* as mediated by affective response, when comparing the categories *Somewhat vs. Not really*.

$\beta = 0.56,$
$p < 0.001$

Affective response

$\beta = 0.30,$
$p < 0.001$

Message frame

Potential effectiveness scale

$\beta = 0.08,$
$p = 0.402$

$(\beta = -0.08,$
$p = 0.544)^{\dagger}$

[†]The standardized regression coefficient between textual message frame and the *effectiveness scale* controlling for affective response is in parenthesis.