# DISCOURAGEMENT COMMUNICATION ON CIGARETTE PACKAGING


An explorative experimental study: into the effects of discouragement communication on cigarette packaging aimed at stimulating smoking cessation.

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## Abstract

**Context:** Smoking cigarettes or other tobacco products is a common addiction, however not without harmful consequences. Because smoking causes significant health damage to both the smoker and his environment, reducing smoking behavior is an important matter of public health. The implementation of warning labels on tobacco products is one of the initiatives taken to increase risk perception of smoking behavior and to stimulate smoking cessation. Several studies have been undertaken on the subject of effectiveness of warning labels, which lead to the attention being focused solely on increasing risk perception via fear appeals. However, the effects of communication based on other behavior change strategies than fear appeals on tobacco products have not yet been examined extensively. Besides, to discover on what aspect the strategies should focus to be the most effective, it is necessary to know which socio-psychological mechanisms predict smoking cessation.

**Aim:** The aim of this study is threefold. First, this study seeks to examine which strategy, translated into discouragement communication on cigarette packaging, works best to stimulate smoking cessation. Second, this study aims to explore how behavior change strategies work compared to the traditional fear appeals on possible underlying mechanisms. Finally, the third goal of this study is to explain these results by examining the possible underlying mechanisms of smoking cessation.

**Method:** Within a between-subjects' factorial design respondents were exposed to cigarette packages designed according to one of the seven different behavior change strategies. First, the stop intention of smokers and the effects on possible mechanisms of smoking cessation (risk perception, attitude towards smoking cessation, perceived norm of smoking cessation, self-identity as a smoker, self-efficacy, habit, and disgust) was measured. Subsequently, the possible underlying mechanisms are tested on the dependent variable stop intention.

**Findings:** Overall, findings of this study indicate that it does not seem to matter which strategy on tobacco products is used to change smokers' stop intention, whether it is risk perception, attitude, perceived norm, self-identity, self-efficacy, habit or disgust. Secondly, findings of this study show that risk perception, self-identity, and disgust are significant predictors of smoking cessation. Besides, a correlation is found between these three cessation mechanisms.

**Conclusion:** It can be concluded that stop intention does not vary as a result of different kind of strategies. Also, it does not matter which strategy on tobacco products is used to change the mechanisms, however, risk perception, self-identity, and disgust are relevant cessation mechanisms. Therefore, results from this study provide preliminary support that the implementation of fear appeals on tobacco products might not be the most suitable strategy. These findings can be used as inspiration for future research and as a foundation for the development of new strategies for communication on cigarette packaging and new campaigns aiming to stimulate smoking cessation via risk perception, self-identity, and disgust.


**Keywords:** Cigarette packaging; Discouragement communication; Smoking cessation; Stop intention; Experimental design

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# 1. Introduction

Smoking is the leading preventable cause of death in the world. With an average of more than two deaths per hour, there is no other behavior that causes as many deaths among the world population (World Health Organization, 2003). Every year, around 19200 people from the age of 20 years or older die from smoking-related diseases in the Netherlands only (Van Laar et al., 2016). Nevertheless, 800.000 cigarette packages are sold annually in the Netherlands. Hence, reducing smoking behavior is an important concern of public health. In order to decrease the number of smokers worldwide, the World Health Organization has proposed the Framework Convention on Tobacco Control (FCTC). They support countries in the development of effective tools for tobacco control policies (World Health Organization, 2003).

One of the initiatives that has been developed to stimulate quit behavior among smokers is putting warning labels and graphics on the packaging of the tobacco products. The reasoning behind the use of threatening communication is the idea that when smokers are emotionally confronted with the negative effects of their behavior, they will quit smoking (Kok, Peters, Kessels, Ten Hoor, & Ruiter, 2017). The decision of the European Union to recommend warning labels on tobacco products resulted in the fact that those labels and graphics focusing on fear are used in more than 70 countries (Jung, 2016).

Since ages, behavior change scientists have published literature regarding the ineffectiveness of threatening information (Leventhal, 1971; Ruiter, Abraham, & Kok, 2001; Witte & Allen, 2000). There have been many studies that focused on tobacco products with those so-called fear appeals, but there is little scientific knowledge regarding other kinds of behavior change strategies to stimulate smoking cessation (also known as quitting smoking). According to Peter et al. (2013), the lack of knowledge about strategies for behavior change is the most important reason for the introduction of fear appeals on tobacco products. Considering the fact that research suggests that smokers who read cigarette package warnings are more likely to try to quit (Thrasher et al., 2014) and cigarette packs need the most effective communication to increase smoking cessation, the first research question is formulated as:

'*Which behavior change strategy, translated into discouragement communication on cigarette packs, works best to stimulate smoking cessation?*'

Demographic variables, smoking behavior, and earlier stop attempts are proven predictors of smoking cessation (e.g., Ozge, 2006; Yang et al., 2015), however hard to influence. Fear appeals on tobacco products are seen as a strategy to increase smoking cessation via risk perception (i.e., beliefs about potential harm). Nonetheless, such socio-psychological mechanisms to initiate smoking cessation are complex (Andrews & Heath, 2003). The second research question aims at examining the differences between the strategies on possible underlying mechanisms of smoking cessation. Therefore, the effects from the strategies on the possible mechanisms will be explored. Hence, the second research question is

formulated as:

*'How do the behavior change strategies, translated into discouragement communication on cigarette packs, affect the possible socio-psychological mechanisms?'*

Most theories about behavior change relating to health issues do not account risk perception as adequate and relevant motivator (Peters, Ruiter, Ten Hoor, Kessels, & Kok, 2018). An effective behavior change strategy must target a mechanism that predicts behavior (i.e., smoking cessation) (Peters et al., 2018). Since stimulating smoking cessation is the main goal of the communication on cigarette packs, it is important to know which socio-psychological mechanisms underlie smoking cessation. Hence, the third research question will further explore this issue:

*'Which socio-psychological mechanisms explain the desirable behavior of smoking cessation?'*

## 1.1 Relevance of this study

This research offers theoretical and practical relevance in several ways. First, although extensive research has been carried out on fear appeals on tobacco products, no experimental design study exists yet which considers other behavior change strategies, translated in communication on smoking products. By doing so, this study will advance our understanding of the different strategies that one can use on cigarette packaging and which strategy works best to stimulate smoking cessation. Second, the literature regarding which mechanisms predict smoking cessation the best has not been synthesized sufficiently. The results of this research will give an indication which of the seven mechanisms elaborated upon in this study are important for the stimulation of smoking cessation via communication on cigarette packaging. Finally, from a practical point of view, this study will be interesting for the Dutch Government and lobby groups, for example, Alliantie Rookvrij Nederland, which are trying to decrease the number of smokers in the Netherlands.

# 2. Theoretical Framework

This theoretical framework provides an overview and discussion of the main concepts of this study. First, smoking cessation and stop intention, will be applied to the context. Second, the possible predicting mechanisms of smoking cessation will be explored and defined. The third section discusses the seven selected strategies which attempt to target stop intention and possible cessation predictors. Lastly, this chapter will end with the conceptual research model and an overview of the hypotheses.

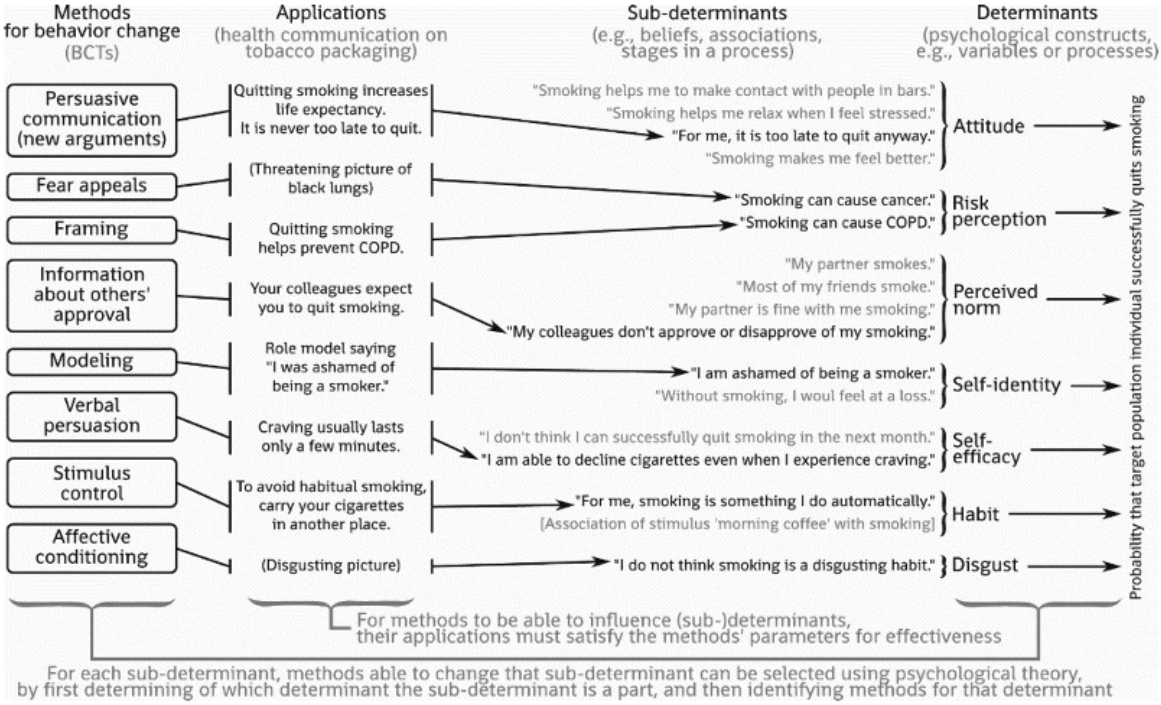
## 2.1 Stop intention

Smoking cessation is the process of discontinuing tobacco smoking (World Health Organization, 2003) and the desired outcome of discouragement communication on cigarette packaging. The Theory of Reasoned Action describes that human action is determined by behavior intention. Behavior intention is defined as a person's motivation to perform the behavior (Fishbein & Ajzen, 1975). There is sizable evidence that intention to perform a behavior, predicts actual behavior (Sheppard, Hartwick, & Warshaw, 1988). Intention (e.g., Primack et al., 2008), and especially stop intention (e.g., Jardin & Carpenter, 2012; Piñeiro et al., 2016, has been used successfully in predicting smoking behavior in formerly studies among tobacco use. Since intention is seen as the most relevant predictor of actual behavior (Dharma, Putri, Habibah, & Izatunida, 2017), using intention as dependent variable seems acceptable. (Dharma, Putri, Habibah, & Izatunida, 2017). Because behavior measures are regularly expensive in terms of required funds and the aim of this explorative study is to point out which strategy works best to stimulate cessation, using stop intention seem adequate.

## 2.2 Mechanisms of smoking cessation

Various studies explore different smoking cessation programs and most of them show that smoking cessation is influenced by many variables. The model from Peters et al. (2018) (see Figure 1), is an illustration of a hypothetical subset of socio-psychological variables for stimulating smoking cessation. According to the right part of the model the determinants give answer on the question why one could expect successfully quit behavior. After explaining these possible cessation mechanisms, the strategies for addressing these mechanisms (left part of the model) will be explained.

***Figure 1.*** Model (sub) determinants, methods and applications for behavior change




## Attitude

Several studies have been investigated the concept of attitude. For instance, Eagly and Chaiken (1993), describe attitude as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p.1). According to the Theory of Planned Behavior (Ajzen, 1991), and the Integrated Model for Behavioural Change (Vries et al. 2003), the term attitude refers to a learned tendency to respond favorably or unfavorably to the object of the attitude in a systematic way. Both theories state that attitude is one of the fundamental factors that influence a person's behavior. Theoretically, a person is most likely to adopt a behavior if he or she has a positive attitude toward that behavior. In the context of smoking cessation, negatives attitudes toward smoking would predict less smoking behavior (e.g., Larsen & Cohen, 2009; Rise, Kovac, Kraft, & Moan, 2008) and if someone has a positive attitude towards smoking cessation, one will be more inclined to stop smoking (Trimbos Instituut, 2015). Consequently, these theoretical insights prompted the hypotheses that:

H1: The more positive the attitude towards smoking cessation, the higher the intention to stop smoking.

## Risk perception

Risk perception is conceptualized by Borrelli, Hayes, Dunsiger, and Fava (2010) as a multi-dimensional construct that includes perceived vulnerability, optimistic bias and precaution effectiveness. In theories of health behaviors, perceptions of risk play often a main role (e.g.,

Ferrer & Klein, 2015; Janz & Becker, 1984; Rogers, 1975; Schwarzer, 1999) and previous studies have found a positive correlation between risk perceptions and health behavior (Norman, Conner, & Bell, 1999; Brewer, Weinstein, Cuite, & Herrington, 2004; Weinstein, 2005; McCaul et al., 2006). In the domain of changing smoking behavior, a substantial amount of research relate to risk perception has been performed. In the context of smoking cessation, increasing one's risk perceptions about smoking should facilitate movement toward quitting behavior (Weinstein & Sandman, 1993). Driezen et al. (2016) show in their study that smokers' who concern about their health consequences significantly influenced their odds of planning to quit. Therefore, based on the findings from the previous studies, the following hypotheses is proposed:

H2: The higher the risk perceptions of smoking, the higher the intention to stop smoking.

### Perceived norm

The concepts of perceived norms or subjective norms is defined by Ajzen (1991) as "the perceived social pressure to perform or not to perform the behavior" (p. 188). Several theoretical models that have been used to successfully predict smoking behavior rely on the concept of normative beliefs as precursors to behavior change. According to the Theory of Planned Behavior (Ajzen, 1991) subjective normative beliefs involving smoking lead to the intention to smoke, which in turn leads to smoking. In other words, the motivation to change behavior depends on one's views on social influence (Vries & Mudde, 1998). Earlier studies show that the impact of perceived smoking norms influence smoking behavior (e.g., Wiium, Torsheim, & Wold, 2006) and is one of the most important influencer of tobacco consumption (e.g., Alamar & Glantz, 2006). The general agreement that perceived norms is an important predictor of smoking behavior is strongly supported by empirical studies in various contexts (e.g., Aitken, 1980; Van Roosmalen & MCDaniel, 1989). Smokers will have strong stop intentions if they believe that others who are important to them think that they should quit smoking. Hence, it is hypothesized that:

H3: The higher the perceived norms of smoking cessation, the higher the intention to stop smoking.

### Self-identity

Identity serves as a standard or reference that guides behavior in certain situations, it is a set of meanings attached to the self (Stets & Biga, 2003). Therefore, self-identity can be defined as the noticeable part of a one's self which relates to the intention to perform a certain type of behavior (Conner & Armitage, 1998). In other words, self-identity is how people respond to the question: "Who am I?". Identity theories state that individuals are motivated to behave in line with their identity, and for that reason identity can be a particularly powerful influencer of behavior (West, 2006). Previous studies show evidence of self-identity in terms of the particular behavior is strongly related to the adoption of the recommended healthy behavior (e.g., Charng, Piliavin, & Callero, 1988; Falomir & Invernizzi, 1999; Terry, Hogg, & White, 1999). Most studies regarding smoking and identity focus on identity as a forerunner of behavior (Moan and Rise, 2006; Hertel and Mermelstein, 2012; Tombor, Shahab, Brown,

& West, 2013). Self-identity in relation to smoking refers to the importance of behaviors such as quitting and for how individuals perceive themselves (Van den Putte, Yzer, Willemsen, & De Bruijn, 2009; Meijer et al., 2018). Thus, the following hypotheses is proposed:

H4: The more people identify themselves as a smoker, the lower the intention to stop smoking.

### Self-efficacy

The concept of self-efficacy is defined by Bandura (2010) as the confidence people have in their ability to perform and sustain a certain behavior in a specific situation. In similar vein, individuals' perception of their ability to perform across a variety of situations (Judge, Erez, & Bono, 1998). The earlier mentioned Theory of Planned Behavior states that self-efficacy is one of the three variables intention and behavior is explained by (Ajzen, 1991). High self-efficacy has been found to be a good predictor of health promotion behaviors, such as smoking cessation. According to Bricker et al. (2011) targeting self-efficacy to resist smoking, may be important for effecting smoking cessation. Previous research state that smokers with a high confidence in their ability to stop smoking are more often successful in smoking cessation (e.g., Baldwin et al., 2006; Woodruff, Conway, & Edwards, 2008). Therefore, based on the supporting insights from prior studies, the next research hypothesis is:

H5: The higher the self-efficacy regarding smoking cessation, the higher the intention to stop smoking.

### Habit

The process whereby a situation automatically generates an impulse towards doing an action that has been repeatedly performed in that specific situation is also called habit (Gardner, Corbridge, & McGowan, 2015). In other words, habits are automatic behavioral responses to environmental cues (Lally & Gardner, 2013; Wood & Rünger, 2016). Habits occur with less awareness and especially when the habit is strong deliberate intentions have been shown to have a reduced influence on behavior (Lally & Gardner, 2013). For example, when people have the intention to live healthy but have a habit of smoking, their pattern will be unhealthy because of smoking. Because automatic smoking was found to be a negative predictor of smoking cessation, interventions should be targeted to disrupt it. Emanating from these points, the generated hypothesis is:

H6: The stronger the habit of smoking, the lower the intention to stop smoking.

### Disgust

Disgust is an emotion with distinct behavioral, physiological, and cognitive dimensions (e.g., Levenson, 1992) that services to prevent contamination and disease (Woody & Teachman, 2000). Disgust refers to the offence taken to noxious ideas that evoke a nausea reaction (Rozin, Haidt, & McCauley, 1999). In similar vein, disgust has been defined as an emotion characterized by a defensive response to stimuli perceived as revolting or impure (Woody & Teachman, 2000) and so one wants to distance yourself from it (Lazarus, 1991). As to

smoking, the study of Cochran (2017), shows that disgust may reduce motivated attention to smoking cues. The same study shows also that disgust may represent a more fruitful target for public health cessation efforts than risk. Thus, the last hypothesis is:
H7: The higher people perceive disgust of smoking, the higher the intention to stop smoking.

Now that the possible cessation mechanisms have been explained, various strategies for addressing these mechanisms will be explained next.

## 2.3 Strategies to stimulate smoking cessation

According to the model from Peters et al. (2018) particular behavior change methods could be used on tobacco products to stimulate smokers to quit (Peters et al., 2018). The methods in this model are chosen from the intervention Mapping, a toolbox of different behavior change methods (Kok, Bartholomew, Parcel, Gottlieb, & Fernández, 2013) and based on the behavior change techniques (BCT) taxonomy (Abraham & Michie, 2008). Despite the model from Peters et al. (2018) shows that methods and determinants are not all connected to each other, this study is interested in the effects of all the strategies on possible mechanism from smoking cessation. Hence, the same strategy can affect other strategies and different mechanisms. For example, modeling could improve self-efficacy and at the same time provide information about the approval of others and change perceived norms (Kok et al., 2013). Consequently, this study is interested in the different effects of the strategies on stop intention and the possible mechanisms and test the model from Peters et al. (2018) partly. Because persuasive communication are all messages that have the intention to shape, reinforce, or change the responses of people (Roloff & Miller, 1980), and so all the manipulated communication portrayed on cigarette packaging will be persuasive communication anyway, this strategy from the model from Peter et al. (2018), is not specifically included in the current study.

### Fear appeals

According to Witte (1992), fear appeals are “persuasive messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommend’’ (p. 329). Fear arousal has been suggested as a strategy to increase awareness of risk behavior and to change the risk behavior into health promoting behavior (Fassier et al., 2018; Peters et al., 2018). Several reviews of the impacts of health communication, especially for smoking, show that fear appeals are an effective way of communicating the risks of smoking and stimulating quitting activity (Durkin, Brennan, & Wakefield, 2012; Wakefield, Loken, & Hornik, 2010). In contrast, experimental evidence suggest that threatening communication is not an effective strategy for stimulating behavior change (e.g., Witte, 1992; Earl & Albarracín, 2007; De Hoog, Stroebe, & De Wit, 2007; Peters et al., 2012; Kessels, Ruiter, Brug, & Jansma, 2011). Despite the past decades of research and broadly used theories, the effectiveness of fear appeals in social marketing and especially in smoking behavior remain disputed. As mentioned before, Peters et al. (2013) argue that fear appeals

on tobacco packages could be counterproductive if smokers are aware of the risk but lack efficacy to quit smoking. More specific, they may change their behavior if efficacy is high, however, if their efficacy is low they could react defensively. This effect of fear appeals is explained by the Extended Parallel Process (e.g., Lewis, Watson, Tay, & White, 2007) and is also in line with the concept of 'defensive avoidance' from Hovland, Janis, and Kelly (1953). The consensus from al the research lies in that although studies differ in what exactly will happen under high efficacy, studies agree that fear appeals have small effects when targeting populations low in efficacy.

### Gain-framed appeals

The motivational theory (Miller & Rollnick, 1991) emphasizes the need to frame interventions in a way that reduces resistance to change. One strategy to do that and stimulate behavior change is framing (Peters et al., 2018). The main idea is that the way information is framed influences people's behavior (Tversky & Kahneman, 1989). Message framing is one of the most commonly manipulated characteristic to influence behaviors (Maheswaran & Meyers-Levy, 1990) and one of the most researched phenomena in health communication (Wansink & Pope, 2014). Many studies have been conducted to better understand whether the use of positive framing is more or less persuasive than a negative framing. Gain-frame messages focus on the positive outcome and on the benefits, that can be acquired by adhering to a health message and following a suggested course of action. Positive gain frames should be more readily accepted and prevent defensive reactions (Kok et al., 2016). Using gain-framed messages to emphasize the benefits of performing the healthy behavior or emphasize the disadvantages of not performing the healthy behavior affect the intrinsic motivation of smoker to quit smoking. The behavior that should be emphasized is a positive one and for that to take place a positive response to behavior is required. Because framing includes both positive and negative communication and this study will only use positive framing, gain-framed appeals will be the strategy behind the communication.

### Information about others approval

Abraham and Michie (2008) define information about others' approval as information about what others think about the person's behavior and whether others will approve or disapprove it. The theoretical basis for this definition is found in several theories, for example the Theory of Planned Behavior. Information about others' approval, known as social approval, plays a major role predicting intentions (Ajzen, 1991; Davis, 1989). In terms of tobacco consumption, previous research demonstrates the importance of information about others approval in determining tobacco consumption (Vries et al., 1995). According to the model of Peters et al. (2018) information about others approval will influence perceived norms and that in turn is supposed to influence the intention to stop smoking.

### Modeling

Modeling is providing an appropriate model being reinforced for the desired action. A model provides an example for people to aspire or to imitate, and not only a person from whom one wants to learn something, but also someone who wants to imitate people or to whom they want to model themselves (Kok et al., 2015). According to the Social Cognitive theory (Bandura, 1986) modeling plays a central role to stimulate individuals to the suggested actions. Modeling is a strong and popular method for the reinforcement of the modeled behavior (McAllister, Perry, & Parcel, 2008) and modeling can shape perceptions for social norms for smoking (Fagan, Eisenberg, Stoddard, Frazier, & Sorensen, 2001).

### Verbal persuasion

According to Bandura (1994), verbal persuasion is a way of strengthening one's beliefs that they have what it takes to succeed or telling one that he or she can do it (Bandura, 1997). When other people encourage and convince to perform a task and change behavior, one will believe that one is more capable of performing the task. Bandura (1997) concludes that powerful support can boost confidence enough to induce the first efforts towards behavior change. If one is persuaded verbally that he or she is possessing the capabilities to master given activities, are likely to mobilize considerable effort and maintain it. In the context of smoking cessation, promoting a smoker's confidence in their ability to quit smoking seems important for enhancing the smoker's likelihood that they will successfully quit smoking (Martinez et al., 2010).

### Stimulus control

Stimulus control is often described as a situation in which a behavior is triggered by the presence or absence of any stimulus (e.g., Skinner, 2000). Stimulus control occurs when a person behaves in one way in the presence of a given stimulus and another way in its absence. To change intention to cessation stimulus control can be an effective method (Peters et al. 2018). Since stimulus control pushes removing cues for unhealthy patterns and adding prompts for healthier alternatives (Prochaska et al., 2015).

### Affective conditioning

The model from Peters et al. (2018) describes affective conditioning as a method of stimulating cessation via disgust. Affective conditioning is described as the transfer of our feelings from one set of items to another (Stewart, 2016). The study of Leventhal, Watts, and Pagano (1967) included films showing the accumulation of tar in the lungs and a lung cancer operation and an examination of the 15 most cited fear appeal articles found that nine of these studies included stimuli that were rated as disgusting (Morales, Wu, & Fitzsimons, 2012).

## 2.4 Conceptual research model

As stated in the introduction the main research questions for this study are:
RQ1: '*Which behavior change strategy, translated into discouragement communication on cigarette packs, works best to stimulate smoking cessation?'* RQ2: *'How do the behavior change strategies relate to the socio-psychological mechanism?'* and RQ3: *'Which socio-psychological mechanisms explain the desirable behavior of smoking cessation?'.*
To be able to answer these questions the following research model has been proposed (see Figure 2). In Table 1 an overview is provided that shows the stated hypotheses.

***Figure 2.*** Research model

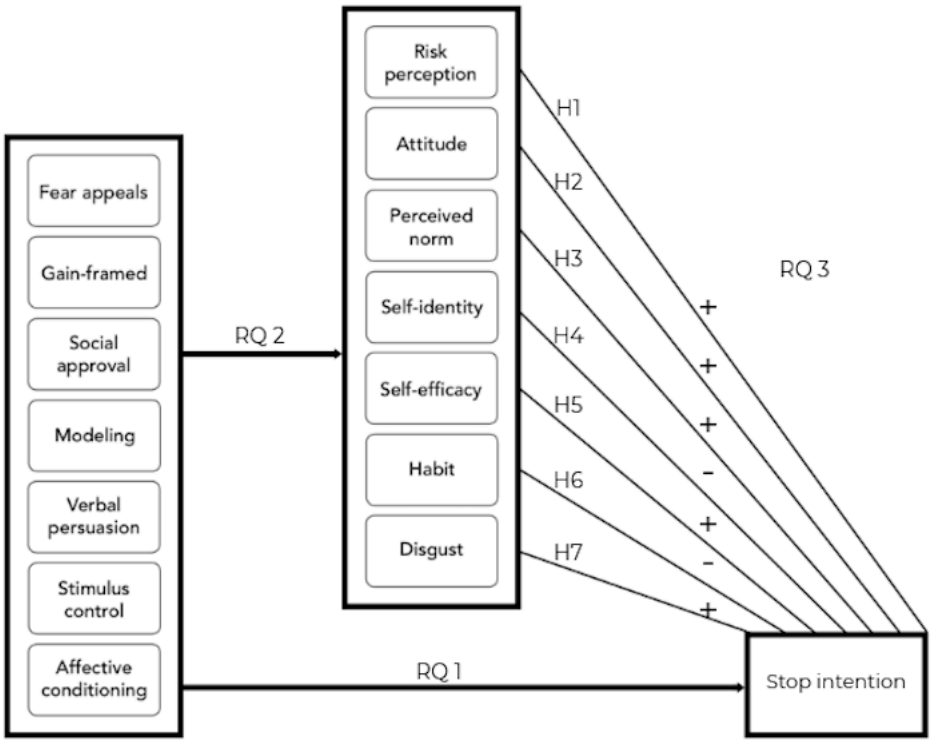



**Table 1.**
*Overview of hypotheses*

| Hypothesis | Stand |
|---|---|
| H1 | The more positive the attitude towards smoking cessation, the higher the intention to stop smoking |
| H2 | The higher the risk perceptions of smoking, the higher the intention to stop smoking |
| H3 | The higher the perceived norms of smoking cessation, the higher the intention to stop smoking |
| H4 | The more people identify themselves as a smoker, the lower the intention to stop smoking |
| H5 | The higher the self-efficacy regarding smoking cessation, the higher the intention to stop smoking |
| H6 | The stronger the habit of smoking, the lower the intention to stop smoking |
| H7 | The higher people perceive disgust of smoking, the higher the intention to stop smoking |

# 3. Method

In the following chapter the research methodology will be explained. In this context, further insights into the research design, the procedure, the stimulus materials, the manipulation check, the measurements, the sample, and the data analysis will be given.

## 3.1 Research design

The purpose of this study is to investigate the possible influence of different strategies on packaging design on smoking cessation. In order to test this, a between-subjects design has been used. By means of an online survey it is studied to what extent the different strategies translated in text messages have an effect on stop intention and via which mechanisms are predictors of stop intention. Table 2 shows the seven different conditions of this study.

**Table 2.**

*Conditions*

| **Strategy** | **Condition** |
|---|---|
| Fear appeal | Condition 1 |
| Gain-framed | Condition 2 |
| Social approval | Condition 3 |
| Modeling | Condition 4 |
| Verbal persuasion | Condition 5 |
| Stimulus control | Condition 6 |
| Affective conditioning | Condition 7 |

## 3.2 Procedure

An online experiment (see appendix A) was conducted using the software Qualtrics (www.qualtrics.com). The survey started with a short introduction and respondents had to give their consent to fill in the questionnaire voluntarily before accessing the survey. After the introduction, two contingency questions have been added to make sure that only people above the age of 18 (1) and smokers (2) were participating in this research. Respondents who continued to fill in the questionnaire were randomly allocated to one of the seven conditions. Before the stimuli was being showed, participants were told: ‘‘The following is an alternative design for cigarette packs, which might one day replace currently available packs. We would like you to imagine that these cigarette packs are already currently available in stores”. After exposure to the cigarette packages, respondents were asked about their intention to stop and had to respond to different scales that measured the possible mediating variables. Also, some demographic questions and a few manipulation check questions were asked. The questionnaire ended with a message thanking the respondent for participating and the option to fill in his or her e-mail address. The completion of the survey

took about 10 minutes. The collected data was analyzed by using the Statistical Package for Social Sciences (SPSS Version 25.0).

## 3.3 Stimulus materials

### Pretest

A pretest was conducted to design different text-messages per strategy. This was done by a focus group with eight participants. The participants were all above the age of 18 and approached via the researcher's network. The researcher explained the participants more in depth about the different strategies: fear appeal, gain-framed, social approval, modeling, verbal persuasion, stimulus control and self-affiliation. The participants were first asked to come up with various messages on paper and after this was done, the participants were asked to come up with their best messages per strategy. Then, the researcher added the messages from the model from Peters et al. (2018) and the participants had to vote on the best messages per strategy. The three messages per strategy which were selected most frequently in the pretest were chosen to be included in the final study. This was all done to find out whether a clear distinction was made between the different messages per strategy. Table 3 shows the messages created accordingly to the different strategies.

**Table 3.**
*Overview stimulus*

| **Strategy** | **Stimulus** |
|---|---|
| Fear appeal | *1. So you want to get cancer?* |
| | *2. You smoke yourself into the coffin* |
| | *3. Greetings to your lung doctor* |
| Gain-framed | *1. Stop and give yourself a holiday as a gift* |
| | *2. Stopping smoking makes you richer* |
| | *3. If you stop, you also smell good once* |
| Social approval | *1. Your friends will see you as a follower if you smoke* |
| | *2. Grandma is worried about you* |
| | *3. Your mother really sees you* |
| Modeling | *1. Johan Cruijf: "Smoking, everything has its disadvantage"* |
| | *2. Obama: "Stop smoking, yes we can!"* |
| | *3. Javier Guzman: "Smoking is one big theater"* |
| Verbal persuasion | *1. I don't smoke* |
| | *2. The need for a cigarette lasts 30 seconds, so wait!* |
| | *3. Without smoking addiction you are much more fun, you have the choice to stop* |
| Stimulus control | *1. Hide your lighter* |
| | *2. Put the package away and take in some fresh air* |
| | *3. Is the second cigarette just as good?* |
| Affective conditioning | *1. Tears belongs on the road, not in your lungs* |
| | *2. Do you smoke? People walk away from you* |
| | *3. Smokers are known for their bad breath* |

### Packaging

This study used the package from Marlboro, the most popular brand in the Netherlands among smokers (Talhout, Sleijffers, & Opperhuizen, 2009). The cigarette packs contained different messages translated from one of the seven strategies. Three packages were shown

to the respondents; therefore 21 different cigarette packs were designed for the aim of this study. In order to control the variables other than discouragement information, all other elements were kept constant in the different cigarette packs (e.g., colors, style). Figure 3 shows the three cigarette packs shown in condition 1 (strategy: fear appeal).


**Figure 3.** *Cigarette packs condition 1 (Fear appeal)*

## 3.4 Manipulation check

In order to test the internal validity of this study a manipulation check question was included at the end of the questionnaire. All respondents had to fill in the extent to which the seven strategies were used on the cigarette packages on a five-point Likert scale (Spector, 1992). On the one hand, this question had the purpose to control whether the respondents had seen the packaging and read the messages. Additionally, the questions served as check if the communication on the packaging was clear and a clear distinction was made between the different strategies. Table 4 presents the extent to which the respondents perceived the stimuli compared to what they were shown in the experiment by showing the total mean scores per condition. Except from the group who saw the fear appeal, all conditions score the highest mean on the strategy which they were shown. In order to find out whether these differences are statistically significant a series of paired samples t-tests for each condition was carried out. For example, in condition 1 (fear appeal), fear appeal elicited a statistically significant increase compared to a gain-framed, $t(29) = 2.192$, $p = .037$. As can be seen from Table 4, the majority of respondents correctly recognized the manipulation, but some percentages were not significant. Influencing people through messages is usually an unconscious process, for that reason, despite the fact not all manipulation checks were ideal and significant, it was decided to continue this study with this data set.

**Table 4.**
*Overview of stimuli as displayed and how these were perceived by respondents*

| | **Condition 1** Fear appeal | | | **Condition 2** Gain-framed | | | **Condition 3** Social approval | | | **Condition 4** Modeling | | | **Condition 5** Verbal persuasion | | | **Condition 6** Stimulus control | | | **Condition 7** Affective conditioning | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | *t-test* | Mean | SD | *t-test* | Mean | SD | *t-test* | Mean | SD | *t-test* | Mean | SD | *t-test* | Mean | SD | *t-test* | Mean | SD | *t-test* |
| **Fear appeal** | **2.80** | 1.19 | n.a* | 1.97 | 1.03 | 3.78** | 2.55 | 1.06 | 1.34 | 1.79 | .84 | 5.97** | 2.03 | .91 | 4.14** | 2.26 | .93 | 4.15** | 2.66 | 1.03 | 2.71** |
| **Gain-framed** | 2.20 | .85 | 2.19** | **3.03** | 1.14 | n.a | 2.08 | .82 | 4.18** | 2.50 | .96 | 2.36** | 2.81 | 1.12 | 1.71** | 2.42 | .89 | 4.25** | 2.00 | .80 | 5.45** |
| **Social approval** | 2.23 | .90 | 1.98** | 2.82 | 1.19 | 1.16 | **2.92** | 1.19 | n.a | 2.53 | .93 | 2.51** | 2.89 | 1.17 | 1.19 | 2.52 | .85 | 3.49** | 2.40 | 1.38 | 3.13** |
| **Modeling** | 2.23 | .82 | 2.21** | 2.50 | 1.08 | 3.21** | 2.84 | 1.10 | .55 | **3.03** | 1.06 | n.a | 2.97 | 1.16 | .66 | 2.81 | .83 | 2.45** | 2.17 | 1.07 | 4.07** |
| **Verbal persuasion** | 2.20 | .66 | 2.83** | 2.47 | .96 | 3.51 ** | 2.39 | .86 | 2.52** | 2.85 | .99 | 1.14 | **3.08** | 1.13 | n.a | 2.81 | .83 | 2.53** | 2.11 | 1.05 | 4.24** |
| **Stimulus control** | 2.53 | .97 | .97 | 2.97 | 1.14 | .31 | 2.74 | .92 | .98 | 2.65 | .95 | 2.42** | 3.31 | .95 | -1.49 | **3.26** | .93 | n.a | 2.31 | 1.05 | 3.69** |
| **Affective conditioning** | 2.87 | 1.20 | .47 | 2.50 | 1.21 | 1.81 | 2.79 | 1.14 | .57 | 2.38 | 1.21 | 3.01** | 2.61 | 1.10 | 1.76 | 2.48 | 1.03 | 3.43** | **3.17** | 1.32 | n.a |

Note.* n.a = not applicable ** $p < 0.05$ (paired-sample t-test)

## 3.5 Measurements

In order to measure the *intention to stop,* one question was asked. The question concerned in how much time the respondent would plan to quit smoking. The answers that could be selected varied from 'I want to stop smoking within 1 month' to 'I do not want to stop'. The other constructs of this study included the respondents' attitude, risk perception, perceived norm, self-identity, self-efficacy, habit and disgust. In order to measure these variables, several (existing) measurement instruments were adopted. Respondents evaluated all items on a five-point Likert scale ranges from "totally disagree" (1) to "totally agree" (5). These scales were created following the rules of Spector (1992) and were adapted to the particular context of this study. In the cases where they were originally in English, they were translated into Dutch. For every construct reverse worded items were added in order to control for the response style threat (Dooley, 2001). Besides measuring the constructs, the survey held different items that represented the respondents' personal information concerning their age, gender, smoking behavior and earlier attempts to quit smoking. By doing this, the possible distorted influence of these factors has been removed from the results. Table 5 provides an overview of the main constructs that were measured, some example items, the scale upon which the items are based and the final Cronbach's alpha for each construct. Some statements were deleted to improve the Cronbach's alpha. Further deletion of items of constructs with a low Cronbach's alpha (attitude, self-efficacy) did not deliver an α score above .70. Therefore, the items in these constructs were not used together in further analyses. For the scales attitude and self-efficacy only one item 'If I stop, I feel more satisfied' and 'If I want to stop I can, also when I see someone else enjoying smoking' was used for further analyses. These two items explained the constructs the best.

**Table 5.**
*Overview of main constructs, number of items, example items, sources and, Cronbach's alpha*

| Construct | Number of items | Examples items | Sources | Cronbach's alpha |
|---|---|---|---|---|
| Stop intention | 1 | "Are you planning to quit smoking?" | STIVOSA (2009) | n.a. |
| Risk perception | 4 | "By continuing smoking, I do damage to others"<br>"By continuing smoking, I am deteriorating my health" | STIVOSA (2009) | α = 0.75 |
| Attitude | 1 | "If I stop, I feel more satisfied" | STIVOSA (2009) | n.a. |
| Perceived norm | 4 | "Most people I know will give me sufficient support if I want to quit smoking"<br>"Most people I know will be proud of me if I stop smoking" | STIVOSA (2009); Zeko (2008) | α = 0.66 |
| Self-identity | 4 | "Smoking fits who I am"<br>"Smoking suits how I want to live" | Lokhorst, Anne M.; Staats, Henk; van Dijk, Jerry; van Dijk, Eric; de Snoo, Geert (2011); Sparks and Shepard (1992); Meijer et al. (2018) | α = 0.81 |
| Self-efficacy | 1 | "If I want to stop I can, also when I see someone else enjoying smoking" | STIVOSA (2009) | n.a. |
| Habit | 4 | "I smoke without thinking about it"<br>"Smoking is something I do automatically" | Carlos Flavian, Raquel Gurrea (2006); Lena Fleig, Sarah Pomp, Linda Parschau, Milena Barz, Daniela Lange, Ralf Schwarzer, Sonia Lippke (2013) | α = 0.73 |
| Disgust | 4 | "I think smoking is sickening"<br>"I find smoking repulsive" | Nabi (2002) | α = 0.76 |

## 3.6 Sample

The study draws on a sample collected from the researcher's own network (i.e. convenience sampling) in the Netherlands and all smokers above the age of 18 could participate. To accelerate the collecting process and to thank the respondents for filling in the survey, two vouchers with a value of 20 euros were raffled. In the period from the 26th of November until the 3rd of December 2018 in total 238 smokers participated in this study, of which 126 (52,9%) were male and 110 (46,2%) were female. The gender of two respondents was unverified. Table 6 provides an overview of the sample characteristics of the respondents within the different conditions of this study. To examine whether the sample characteristics were homogeneous in all the condition groups, a series of Chi-square tests and Kruskal-Wallis tests was conducted. As can be noticed from Table 6, the distribution of demographic characteristics of the respondents within the seven conditions is highly similar, as there are not major outliers. It can be concluded that all the respondents who took part in this experiment are equally distributed through all experimental conditions.

**Table 6.**
*Sample characteristics per condition*

| | **Condition 1** Fear appeal | | **Condition 2** Gain-framed | | **Condition 3** Social approval | | **Condition 4** Modeling | | **Condition 5** Verbal persuasion | | **Condition 6** Stimulus control | | **Condition 7** Affective conditioning | | **Total** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Characteristics | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| **Gender** | | | | | | | | | | | | | | | | |
| Men | 19 | 63,3% | 18 | 52,9% | 22 | 57,9% | 19 | 55,9% | 18 | 50,0% | 11 | 35,5% | 19 | 54,3% | 126 | 52,9% |
| Woman | 11 | 36,7% | 15 | 44,1% | 15 | 39,5% | 15 | 44,1% | 18 | 50,0% | 20 | 64,5% | 16 | 45,7% | 110 | 46,2% |
| Unknown | 0 | 0,0% | 1 | 2,9% | 1 | 2,6% | 0 | 0,0% | 0 | 0,0% | 0 | 0,0% | 0 | 0,0% | 2 | 0,8% |
| $x^2$ (12) = 10.721, $p$ = .553 | | | | | | | | | | | | | | | | |
| **Age** | | | | | | | | | | | | | | | | |
| 18 - 25 | 11 | 36,7% | 13 | 38,2% | 20 | 52,6% | 15 | 44,1% | 17 | 47,2% | 14 | 45,2% | 18 | 51,4% | 108 | 45,4% |
| 26 - 35 | 12 | 40,0% | 8 | 23,5% | 10 | 26,3% | 15 | 44,1% | 11 | 30,6% | 7 | 22,6% | 11 | 31,4% | 74 | 31,1% |
| 36 - 45 | 6 | 20,0% | 5 | 14,7% | 4 | 10,5% | 2 | 5,9% | 3 | 8,3% | 5 | 16,1% | 4 | 11,4% | 29 | 12,2% |
| 46 - 55 | 1 | 3,3% | 5 | 14,7% | 1 | 2,6% | 2 | 5,9% | 5 | 13,9% | 3 | 9,7% | 1 | 2,9% | 18 | 7,6% |
| 56 - 65 | 0 | 0,0% | 3 | 8,8% | 3 | 7,9% | 0 | 0,0% | 0 | 0,0% | 2 | 6,5% | 1 | 2,9% | 9 | 3,8% |
| $x^2$ (24) = 25.520, $p$ = .378 | | | | | | | | | | | | | | | | |
| **Education level*** | | | | | | | | | | | | | | | | |
| Low education | 0 | 0,0% | 3 | 9,7% | 4 | 10,8% | 1 | 3,0% | 4 | 12,5% | 3 | 10,0% | 2 | 5,7% | 17 | 7,5% |
| Middel education | 19 | 65,5% | 20 | 64,5% | 19 | 51,4% | 21 | 63,6% | 14 | 43,8% | 19 | 63,3% | 14 | 40,0% | 126 | 55,5% |
| High education | 10 | 34,5% | 8 | 25,8% | 14 | 37,8% | 11 | 33,3% | 14 | 43,8% | 8 | 26,7% | 19 | 54,3% | 84 | 37,0% |
| $x^2$ (12) = 14.705, $p$ = .258 | | | | | | | | | | | | | | | | |
| **Smoking period** | | | | | | | | | | | | | | | | |
| Less dan 6 months | 0 | 0,0% | 0 | 0,0% | 1 | 2,6% | 0 | 0,0% | 1 | 2,8% | 1 | 3,2% | 1 | 2,9% | 4 | 1,7% |
| Between one year and six months | 0 | 0,0% | 0 | 0,0% | 1 | 2,6% | 1 | 2,9% | 2 | 5,6% | 0 | 0,0% | 2 | 5,7% | 6 | 2,5% |
| Between one year and two years | 0 | 0,0% | 2 | 5,9% | 3 | 7,9% | 2 | 5,9% | 2 | 5,6% | 3 | 9,7% | 4 | 11,4% | 16 | 6,7% |
| Between two and five years | 8 | 26,7% | 5 | 14,7% | 9 | 23,7% | 10 | 29,4% | 4 | 11,1% | 3 | 9,7% | 7 | 20,0% | 46 | 19,3% |
| Longer than five years | 22 | 73,3% | 27 | 79,4% | 24 | 63,2% | 21 | 61,8% | 27 | 75,0% | 24 | 77,4% | 21 | 60,0% | 166 | 69,7% |
| $x^2$ (12) = 19.855, $p$ = .705 | | | | | | | | | | | | | | | | |
| **Quit attempt** | | | | | | | | | | | | | | | | |
| Yes | 20 | 66,7% | 23 | 67,6% | 24 | 63,2% | 26 | 76,5% | 30 | 83,3% | 21 | 67,7% | 28 | 80,0% | 172 | 72,3% |
| No | 10 | 33,3% | 11 | 32,4% | 14 | 36,8% | 8 | 23,5% | 6 | 16,7% | 10 | 32,3% | 7 | 20,0% | 66 | 27,7% |
| $x^2$ (6) = 6.266, $p$ = .394 | | | | | | | | | | | | | | | | |
| **Total** | 30 | 100,0% | 34 | 100,0% | 38 | 100,0% | 34 | 100,0% | 36 | 100,0% | 31 | 100,0% | 35 | 100,0% | 238 | 100,0% |

Note.* Low education = Basisschool, LBO, VMBO/MAVO; Medium education = MBO, HAVO, VWO; High education = Bachelor, Master.

## 3.7 Analyses

Prior to the data analyses, data was screened and cleaned by the following three steps. Firstly, data was checked for outliers by inspecting the minimum and maximum score for each variable (Pallant, 2005). Scores of all variables were found to be falling within the range of possible scores corresponding to that specific variable. Secondly, partial responses were identified. From the 300 smoking respondents, 61 did not complete the questionnaire and were therefore removed from analysis. Additionally, one respondent was aged above the age of 65. This respondent is removed as well, resulting in 238 usable surveys. Finally, all the reverse worded items included in the questionnaire were recoded into the same direction as the other items.

In order to use the proper variance and regression tests, the Kolmogorov Smirnov test is carried out to see how the sample in the present study data was distributed (Field, 2009). The test indicates that stop intention does not follow a normal distribution ($D(238) = .200$, $p < 0.05$). Therefore, the Kruskal-Wallis test was chosen to evaluate differences among the seven groups on stop intention. In order to see whether relationships between the variables exist and due to the non-normality distribution that this study has, the Spearman correlation analysis was carried out. After the correlation analysis was conducted and to determine which of the variables (if any) have a statistically significant effect on stop intention an ordinal regression analysis was carried out. By carrying out an ordinal regression analysis, this study will provide an interpretation of how a single unit increase or decrease in that variable, was associated with the odds of the dependent variable resulting in a higher or lower stop intention. It also determined how well the ordinal regression model predicts the dependent variable stop intention.

# 4. Results

The following section describes the results of this study. The first part is about the differences between the seven strategies regarding the dependent variable stop intention. The second part describes the differences between the strategies on possible predicting variables of stop intention. The third part reveals the results whether relationships exist between the variables. The fourth part shows the results of the ordinal regression to find out which variables predict the dependent variable stop intention most. The last part gives an overview of the hypotheses and final research model.

## 4.1 Differences strategies regarding dependent variable: stop intention

As can be seen from Table 7, stop intention ranged from average 2.99 to 4.20. A Kruskal-Wallis H test was run to determine if there were differences in stop intention scores between the groups "fear appeal" (n = 30,) "gain framed" (n = 34), "social approval" (n = 38), "modeling", (n = 34), “verbal persuasion” (n = 36), “stimulus control” (n = 31), and affective conditioning” (n = 35). Distributions of stop intention scores were not similar for all groups, as assessed by visual inspection of a boxplot. Stop intention scores increased from fear appeal (mean rank = 100.73), to modeling (mean rank = 101.93), to social approval (mean rank = 113.67), to affective conditioning (mean rank = 122.51), to stimulus control (mean rank = 130.06), to gain-framed (mean rank = 133.04), to verbal persuasion (mean rank = 133.07) groups, but the differences were not statistically significant, $\chi^2(6) = 8.620$, $p = .196$. Table 7 shows the mean and the detailed results of the Kruskal-Wallis H test.

**Table 7.**

*Descriptive statistics of the dependent variable*

| | N | Mean | Mean Rank |
|---|---|---|---|
| Fear appeal | 30 | 3.36 | 100.73 |
| Gain-framed | 34 | 3.92 | 133.04 |
| Social approval | 38 | 2.99 | 113.67 |
| Modeling | 34 | 3.00 | 101.93 |
| Verbal persuasion | 36 | 3.70 | 133.07 |
| Stimulus control | 31 | 4.20 | 130.06 |
| Affective conditioning | 35 | 3.50 | 122.51 |
| Total | 238 | | |

$\chi^2(6)= 8.620$, $p = .196$

## 4.2 Differences strategies regarding possible predictors of stop intention

A series of analysis of variance (ANOVA) was conducted to determine if smokers’ risk perception, attitude, perceived norm, self-identity, self-efficacy, habit, and disgust were different for groups who were confronted with different text messages. There were no extreme outliers, as assessed by boxplot. A Levene’s test for equality of variances was performed in order to test whether the variability of the scores for each group is similar. It was found that the p values were higher than the significance level ($\alpha= 0.05$) and therefore it

was assumed that the variances for the group are equal on all the variables. However, not all data was normally distributed for each group, as assessed by Shapiro-Wilk test ($p > .05$). Because the sample size was nearly equal and the one-way ANOVA is fairly "robust" to deviations from normality, the ANOVA test was run anyway (Liz, Keselman & Keselman, 1996). A one-way ANOVA was conducted seven times to determine if risk perception, attitude, perceived norm, self-identity, self-efficacy, habit, and disgust were different smokers who were confronted with different text messages. Table 8 provides the mean and standard deviation of the variables per condition and shows the absence of any significant results. Since no significant effects were found, this study will not look further into these effects.

**Table 8.**
*Descriptive statistics of variables and results One-way ANOVA*

| Variables | **Condition 1** Fear appeal | **Condition 2** Gain-framed | **Condition 3** Social approval | **Condition 4** Modeling | **Condition 5** Verbal persuasion | **Condition 6** Stimulus control | **Condition 7** Affective conditioning | **Total** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *M (SD)* | *M (SD)* | *M (SD)* | *M (SD)* | *M (SD)* | *M (SD)* | *M (SD)* | *M (SD)* | **df** | **F** | ***p*** |
| Risk perception | 3.59 (.83) | 3.88 (.77) | 3.80 (.69) | 3.76 (.91) | 3.86 (.69) | 4.10 (.78) | 3.94 (.81) | 3.85 (.78) | 6,231 | 1.286 | .264 |
| Attitude | 3.10 (1.03) | 3.24 (1.08) | 3.05 (1.14) | 3.06 (1.07) | 3.00 (1.17) | 3.39 (1.05) | 3.23 (1.97) | 3.15 (1.07) | 6,231 | .536 | .781 |
| Perceived norm | 3.57 (.63) | 3.63 (.75) | 3.61 (.77) | 3.56 (.70) | 3.70 (.72) | 3.76 (.62) | 3.67 (.67) | 3.64 (.69) | 6,231 | .369 | .898 |
| Self idenity | 2.64 (.80) | 2.54 (.96) | 2.82 (.73) | 2.65 (.81) | 2.45 (.73) | 2.65 (.75) | 2.41 (.73) | 2.60 (.79) | 6,231 | 1.145 | .337 |
| Self-efficacy | 2.77 (1.01) | 3.06 (.92) | 2.82 (1.11) | 3.18 (.94) | 3.08 (1.08) | 3.26 (.93) | 3.26 (1.04) | 3.06 (1.01) | 6,231 | 1.294 | .261 |
| Habit | 3.36 (.87) | 3.27 (1.00) | 3.12 (1.06) | 3.29 (.81) | 3.09 (1.03) | 3.38 (.89) | 3.17 (.87) | 3.23 (.94) | 6,231 | .484 | .820 |
| Disgust | 2.79 (.67) | 2.70 (.92) | 2.57 (.69) | 2.92 (.85) | 2.68 (.83) | 3.01 (.81) | 2.72 (.92) | 2.76 (.82) | 6,231 | 1.164 | .327 |

## 4.3 Correlation analyses mechanisms and stop intention

In order to see whether relationships between the variables exist, a correlation analysis was carried out. The following section discusses the results of the correlation analysis on stop intention, as well the outstanding relation between some variables.

Due the non-normality distribution that this study has, a series of Spearman rank-order correlations were conducted in order to determine if there were any relationships. It was found that all variables, except the variable of habit ($r_S(236) = .020$, $p = .760$), are related to the dependent variable of stop intention. The negative correlation between self-identity and stop intention is the strongest ($r_S(236) = -.420$, $p = .000$). Also, a moderate positive correlation between risk perception and stop intention ($r_S(236) = .341$, $p = .000$) and disgust and stop intention ($r_S(236) = .336$, $p = .000$) is found. A weak positive correlation between attitude and stop intention is found ($r_S(236) = .226$, $p = .000$). The positive correlation between self-efficacy and stop intention ($r_S(236) = .150$, $p = .021$) and perceived norm and stop intention ($r_S(236) = .193$, $p = .003$) are the weakest correlation. Table 9 presents the correlations between all measurement variables.

As can been seen from Table 9 the variable risk perception is significant correlated to every variable except habit. Perceived norm ($r_S(236) = .359$, $p = .000$) and disgust are moderate positive related ($r_S(236) = .353$, $p = .000$) to risk perception. A moderate negative correlation between and risk perception and self-identity is found ($r_S(236) = -.319$, $p = .000$). Also, a moderate negative correlation between self-identity and disgust is found $r_S(236) = -.425$, $p = .000$). The current study shows not have any correlations above 0.7 which indicated that the correlations are only very weak to moderate (Burns & Burns, 2008). However, worth

mentioning the highest correlations are found between stop intention, risk perception, self-identity, and disgust.

**Table 9.**
*Correlation analysis*

| | STI | RP | AT | PN | SI | SE | HA | DI |
|---|---|---|---|---|---|---|---|---|
| **STI** | 1 | | | | | | | |
| **RP** | .341** | 1 | | | | | | |
| **AT** | .226** | .268** | 1 | | | | | |
| **PN** | .193** | .359** | .160* | 1 | | | | |
| **SI** | -.420** | -.319** | -.071 | -.203** | 1 | | | |
| **SE** | .150* | .142* | .119 | .005 | -.201** | 1 | | |
| **HA** | .020 | .014 | .041 | .118 | .210** | -.188** | 1 | |
| **DI** | .336** | .353** | .192** | .217** | -.425** | 0.44 | -.036 | 1 |

Notes. N = 238

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

STI = Stop intention; RP = Risk perception; AT = Attitude; PN = Perceived norm; SI = Self-identity; SE = Self-efficacy, HA = Habit; DI = Disgust

## 4.4 Ordinal logistic regression on stop intention

A cumulative odds ordinal logistic regression with proportional odds was run to determine the effect of risk perception, attitude, perceived norm, self-identity, self-efficacy, and disgust on stop intention. Because there was no statistically significant correlation found between habit and stop intention, this study will no longer see habit as predicting variable of stop intention.

There were proportional odds, as assessed by a full likelihood ratio test comparing the fitted model to a model with varying location parameters, $\chi^2(28) = 40.523$, $p = .059$. The Pearson goodness-of-fit test indicated that the model was a good fit to the observed data, $\chi^2(1173) = 1119.932$, $p = .864$ but most cells were sparse with zero frequencies in 83.3% of cells. However, the final model statistically significantly predicted the dependent variable over and above the intercept-only model, $\chi^2(7) = 77.945$, $p < .001$. Table 10 shows the results of the ordinal regression analysis.

**Table 10.**
*Ordinal regression on stop intention*

| | 95 CI* | df | Exp(B) | Wald | *p* |
|---|---|---|---|---|---|
| Risk perception | [1.171, 2.386] | 1 | 1.672 | 8.012 | .005 |
| Attitude | [.934, 1.485] | 1 | 1.178 | 1.921 | .166 |
| Perceived norm | [.607, 1.287] | 1 | .883 | .417 | .519 |
| Self-identity | [.293, .612] | 1 | .423 | 20.879 | .000 |
| Self-efficacy | [.940, 1.531] | 1 | 1.199 | 2.139 | .144 |
| Disgust | [1.073, 2.093] | 1 | 1.499 | 5.642 | .018 |

Note. *95 CI = 95% Confidence Interval

As can be seen from Table 10 the variables risk perception, self-identity, and disgust have a statistical significance effect on stop intention. An increase in risk perception of smoking (expressed in means) was associated with an increase in the odds of considering stop intention, with an odds ratio of 1.672, 95% CI [1.171, 2.386], $\chi^2(1) = 8.012$, $p = .005$. A decrease in self-identity as a smoker (expressed in means) was associated with an increase in the odds of considering stop intention, with an odds ratio of 0.423, 95% CI [0.293, 0.612], $\chi^2(1) = 20.870$, $p = .000$. An increase in disgust of smoking (expressed in means) was associated with an increase in the odds of considering stop intention, with an odds ratio of 1.499, 95% CI [1.073, 2.093], $\chi^2$ (1) = 5.642, $p = .018$.

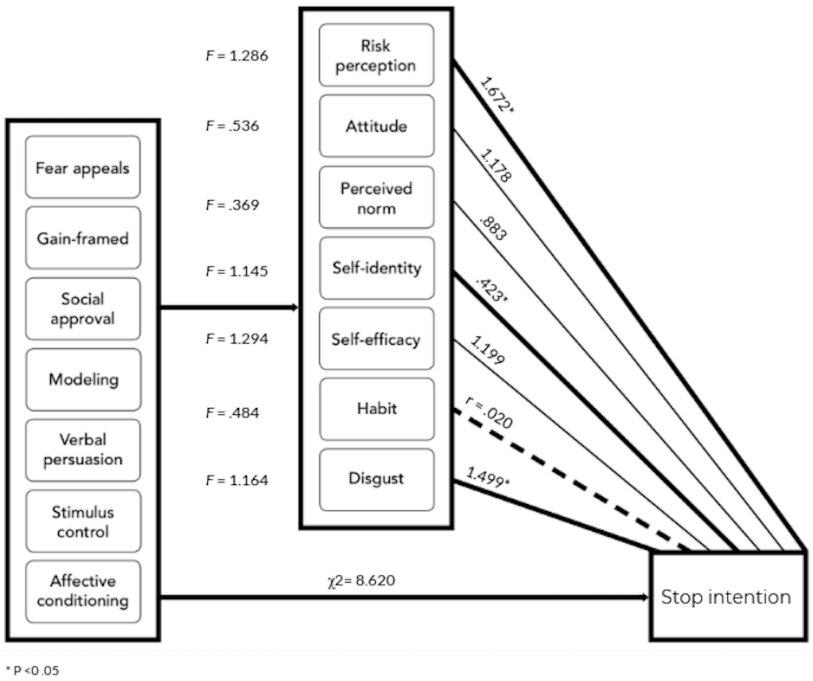
## 4.5 Overview hypotheses and model

In table 11 an overview is provided that shows which of the stated hypotheses are supported (significant effect), and which are not supported (non-significant effect). The final research model is presented in Figure 4.

**Table 11.**
*Overview of stated hypotheses*

| Hypotheses | Stand | Result |
|---|---|---|
| H1 | The more positive the attitude towards smoking cessation, the higher the intention to stop smoking | Not supported |
| H2 | The higher the risk perceptions of smoking, the higher the intention to stop smoking | Supported |
| H3 | The higher the perceived norms of smoking cessation, the higher the intention to stop smoking | Not supported |
| H4 | The more people identify themselves as a smoker, the lower the intention to stop smoking | Supported |
| H5 | The higher the self-efficacy regarding smoking cessation, the higher the intention to stop smoking | Not supported |
| H6 | The stronger the habit of smoking, the lower the intention to stop smoking | Not supported |
| H7 | The higher people perceive disgust of smoking, the higher the intention to stop smoking | Supported |

***Figure 4.*** Final research model



# 5. Discussion

The following section serves to discuss the research results, thereby providing an answer to the research questions. In addition to discussing the research results, limitations will be expressed and suggestions for future research are presented. Finally, theoretical and practical implications deriving from this study will be highlighted and a brief general conclusion is given.

## 5.1 Discussion of research results

The first research question of this study is formulated as: *'Which strategy, translated into discouragement communication on cigarette packaging, works best to stimulate smoking cessation?'* Several strategies on smoking cessation were studied, including 'fear appeals', being a frequently used strategy. Fear appeals are often used in public health programs and in particular to stimulate smoking cessation. Nevertheless, concerning this study, there is no evidence that fear appeals have more effect on stop intention compared to the other strategies. A possible explanation for the fact that smokers who were confronted with the fear appeal packages did not score significantly higher on stop intention compared to the other strategies, is offered by Janis and Feshbach (1953) and Kok et al. (2018). These authors suggest that negative emotions are caused as a response to fear appeal messages, for example, the occurrence of defensive avoidance. This "boomerang effect" is believed to occur because people in this situation will deny the threat or will be reacting contradictory to the message (Witte, 1992). Considering the fact that research suggests that smokers who read cigarette package warnings are more likely to try to quit (Trasher, 2015), this study indicates that only focusing on fear appeals is not meaningful. Besides, several researchers have written about the ineffectiveness of threatening information (Leventhal, 1971; Ruiter, Abraham, & Kok, 2001; Witte & Allen, 2000). Nevertheless, the results from this study are in line with the idea from Kok et al. (2018). These researchers expected that presenting fear appeals on cigarette packages is not more effective in stimulating stop intention, compared to the other strategies on cigarette packages. For that reason, results from this study provide preliminary support that the use of fear appeals does not appear to be the most suitable strategy to stimulate smoking cessation via communication through cigarette packaging. With this in mind, the suggestion of Kok et al. (2018) that one should continue to look for new and innovative ways to assist smokers to quit is considered to be accurate.

The second research question of this study was: *'How do the behavior change strategies, translated into discouragement communication on cigarette packs, affect the possible socio-psychological mechanisms?'* Similarly, for stop intention, there are no differences found among the strategies on the possible mechanisms: risk perception, attitude, perceived norm, self-identity, self-efficacy, habit, and disgust. The current study is unable to clarify if the mechanisms are correctly addressed by the relevant strategies. However, it can be concluded that the different mechanisms of smoking cessation do not vary as a result of different kind of discouragement information. As was concluded before by Robinson (1997)

and Wakefield, Loken, and Hornik (2010), the current study confirms the idea that changing intentions and behavior by discouragement communication is difficult. By the lack of significant differences, this research indicates that strategies affect probably more than one mechanism, which is in contrast with the model from Peter et al. (2018), but is in line with the study from Kok et al. (2013).

The third research question of this study was: *'Which underlying mechanisms explain the desirable behavior of smoking cessation?'* Several studies on health behavior are based on the three predictors of intentions and behavior from the commonly used Theory of Planned Behavior (Ajzen, 1991), namely attitude, self-efficacy and perceived norm. One of the results from this study is that these variables do not appear to be the most important predictors of the intention to quit smoking. In line with various studies (Manfredi, Lacey, Warnecke, & Petraitis, 1998; Norman, Conner, & Bell, 1999; Norman et al., 1999; Van den Putte, Yzer, Willemsen, & De Bruijn, 2009), this study states that stop intention is hardly related to perceived norm. Besides, in contradiction to previous studies (e.g., Moan and Rise, 2005), attitudes and self-efficacy beliefs are not found as significant predictors of the intention to stop smoking. Also in contrast with previous studies regarding habit and intention interaction (e.g., Gardner 2009; van Bree et al. 2013), no relationship is found between habit and stop intention. However, the study from Benjamin Gardner, Sharon, Corbridge, and McGowan (2015) shows the same missing correlation between habit and intention. They stated that if a habit do not dominate over intentions in regulating behavior, previous claims that changing motivation will be insufficient for changing habitual behavior may be premature (Gardner, Corbridge, & McGowan, 2015). Besides, one should keep in mind that intentions are less predictive for behavior where habit is strongly present (Triandis, 1977); when the habit is strong, intention is no longer a good predictor of smoking cessation.

As mentioned before, Peters et al. (2018) state that most theories about behavior change caused by health reasons do not account risk perception as a relevant predictor of smoking cessation. However, this study suggests that risk perception is one of the important mechanisms to focus on. An explanation is found in the risk perception theory, that predicts that once people experience a threat, they want to counter that threat (Weinstein & Sandman, 1993). In 2014, Sheeran, Harris, and Epton found that when interventions successfully change risk perceptions, this often results in behavior change due to health concerns. In this case, smokers who perceived high risks of smoking seem to have high intention to change their behavior and stop smoking.

This study also found out that disgust is one of the relevant predictors for stop intention. However, Peters et al (2018) are skeptical about it, this result is in line with the results of the studies of Lazarus (1991) and Jónsdóttir, Holm, Poltavski, and Vogeltanz-Holm (2014). Both studies stated that that disgust is a significant predictor of smoking cessation behavior. According to Lazarus (1991), disgust is an emotion marked by defensive responses, so one wants to distance oneself from it.

The last mechanism this study determined is a variable that hardly ever occurs in

earlier research on stopping behavior, namely a person's identity as a smoker. A possible reason for the negative relationship is given by Freeman, Hennessy, and Marzullo (2011). They state that those who consider themselves as “smoker” are more likely to respond defensively to persuasive discouragement messages. Earlier studies (e.g., Moan & Rise, 2005; Van den Putte, Yzer, Willemsen, & De Bruijn, 2009; Song & Ling, 2011; Meijer et al., 2018) stated that smoking cessation is determined by peoples’ own identity as a quitter. The current study shows that smokers with smoking as a part of their identity, are less likely to have the intention to quit smoking, which makes self-identity as a smoker an important mechanism of smoking cessation. In other words, smokers feel less stimulated to quit smoking if they consider themselves as a smoker.

Lastly, this study detected significant correlations between three of the relevant cessation mechanisms: risk perception, self-identity, and disgust. Since focusing on individual mechanisms probably does not have the same effect as focusing on a combination of mechanisms (Breitinger, 2012), targeting more than one mechanism could be more successful than focusing on only one mechanism. This is called the synergy effect, by which the creation of a whole is greater than the sum of the parts (Breitinger, 2012).

## 5.2 Limitations and further research

The experiment as a part of this study exposed smokers in a single session to cigarette packs, although in reality the exposure is always repeated. Due to time and cost constraints, it was not possible to set up a long-term study with repeated exposure. However, repeated exposure may be needed over time to elicit intention and behavior change (Johnston & Johnson, 2013). The fact that there were no significant differences between the different groups could be due to the fact this study exposed smokers in a single session to cigarette packs. It is possible that other strategies than fear appeal are more effective to stimulate smoking cessation, but that the methods used herein, are insufficient to prove such effects. Therefore, this study appeals for an improved field- experimental design with naturally repeated exposure to cigarette packages.

As mentioned earlier, the only way to conclude that the manipulation has a specific effect on behavior is by organize an experiment with behavior as dependent variable. Additionally, smoking cessation can only be taken seriously when people have been actually rid of cigarettes for one year (Benowitz et al., 2015). Such long following-up measurements require substantial financing. Using stop intention as the dependent variable seems accurate, because intentions often predict behavior (Webb and Sheeran, 2006). However, one has to keep in mind that under circumstance where defensive reactions are presumably to happen, self-reported intentions are likely to be biased (Malouff, Schutte, Rooke, & MacDonell, 2012). When looking at the questionnaire, the question which measured smoking cessation could have been extended with some follow up questions in order to find out more relevant information about the stop intention. The average of the extra items could, under special assumptions, then be seen a ‘’quasi-interval”. By altering the measuring

scale of ordinal outcome, the parametric test, which has more power than the non-parametric test, could then be used.

The collection of respondents was done through convenience sampling. For this reason, all respondents came from (the extension of) the researchers' network, which could cause bias (Bornstein, 2013). Moreover, the study was conducted in the Netherlands and only included Dutch respondents. The brand used in the experiment (Marlboro) was chosen based on a list of top brands in the Netherlands. Hence, the study was tailored to the Dutch market and results may differ in other countries. Therefore, it might be useful to repeat this study with a random sampling technique, which reduces sampling bias and creates a higher validity or focus on different countries. Thereby, it cannot simply be assumed that the results in other areas will be the same and this will therefore have to be investigated. It could be interesting to expand the research into the effects of the different strategies to other areas of research focused on (health) behavior. Consider, for example, influencing alcohol consumption or sun protection via discouragement communication on the product packaging.

Another limitation concerns the fact that two scales (attitude and self-efficacy) showed to have low reliability. As their Cronbach's alpha values were quite poor and below 0.7, the constructs would normally be abandoned from further analysis and interpretation. However, as they play an important role because of the explorative design of the study, two items which explained the constructs the best were kept in the analysis. In order to improve the scales, the number and quality of items needs to be increased.

Finally, the cigarette packages used were developed in such a way that the differences were minimal, apart from the text messages. This was to make sure that if the results were different, the reason for the difference could only be manipulation. However, based on the non-significant results, this was not the case. The stimulus material on the packaging consisted only text messages and no pictorial warnings. Noar et al. (2016) state that pictorial warnings are more effective than text warnings on the intention to quit smoking, and various studies conclude that pictorial warnings will actually reduce smoking (e.g., Brewer et al., 2016; Levy, Mays, Yuan, Hammond; Thrasher, 2016). In addition, in time it is proven that health knowledge among smokers is improved by pictorial warning labels vs. text-only messages (Peters et al., 2018). In the future, it might therefore be worth to consider the combination of text messages with pictures on cigarette packages to make the manipulations stronger. Also, further research regarding the combination of strategies focusing on risk perception, self-identity, and disgust is recommended, to improve the desired smoking cessation.

## 5.3 Theoretical and practical implications

Findings of this study offer valuable contributions to existing literature in various ways. First, as the influence of different strategies implemented on tobacco products seemed to be insufficiently investigated, this study explored this field of research. This study is the first experimental study that manipulated text messages based on seven different strategies for

changing behavior. It therefore adds to the field of research regarding the impact of different kinds of communication on tobacco products to stimulate smoking cessation. Plus, even more valuable is that this study created a basis for further research into different kinds of discouragement communications. Namely, despite the fact that there are several studies into the effects of fear appeals on smoking behavior (e.g., Witte & Allen, 2000; Peters et al., 2018), there was a lack of available data concerning the effects of different strategies on possible predictors of smoking cessation. Another field that this research enhances to is the research on factors influencing the stop intention of smokers in the Netherlands. Although a large amount of literature proved the impact of fear appeals on smoking cessation (e.g., White & Albarracín, 2018), findings of this study provide some other directions, which sheds new light on this issue.

The results of this study also reveal a practical implication. A relevant implication arising from the current study is the fact that communication on cigarette packages should target smokers' risk perception, self-identity, and disgust. Regarding the relationship between the relevant cessation mechanisms, it could be wise to elect a message which affects all the three mechanisms to increase smoking cessation. Practically, this means that risk perception, self-identity, and disgust can be successfully integrated into smoking cessation interventions and related behavioral support programs. However, despite this study suggest that one should focus on risk perception, self-identity, and disgust, this advice is not unconditional. Namely, this study also suggests that one should not continue highlighting the negative health consequences of smoking to stimulate smoking cessation. They should keep in mind that those who consider themselves as "smoker" are more likely to respond defensively to persuasive discouragement messages. A suggestion would be a campaign which stimulate smokers to consider their reasons for quitting by sharing personal stories from former (known) smokers. This campaign provides smokers with hope by sharing the success stories of others who are not identifying themselves as a smoker anymore. However, research on the larger system of interventions and how to address these mechanisms of smoking cessation is needed. Earlier experiences have shown that executive-sponsored governance structures, such as implementation working groups, have contributed to the successful implementation of smoking cessation applications (Cancer Institute NSW, 2018). Therefore, the government can play a very important role by funding research regarding this and changing the sole focus from fear appeal to the other possible strategies and more specifically a combination of mechanisms.

## 5.4 Conclusion

This study was designed to examine which strategy on cigarette packages works best to stimulate smoking cessation. Overall, findings suggest that it does not seem to matter which strategy on cigarette packages is used to change smokers' stop intention, whether it is attitude, risk perception, perceived norm, self-identity, self-efficacy, habit or disgust. Because the lack of differences in result of the strategies, this study cannot make clear if the variables are correctly addressed by relevant conditions and it seems that the different

mechanisms of smoking cessation do not vary as a result of different kind of discouragement information. However, results from this study provide preliminary support that the provision of fear appeals might not increase risk perception and motivate changes in smoking behavior. Along the results from this study, further research concerning how to address relevant mechanisms of smoking cessation are promising for other strategies than fear appeals.

The last aim of this study was to explore the relevant mechanisms for smoking cessation. The identification of mechanisms that may predict success in stimulating smoking cessation is highly desirable as this could help to match smokers with a strategy that is suitable to help them quit smoking. This research encourages communication on cigarette packages which target both smokers' risk perception, self-identity as a quitter, and disgust. Concerning the earlier mentioned synergy effect and fact that the cessation mechanisms correlate, the effects of targeting those mechanisms simultaneously on cigarette packaging and other campaigns will be promising. Hence, these data provide evidence for the need to further explore how to target these mechanisms and develop more appropriate communication on tobacco products.

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# Appendices

## Appendix A Survey

*Hoe stimuleren we rokers via een sigarettenverpakking om te stoppen met roken?*
Het doel van dit onderzoek is om te achterhalen hoe de beschikbare ruimte op de sigarettenverpakking het meest effectief kan worden gebruikt om rokers te stimuleren om te stoppen met roken. Het onderzoek zal ongeveer 5 minuten van jouw tijd in beslag nemen. Uiteraard worden jouw antwoorden geheel anoniem verwerkt.
Dit onderzoek is ter afsluiting van mijn opleiding Marketing Communications aan de Universiteit Twente. Voor vragen en opmerkingen over het onderzoek kun je contact opnemen met Mathilde Weijdeman via e-mail: m.weijdeman@student.utwente.nl.
Onder alle respondenten die de gehele vragenlijst hebben ingevuld en de vragenlijst doorsturen naar tenminste 1 andere roker worden cadeaubonnen ter waarde van 20 euro verloot. Wil jij hier ook kans op maken? Vul dan aan het einde van de vragenlijst je e-mailadres in!

Door verder te gaan, ga je akkoord met deelname aan dit onderzoek. **Alvast hartelijk dank voor jouw deelname aan dit onderzoek!**

Wat is jouw leeftijd?

- ○ < 18 jaar (1)
- ○ 18 - 25 jaar (2)
- ○ 26 - 35 jaar (3)
- ○ 36 - 45 jaar (4)
- ○ 46 - 55 jaar (5)
- ○ 56 - 65 jaar (6)
- ○ > 65 jaar (7)

*Ga naar: Einde enquête Als Wat is jouw leeftijd? = < 18 jaarHeb je de afgelopen 7 dagen één of meer sigaretten (of andere tabaksproducten) gerookt?*

- ○ Ja (1)
- ○ Nee (2)

*Ga naar: Einde enquête Als Heb je de afgelopen 7 dagen één of meer sigaretten (of andere tabaksproducten) gerookt? = Nee*

Op de volgende pagina zie je drie sigarettenverpakkingen met teksten die de huidige waarschuwingsteksten kunnen vervangen. Bekijk deze aandachtig en stel je voor dat deze

sigarettenverpakkingen nu al in de winkels verkrijgbaar zijn.
Klik vervolgens op " --> " om de vragen te beantwoorden.

*1 van de 7 manipulaties wordt getoond*

Ben je van plan om te stoppen met roken?

- ○ Ja, binnen 1 maand (1)
- ○ Ja, binnen 6 maanden, maar niet in de komende maand (2)
- ○ Ja, binnen een jaar, maar niet in de komende 6 maanden (3)
- ○ Ja, binnen 5 jaar (4)
- ○ Ja, maar niet binnen 5 jaar (5)
- ○ Nee, ik ben niet van plan om te stoppen (6)

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**Als ik zou stoppen met roken dan**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...kan ik mij minder goed ontspannen (1) | ○ | ○ | ○ | ○ | ○ |
| ...ga ik de gezelligheid missen (2) | ○ | ○ | ○ | ○ | ○ |
| ...verveel ik mij vaker (3) | ○ | ○ | ○ | ○ | ○ |
| ...voel ik mij meer tevreden (4) | ○ | ○ | ○ | ○ | ○ |

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**Door te blijven roken**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...breng ik schade toe aan mezelf (1) | ○ | ○ | ○ | ○ | ○ |
| ...breng ik schade toe aan anderen (2) | ○ | ○ | ○ | ○ | ○ |
| ...verslecht ik mijn gezondheid (3) | ○ | ○ | ○ | ○ | ○ |
| ...wordt de kans kleiner dat ik ziek word (4) | ○ | ○ | ○ | ○ | ○ |

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**De meeste mensen die belangrijk voor mij zijn (partner/vrienden/familie/collega's)**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...keuren roken goed (1) | ○ | ○ | ○ | ○ | ○ |
| ...geven mij voldoende steun als ik zou willen stoppen met roken (2) | ○ | ○ | ○ | ○ | ○ |
| ...zullen trots op mij zijn als ik stop met roken (3) | ○ | ○ | ○ | ○ | ○ |
| ...stimuleren mij om te stoppen met roken (4) | ○ | ○ | ○ | ○ | ○ |

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**Roken**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...is niet hoe ik mezelf graag zie (1) | ○ | ○ | ○ | ○ | ○ |
| ...is typisch iets voor mij (2) | ○ | ○ | ○ | ○ | ○ |
| ...past bij wie ik ben (3) | ○ | ○ | ○ | ○ | ○ |
| ...past bij hoe ik wil leven (4) | ○ | ○ | ○ | ○ | ○ |

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**Als ik zou willen stoppen met roken dan lukt mij dit**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...ook als ik mij gestresst voel (1) | ○ | ○ | ○ | ○ | ○ |
| ...ook als ik uit ben (in een café, op een feest of op visite) (2) | ○ | ○ | ○ | ○ | ○ |
| ...ook als ik iemand anders zie genieten van roken (3) | ○ | ○ | ○ | ○ | ○ |
| ...niet als ik een sigaret aangeboden krijg (4) | ○ | ○ | ○ | ○ | ○ |

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**Roken doe ik**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...zonder dat ik er bij nadenk (1) | ○ | ○ | ○ | ○ | ○ |
| ...automatisch (2) | ○ | ○ | ○ | ○ | ○ |
| ...maar hoort niet bij mijn dagelijkse routine (3) | ○ | ○ | ○ | ○ | ○ |
| ...meestal op vaste momenten (4) | ○ | ○ | ○ | ○ | ○ |

Geef hieronder aan in hoeverre je het eens bent met de volgende stellingen.

**Ik vind roken**

| | Helemaal mee oneens (1) | Mee oneens (2) | Neutraal (3) | Mee eens (4) | Helemaal mee eens (5) |
|---|---|---|---|---|---|
| ...ziekmakend (1) | ○ | ○ | ○ | ○ | ○ |
| ...afstotend (2) | ○ | ○ | ○ | ○ | ○ |
| ...aantrekkelijk (3) | ○ | ○ | ○ | ○ | ○ |
| ...vies (4) | ○ | ○ | ○ | ○ | ○ |

Hoeveel sigaretten (of andere tabaksproducten) rook je gemiddeld **totaal** per dag?

- ○ 1 - 5 (1)
- ○ 6 - 10 (2)
- ○ 11 - 15 (3)
- ○ 16 - 20 (4)
- ○ > 20 (5)

Hoe lang rook je al?

- ○ Minder dan een half jaar (1)
- ○ Tussen een half jaar en één jaar (2)
- ○ Tussen één jaar en twee jaar (3)
- ○ Tussen twee en vijf jaar (4)
- ○ Langer dan vijf jaar (5)

Heb je ooit wel eens geprobeerd om te stoppen met roken?

- ○ Ja (1)
- ○ Nee (2)

*Ga naar: Einde blok Als Heb je ooit wel eens geprobeerd om te stoppen met roken? = Nee*

Hoe lang heeft de langste periode geduurd waarin je gestopt was met roken?

Korter dan 24 uur (1)

- ○ Ongeveer een dag (2)
- ○ Tussen 1 en 7 dagen (3)
- ○ Tussen 1 en 4 weken (4)
- ○ Tussen 1 en 3 maanden (5)
- ○ Tussen 3 en 6 maanden (6)
- ○ Langer dan 6 maanden (7)

Wat is je geslacht?

- ○ Man (1)
- ○ Vrouw (2)
- ○ Zeg ik liever niet (3)

Wat is je hoogst afgeronde opleiding? (Indien geen van deze antwoorden juist is kies dan het antwoord dat het meest overeenkomt)

- ○ Basisonderwijs (1)
- ○ LBO (2)
- ○ VMBO/MAVO (3)
- ○ MBO (4)

- ○ HAVO (5)
- ○ VWO (6)
- ○ Bachelor (7)
- ○ Master (8)

In hoeverre vind je de boodschap op de pakjes die je gezien hebt zich focussen op:

| | Helemaal mee oneens (1) | Mee oneens (3) | Neutraal (4) | Mee eens (5) | Helemaal mee eens (6) |
|---|---|---|---|---|---|
| Het oproepen van angst (1) | ○ | ○ | ○ | ○ | ○ |
| Beloning (2) | ○ | ○ | ○ | ○ | ○ |
| Goedkeuring uit de omgeving (3) | ○ | ○ | ○ | ○ | ○ |
| Een rolmodel (4) | ○ | ○ | ○ | ○ | ○ |
| Het boosten van vertrouwen (5) | ○ | ○ | ○ | ○ | ○ |
| Het doorbreken van een gewoonte (6) | ○ | ○ | ○ | ○ | ○ |
| Het oproepen van walging (7) | ○ | ○ | ○ | ○ | ○ |

Hartelijk dank voor het invullen van de vragenlijst! Wil je de resultaten van het onderzoek inzien of kans maken op een waardebon t.w.v. 20 euro? Vul hieronder je e-mailadres in. Er wordt betrouwbaar met jouw gegevens omgegaan. Klik vervolgens op --> om de vragenlijst af te ronden.

# Appendix B Manipulations

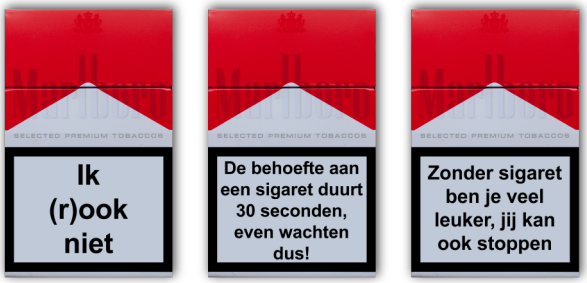
## B.1 Fear appeal


## B.2 Gain-framed


## B.3 Social approval


## B.4 Modeling

## B.5 Verbal persuasion




## B.6 Stimulus control


## B.7 Affective conditioning