



THE EFFECT OF MARKETING  
MESSAGES ON CHANGING BEHAVIOUR DISORDERS

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## **Abstract**

**Title:** The effect of marketing messages on changing behaviour disorders

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Behaviour disorders such as over-eating and smoking have been a constant debate in many societies throughout the years, being prejudicial not only for the individuals' health but also resulting in heavy burdens on the society. Consequently, regulators and public authorities have been trying to implement warning messages that can guide consumers to stop embracing such behaviour disorders.

Hence, the main purpose is to understand how public regulators can more effectively use different messages' framing to address different behaviour scenarios, which ultimately will decrease the effect these disorders have on society. Additionally, there is also the goal to understand if there are any differences between consumers' characteristics, as low and high self-regulated consumers, understanding which message frame is more effective among both types. With these objectives in mind, six in-depth interviews and an online experimental study was used to reach insightful results.

The main conclusions taken from the present study indicate that smoking disorder is considered as an addictive behaviour, and that a loss-framed message would work best on prevention warnings and a gain-framed message in medical detection warnings. Furthermore, high self-regulated smokers tend to be less influenced by these warnings, due to their intrinsic self-control. Smokers knowingly keep smoking, not being motivated to quit, preferring to endure in medical examinations to monitor health. Contrarily, overweight consumers do not consider over-eating as an addictive behaviour, believing to be able to lose the excess weight at any time. Hence, framing conditions do not influence their behaviour like in the smoking disorder.

## **Resumo**

**Título:** Efeito de mensagens de marketing a mudar vícios comportamentais

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Vícios comportamentais como obesidade e tabaco são um debate recorrente na sociedade. Estes comportamentos são prejudiciais não só para a saúde dos consumidores, como acarretam consequências para a sociedade. Autoridades reguladoras têm feito esforços para desenvolver e implementar mensagens que orientem consumidores a cessar estes comportamentos.

Assim, este estudo tem como objetivo entender como utilizar diferentes tipos de mensagens, de forma a controlar vícios comportamentais, procurando diminuir os seus efeitos nefastos na sociedade. Adicionalmente, é relevante entender se existe alguma diferença entre características pessoais dos consumidores, mais concretamente entre consumidores com baixo e alto controlo pessoal. Tendo em vista estes objetivos, foram realizadas seis entrevistas e um questionário, de forma a produzir um conjunto de resultados mais detalhado.

Em conclusão, verificou-se que fumar é aceite como um vício, onde uma mensagem formulada em termos de perda funcionará melhor na prevenção do comportamento, enquanto que mensagens formuladas em termos de ganhos funcionarão melhor na detecção de doenças. Como esperado, consumidores com um elevado nível de controlo são menos influenciados por este tipo de mensagens, não se verificando o acima descrito. Os fumadores mantêm o seu comportamento, conscientes das implicações na sua saúde, preferindo fazer exames médicos a parar de fumar. Contrariamente, consumidores com excesso de peso não consideram comer demais como um vício, acreditando que conseguem perder o excesso de peso a qualquer momento. Estes consumidores têm mais motivação para perder peso do que fazer exames médicos, pelo que os diferentes tipos de mensagens estudados não influenciam o seu comportamento.

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## **Chapter 1: Introduction**

### **1.1 Background**

Addictive behaviours such as alcoholism, drug abuse, over-eating, smoking, among others, have been a constant debate in many societies throughout the years (Gowing et al. 2015). These behaviours are not only prejudicial to the individual's health, but also impose a more severe problem, resulting in high economic burdens on the society, through lost productivity and healthcare costs, amongst other (Gowing et al. 2015).

Looking deeper into alcoholism, from 2.1 billion people that drink alcohol worldwide, 13% endures in heavy episodic consumption. This type of drinking is defined as consuming at least 60g of alcohol on one occasion, and it was shown that its majority comes from developed countries. Additionally, consumers with alcohol disorders are likely to be consuming larger quantities over extended periods of time. These consumers form a group that experience the worst effects, such as harmful use or dependence. It is estimated that 4.9% of the population worldwide is in this situation and suffered from alcohol disorders in the past year (Gowing et al. 2015).

Concerning obesity, it has been steadily increasing especially in the United States, which is one of the countries that suffer more with this negative behaviour (Obesity Action 2013). In this article, 93 million Americans are affected by obesity, in estimate, with 9 million of them being children from 6 to 19 years old. To better understand the implications of this problem it is important to outline that when children are already considered as obese in childhood, are 70% more likely to be obese in their adulthood, not stopping this behaviour (Obesity Action 2013).

Moreover, analysing the usage of controlled substances, 3.5% of adults - representing approximately 174 million people - use cannabis globally. Other drugs use such as, psychoactive drugs, are used by 0.3% of the world's adult population. It is important to highlight that although these numbers seem smaller compared other behaviour disorders, drug use is very tough to monitor due to its illegal status. Therefore, the presented values are expected to be lower than the actual reality (Gowing et al. 2015).

Finally, smoking is one of the most studied behaviour disorders, with currently 22.5% of the world's adult population smoking tobacco, which represents 1 billion people (Gowing et al. 2015). The new market regulations from tobacco control plan resulted in a 42.4% decrease in consumption (Current Cigarette Smoking Prevalence Among Working Adults, 2011). However, this decrease has been slowing down in the past years, and younger consumers have

been starting smoking, which leads to the need for new regulations to reduce smoking even further (Witton & O'Reilly 2015).

A question that is of great interest then is what kind of messages can be developed by public authorities and health managers to help consumers to stop the embracement of such behaviour disorders. According to Schneider and colleagues (2001) messages can be framed to influence consumers' behaviour by emphasizing the benefits of adopting a healthier lifestyle. To prevent these behaviours, it has been suggested that gain-framed messages - stating consumers' gain by not practising a certain behaviour - are the most effective for appealing to a change in the behaviour (Rothman & Salovey 1997; Mollen et al. 2017). However, there are still some situations in which there has been no scientific consensus. According to Graaf and colleagues (2015) in health messages related to responsible use of alcohol, it was shown that using negative framed messages highlighted to be more effective. Hence, it is highly likely that other factors may also influence the change in consumer's behaviour. Booker and Mullan (2013) showed that self-regulation might influence motivation and thus explain consumers' negative choices. Therefore, the consumer's individual characteristics, classified as low and high self-regulated consumers, will be considered as a moderator for the study.

To conclude, one can say that the most discussed issues are alcoholism, obesity, drug use, as well as smoking. The latter has seen recent improvement in the past years, showing that adding messages to the packaging can make a difference in changing behaviour disorders. Hence, the proposed idea in this dissertation is to understand how public regulators can more effectively use different messages' types that will lead to a decrease in these behaviours that have been affecting our society.

## **1.2 Problem statement**

The problem this dissertation proposes to understand is which type of marketing messages are more effective in changing consumers' behaviour disorders. Also, this research also has the goal of understanding if there are any differences between consumer's individual characteristics, as being low or high self-regulated consumers, assessing which type of messages are more effective among both types of consumers. Therefore, four research questions were formulated to address the information needed for this research study:

**Research Question 1:** Which type of messages are most commonly used in the market?

The first research question aims to understand which are the messages' types that are more commonly used in health-related communications.

**Research Question 2:** Which types of negative behaviour are most common in the society?

With this second question, the aim is to understand which are the most precedent behaviour disorders consumers tend to have, for example, alcoholism, obesity, among others, and focus the scope of the analysis on these specific behaviours.

**Research Question 3:** Which type of marketing messages are more effective on changing behaviour?

Additionally, it is important to understand which of the proposed message types may have a higher effectiveness on general consumers, providing a broader analysis of the topic.

**Research Question 4:** Are there any differences in effectiveness among low and high self-regulated consumers? Which type of marketing message would work best for low self-regulated consumers?

Finally, this research question has the aim to understand the effectiveness of different messages on low and high self-regulated consumers. If shown that there are differences between consumers' individual characteristics, we will try to assess what are the most effective message for low self-regulated consumers.

### **1.3 Scope of Analysis**

By focusing the analysis on specific message types and specific behaviour disorders, it will be possible to have a deeper understanding of how messages can change negative behaviour. Therefore, the proposed dissertation will focus on the two most used messages currently on the market. With the same reasoning, it will be studied the three more precedent behaviour disorders that have a higher impact on consumer's health. Both the message types as well as, behaviour disorders will be defined through the review of already published literature.

### **1.4 Academic and Managerial Relevance**

Different marketing messages such as the ones used in the tobacco control plan have shown to be effective over the years, decreasing its consumption. Therefore, this dissertation

will provide public authorities and regulators with a better view of how marketing content can help citizens to avoid unhealthy behaviour disorders.

Additionally, even though the proposed topics are subject to recurring studies, there are no studies, to the author's knowledge, which analyse the effects of different marketing messages on multiple behaviour disorders, as proposed in the present dissertation. Typically, issues such as alcohol, tobacco, other drug use and obesity are researched separately, not existing studies that give an overview of addictive behaviours as a whole (Gowing et al. 2015).

### **1.5 Dissertation Outline**

The proposed dissertation will be composed of five key chapters. Chapter 1 will start with an overview of the research topic's background and its relevance for the proposed study. The problem statement, as well as corresponding research questions and hypothesis, will also be present in Chapter 1. Chapter 2 will include a review of the literature previously published regarding the specific topics approached by the study, and derived from the research questions. Furthermore, Chapter three will explain the methodology that will be used, as well as, the description of the data collection method. After collecting the information needed for the analysis, the interpretation of the results will be presented in Chapter 4. Finally, the fifth chapter will present the main conclusions derived from the research study. Additionally, it will briefly present the limitations of the proposed dissertation as well as, some ideas for future research.

## **Chapter 2: Literature Review**

### **2.1 Behaviour Disorders**

Addictive behaviour can be defined as a behaviour in which an individual is addicted to a substance – either chemical like tobacco, or natural like food – in which the level of present consumption is associated with past consumption (Chaloupka 1990). According to this study, behaviour disorders were first considered to be an irrational behaviour on which economic analysis did not apply. It was believed that policies such as law enforcement, high taxes and dissemination of information concerning negative health effects, would have little if any impact on consumption. With more research, it was shown that behaviour disorders are indeed a rational behaviour, following the basic laws of the economy where an increase in price, legal sanctions or information about negative health effects, will decrease its consumption (Chaloupka 1990). Hence, it is of great importance to set policies and evaluate priorities that can effectively change these behaviours and track its progress (Gowing et al. 2015).

According to WHO Report (2014), the United Nations General Assembly conducted in 2011 met to discuss health issues among which alcohol consumption, tobacco smoking and over-eating were three of the four biggest contributors towards economic burden and premature deaths on the society. Its major impact is represented by health care costs, public safety and lost productivity. However, the study of these behaviours had major setbacks throughout the years, namely the lack of accurate data to analyse and comparable across countries (Gowing et al. 2015).

#### **2.1.1 Overweight**

According to Vohs and colleagues, overweight is the most difficult behaviour to be self-controlled, since contrary to drinking alcohol or smoking, people need to consume calories to live. Hence, throughout the years there has been a lack of understanding towards obesity as well as large biases when it comes to discussing weight issues. It is imperative that these gaps be addressed before any measures can be effectively taken (Obesity Action 2013). According to WHO Report (2014), overweight can be defined as having weight for height ratio above one standard deviation from the median, whereas obesity is defined as having, at least, two standard deviations above the median.

According to WHO Report (2014), there are 11% of men and 15% of women considered as obese – representing more than half billion adults –, whereas the number of

overweight population has already reached 39% of adults in 2014 (Appendix A – Figure A & B). As one can see, obesity is a heavily spread problem that has jumped to one of the top priorities in health agendas in many countries (Swinburn, Gill & Kumanyika 2005).

Furthermore, one of the major consequences of overweight is diabetes, which consequently increases the risk of other chronic diseases, namely cardiovascular diseases, kidney failure, or even blindness (Swinburn, Gill & Kumanyika 2005; Barry, Brescoll & Gollust 2013; WHO Report 2014). In 2012, diabetes was responsible for 1.5 million deaths (WHO Report 2014). Due to these health complications, treating an individual that suffers from obesity, costs approximately 1.244 dollars more than a healthy individual (Obesity Action 2013), placing a major financial burden on governments accounting for up to 6% of the total healthcare expenditure in some countries (Swinburn, Gill & Kumanyika 2005). Hence, authorities have increasingly recognised the necessity to deliver effective strategies to control overweight and obesity (Swinburn, Gill & Kumanyika 2005; WHO Report 2014).

#### **2.1.1.1 Policies on Overweight Issues**

According to Clarke and colleagues (2016), 89% of developed countries are trying to develop policies to act on overweight issues, having at least one unit in the Ministry of Health focused on this behaviour. However, in order to reduce the overweight population, there needs to be specific strategies, different from complete cessation of the behaviour (Vohs, Baumeister & Tice, 2012). Currently, there is little evidence on what is effective to prevent obesity and overweight, but substantial research on promoting healthy diets and physical activity, the major drivers to reduce obesity (Swinburn, Gill & Kumanyika 2005; WHO Report 2014).

Prior work has shown that agricultural subsidies can be effective in promoting a healthier diet, not only by encouraging long-term fruit and vegetable production but also transportation and marketing (WHO Report 2014). Additionally, taxation on unhealthy foods, as well as nutrition labelling can guide consumers to change their purchasing habits, improving their health (Clarke, Swinburn & Sacks 2016; WHO Report 2014).

#### **2.1.2 Alcoholism**

According to Babor and colleagues (2010), alcohol is a common behaviour disorder. It employs numerous people, brings foreign currency from exported beverages and creates tax revenue for the government. However, these economic benefits come to the society with major costs.

According to the WHO Report (2014), alcohol is a psychoactive substance with dependency properties that cause a significant burden of disease and death throughout many countries. Although approximately 43% of the world's adult population drink alcohol, only 13% of them incur in HED (Gowing et al. 2015). Heavy episodic drinking – HED –, can be defined as the consumption of at least 60g of alcohol on one single occasion, per month (Appendix A – Figure C). As a reference point, it is approximately equivalent to six standard drinks in the majority of countries. Although the average consumption of an individual may be lower, this type of consumption on one single occasion is already associated with detrimental consequences (WHO Report 2014). According to the WHO Report (2014), Harmful Use of Alcohol and Alcohol Dependency are two major alcohol disorders that trigger health problems. According to Gowing and colleagues (2015), approximately 4.9% of the world's adult population suffers from one of these disorders, representing 240 Million people.

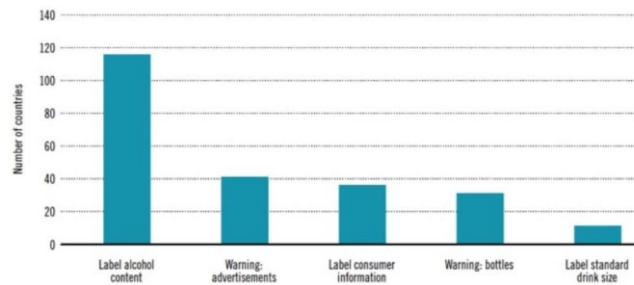
Furthermore, alcohol brings a health burden to not only the individual but also a social and economic burden to the society, having a significant impact on public health (Babor et al.2010; WHO Report 2014). According to Gowing and colleagues (2015), 5.9% of all deaths worldwide are attributable to alcohol use, corresponding to 3.3 Million deaths. Among social and economic costs caused by alcohol, it is noticeable the direct costs such as, hospitals and health system, police and criminal justice system, as well as unemployment and welfare systems (WHO Report 2014).

#### **2.1.2.1 Policies on Alcohol Consumption**

According to WHO Report (2014), there has been considerable research for the past years to discover what is the best strategy to reduce the harmful use of alcohol. The most effective measures seem to be taxation, restricting alcohol availability and implementation of banners on advertising (Chisholm et al. 2004; Anderson et al. 2009; Babor et al. 2010). Additionally, there has been an increase in measures to reduce alcohol consumption among drivers, by reducing the limits for blood alcohol concentration (Appendix A – Figure D) and enforcing random breath testing (Babor et al.2010).

Furthermore, as seen in Figure 1, warning labels for alcohol containers such as describing the percentage of alcohol present in the drink, is mandatory in the majority of countries. However, health-focused messages, such as “Excessive consumption of alcohol is harmful to health” are only present in few countries – South America and Africa –, creating an opportunity to research further the use of these policies (WHO Report 2014; Babor et al. 2010).





**Figure 1:** Required warnings and health-related information on labels in 2012 (WHO Report 2014)

### 2.1.3 Smoking

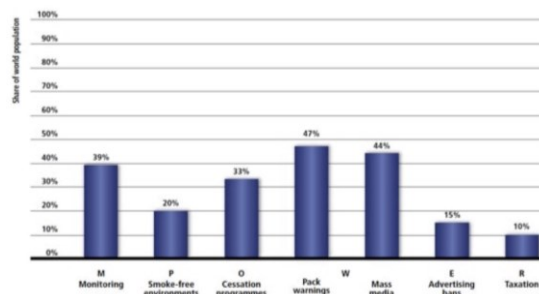
According to Chaloupka (1990), smoking is the ideal negative behaviour to be tested in an addiction study. Due to its nicotine component, it is considered an addictive good being the widest spread addiction in today's society. Additionally, due to its legality, the data sources found throughout previous studies are more reliable, as well as data from prices and taxes are accurately reported both at national and regional level.

Approximately, 22.5% of the global adult population smokes tobacco, representing 1 billion consumers that suffer from this addictive behaviour (Appendix A – Figure E) (Gowing et al. 2015; WHO Report 2014). According to Chaloupka (1990) and WHO Report (2017), cigarette smoking is the largest preventable behaviour responsible for premature death and disability in the United States. Non-smokers or second-hand smokers, also face a greater risk of cancer due to involuntary smoking than they would face from all air pollutants. It is estimated that six million people die annually due to tobacco use, not only from direct smokers but also over 600.000 of those deaths correspond to second-hand smoke (WHO Report 2014). Hence, according to the WHO Report (2014), tobacco is currently one of the leading causes of preventable deaths around the world, reporting that the health burden on the society exceeds the total tax revenue made from all tobacco products. Hence, it is imperative that action be taking to reduce this behaviour and prevent the annual toll of eight million deaths per year.

#### 2.1.3.1 Warning Labels Effect on Smoking Cessation

According to Cigarette Smoking (2011), the prevalence of cigarette smoking among adults has decreased 42.2% since 1965. However, this decrease has diminished for the past five years, not reaching the Healthy People 2010 objective to reach 12% of smokers. Hence, although this decline shows that the Governments' tobacco control plans are on track, it is still imperative that authorities come up with policies that reduce even further this behaviour (Witton & O'Reilly 2015; Cigarette Smoking 2011; WHO Report 2011).

For the last years, any consumer that buys a cigarette pack will find warning labels on the packaging describing negative health consequences for smokers (Hung, Chaloupka & Fong 2014; WHO Report 2011). According to Hung and colleagues (2014) and O’Hegarty and colleagues (2006), since 2000 more than forty countries have implemented graphic warning messages on cigarette packs, decreasing at least 12 to 20% of the cigarette prevalence in the first years of implementation. Currently, 121 countries have implemented at least one anti-tobacco measure (WHO Report 2017). In figure 7 it can be seen the percentage of consumers covered by tobacco control policies throughout the world (WHO Report 2017).



**Figure 2:** World population covered by tobacco control policies in 2016 (WHO Report 2017)

As seen in Figure 2, and according to the WHO Report (2017), packaging warning labels are the most spread anti-tobacco measure reaching 3.5 billion people, almost half the global population. Warning labels have been used to promote the cessation of cigarette smoking by educating consumers towards the associated health issues and providing information on assistance for quitting (O’Hegarty 2006). However, this measure has various setbacks especially from the tobacco industry, that constantly challenges the use of warning labels (WHO Report 2017). Additionally, one of the most common practices with the current warning labels is that consumers tend to find ways to avoid them (Hammond et al. 2010). In a survey conducted by Hammond and colleagues (2010), 36% of respondents admitted ignoring the warning labels, by either covering it (19%), use a different case (21%) or even request a specific packaging to avoid a particular label (17%). Additionally, 44% and 58% of the respondents reported avoiding the warning labels due to fear or disgust, respectively. In this study, 20% of smokers reported reducing the consumption of tobacco due to the effect of the warnings. Further evidence is reported on WHO Report (2017) and O’Hegarty and colleagues (2006), describing that warning labels are effective in raising awareness towards the health risks of smoking, which consequently will reduce or even lead to cessation of the behaviour. Additionally, it is reported that by covering at least half of the package surface with both text and image, there is an increase in effectiveness compared to text-only warnings (O’Hegarty et

al. 2006). According to O'Hegarty and colleagues (2006), the difference in effectiveness is due to overexposure towards a message that can wear-out the effect, whereas seeing a picture of cancerous lungs is harder to avoid or dismiss.

To conclude, although the progress done towards the adoption of anti-tobacco measures is encouraging, it is still not sufficient to end the tobacco epidemic. Hence, it is important that every country keep developing new measures to significantly reduce the number of smokers worldwide (WHO Report 2017; WHO Report 2014).

## **2.2 Message Framing**

Public health regulators often use persuasive messages as a strategy to motivate consumers to adopt healthy behaviours (Gallagher & Updegraff 2012). Message strategy and the way different appeals are framed, can influence consumers to process various stages of a decision and ultimately can lead to a change in behaviour (Smith & Berger 1998). According to Maheswaran & Meyers-Levy (2004), in framing studies, it is examined how consumers' judgments of a message may differ to how the message is framed. Thus, message framing has been a valuable tool in a marketing context, with considerable research analysing the persuasiveness of health messages, showing how different manipulations can lead to a change in behaviour that persist for months (Updegraff & Rothman 2013; Gallagher & Updegraff 2012; Shiv, Edell & Payne 1997).

According to Rothman & Salovey (1997), almost all health-related communication can be framed either in terms of associated benefits or associated costs. Hence, one framework used to influence consumer behaviour, involves comparing messages that use gain-framed statements (benefits) versus loss-framed statements (costs) associated with the behaviour it aims to change (e.g., Rothman & Salovey 1997; Block & Keller 1995; Maheswaran & Meyers-Levy 1990; Graff, Putte & Brujin 2015; White, Macdonnell & Dahl 2011).

Gain-framed messages are formulated in the positive sense of the message, meaning that it can stress either the benefits gained or the negative consequences avoided if the consumer accepts the healthy behaviour (e.g., "You will reduce [avoid increasing] your risk of having lung cancer if you quit smoking") (Maheswaran & Meyers-Levy 2004). Likewise, loss-framed messages convey the negative sense of the statement, stressing either the negative consequences occurred or the benefits foregone when the consumer does not accept the healthy behaviour (e.g., "You will increase [not reduce] your risk of having lung cancer if you do not quit smoking"). According to Rothman & Salovey (1997) and Tversky & Kahneman (1981),

consumers are sensitive to whether a behavioural alternative is framed in terms of benefits or losses even when it is conveying the same underlying message. However, there is still no consensus on how these messages should be framed to be more effective at changing consumers' behaviours in healthier ways (Graaf, Putte & Brujin 2015; White, Macdonnell & Dahl 2011).

### **2.2.1 Common research findings**

Prior work commonly finds evidence that the loss-framed messages tend to be more persuasive on changing behaviour (Meyerowitz and Chaiken 1987; White, Macdonnell & Dahl 2011; Nan et al. 2015). However, the superior effectiveness of loss-framed messages compared to gain-framed was only shown under specific conditions (White, Macdonnell & Dahl 2011). As an example, situations of high issue involvement (Maheswaran and Meyers-Levy 1990), depth processing (Block and Keller 1995), risky implications (Meyers-Levy and Maheswaran 2004) as well as detection of diseases (Rothman and Salovey 1997) have all shown to be more effective under loss-framed messages. In a study conducted by Graff and colleagues (2015), it was shown that intentions about responsible drinking were dependent on issue involvement and that a loss-framed message was more effective in changing students' intentions towards responsible drinking. Gain-framed messages had no impact on intentions to perform responsible drinking, with students with high issue involvement. Consequently, researchers proposed that issue involvement can predict whether gain or loss-framed messages would have an advantage in influencing behaviour (Meyers-Levy & Maheswaran 2004; Meyers-Levy & Maheswaran 1990). Hence, it is relevant to consider the context in which a message is delivered in health communication (Graaf, Putte & Brujin 2015). In most cases, the framed message is not the only piece of information consumers have, and so, it should be considered the way the framed information fits into the consumers' cognitive representation of the issue (Rothman & Salovey 1997). Consumers can process the consequences of a specific health problem in terms of associated feelings from past experiences (Updegraff & Rothman 2013). According to Graaf and colleagues (2015) and Rothman & Salovey (1997), when there is family history involved, consumers are predisposed to consider the issue in terms of costs and losses, which facilitates the receptivity to a loss-framed message. Hence, consumers with high issue involvement tend to have more positive intentions to perform a certain behaviour, when a loss-framed message is presented (Graaf, Putte & Brujin 2015). Contrarily, with low issue involvement, a gain-framed message seems to be more persuasive, triggering positive responses

on consumers' (Meyers-Levy & Masheswaran 2004). In a study conducted by Meyers-Levy & Masheswaran (1990), students who were especially concerned about heart disease, engaged in deeper processing after their exposure to a loss-framed message, leading to stronger intentions to perform a blood test.

Consequently, messages encouraging smoking cessation tend to be framed to emphasise the feeling of fear and threat by using the negative consequences of cigarette smoking (Schneider et al. 2001). According to Duhachek and colleagues (2012), although loss-framed messages attract consumers' attention by highlighting the negative consequences of prolonged smoking, the current use of these messages appeals induces defensive processing which can consequently inhibit persuasion. Hence, its effectiveness in influencing consumers to quit smoking can still be further researched (Schneider et al. 2001; Shiv, Edell & Payne 1997).

### **2.2.2 Prospect Theory applied to Health-Related Behaviours**

One study that has guided the majority of the research conducted in message framing is Rothman and Salovey's (1997) application of the Prospect Theory to health communication (Updegraff & Rothman 2013). Prospect Theory proposes that consumers tend to be more willing to accept risks when they evaluate the option in terms of associated costs, but contrarily, tend to avoid risks when the same option is framed in terms of associated benefits (Tversky & Kahneman 1981, Rothman et al. 1993). Translating into health communication, detection behaviours are considered more uncertain than prevention behaviours since there is a possibility to discover that the individual is sick. Thus, willingness to accept risk and engage in detection behaviours, such as mammography or HIV testing, can be facilitated by using loss-framed messages (Meyerowitz & Chaiken 1987). On the other hand, prevention behaviours such as quit smoking or avoiding alcohol, are associated with more certain outcomes like improving vitality and reducing the risk of illness. Hence, prevention behaviours may be more influenced by emphasising the benefits of not performing the behaviour, rather than the cost of performing it (Schneider et al. 2001; Rothman & Salovey 1997).

*Detection Behaviours.* A study conducted by Meyerowitz & Chaiken (1987) on Breast Self-Examination – BSE – revealed that women look at this behaviour as risky due to the possibility to detect cancer. Therefore, it was shown that exposure to a loss-frame message was more effective than gain-framed message, to influence women to perform the examination, choosing the riskier option.

*Prevention Behaviours.* In an experiment by Rothman and colleagues (1993), it was

examined the influence of framing messages, on intentions to use sunscreen to prevent skin cancer. Sunscreen prevents skin cancer when is used an SPF of 15 or above. Participants were given the possibility to request sunscreen with SPF 2, 6, 8 or 15 after reading a pamphlet. Consistently with the prospect theory, participants who were given the gain-framed pamphlet were significantly more likely to request the SPF 15 sample than those who were given the loss-framed pamphlet (Rothman & Salovey 1997). Thus, according to Rothman & Salovey (1997), it can be argued that the underlying detection or prevention function of a health behaviour should determine whether people view the behaviour as safe or risky, and consequently determining which frame will deliver greater adoption.

Furthermore, Salovey & Williams-Piehot (2004) complemented the Prospect Theory with further research. As defended by Rothman & Salovey (1997), the distinction between prevention and detection behaviour determines the most effective frame to use in health communications, since these behaviours differ in terms uncertainty associated. If one considers being tested for HIV, it is a typical detection behaviour with associated risk of finding illness and thus should be more motivated by loss-framed messages. However, since HIV is connected, in large part, to the individual's past behaviour, some might not see the test as being uncertain. In an experiment conducted by Salovey & Williams-Piehot (2004), this theory was proposed with 38% of women who viewed the test as a certain outcome responding better to a gain-framed message. Hence, according to Salovey & Williams-Piehot (2004), it can be concluded that certain detection behaviours can have its uncertainty decreased and consequently a gain-framed message is more effective.

Consistent with this perspective, Rothman and colleagues (2006), has shown that the risk implications of a behaviour determine the effectiveness of a gain versus loss-framed message, independently of a detection or prevention behaviour being performed. In this study, it was shown that women who had already been detected with a potential heart problem, changed the way they perceive the screening test. In this context, the women no longer viewed the test as an uncertain outcome, focusing on what they can do to maintain their health and responding more positively to a gain-framed message. Hence, it can be concluded that the message effectiveness should be considered in terms of the individual perceptions of the outcome, rather than behaviour type per se (Rothman et al. 2006; Latimer, Salovey & Rothman 2007).

### 2.3 Self-Regulation

According to Graaf and colleagues (2015) and Block & Keller (1995), it is necessary to identify moderators that help to understand when different frames are more effective in health-related communications. According to Rothman and colleagues (2006) and Latimer and colleagues (2007), if the message effectiveness should be considered in terms of individual perceptions about the outcome, it is of great interest to study the effect self-regulation can have on the individuals' choices.

In a study conducted by Hall & Fong (2007), it was highlighted that not only self-regulation can moderate effects on intention to perform a behaviour, but can also have a direct impact on behaviour. Hence, self-regulation can be defined as a personality process by which consumers have the ability to alter behaviours (Baumeister & Vohs 2007; Baumeister et al. 2006). It increases the adaptability of human behaviour by enabling consumers to adjust their actions and override undesired behavioural responses to achieve certain objectives (e.g., Vohs et al. 2008; Baumeister, Schmeichel & Vohs, 2007; Tangney, Baumeister & Boone 2004; Baumeister, Tice & Heatherton 1994; Baumeister & Vohs 2007). In day to day lives, self-regulation can be used to resist the temptation of eating good-tasting and easily available food to have a healthier diet. According to Baumeister and colleagues (2006), it was shown that consumers who have high levels of self-regulation are more successful in life by engaging in more positive outcomes. However, self-regulation is not infallible, and thus many consumers develop health-related issues, caused by a self-regulatory failure (Hagger et al. 2009; Bętkowska-Korpała & Olszewska 2016).

According to Bętkowska-Korpała & Olszewska (2016), self-determination and self-motivation are two of the most important areas within self-regulation. While self-determination is the ability to set goals that are consistent with one individual's needs, self-motivation is related to the ability to finish a task overcoming difficulties and neutralising a negative state to trigger a positive mood (Bętkowska-Korpała & Olszewska 2016). Hence, if motivation is high to achieve a certain goal, it might even compensate the lack of some level of regulation (Baumeister & Vohs 2007). Although the power of motivation is not able to directly influence goal achievement, it can help to make the decision to accomplish the task (Bętkowska-Korpała & Olszewska 2016). Evidence is shown on an example given by Baumeister & Vohs (2007), in which when an alcoholic gives a speech under the influence it decreases the speaking ability. However, if a loved one appears in the speech, it is likely that the motivation level to perform the speech is higher, and the consumer manages to speak properly despite the greater difficulty.

According to Baumeister & Vohs (2007), this compensation only works for a limited amount of regulation failure but outlines the importance motivation can have on helping to change behaviours.

Furthermore, some authors view self-regulation as a limited resource. According to Baumeister and colleagues (2006), an individual has a limited stock of regulation, resembling energy and strength, used whenever there are behavioural changes, overrides or response regulation. In this theory, it is believed that this resource is also used for a broad assortment of behaviours that have in common the override or alteration of initial responses, such as controlling emotions and regulating thought (Schmeichel, Baumeister & Vohs 2003). When this limited resource is used, the consumer falls in a state of ego depletion in which further efforts to self-regulate are less effective than normally (Baumeister et al. 2006; Baumeister & Heatherton 1996). In a series of studies conducted by Schmeichel and colleagues (2003) and Baumeister and colleagues (2006), it was highlighted that when consumers use self-regulation to suppress thoughts in a first task, engaged in a heavier consumption of alcohol in the second task, even though a subsequent driving test was going to be performed. Hence, according to Baumeister and colleagues (2006) and Baumeister & Heatherton (1996), it can be concluded that self-regulation is a limited resource that can be temporarily depleted.

### **2.3.1 Self-Regulation on Behaviour disorders**

For many years, it was believed that addictive behaviours would result in irresistible cravings that the self could not control. In a study by Baumeister and colleagues (2007), it was shown that cravings, even from addiction, could be controllable. Evidence was shown on the “gun to the head test” where Vohs and colleagues proposed to show which behaviours were truly irresistible. In this experiment, if a behaviour were truly irresistible not even someone with a gun to your head would prevent you from doing that behaviour. This was true for sleep, sitting or lying down and urinating since eventually, the individual will perform these acts even when threatened. Hence, it was concluded that addictive behaviours, such as smoking, drinking or overeating, could be controlled and eliminated through self-regulation (Baumeister, Schmeister & Vohs 2007; Bętkowska-Korpała & Olszewska 2016; Baumeister & Heatherton 1996).

Furthermore, self-regulated consumers delay short-term benefits in favour of long-term goal achievement, overcoming a series of obstacles and temptations (Hagger et al. 2009). Evidence of this assumption was shown in a study conducted by Tangney and colleagues



(2004) and Bętkowska-Korpała & Olszewska (2016), where alcohol addicted consumers had lower self-regulation engaging in the short-term benefit of consuming alcohol than the healthier participants who focused on long-term abstinence. The will to control a behaviour comes from regulatory guides that the consumer creates for everyday decisions to deny or accept the consumption of a good (Baumeister, Schmeister & Vohs 2007). However, the long-term benefit of a decision might not be enough to encourage oneself to forego short-term satisfaction. Although the majority of people might be sensible to health warnings, avoiding the consumption of a substance to improve the odds of not developing diseases later in life, other consumers might not value this outcome. As an example, teenagers tend to disdain old-age health issues as a remote possibility as well as soldiers in war zones who doubt their chances of surviving the war. Hence, it can be concluded that these consumers tend not to find the long-term chance of escaping health diseases or overweight, a good enough reason to stop the short-term satisfaction of drinking alcohol, smoking tobacco or eating the desired food (Vohs, Baumeister & Tice 2012; Ferraro, Shiv & Bettman 2005).

Furthermore, throughout many studies of addiction and consumer buying habits, it was shown that in some cases constantly resisting temptation might be detrimental to self-regulatory processes. By resisting the temptation to purchase or consume something, consumers experience an increase in desire for that product, due to feelings of deprivation (Baumeister, Schmeister & Vohs 2007). Hence, in a behaviour such as overeating, trying to completely stop the intake of tempting food might be detrimental to the long-term goal of reducing weight. Contrarily, behaviours such as smoking and drinking alcohol do not represent a physical necessity and thus, should be stopped completely (Vohs, Baumeister & Tice 2012). In a study conducted by Bętkowska-Korpała & Olszewska (2016), it was shown that the higher the period of abstinence, the higher the strengthen and development of self-regulation. Hence, not only self-regulation helps the consumer to start and maintain a recovery process, but also develops more self-regulation competences (Bętkowska-Korpała & Olszewska 2016). According to Baumeister & Heatherton (1996), the more the consumer engages in self-regulation, the more it develops and becomes easier to exercise.

## **2.4 Main Findings and Hypothesis**

Finding the most effective message type to alter consumers' negative behaviour is the aim of the present dissertation. Also, since addiction is highly related to the individual's self-

control, it is imperative to discover if there is a difference in effectiveness from consumers with high and low self-regulation.

As it can be concluded from the literature review, the research made to discover which message type is more effective to change consumers' negative behaviour has benefited from many insights throughout the years. Commonly it was found that a loss-frame message would be more effective since it emphasises the positive benefits foregone or the consequences acquired by developing a certain behaviour (Meyerowitz and Chaiken 1987; White, Macdonnell & Dahl 2011; Nan et al. 2015; Maheswaran & Meyers-Levy 2004). Due to this research findings, smoking warnings tend to be written with a loss-frame message. However, its effectiveness on actually making consumers to stop smoking can be further researched (Schneider et al. 2001).

From the application of the Prospect Theory to health communication it can be concluded that the difference in outcome from each behaviour is what makes consumers more sensitive towards gain or loss-frame message. In detection behaviours, consumers have a high perception of risk due to the possibility of finding a disease. Hence, it is easier to reach consumers by a loss-framed message. Contrarily, in a prevention behaviour, the outcome is more certain since it increases the quality of life no matter what the behaviour is. Thus, it is more effective to appeal to consumers by a gain-framed message (Rothman & Salovey 1997). Therefore, this leads to predict the following hypothesis:

**H<sub>1</sub>:** Consumers who perceive a change in behaviour with a certain/uncertain outcome, will be more influenced by gain/loss-framed messages.

Concerning the role of self-regulation as a moderator, it was concluded that it is one of the most common human traits by enabling consumers to alter their behaviour as it is needed to adjust actions and override undesired responses (Baumeister & Heatherton 1996). However, since self-regulation is believed to be used to control other behaviours, consumers tend to enter in a state of ego depletion after performing a certain task, decreasing their level of control for subsequent actions (Schmeichel, Baumeister & Vohs 2003). This ego depletion state turns consumers less able to control their impulses and override undesired responses (Baumeister et al. 2006; Baumeister & Heatherton 1996).

Primary research on self-regulation to alter behaviour disorders considered these to develop uncontrollable cravings. Only Baumeister and colleagues (2007) highlighted that even cravings from addiction could be controllable though self-regulation. To do that, it is necessary to delay short-term satisfaction from consuming the substance, to engage in long-term benefits

of cessation of the behaviour (Hagger et al. 2009). However, there are consumers who do not view the long-term benefits has a good enough reason to stop (Vohs, Baumeister & Tice 2012).

Although behaviours such as smoking and drinking can be controllable through the complete cessation, eating is harder to control since calorie intake is needed for survival. Hence, there needs to be established specific rules and guidelines to enable consumers to stop this specific behaviour (Vohs, Baumeister & Tice 2012). Further research has shown that a possible lack of self-regulation can be somewhat compensated through motivation (Bętkowska-Korpała & Olszewska 2016; Baumeister & Vohs 2007). Thus, the following moderation relation is hypothesized:

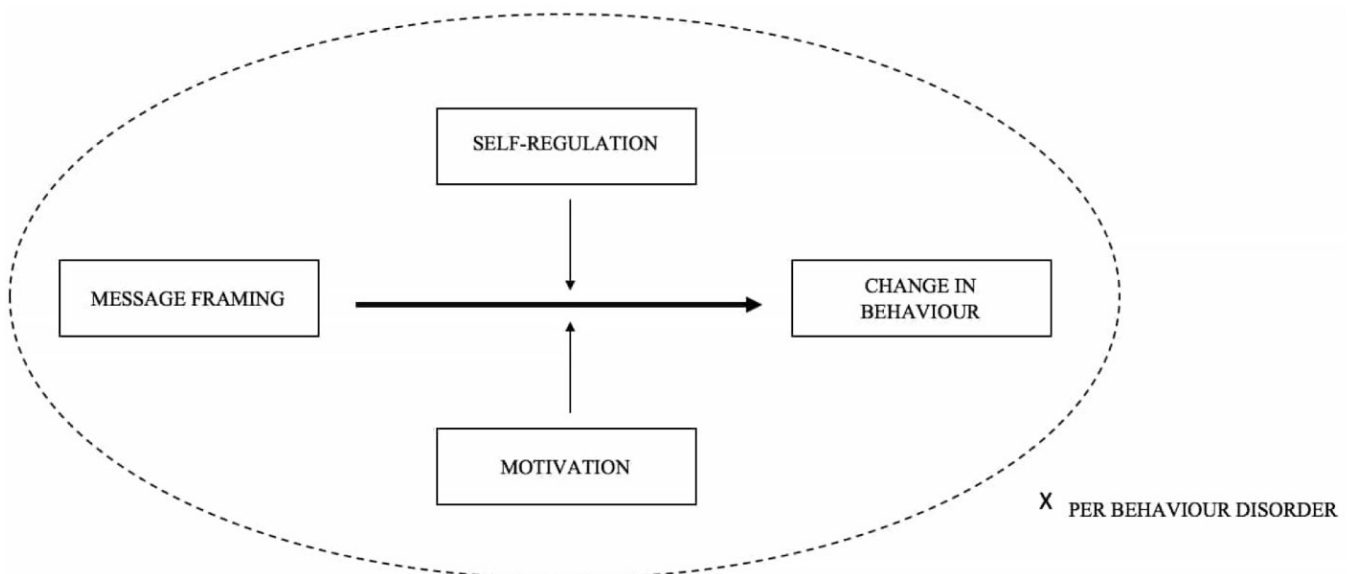
**H<sub>2</sub>:** Consumers with higher/lower ability to self-regulate, will have high/lower likelihood of perceiving a change in behaviour as certain.

**H<sub>3</sub>:** Consumers with lower ability to self-regulate can have higher motivation and thus, high likelihood of perceiving a change in behaviour as certain.

To conclude, the literature review showed that there are clear gaps in policies developed to control these behaviours, which creates an opportunity to research further this matter. These behaviours are a problem in today’s society, and the research of message framing can help regulators to control them effectively.

**Figure 3:** Conceptual Framework

According to McGaghie and colleagues (2001), the conceptual framework identifies not only the research variables but also the relationship between them. Hence, the conceptual framework is shown below, presenting the research question that drives the current dissertation.



## **Chapter 3: Methodology**

The methodology for the present dissertation was developed to collect primary and secondary data to reach conclusions that will help to confirm the hypothesis developed in the Literature Review chapter.

By using both qualitative and quantitative data, there will be a complete analysis of all the factors that influence consumers' behaviour disorders, allowing a deeper understanding of each hypothesis through different points of view.

### **3.1 Sample of study**

The present study studies which type of message framing is more effective in changing consumers' behaviour disorders, such as smoking, obesity and alcoholism. Hence, to answer the research problem, it is important to identify segments of consumers that suffer from these disorders.

The author decided to address only smoking and obesity disorders, since it is easier to reach these consumers to participate in the study, compared with collecting data next to participants with alcoholic problems. Both alcoholism and drug abuse tend to be more censored disorders, increasing the difficulty to reach consumers with these problems within the time frame of this dissertation.

Furthermore, personality traits such as the level of self-regulation, motivation to stop the behaviour, as well as sociodemographic characteristics were also studied for these consumers.

Hence, the population of interest are individuals of both genders, with different levels of self-regulation, that either smoke, are overweight or simultaneously both.

### **3.2 Qualitative Data**

Regarding qualitative research, it was conducted six in-depth interviews, with the aim of understanding the underlying reasons and motivations for the collect answers. This method allows to identify insights that can help to better interpret the quantitative results. Although it is more time consuming, it uncovers subconscious information to understand why certain answers were given (Malhotra & Birks 2007).

All interviewees selected had one of the behaviour disorders under study. Also, to have a balanced sample, each disorder had an equal proportion of respondents. All interviews were

recorded and transcribed to analyse the insights collected (Appendix C for In-depth Interviews General Guidelines).

### 3.3 Quantitative Data

In respect to the quantitative research, an online experimental survey was conducted to understand which type of message framing would be more effective in influencing consumers' attitudes towards the cessation of the behaviour disorder. Online surveys are vastly used due to its speed on collecting answers, cost-effectiveness and the high response rate that enables the author to generalise the results to the population (Malhotra & Birks 2007). One drawback of this approach was the number of collected answers that did not embrace the target population as well as not having the possibility to clarify certain answers.

The survey was pre-tested, to make sure the questions would be clear and as simple as possible to prevent participants to have different interpretations that could lead to incorrect answers. The pre-test was conducted with 10 individuals.

The survey consisted of five sections: Screening Questions, Self-Regulation Evaluation, Smoking Disorder manipulation, Overweight Disorder manipulation and Demographic Questions. The survey was made available on October 11<sup>th</sup> and closed on October 18<sup>th</sup>, collecting a total of 814 responses among which, 237 were incomplete, 305 were answered by consumers without any of the behaviour disorders, reaching a total of 272 valid answers.

### 3.4 Measures

The study began with two screening questions to ensure that the author could focus on the answers from consumers with at least one of the disorders.

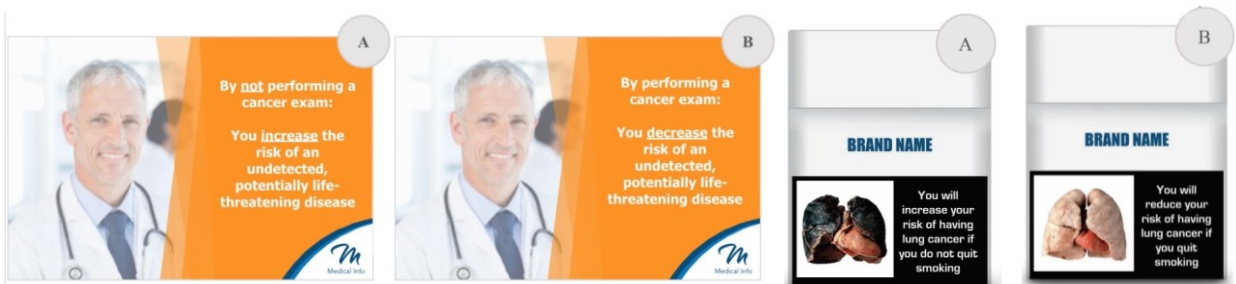
The *Self-Regulation Evaluation* section aimed to assess the respondents level of self-regulation. It was used a pre-tested Brief Self-control Scale, adapted from Tangney and colleagues (2004). Respondents were asked to categorise how much 13 statements reflected their personality, in which the level of agreement or disagreement was measured (e.g., "I am good at resisting temptation" and "I often act without thinking through all the alternatives", 7-point scale, 1= not like me and 7=very much like me).

The *Smoking Disorder and Overweight Disorder* sections were divided into three subsections, namely *consumption habits*, *certain outcome* and *uncertain outcome*, in which all the measures used were adapted from previous studies. Smoking and Overweight habits had

the aim to understand consumers patterns of consumption and behaviour. The heaviness of smoking was evaluated with a pre-tested scale adapted from Heatherton and colleagues (1989). It consists of asking respondents two central questions, “how many cigarettes do you smoke per day” and “how long do you wait until smoking the first cigarette in the morning” (e.g., “1-10 cigarettes”, “11-20 cigarettes” and “≤ 5 minutes”, “6-30 minutes”). Both questions and measurement hypothesis were studied in the article proving to be the best fit to categorise heaviness of smoking.

In the *certain [uncertain] outcome subsection* it was shown an image to the consumer, showing an advertisement encouraging prevention of the behaviour – certain outcome – [detection of a behaviour-related disease – uncertain outcome]. The image shown was randomly assigned to the participant from two possible options – Figure 4 and 5 – where image A represented a loss-framed message, and image B represented a gain-framed message. By randomly showing only one of the images, the author could truthfully understand the perceived difference between images and effectively conclude which would work best towards the prevention behaviour [detection behaviour]. The image was evaluated in three different dimensions: *message evaluation*, *behavioural response* and *behavioural intention*. In each dimension, participants were asked to classify their level of agreement with specific statements, (e.g., “The ad is persuasive”, “The ad put thoughts in my mind about not wanting to smoke” and “After seeing this ad, I plan to reduce smoking”, respectively, 7-point Likert scale).

Finally, the Demographics section it was asked age, gender, income, education, occupation and nationality, with the aim to categorise the sample of study.



**Figure 5:** Detection condition, loss and gain-framed messages, respectively

**Figure 5:** Prevention condition, loss and gain-framed messages, respectively

## Chapter 4: Results Analysis

### 4.1 Survey Data description

The general sample is composed of 272 individuals who completed the survey and belong to the target population, having at least one of the disorders. The most common disorder was smoking with 51.8% of respondents, 32.7% were overweight consumers, and 15.4% with both overweight and smoking disorders. The vast majority (83.3%) was Portuguese, followed by 6.3% Americans and 3.7% Germans. There was 72.4% of female respondents with only 27.6% of men. Additionally, 64% of respondents were aged between 18 to 24 years old, 13.6% between 25 to 34 years old and 8.8% between 45 to 54 years old. Regarding occupation, 146 respondents were students and 87 employed workers, with more than 65% having at least a Bachelor Degree. Lastly, the average monthly household income is between 1.5 and 2 thousand euros.

#### 4.1.1 Smoking sample characterization

The smoking sample was composed of a total of 183 consumers who smoke - 141 only have the smoking disorder and 42 smokes and are overweight - more than four times per week. The majority smoke 1 to 10 cigarettes per day, waiting on average more than one hour until smoking the first cigarette, which can be considered as a light consumption. Regarding buying habits, the majority of consumers stated they do not engage in any specific behaviour when buying cigarettes. However, there were 42.7% of smokers who have asked not to have a specific warning; 60% who cover the images and 24.6% who either try to ignore the warnings or switch the packaging with a friend – Figure 6. Furthermore, 65.6% of smokers believe that the current warning messages in the market, are not effective in preventing smoking behaviour.

Buying behaviour	Percentage
Ask not to have specific message	19,7%
Ask not to have specific image	22,9%
Cover the warning messages	30,6%
Use a different case	28,9%
Try to ignore or switch package with a friend	4,4%

**Figure 6:** Smoking Buying Behaviour characterization

### 4.1.2 Overweight sample characterization

Finally, the overweight sample has 131 consumers who consider themselves as overweight, with 89 who are only overweight and 42 who smoke and are simultaneously overweight. From the total overweight sample, 23 have diseases that can cause weight gain and thus may have a different intake of the ads presented. Regarding consumers' eating habits, 77.1% classified as moderately unhealthy, with the same proportion of sedentary and active lifestyles. Additionally, 51.1% of these consumers consider that nutrition labelling guide them through buying healthy options; 57.3% consider advertisement of healthy foods motivate them to buy healthy, and 74.8% agree that low prices also motivate them to buy healthy options. However, 48.1% agreed that taxation on fast food does not prevent them from buying it.

### 4.2 Hypothesis Analysis

To correctly evaluate all the study hypothesis from the present dissertation it was used the Brief Self-Control Scale, as well as, Smoking and Overweight Scales adapted from the literature, with the aim of creating self-regulation, message evaluation, behavioural response and behavioural intention variables. To ensure that all items used represent the variables, the Cronbach's alpha was computed and compared with the reference value of 0.7 according to DeVellis (1991).

**Table 1 – Scale's Reliability**

Scale	Dimensions	Number of Initial Items	Cronbach's alpha	Cronbach's alpha if item deleted	Item deleted	Final number of items	Correlation	
Self-Regulation Scale	-	13	0.764	-	-	13	-	
Current Ad Effectiveness	-	4	0.860	-	-	4	-	
Smoking Scale	Message Evaluation	4	0.844	-	-	4	-	
	Behavioural Response	4	0.882	-	-	4	-	
	Behavioural Intention	Certain	4	0.167	0.858	2	2	$\rho = 0.781^{**}$
		Uncertain	4	0.358	0.854	2	2	$\rho = 0.748^{**}$
Overweight Scale	Message Evaluation	4	0.889	-	-	4	-	
	Behavioural Response	4	0.888	-	-	4	-	
	Behavioural Intention	Certain	4	0.144	0.846	2	2	$\rho = 0.734^{**}$
		Uncertain	4	0.392	0.941	2	2	$\rho = 0.889^{**}$

*\*\* Correlation is significant at the 0.01 level*



As seen in Table 1, for the self-regulation scale and current ad effectiveness scale, the Cronbach's alpha equal to 0.764 and 0.860, respectively. Due to its high value and since there is no possibility of improving any of the scales, it was decided to maintain all the items.

Concerning the smoking scale, when computing the Cronbach's alpha for the message evaluation and behavioural response, the value is equal to 0.844 slightly increasing to 0.865 when removing the item "The ad has a clear message" and equal to 0.882, respectively. However, since both Cronbach's alphas are already high, it was decided to maintain all items for message evaluation as well as behavioural response. Lastly, the Cronbach's alpha for behavioural intention was equal to 0.167 and 0.358 in certain and uncertain behaviours, which increased to 0.858 and 0.854 respectively, when deleted the last two items. Hence, due to the significant increase when removing these items, it was opted to use only two statements to explain behavioural intention for each behaviour condition. Since the scale was left with only two items, it was analysed the correlation between the items, which was 0.781 and 0.748 for certain and uncertain behaviours, both significant at a 0.01 level.

Additionally, regarding the overweight scale, when computing the Cronbach's alpha for the message evaluation and behavioural response, the value is equal to 0.889 and 0.888 slightly increasing to 0.904 when deleting the item "The ad grasped my attention immediately", respectively. Since the Cronbach's alphas are already high in both situations, it was decided to maintain all items when explaining the underlying concept of behavioural response. Lastly, the Cronbach's alpha for behavioural intention was equal to 0.144 and 0.392 for certain and uncertain behaviours, which increased to 0.846 and 0.941 respectively, when deleting the last two items for each condition. Hence, due to the significant increase when removing these items, it was opted to use only two statements to explain the underlying concept of behavioural intention. Since the scale was left with only two items, the correlation was analysed reaching 0.734 and 0.889 for certain and uncertain behaviours, both significant at a 0.01 level.

#### **4.2.1 Smoking Disorder**

In the present subchapter, the analysis presented was organized by behaviour disorder to be easier to understand the conclusions from each disorder. Additionally, the tests performed were equally made for both disorders but only presented on the smoking behaviour not to repeat information.

### 4.2.1.1 Hypothesis 1

**H<sub>1</sub>:** Consumers who perceive a change in behaviour with a certain/uncertain outcome, will be more influenced by gain/loss-framed messages.

The first hypothesis was analysed using an ANOVA, with *Message Evaluation*, *Behavioural Response* and *Behavioural Intention* as dependent variables and *behaviour condition* and *framing condition* as fixed effects.

**Table 2** – ANOVA for Hypothesis 1

	Certain		Uncertain		ME Behaviour Condition	ME Framing Condition	Interaction Effect
	Loss	Gain	Loss	Gain			
<b>Message Evaluation</b>	4.45	4.02	3.62	4.06	F(1,362) = 6.305 *	F(1,362) = 0.000	F(1,362) = 7.741 **
<b>Behavioural Response</b>	3.51	3.13	3.36	3.78	F(1,362) = 2.255	F(1,362) = 0.014	F(1,362) = 5.660 *
<b>Behavioural Intention</b>	2.38	2.13	2.91	3.14	F(1,362) = 23.827 ***	F(1,362) = 0.002	F(1,362) = 2.358

As seen in table 2, Message Evaluation – the way the message is perceived by the consumers – has a significant interaction effect as well as a significant main effect with behaviour condition. The main effect suggests that participants consider the message to be clearer, more persuasive, stronger and more impactful when in presence of the certain outcome, independent of the message framing ( $M_{\text{certain}} = 4.25$ ,  $M_{\text{uncertain}} = 3.84$   $F(1,362) = 6.31$ ,  $p < .05$ ).

**Table 3** – Independent Samples T-test for Message Evaluation

Message Evaluation		Levene's Test		T-test for Equality of Means				
		F	Sig.	Mean	t	df	Sig.(2-tailed)	
Pair 1	Certain, Loss - Uncertain, Loss	2.42	.122	0.84	3.773	187	.000	***
Pair 2	Certain, Gain - Uncertain, Gain	2.74	.099	-0.04	-0.190	175	.849	
Pair 3	Certain, Gain - Certain, Loss	0.11	.741	-0.44	-2.095	181	.038	*
Pair 4	Uncertain, Gain - Uncertain, Loss	0.03	.856	0.44	1.863	181	.064	
Pair 5	Certain, Gain - Uncertain, Loss	3.59	.060	0.40	1.781	176	.077	
Pair 6	Uncertain, Gain - Certain, Loss	1.77	.185	-0.39	-1.772	186	.078	

\* Significant at a .05 level  
 \*\*\* Significant at a .001 level

Additionally, the significant interaction effect indicates that there is a significant effect between one of the four conditions ( $M_{\text{certain, loss}} = 4.45$ ,  $M_{\text{certain, gain}} = 4.02$ ,  $M_{\text{uncertain, loss}} = 3.62$ ,  $M_{\text{uncertain, gain}} = 4.06$ ,  $F(1,362) = 7.74$ ,  $p < .01$ ). By conducting an independent t-test comparing the certain, loss with uncertain, loss condition it was concluded that a loss-framed message works best when in presence of the certain outcome ( $M_{\text{certain, loss}} = 4.45$ ,  $M_{\text{uncertain, loss}} = 3.62$ ,  $t(187) = 3.77$ ,  $p < .001$ ). Comparatively, participants showed the same level of response for the gain-framed message in both certain and uncertain outcomes, not having a significant difference ( $M_{\text{certain, gain}} = 4.02$ ,  $M_{\text{uncertain, gain}} = 4.06$ ,  $t(175) = -0.19$ , *n.s.*).

Furthermore, data confirms that when considering a certain outcome, there is a significant higher effect for the loss-framed message, being the most effective on this scenario ( $M_{\text{certain, loss}} = 4.45$ ,  $M_{\text{certain, gain}} = 4.02$ ,  $t(181) = 2.095$ ,  $p < .05$ ; all other t-test *n.s.*).

**Table 4 – Independent Samples T-test for Behavioural Response**

Behavioural Response		Levene's Test		T-test for Equality of Means			
		F	Sig.	Mean	t	df	Sig.(2-tailed)
Pair 1	Certain, Loss - Uncertain, Loss	0.19	.657	0.15	0.641	187	.522
Pair 2	Certain, Gain - Uncertain, Gain	0.16	.899	-0.65	-2.656	175	.009 **
Pair 3	Certain, Gain - Certain, Loss	0.55	.460	-0.38	-1.630	181	.105
Pair 4	Uncertain, Gain - Uncertain, Loss	0.15	.696	0.42	1.734	181	.085
Pair 5	Certain, Gain - Uncertain, Loss	0.07	.786	-0.23	-0.956	176	.340
Pair 6	Uncertain, Gain - Certain, Loss	0.75	.388	0.27	1.172	186	.243

\* Significant at a .05 level  
 \*\* Significant at a .01 level  
 \*\*\* Significant at a .001 level

Regarding Behavioural Response, data indicates a significant interaction effect. Additional analysis suggests that participants tend to show higher response in a gain-framed message when in presence of an uncertain outcome ( $M_{\text{certain, gain}} = 3.13$ ,  $M_{\text{uncertain, gain}} = 3.78$ ,  $t(175) = -2.656$ ,  $p < .01$ ; all other t-tests *n.s.*). Comparatively, participants showed the same level of response for the loss-framed message in both certain and uncertain outcomes, not having a significant difference ( $M_{\text{certain, loss}} = 3.51$ ,  $M_{\text{uncertain, loss}} = 3.36$ ,  $t(187) = .641$ , *n.s.*).

Data suggests that there is no difference between framing conditions, not having one frame more effective than the other, in neither certain or uncertain outcomes ( $M_{\text{certain, loss}} = 3.51$ ,

$M_{\text{certain,gain}} = 3.13$ ,  $t(181) = -1.630$ , *n.s.* ;  $M_{\text{uncertain,loss}} = 3.36$ ,  $M_{\text{uncertain,gain}} = 3.78$ ,  $t(181) = 1.734$ , *n.s.*

Finally, in terms of Behavioural Intention, there is only a significant main effect for behaviour intention condition, indicating that consumers have higher intentions to perform the uncertain outcome – medical examination –, independent of the message framing ( $M_{\text{certain}} = 2.27$ ,  $M_{\text{uncertain}} = 3.03$ ,  $F(1,362) = 23.83$ ,  $p < .001$ ).

#### 4.2.1.2 Hypothesis 2

**H<sub>2</sub>:** Consumers with higher/lower ability to self-regulate, will have high/lower likelihood of perceiving a change in behaviour as certain.

To analyze the second hypothesis it was conducted an ANOVA test, using *Message Evaluation*, *Behavioural Response*, *Behavioural Intention* and *Motivation* as dependent variables and *behaviour condition*, *framing condition* and *self-regulation* as fixed effects. The results were shown separately for low and high self-regulated consumers to be easier to understand and compare the results – see table 5.

For low self-regulated consumers, there is a significant main effect for behaviour condition in Message Evaluation. This suggests that participants classified the message to be clearer, more persuasive, stronger and more impactful when in presence of the certain outcome, independent of the message type ( $M_{\text{certain}} = 4.12$ ,  $M_{\text{uncertain}} = 3.66$ ,  $F(1,126) = 3.92$ ,  $p < .05$ ).

Additionally, data indicates a significant interaction effect between behaviour and framing conditions in Message Evaluation. Additional analysis – table 6 – suggests that the loss-framed message has a higher mean when in presence of the certain outcome ( $M_{\text{certain, loss}} = 4.44$ ,  $M_{\text{uncertain, loss}} = 3.36$ ,  $t(69) = 3.43$ ,  $p < .001$ ; all other t-test *n.s.*). For the gain-framed message, data indicates no significant difference in effectiveness for the gain-framed message ( $M_{\text{certain, gain}} = 3.79$ ,  $M_{\text{uncertain, gain}} = 3.96$ ,  $t(57) = -0.526$ , *n.s.*).

**Table 5 – ANOVA for Hypothesis 2 & 3**

**ANOVA table for High Regulation**

	Certain		Uncertain		ME	ME	Interaction Effect
	Loss	Gain	Loss	Gain	Behaviour Condition	Framing Condition	Behaviour Condition * Framing Condition
<b>Message Evaluation</b>	4.47	4.12	3.75	4.12	F(1,232) = 2.822	F(1,232) = 0.001	F(1,232) = 2.817
<b>Behavioural Response</b>	3.37	3.10	3.40	3.75	F(1,232) = 2.321	F(1,232) = 0.032	F(1,232) = 1.936
<b>Behavioural Intention</b>	2.54	2.18	2.96	3.25	F(1,232) = 12.607 ***	F(1,232) = 0.002	F(1,232) = 2.814
<b>Motivation</b>	3.81	3.20	3.45	3.55	F(1,232) = 0.000	F(1,232) = 1.251	F(1,232) = 2.451

**ANOVA table for Low Regulation**

	Certain		Uncertain		ME	ME	Interaction Effect
	Loss	Gain	Loss	Gain	Behaviour Condition	Framing Condition	Behaviour Condition * Framing Condition
<b>Message Evaluation</b>	4.44	3.79	3.36	3.96	F(1,126) = 3.917 *	F(1,126) = 0.012	F(1,126) = 7.481 **
<b>Behavioural Response</b>	3.72	3.22	3.31	3.84	F(1,126) = 0.172	F(1,126) = 0.005	F(1,126) = 4.636 *
<b>Behavioural Intention</b>	2.15	2.02	2.89	2.96	F(1,126) = 11.567 ***	F(1,126) = 0.021	F(1,126) = 0.163
<b>Motivation</b>	3.62	3.12	3.44	3.39	F(1,126) = 0.054	F(1,126) = 1.579	F(1,126) = 1.113

**Table 6 – Independent Samples T-test for Message Evaluation in Low Regulation**

Message Evaluation  Low Regulation		Levene's Test		T-test for Equality of Means			
		F	Sig.	Mean	t	df	Sig.(2-tailed)
Pair 1	Certain, Loss - Uncertain, Loss	2.35	.130	1.08	3.43	69	.001 ***
Pair 2	Certain, Gain - Uncertain, Gain	0.17	.679	- 0.17	- 0.526	57	.601
Pair 3	Certain, Gain - Certain, Loss	0.01	.925	- 0.65	- 2.222	63	.031 *
Pair 4	Uncertain, Gain - Uncertain, Loss	1.01	.318	0.60	1.726	63	.089
Pair 5	Certain, Gain - Uncertain, Loss	2.30	.135	0.43	1.220	56	.227
Pair 6	Uncertain, Gain - Certain, Loss	0.13	.716	- 0.48	- 1.603	70	.114

\* Significant at a .05 level  
 \*\* Significant at a .01 level  
 \*\*\* Significant at a .001 level

Furthermore, data suggests that when considering a certain outcome, there is a significant higher effect for the loss-framed message, being the most effective on this scenario ( $M_{\text{certain,loss}} = 4.44$ ,  $M_{\text{certain,gain}} = 3.79$ ,  $t(63) = 2.222$ ,  $p < .05$ ). Concerning the uncertain outcome, there is no significant difference among loss and gain-framed messages, not having one frame more effective than the other ( $M_{\text{uncertain,loss}} = 3.36$ ,  $M_{\text{uncertain,gain}} = 3.96$ ,  $t(63) = 1.726$ , *n.s.*).

This result has the same conclusion to the Message Evaluation on the first hypothesis, reinforcing the preferred use of a loss-framed message in a certain outcome, and not having a significant difference in effectiveness for the gain-framed message.

**Table 7 – Independent Samples T-test for Behavioural Response in Low Regulation**

Behavioural Response  Low Regulation		Levene's Test		T-test for Equality of Means			
		F	Sig.	Mean	t	df	Sig.(2-tailed)
Pair 1	Certain, Loss - Uncertain, Loss	2.68	.106	0.42	1.344	69	.183
Pair 2	Certain, Gain - Uncertain, Gain	11.34	.001	- 0.62	- 1.580	40	.122
Pair 3	Certain, Gain - Certain, Loss	10.35	.002	- 0.50	- 1.299	39	.201
Pair 4	Uncertain, Gain - Uncertain, Loss	3.53	.065	0.54	1.653	63	.103
Pair 5	Certain, Gain - Uncertain, Loss	2.08	.155	- 0.09	- 0.198	56	.844
Pair 6	Uncertain, Gain - Certain, Loss	0.15	.701	0.12	0.432	70	.667

In relation to Behavioural Response, there is also a significant interaction between behaviour and framing conditions. However, with additional analysis – table 7 – it was not found any significant effect to be reported.

Furthermore, there is only one common effect for both high and low self-regulated participants, which is the significant main effect for behaviour condition in Behavioural Intention. This suggests that consumers tend to have higher intention to perform the uncertain outcome – medical examination – rather than trying to quit smoking – certain outcome, which is consistent with the previous hypothesis ( $M_{\text{certain}} = 2.36$ ,  $M_{\text{uncertain}} = 3.10$ ,  $F(1,232) = 12.61$ ,  $p < .001$  for high self-regulated participants and  $M_{\text{certain}} = 2.09$ ,  $M_{\text{uncertain}} = 2.93$ ,  $F(1,126) = 11.57$ ,  $p < .001$  for low self-regulated participants).

Hence, it can be concluded that high self-regulated participants do not have significant effects suggesting a higher level of control being less influenced by framing and behaviour conditions. Furthermore, the major conclusions are consistent with the previous analysis on the first hypothesis, suggesting that a loss-framed message is more effective in certain outcomes, whereas a gain-framed message is more effective in uncertain outcomes. Additionally, it is consistent that participants tend to have higher intentions to perform a medical examination rather than trying to stop smoking.

#### 4.2.1.3 Hypothesis 3

**H<sub>3</sub>:** Consumers with lower ability to self-regulate can have higher motivation and thus, high likelihood of perceiving a change in behaviour as certain.

Regarding hypothesis 3, as seen in Table 5, there are no significant effects for motivation, which suggests that participants have a similar level of motivation independently of the framing or behaviour condition. Additionally, there is no difference in motivation between low and high self-regulated consumers ( $M_{\text{High}} = 3.50$ ,  $M_{\text{Low}} = 3.42$ ,  $t(364) = 0.49$ , *n.s.*), rejecting the hypothesis.

#### 4.2.1.4 Extra Analysis

To further analyse the data collected among participants, it was compared data from consumers who exclusively smoke, with participants with both disorders. However, since there

were no differences from the previous analysis, it was not reported in the present dissertation. Hence, it was decided to analyse the differences among gender, being reported the differences from the previous analysis.

**Table 8 – ANOVA for Extra Analysis**

ANOVA table for Male							
	Certain		Uncertain		ME Behaviour Condition	ME Framing Condition	Interaction Effect
	Loss	Gain	Loss	Gain			
Message Evaluation	4.37	3.71	3.47	3.94	F(1,110) = 1.191	F(1,110) = 0.096	F(1,110) = 3.439
Behavioural Response	3.28	2.82	2.86	3.70	F(1,110) = 0.605	F(1,110) = 0.391	F(1,110) = 4.641 *
Behavioural Intention	2.41	1.97	2.33	3.15	F(1,110) = 4.124 *	F(1,110) = 0.467	F(1,110) = 5.356 *

ANOVA table for Female							
	Certain		Uncertain		ME Behaviour Condition	ME Framing Condition	Interaction Effect
	Loss	Gain	Loss	Gain			
Message Evaluation	4.49	4.18	3.67	4.13	F(1,248) = 5.449 *	F(1,248) = 0.147	F(1,248) = 4.355 *
Behavioural Response	3.61	3.29	3.54	3.83	F(1,248) = 1.364	F(1,248) = 0.004	F(1,248) = 2.220
Behavioural Intention	2.37	2.22	3.11	3.14	F(1,248) = 18.556 ***	F(1,248) = 0.101	F(1,248) = 0.213

As seen in table 8, there is a significant effect that were not reported before, the interaction effect for Behavioural Intention for male participants. The additional analysis on table 9 suggests that a gain-framed message, would be more effective on the uncertain outcome, increasing the intention to perform a medical examination ( $M_{\text{certain, gain}} = 1.97$ ,  $M_{\text{uncertain, gain}} = 3.15$ ,  $t(60) = 3.29$ ,  $p < .01$ ). Additionally, it was found that when considering an uncertain outcome – medical examination – a gain-framed message would be the most effective message type ( $M_{\text{uncertain, loss}} = 2.33$ ,  $M_{\text{uncertain, gain}} = 3.15$ ,  $t(55) = 2.17$ ,  $p < .05$ ). Hence, it can be concluded that there are gender differences, since male participants have a significant interaction that is not present in female participants. However, although there are gender differences with a new interaction not studied before, this conclusion supports the previous findings that a loss-framed message would be more effective on certain outcomes, and gain-framed messages would work best on uncertain outcomes.



**Table 9 – Independent Samples T-test for Behavioural Intention in Male participants**

Behavioural Intention		Levene's Test		T-test for Equality of Means			
Male		F	Sig.	Mean	t	df	Sig.(2-tailed)
Pair 1	Certain, Loss - Uncertain, Loss	1.69	.200	0.07	0.187	50	.852
Pair 2	Certain, Gain - Uncertain, Gain	0.44	.511	- 1.18	- 3.292	60	.002 **
Pair 3	Certain, Gain - Certain, Loss	1.80	.185	- 0.45	- 1.128	55	.264
Pair 4	Uncertain, Gain - Uncertain, Loss	0.38	.542	0.82	2.171	55	.034 *
Pair 5	Certain, Gain - Uncertain, Loss	0.01	.970	- 0.37	- 0.975	51	.334
Pair 6	Uncertain, Gain - Certain, Loss	0.61	.438	0.74	1.904	59	.062

\* Significant at a .05 level  
 \*\* Significant at a .01 level  
 \*\*\* Significant at a .001 level

Finally, to sum up the smoking disorder, below is a table with a summary of the hypothesis testing and main findings.

**Table 10 – Summary of Hypothesis Testing**

Component studied	Hypothesis	Description	Results	Main Findings
Message Type	H1	Consumers who perceive a change in behaviour with a certain/uncertain outcome, will be more influenced by gain/loss framed messages.	Not supported	Loss-framed message - Certain outcome Gain-framed message - Uncertain outcome Higher intention to perform medical examination
Self-Regulation	H2	Consumers with higher/lower ability to self-regulate, will have high/lower likelihood of perceiving a change in behaviour as certain.	Not supported	High Less influenced by framing and behaviour conditions Higher intention to perform medical examination Low Loss-framed message - Certain outcome Gain-framed message - Uncertain outcome Higher intention to perform medical examination
Motivation	H3	Consumers with lower ability to self-regulate can have higher motivation and thus, high likelihood of perceiving a change in behaviour as certain.	Not supported	No difference in motivation among high and low self-regulated participants
Gender Differences	Extra analysis	Female and male consumers respond differently to the stimuli presented	-	Loss-framed message - Certain outcome Gain-framed message - Uncertain outcome Higher intention to perform medical examination

## 4.2.2. Overweight Disorder

As previously explained, in the overweight disorder, it was used the same tests as in the smoking disorder to interpret the hypothesis at hand. Results will be reported below.

### 4.2.2.1 Hypothesis 1

**Table 11 – ANOVA for Hypothesis 1**

	Certain		Uncertain		ME Behaviour Condition	ME Framing Condition	Interaction Effect
	Loss	Gain	Loss	Gain			
Message Evaluation	4.80	4.54	3.57	3.38	F(1,258) = 39.927 ***	F(1,258) = 1.406	F(1,258) = 0.036
Behavioural Response	4.30	4.41	3.27	3.23	F(1,258) = 25.527 ***	F(1,258) = 0.031	F(1,258) = 0.147
Behavioural Intention	4.00	4.04	2.74	3.02	F(1,258) = 35.660 ***	F(1,258) = 0.718	F(1,258) = 0.386

Concerning overweight disorder, all dependent variables have a significant main effect on behaviour condition. This suggests that in Message Evaluation participants tend to consider the message more clear, persuasive, strong and impactful when in presence of the certain scenario, independent of the message type, ( $M_{\text{certain}} = 4.67$ ,  $M_{\text{uncertain}} = 3.48$ ,  $F(1,258) = 39.93$ ,  $p < .001$ ). In Behavioural Response, when in presence of the certain scenario, independent of the framing condition, participants tend to show higher response for motivation to lose weight rather than motivation to perform a medical examination ( $M_{\text{certain}} = 4.35$ ,  $M_{\text{uncertain}} = 3.25$ ,  $F(1,258) = 25.53$ ,  $p < .001$ ). Lastly, in Behavioural Intention when in presence of the certain outcome – intention to lose weight –, independent of the message type, participants tend to have higher intentions to perform the behaviour, compared to performing medical examinations ( $M_{\text{certain}} = 4.02$ ,  $M_{\text{uncertain}} = 2.88$ ,  $F(1,258) = 35.66$ ,  $p < .001$ ).

To conclude, hypothesis 1 can be rejected since data indicates that there is no significant effect on message framing, with the only significant difference being the behaviour condition.

#### 4.2.2.2 Hypothesis 2

In the second hypothesis – see table 12 –, all dependent variables have significant main effects on the behaviour condition, in both high and low self-regulated participants, equal to the previous hypothesis. In Message Evaluation, the message was classified to be more clear, persuasive, strong and impactful when in presence of the certain outcome, independent of message type, for both participant types ( $M_{\text{certain}} = 4.76$ ,  $M_{\text{uncertain}} = 3.39$ ,  $F(1,156) = 28.87$ ,  $p < .001$ ;  $M_{\text{certain}} = 4.58$ ,  $M_{\text{uncertain}} = 3.59$ ,  $F(1,98) = 9.85$ ,  $p < .01$  for high and low self-regulated participants, respectively). Behavioural Response is also enhanced in the certain outcome, considering the risks of overweight and motivating consumers to lose weight, independently of the message type, for both participants types ( $M_{\text{certain}} = 4.32$ ,  $M_{\text{uncertain}} = 3.29$ ,  $F(1,156) = 16.75$ ,  $p < .001$ ;  $M_{\text{certain}} = 4.39$ ,  $M_{\text{uncertain}} = 3.19$ ,  $F(1,98) = 15.82$ ,  $p < .001$  for high and low self-regulated participants, respectively). Lastly, in Behavioural Intention data indicates that when in presence of the certain outcome – intention to lose weight – there are higher intentions to perform the behaviour, compared to the uncertain outcome – intention to perform a medical examination – independent of message type for both participant types ( $M_{\text{certain}} = 4.00$ ,  $M_{\text{uncertain}} = 2.86$ ,  $F(1,156) = 21.52$ ,  $p < .001$ ;  $M_{\text{certain}} = 4.05$ ,  $M_{\text{uncertain}} = 2.92$ ,  $F(1,98) = 12.01$ ,  $p < .001$  for high and low self-regulated participants, respectively).

**Table 12 – ANOVA for Hypothesis 2 & 3**

**ANOVA table for High Regulation**

	Certain		Uncertain		ME	ME	Interaction Effect
	Loss	Gain	Loss	Gain	Behaviour Condition	Framing Condition	Behaviour Condition * Framing Condition
	<b>Message Evaluation</b>	4.86	4.66	3.45	3.35	F(1,156) = 28.871 ***	F(1,156) = 0.346
<b>Behavioural Response</b>	4.23	4.42	3.46	3.17	F(1,156) = 16.751 ***	F(1,156) = 0.040	F(1,156) = 0.977
<b>Behavioural Intention</b>	4.05	3.95	2.83	2.88	F(1,156) = 21.516 ***	F(1,156) = 0.010	F(1,156) = 0.092
<b>Motivation</b>	4.93	4.98	5.00	4.91	F(1,156) = 0.001	F(1,156) = 0.006	F(1,156) = 0.090

**ANOVA table for Low Regulation**

	Certain		Uncertain		ME	ME	Interaction Effect
	Loss	Gain	Loss	Gain	Behaviour Condition	Framing Condition	Behaviour Condition * Framing Condition
	<b>Message Evaluation</b>	4.74	4.28	3.69	3.44	F(1,98) = 9.850 **	F(1,98) = 1.390
<b>Behavioural Response</b>	4.39	4.38	3.07	3.38	F(1,98) = 15.818 ***	F(1,98) = 0.248	F(1,98) = 0.316
<b>Behavioural Intention</b>	3.94	4.25	2.65	3.35	F(1,98) = 12.012 ***	F(1,98) = 2.573	F(1,98) = 0.388
<b>Motivation</b>	4.64	5.39	4.87	4.95	F(1,98) = 0.099	F(1,98) = 1.636	F(1,98) = 1.073

To conclude, although hypothesis 2 can be rejected, these results are consistent with the conclusion from the first hypothesis, reinforcing the fact that participants tend to have higher responses for all variables within the certain outcome – lose weight. Additionally, participants tend to have higher intentions to lose weight rather than perform medical examinations.

#### 4.2.2.3 Hypothesis 3

Regarding hypothesis 3, as seen in Table 12, there is no significant effects for motivation, which suggests that participants have a similar level of motivation independently of framing or behaviour conditions. Additionally, there is no difference in motivation between low and high self-regulated consumers ( $M_{High} = 4.95$ ,  $M_{Low} = 4.90$ ,  $t(260) = 0.26$ ,  $n.s$ ), rejecting the hypothesis.

Furthermore, data suggests that, on average, motivation to stop smoking is considerably lower than motivation to lose weight ( $M_{smoking} = 3.47$ ,  $M_{overweight} = 4.93$ ,  $t(626)=11.76$ ,  $p < .001$ ). Hence, although there is no relation between self-regulation and motivation, participants are more willing to lose weight than try to stop smoking.

#### 4.2.2.4 Extra Analysis

As reported previously, it was compared data from consumers who are exclusively overweight, versus participants with both disorders. However, with no differences to report, it was decided to compare differences among gender, which has also proved ineffective with no differences among gender to report, enhancing the differences between smokers and overweight consumers.

To conclude, below is a table with a summary of the hypothesis testing and main findings for the overweight disorder.

**Table 13 – Summary of Hypothesis Testing**

Component studied	Hypothesis	Description	Results	Main Findings
Message Type	H1	Consumers who perceive a change in behaviour with a certain/uncertain outcome, will be more influenced by gain/loss framed messages.	Not supported	Participants are more willing to consider and try to lose weight, rather than medical examinations, independently of message framing
Self-Regulation	H2	Consumers with higher/lower ability to self-regulate, will have high/low likelihood of perceiving a change in behaviour as certain.	Not supported	High Low Participants are more willing to consider and try to lose weight, rather than medical examinations, independently of message framing
Motivation	H3	Consumers with lower ability to self-regulate can have higher motivation and thus, high likelihood of perceiving a change in behaviour as certain.	Not supported	No difference in motivation among high and low self-regulated participants
Gender Differences	Extra analysis	Female and male consumers respond differently to the stimuli presented	-	No differences to report

### **4.3 In-Depth Interviews**

In the following section it will be described the insights collected from the in-depth interviews. This method allows to understand the underlying reasons and motivations for the answers previously analysed, identifying important insights for some conclusions.

#### **4.3.1 General Behaviour**

Regarding general smoking behaviour, the participants tend to smoke an average of six cigarettes on a regular day and wait an average of four hours until they smoke their first cigarette, being classified as light consumption. Also, all the interviewees stated not having any particular behaviour when buying cigarette packs, except avoiding the warnings. However, all respondents knew other consumers that either ask not to have choking images or have a different case to keep the cigarettes, entirely avoiding looking at the warning messages.

Regarding overweight interviewees, all the respondents tend to have an unhealthier diet, although with sporadic periods with a higher focus on being healthier. The majority makes an effort to have an active lifestyle, trying to go to the gym at least twice a week. Additionally, concerning buying habits, it was stated that nutrition labelling does not work as a guideline since consumers know what they should and should not eat while trying to eat healthily. When eating an unhealthy option, it was said: "I am aware that the calorie content is awful so I do not look for it". On the other hand, taxation would be more efficient in preventing consumers from buying unhealthy options. One of the interviews stated that it used to be much more convenient and cheaper to buy fast food and that it shows how the government is putting some effort into preventing this disorder.

#### **4.3.2 Certain Outcome – Prevention**

Concerning smoking prevention, all interviews agreed that using the warning label with a loss-framed message would create more impact, mainly due to the image related to the message. Regarding making consumers stop smoking as well as considering the health risks related to smoking, it was stated that warning labels only work as a way to remind consumers of its consequences, not resulting in a cessation of the behaviour.

Regarding overweight prevention, interviewees agreed that a gain-framed message would be more effective since it enhances the benefits of losing the weight. Being this a more sensitive subject than smoking, the gain-frame tends to grab more attention making consumers

consider the health risks of the behaviour. However, resulting in an actual change in behaviour could be complicated, since it can trigger different outcomes in different people. Some consumers may immediately start to lose weight, while others may gradually try to lose it. On a disorder like smoking the change in behaviour is easier to observe since the consumers just need to stop smoking. However, in both cases, it was stated that overexposure to the messages tends to decrease its effectiveness. By regularly change the images and message presented, it could increase its impact and reach the novelty level of when these messages were first introduced in the market. One interviewee stated that when she first saw the messages, it significantly decreased her cigarette consumption. Throughout the years, the novelty level decreased, and with it, the effectiveness of the warnings also decreased. Additionally, in both cases it was stated that showing images of the internal damage tends to be more shocking which can grab more attention to the warning. However, it was also said that the image deviates the attention from the message, making it easier to avoid reading the warning. Hence, it was suggested to either focus on having a strong image and let it speak for itself, or to have a weaker image but a strong message focusing on health consequences to loved ones. As an example, it was provided with the following warning message “When you smoke, you affect your sister’s health”. Below is a table with a summary of the main findings from the certain outcome.

**Table 14 – Certain Outcome: Summary of Main Findings**

Disorder	Main Findings
Smoking	Loss-framed message creates more impact by highlighting the consequences of smoking Hard to turn into actual behaviour since only reminds consumers of what they already know
Overweight	Gain-framed message creates more impact by highlighting the benefits of losing weight
Both	Overexposure to messages decreases its effectiveness, so these ads should change through time to keep novelty Image can take attention from message, so authorities should focus on either: - Weak message strengthened by a strong image with internal organ damage - Weak image strengthened by a strong message enhancing consequences to loved ones

### 4.3.3. Uncertain Outcome – Detection

Regarding cancer detection messages, all interviewees agreed that the gain-framed message would be more effective in motivating consumers to perform medical examinations.

It reminded consumers that these health complications are serious and should be monitored throughout the years. On the other hand, in diabetes detection examination, the most effective message would be loss-framed due to the “never know” statement that creates doubt in the consumers’ minds. Additionally, the image presented creates a sense of family, reminding consumers that they can hurt them too, which enhances the motivation to perform the examination. However, in both cases, although there is motivation to perform the behaviour, it was stated that translating to actual behaviour can be complicated. In detection examinations, the resulting behaviour is not instant. There is a series of steps that need to be taken, such as, calling the doctor, explain the situation, ask for the exam, schedule the exam, among others. In this process, the consumer tends to lose the impact the message had, and give up the examination. It was stated that by adding statistics as well as, focus on the impact to loved ones, can increase the time span of the message on consumers’ minds.

Furthermore, it was stated that spreading these messages can be more effective to make consumers stop the behaviour than prevention warnings themselves. By performing examinations, consumers go through a scary process of considering if they have any serious disease, which can turn out to be more efficient than just theoretically reminding them of consequences they already know. Presented below is a table with a summary of the main findings from the uncertain outcome.

**Table 15** – Uncertain Outcome: Summary of Main Findings

Disorder	Main Findings
Smoking	Gain-framed message creates more impact by highlighting the consequences of smoking Reminds consumers that consequences from these behaviours are very serious and should be monitored
Overweight	Loss-framed message creates more impact due to "never know" statement
Both	Family feeling can enhance consumers intention to perform behaviours Adding percentages to the messages can increase its time span on consumers' minds' Actual behaviour can be complicated since medical examinations require a longer process than just stopping a behaviour Medical warnings can be more effective on making consumers stop these behaviours, since with a medical process consumers go through the imaginary possibility of having a serious disease

## **Chapter 5: Conclusion and Further Research**

### **5.1 Conclusions**

#### ***RQ1: Which type of messages are most commonly used in the market?***

According to Maheswaran & Meyers-Levy (2004) judgements consumers formulate from a message can change in the way the message is framed. Diverse studies are based on Rothman and Salovey (1997) study, who were the pioneers to defend that every health communication can be framed in terms of gains or losses.

Additionally, Graaf and colleagues (2015) complemented these first theories with the possibility that the loss-framed message might be preferred in specific situations, such as high issue involvement. Hence, the majority of smoking prevention messages tend to be framed by a loss-framed message (Schneider et al. 2001).

Furthermore, the majority of studies have followed the application of Prospect Theory to health communication from Rothman and Salovey (1997). The riskier the outcome, the easier it is to accept the risk if used a loss-framed message (Tversky & Kaheman 1981). Contrarily, the more certain the outcome, the easier to be preferred with a gain-framed message (Rothman et al. 1993). Hence, according to Rothman and colleagues (2006) individual perceptions about the risk of the outcome, will determine which frame to be used.

#### ***RQ2: Which types of negative behaviour are most common in the society?***

Behaviour disorders have been found to follow basic economic rules, where an increase in price, legal sanctions or information about related health issues will decrease its consumption (Chaloupka 1990). In 2011, United Nations General Assembly met to discuss alcohol, smoking and overeating disorders, which are three of the four biggest economic burdens on society, as well as biggest cause for premature death (WHO Report 2014). Due to time and network constraints, the present study only focused on smoke and overeating disorders.

Overeating is the most difficult disorder to be controlled, due to the human necessity of eating to live (Vohs and colleagues). Thus, there is still little evidence of what is effective in preventing this disorder (Swinburn, Gill & Kumanyika 2005; WHO Report 2014).

Concerning smoking, it is considered the widest spread addiction in today's society, making it ideal to study (Chaloupka 1990). According to the WHO Report (2017), there are a vast number of measures being used to prevent smoking behaviours, among which, it is to note, warning labels on cigarette packaging and mass media advertising. Although the spread of these measures has proved to make good progress into stopping these disorders, it is still



important to keep developing new strategies to completely stop this epidemic (WHO Report 2017; WHO Report 2014).

***RQ3: Which type of marketing messages are more effective on changing behaviour?***

***RQ4: Are there any differences in effectiveness among low and high self-regulated consumers? Which type of marketing message would work best for low self-regulated consumers?***

Concerning smoking disorder, findings were consistent among the different hypothesis studied. Although suggesting the opposite of the hypothesis formulated, participants consistently preferred a loss-framed message when considering certain outcomes, such as prevention of smoking. Whereas, a gain-framed was classified as more effective when considering uncertain outcomes, such as performing medical examinations. Additionally, it was found that participants tend to consistently prefer performing a medical examination rather than considering to stop smoking, which is consistent with an addictive behaviour.

When analysing the differences among different levels of regulation, it was found that high self-regulated consumers tend to be less influenced by framing and behaviour conditions, only having in common the higher intention to perform a medical examination. This result was expected due to the higher levels of self-control demonstrated by high self-regulated consumers, that prevent them from being easily influenced.

Regarding overweight disorder, it was consistent that all participants agree that a certain outcome – losing weight – would be the clearest and more impactful message, delivering higher levels of response and motivation to lose weight, independently of message framing or even levels of self-regulation. Also, contrarily to the smoking behaviour, there are consistently higher intentions to lose weight, rather than performing medical examinations.

Hence, it was found completely different results among the two behaviour disorders. This can be explained by the fact that smoking is seen as an addictive behaviour, where consumers consciously know they are hurting themselves. Smoking works as expected, being influenced by behaviour and framing conditions, with high self-regulated consumers less influenced by these conditions. However, in overweight disorder, consumers do not see it as an addiction, believing that losing the excess weight can be done at any time.

Furthermore, this difference in disorders is seen on the motivation means, in which losing weight is considerably higher than trying to stop smoking, which can be explained by the fact that smokers have accepted their addictive behaviour not considering trying to stop.

## 5.2 Limitations and Future Research

It is of great relevance to mention the limitations of the present dissertation, which can give an opportunity to explore in future research. First, the research was limited by the network reach, not being able to access participants with the alcohol disorder. Similarly, it was not possible to conduct a large variety and number of in-depth interviews, which would have enriched the qualitative data even further. Additionally, the measures used are only able to assess intentions to perform the behaviour, not assessing if there is an actual behaviour change, which would have involved monitoring the participants throughout time, reporting any change in behaviour. For future research, it could be studied alcoholism disorder, having a more insightful sample, which assesses consumers actual change in behaviour throughout a period of time.

Concerning quantitative data, it can be said that it is biased in the demographic dimension. More specifically, there is a very high percentage of the sample between 18 to 24 years old, Portuguese and Female. Furthermore, the size of the final sample – 272 participants – might be considered small, and thus, the generalisation of the results to the population may be compromised. Additionally, in future research would be suitable to have a bigger and more representative sample to collect more information and increase the generalisation of results.

Finally, although the use of an online survey allows for fast data collection, the author is not able to control the environment, effort or stimuli presented to the respondents at the time of answering. In future research, instead of using just a self-spread survey questionnaire, where participants answer it at their own time and environment, it should be implemented a controlled environment, where a balanced sample of consumers would answer the survey without any exterior stimuli.

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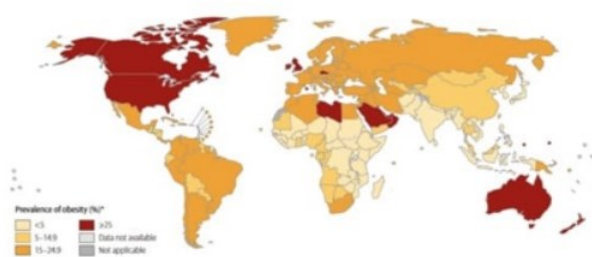
World Health Organization. (2014). *Global Status Report on Noncommunicable Diseases*.

World Health Organization. (2017). *Report on the Global Tobacco Epidemic: Monitoring tobacco use and prevention policies*.



## Appendix

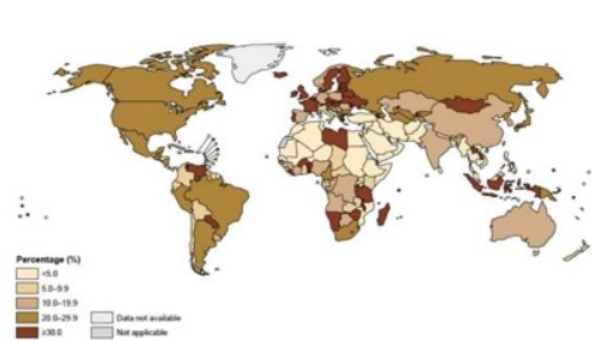
### Appendix A – Prevalence of Behaviour Disorders around the World



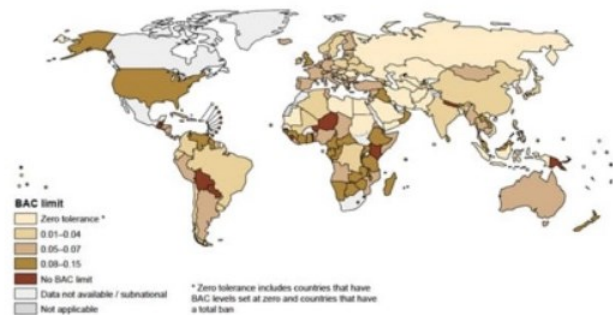
**Figure A:** Prevalence of Obesity in men (18+ years old, %) in 2014



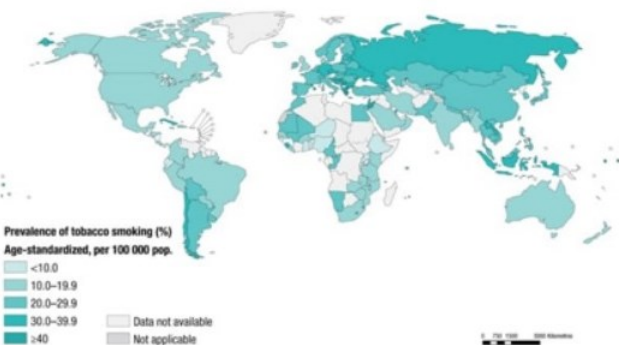
**Figure B:** Prevalence of Obesity in women (18+ years old, %) in 2014



**Figure C:** Prevalence of HED among current drinkers (15+ years old, %) in 2010



**Figure D:** Blood alcohol concentration limits for drivers in 2012



**Figure E:** Prevalence of tobacco smoking (15+ years old, %) in 2015

#### Sources:

World Health Organization. (2014). *Global Status Report on Alcohol and Health*.

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## Appendix B – Questionnaire Guidelines

Dear participant, thank you very much to take the time to answer this survey for my Master Thesis. The purpose of this survey is to understand which types of messages can help consumers to prevent engaging in some negative behaviours, such as adopting unhealthy habits.

The survey takes a maximum of **7 minutes** to complete. It is extremely important to answer **honestly** to all the questions.

Moreover, you will have the chance to win a **15€ Amazon Voucher** by entering your e-mail at the end of the survey. If you wish to remain anonymous, you have the option not to provide your e-mail.

Thank you so much for your collaboration!

1. Do you smoke (cigarettes, electronic cigarettes, etc)?

- Daily
- 4-6 times per week
- Once a week
- Never

2. How would you classify yourself in terms of weight?

- Thin
- Regular Weight
- More Weight than needed
- Overweight

**First, we would like you to answer some questions about yourself:**

3. Classify from 1 “Not like me” to 7 “Very much like me” how much you identify with the following statements:

I am good at resisting temptation

1         7

I have hard time braking bad habits

1         7

I am lazy

1         7

I say inappropriate things

1         7

I do certain things that are bad for me, if they are fun

1         7

I refuse things that are bad for me

1         7

I wish I had more self-discipline  
1 0 0 0 0 0 0 0 7

People would say that I have iron self-discipline  
1 0 0 0 0 0 0 0 7

Pleasure and fun sometimes keep me from getting work done  
1 0 0 0 0 0 0 0 7

I have trouble concentrating  
1 0 0 0 0 0 0 0 7

I am able to work effectively toward long-term goals  
1 0 0 0 0 0 0 0 7

Sometimes I can't stop myself from doing something, even if I know it is wrong  
1 0 0 0 0 0 0 0 7

I often act without thinking through all the alternatives  
1 0 0 0 0 0 0 0 7

**Now we would like you to answer some questions regarding your smoking habits:**

- 4. On average, how many cigarettes do you smoke per day?
  - 1 – 10 cigarettes
  - 11 – 20 cigarettes
  - 21 – 30 cigarettes
  - 31+ cigarettes
  
- 5. How many minutes after you wake up in the morning, do you light your first cigarette?
  - ≤ 5 minutes
  - 6 – 30 minutes
  - 31 – 60 minutes
  - more than 1 hour
  
- 6. Please indicate to what extent do you engage in any of the actions described below

*When I buy a pack of cigarettes...*

	Never	2	3	4	5	6	Always
I ask not to have a specific message	0	0	0	0	0	0	0
I ask not to have a specific image	0	0	0	0	0	0	0
I tend to cover the warning messages	0	0	0	0	0	0	0
I tend to use a different case to avoid warning messages	0	0	0	0	0	0	0
Other: _____	0	0	0	0	0	0	0

7. Classify how much you agree with the following statements from 1 “Do not agree” to 7 “Agree completely”

	1	2	3	4	5	6	7
I consider warning messages on cigarette package are effective on preventing <u>consumers</u> from smoking	0	0	0	0	0	0	0
I consider chocking images on cigarette package are effective on preventing <u>consumers</u> from smoking	0	0	0	0	0	0	0
I consider warning messages to somewhat affect <u>my</u> behaviour	0	0	0	0	0	0	0
I consider chocking images to somewhat affect <u>my</u> behaviour	0	0	0	0	0	0	0

8. How motivated are you to stop smoking?

Not motivated o o o o o o o Extremely motivated

**Certain Outcome:**

Now we would like to present you with some images that can be included in a smoking related advertisement:

*(Randomly assign one image – A or B – to the participant)*



9. Classify how much you agree with the following statements from 1 “Do not agree” to 7 “Agree completely”

	1	2	3	4	5	6	7
The ad creates an impact	0	0	0	0	0	0	0
The ad has a clear message	0	0	0	0	0	0	0
The ad is persuasive	0	0	0	0	0	0	0
The ad is strong	0	0	0	0	0	0	0
The ad grasped my attention immediately	0	0	0	0	0	0	0
The ad put thoughts in my mind about not wanting to smoke	0	0	0	0	0	0	0
The ad makes me think about the risks of smoking	0	0	0	0	0	0	0
The ad motivates me to quit smoking	0	0	0	0	0	0	0

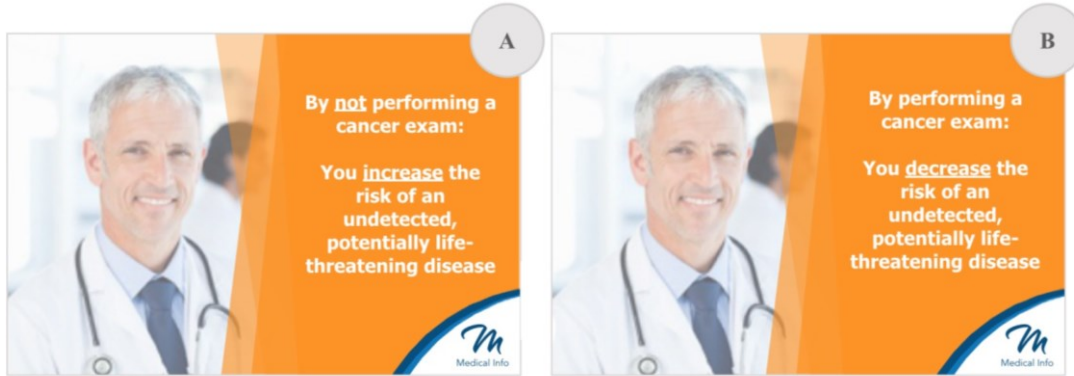
10. Still considering the image, classify the following statements from 1 “Not likely at all” to 7 “Very likely”

	1	2	3	4	5	6	7
After seeing this ad, I plan to stop smoking completely	0	0	0	0	0	0	0
After seeing this ad, I plan to reduce smoking	0	0	0	0	0	0	0
After seeing this ad, I plan to smoke as I normally do	0	0	0	0	0	0	0
After seeing this ad, I plan to increase smoking	0	0	0	0	0	0	0

**Uncertain Outcome:**

Now we would like to present you with some images that can be included in a health-related advertisement:

*(Randomly assign one image – A or B – to the participant)*



11. Classify how much you agree with the following statements from 1 “Do not agree” to 7 “Agree completely”

	1	2	3	4	5	6	7
The ad creates an impact	0	0	0	0	0	0	0
The ad has a clear message	0	0	0	0	0	0	0
The ad is persuasive	0	0	0	0	0	0	0
The ad is strong	0	0	0	0	0	0	0
The ad grasped my attention immediately	0	0	0	0	0	0	0
The ad put thoughts in my mind about performing a medical exam	0	0	0	0	0	0	0
The ad makes me think about the risks of cancer	0	0	0	0	0	0	0
The ad motivates me to perform an exam	0	0	0	0	0	0	0

12. Still considering the image, classify the following statements from 1 “Not likely at all” to 7 “Very likely”

	1	2	3	4	5	6	7
After seeing this ad, I plan to incorporate cancer examination in my regular health routine	0	0	0	0	0	0	0
After seeing this ad, I plan to talk to my doctor about it	0	0	0	0	0	0	0
After seeing this ad, I will continue to have my normal health routine	0	0	0	0	0	0	0
After seeing this ad, I do not consider cancer as a serious health risk for me	0	0	0	0	0	0	0

**In the following section you will be asked questions regarding overweight issues:**

13. How would you characterize your eating habits?

Extremely Healthy o o o o o o o Extremely Unhealthy

14. Classify how much you agree with the following statements from 1 “Do not agree” to 7 “Agree completely”

	1	2	3	4	5	6	7
Nutrition labelling guide me through buying more healthy food	0	0	0	0	0	0	0
Advertisement about healthy foods motivate me to buy more healthy options, such as fruit and vegetables	0	0	0	0	0	0	0
Lower prices on healthy food motivate me to buy them	0	0	0	0	0	0	0
Taxation on fast food prevent me from buying it	0	0	0	0	0	0	0

15. How would you characterize your lifestyle?

Sedentary 0 0 0 0 0 0 0 Extremely Active

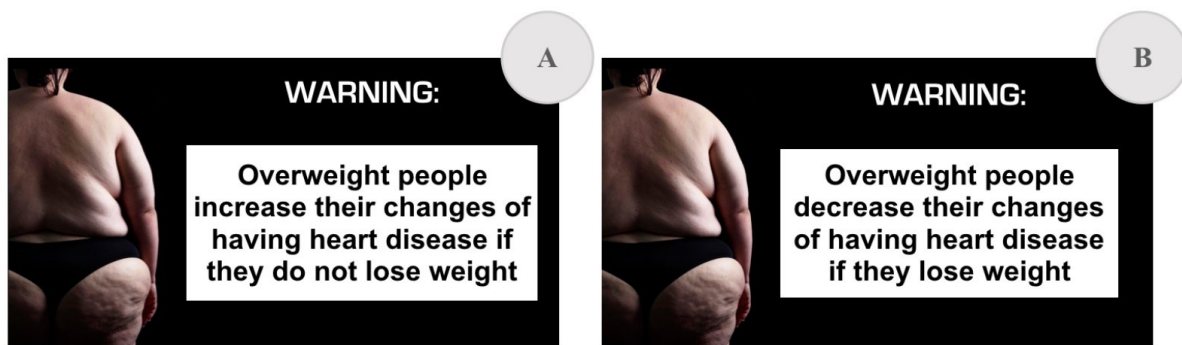
16. How motivated are you to change your current weight situation?

Not motivated 0 0 0 0 0 0 0 Extremely motivated

**Certain Outcome:**

Now we would like to present you with some images that can be included in an overweight related advertisement:

*(Randomly assign one image – A or B – to the participant)*



17. Classify how much you agree with the following statements from 1 “Do not agree” to 7 “Agree completely”

	1	2	3	4	5	6	7
The ad creates an impact	0	0	0	0	0	0	0
The ad has a clear message	0	0	0	0	0	0	0
The ad is persuasive	0	0	0	0	0	0	0
The ad is strong	0	0	0	0	0	0	0
The ad grasped my attention immediately	0	0	0	0	0	0	0
The ad put thoughts in my mind about losing weight	0	0	0	0	0	0	0
The ad makes me think about the risks of not losing weight	0	0	0	0	0	0	0
The ad motivates me to lose weight	0	0	0	0	0	0	0

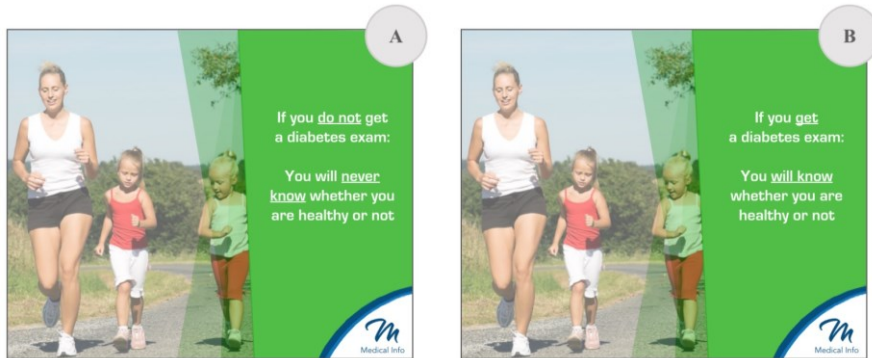
18. Still considering the image, classify the following statements from 1 “Not likely at all” to 7 “Very likely”

	1	2	3	4	5	6	7
After seeing this ad, I plan to lose all my excess weight	0	0	0	0	0	0	0
After seeing this ad, I plan to gradually lose weight	0	0	0	0	0	0	0
After seeing this ad, I plan to continue with my current weight	0	0	0	0	0	0	0
After seeing this ad, I plan to increase my weight	0	0	0	0	0	0	0

**Uncertain Outcome:**

Now we would like to present you with some images that can be included in a health-related advertisement:

*(Randomly assign one image – A or B – to the participant)*



19. Classify how much you agree with the following statements from 1 “Do not agree” to 7 “Agree completely”

	1	2	3	4	5	6	7
The ad creates an impact	0	0	0	0	0	0	0
The ad has a clear message	0	0	0	0	0	0	0
The ad is persuasive	0	0	0	0	0	0	0
The ad is strong	0	0	0	0	0	0	0
The ad grasped my attention immediately	0	0	0	0	0	0	0
The ad put thoughts in my mind about performing a medical exam	0	0	0	0	0	0	0
The ad makes me think about the risks of diabetes	0	0	0	0	0	0	0
The ad motivates me to perform an exam	0	0	0	0	0	0	0

20. Still considering the image, classify the following statements from 1 “Not likely at all” to 7 “Very likely”

	1	2	3	4	5	6	7
After seeing this ad, I plan to incorporate diabetes examination in my regular health routine	0	0	0	0	0	0	0
After seeing this ad, I plan to talk to my doctor about it	0	0	0	0	0	0	0
After seeing this ad, I will continue to have my normal health routine	0	0	0	0	0	0	0
After seeing this ad, I do not consider diabetes as a serious health risk for me	0	0	0	0	0	0	0

**Demographic Questions:**

21. Gender:

- Male
- Female

22. Age:

- < 18
- 18 – 24 years old
- 25 – 34 years old
- 35 – 44 years old
- 45 – 54 years old
- > 55 years old

23. Nationality:

- Portuguese
- German
- French
- Italian
- Other

24. What is your occupation:

- Student
- Employed
- Unemployed
- Working student
- Retired

25. What is your highest level of education?

- 9<sup>th</sup> Grade
- High school
- Bachelor Degree
- Master Degree
- Other

26. What is your monthly household income?

- < 500€
- 501 – 1500€
- 1501 – 2000€
- 2001 – 2500€
- 2501 – 3000€
- 3001 – 4000€
- > 4000€

27. Do you have any of the following diseases causing weight gain?

- Hypothyroidism
- Polycystic Ovary Syndrome
- Cushing's Syndrome
- Insulin Resistance
- None of the above
- Other:

Thank you very much for completing the survey.

If you have any questions or want to provide further comments, you can reach me at the following e-mail: [changing.smoking.overweight@gmail.com](mailto:changing.smoking.overweight@gmail.com)



## **Appendix C – In-depth Interviews General Guidelines: Provisional Questions**

### **I. Introduction**

“Thank you for participating in this research method. I would like to conduct an individual interview to explore how different messages can influence consumers to stop behaviour disorders, such as, smoking or overweight. You were particularly selected for this study so thank you for your collaboration. Everything you say will remain confidential.”

### **II. General Behavioural Questions**

1. On average how many cigarettes do you smoke per day?
2. How long do you wait, after you wake up, to smoke your first cigarette?
3. Do you have any specific behaviour/request when buying cigarette packs? Why?

Or

4. How would you classify your eating habits?
5. How would you classify your lifestyle?
6. Do you take into consideration the labelling facts on food packaging? Why?
7. Does taxation prevent you from eating unhealthy food? Why?

### **III. Certain Outcome** (*Show warning message to participant*)

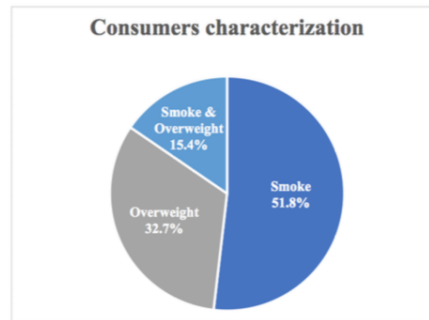
1. What comes to your mind when you see these warning messages?
2. What do you consider creates more impact, the message itself or the image?
3. Do you consider that these messages grab your attention?
4. Do you consider that these warning messages make you think about the health risks associated with this behaviour?
5. Would you stop this behaviour due to these warnings? Why?
6. What would you change in these warning to become more impactful on consumers?

### **IV. Uncertain Outcome** (*Show pamphlet to participant*)

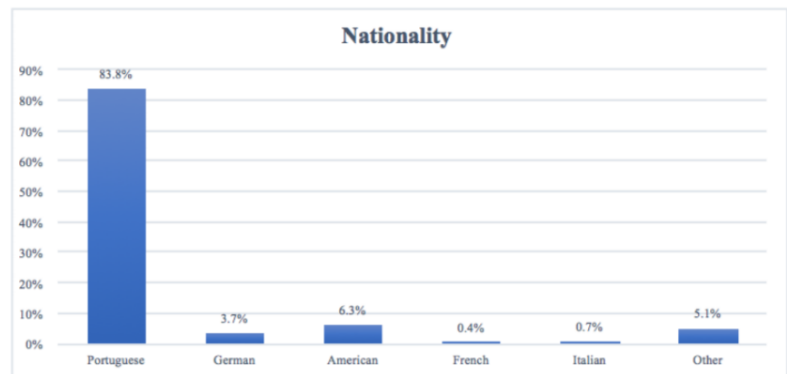
7. What comes to your mind when you see these medical pamphlets?
8. Do you consider that these messages grab your attention?
9. Do you consider that these warning messages make you think about incorporating new exams into your health routine?
10. What would you change in these messages to become more impactful on consumers?

## Appendix D – SPSS Output: Demographic characterization

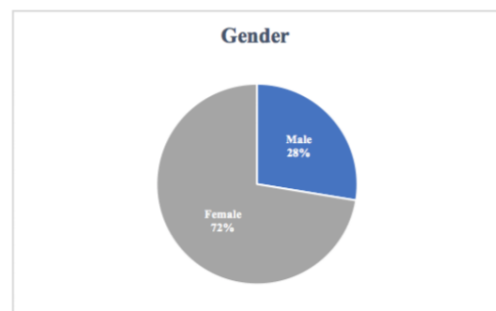
Consumers	Frequency	Valid Percentage
Smoke	141	51,8%
Overweight	89	32,7%
Smoke & Overweight	42	15,4%
Total	272	100%



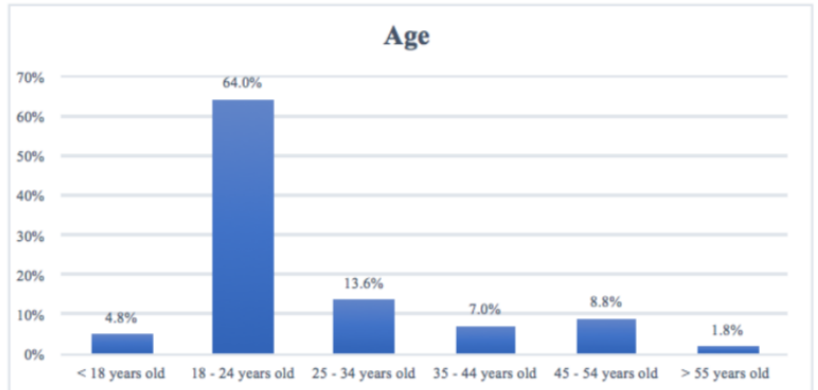
Nationality	Frequency	Valid Percentage
Portuguese	228	83,8%
German	10	3,7%
American	17	6,3%
French	1	0,4%
Italian	2	0,7%
Other	14	5,1%
Total	272	100%



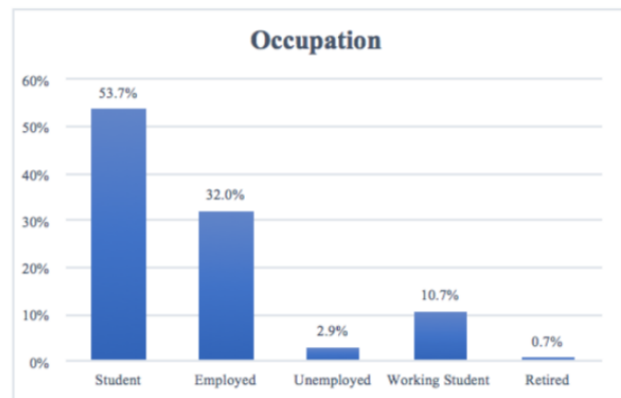
Gender	Frequency	Valid Percentage
Male	75	27,6%
Female	197	72,4%
Total	272	100%



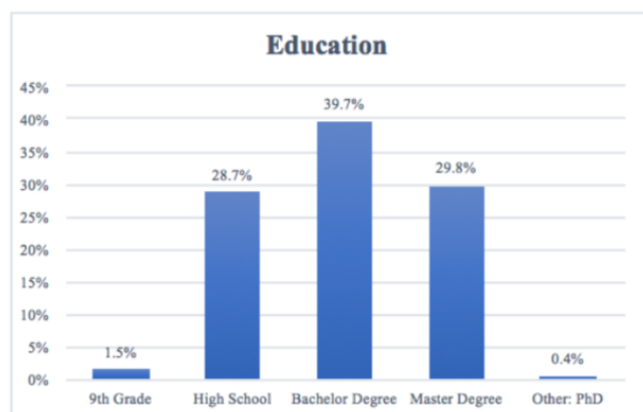
Age	Frequency	Valid Percentage
< 18 years old	13	4,8%
18 - 24 years old	174	64,0%
25 - 34 years old	37	13,6%
35 - 44 years old	19	7,0%
45 - 54 years old	24	8,8%
> 55 years old	5	1,8%
<b>Total</b>	<b>272</b>	<b>100%</b>



Occupation	Frequency	Valid Percentage
Student	146	53,7%
Employed	87	32,0%
Unemployed	8	2,9%
Working Student	29	10,7%
Retired	2	0,7%
<b>Total</b>	<b>272</b>	<b>100%</b>



Education	Frequency	Valid Percentage
9th Grade	4	1,5%
High School	78	28,7%
Bachelor Degree	108	39,7%
Master Degree	81	29,8%
Other: PhD	1	0,4%
<b>Total</b>	<b>272</b>	<b>100%</b>



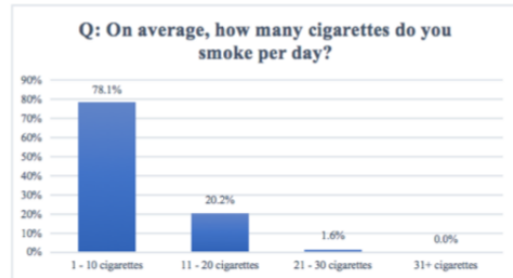
Income	Frequency	Valid Percentage
< 500 €	58	21,3%
501 - 1.500 €	77	28,3%
1.501 - 2.000 €	35	12,9%
2.001 - 2.500 €	20	7,4%
2.501 - 3.000 €	20	7,4%
3.001 - 4.000 €	18	6,6%
> 4.000 €	44	16,2%
Total	272	100%



## Appendix E – SPSS Output: Smoking characterization

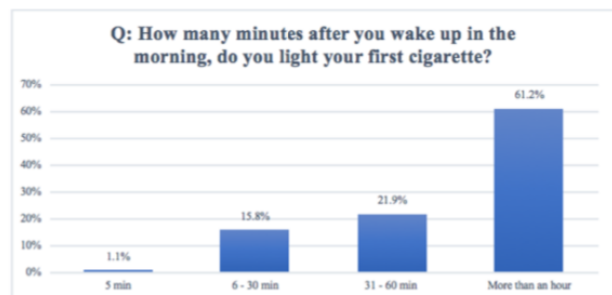
Q: On average, how many cigarettes do you smoke per day?

	Frequency	Valid Percentage
1 - 10 cigarettes	143	78,1%
11 - 20 cigarettes	37	20,2%
21 - 30 cigarettes	3	1,6%
31+ cigarettes	0	0,0%
Total	183	100%



Q: How many minutes after you wake up in the morning, do you light your first cigarette?

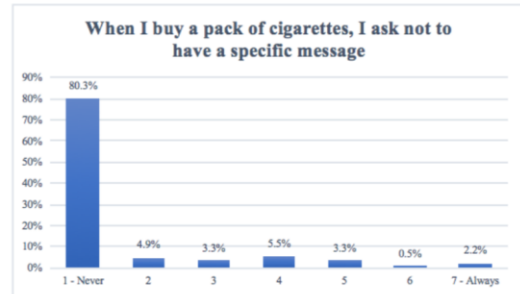
	Frequency	Valid Percentage
5 min	2	1,1%
6 - 30 min	29	15,8%
31 - 60 min	40	21,9%
More than an hour	112	61,2%
Total	183	100%



Q: Please indicate to what extent do you engage in any of the actions described below

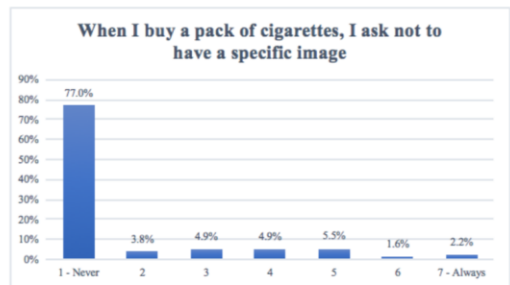
When I buy a pack of cigarettes, I ask not to have a specific message

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Never	147	80,3%	-	-
2	9	4,9%	9	4,9%
3	6	3,3%	6	3,3%
4	10	5,5%	10	5,5%
5	6	3,3%	6	3,3%
6	1	0,5%	1	0,5%
7 - Always	4	2,2%	4	2,2%
Total	183	100%	36	19,7%



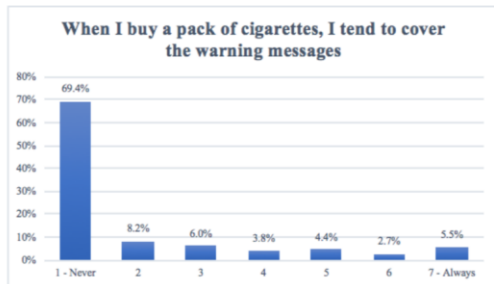
When I buy a pack of cigarettes, I ask not to have a specific image

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Never	141	77,0%	-	-
2	7	3,8%	7	3,8%
3	9	4,9%	9	4,9%
4	9	4,9%	9	4,9%
5	10	5,5%	10	5,5%
6	3	1,6%	3	1,6%
7 - Always	4	2,2%	4	2,2%
Total	183	100%	42	22,9%



When I buy a pack of cigarettes, I tend to cover the warning messages

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Never	127	69,4%	-	-
2	15	8,2%	15	8,2%
3	11	6,0%	11	6,0%
4	7	3,8%	7	3,8%
5	8	4,4%	8	4,4%
6	5	2,7%	5	2,7%
7 - Always	10	5,5%	10	5,5%
Total	183	100%	56	30,6%



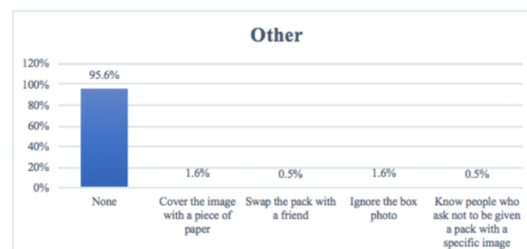
When I buy a pack of cigarettes, I tend to use a different case to avoid warning messages

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Never	130	71,0%	-	-
2	16	8,7%	16	8,7%
3	13	7,1%	13	7,1%
4	9	4,9%	9	4,9%
5	2	1,1%	2	1,1%
6	4	2,2%	4	2,2%
7 - Always	9	4,9%	9	4,9%
Total	183	100%	53	28,9%



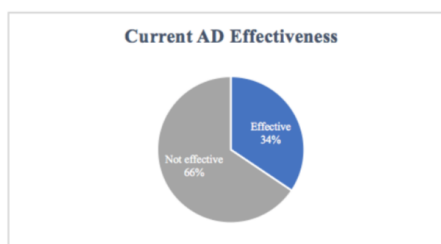
**Other:**

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
None	175	95,6%	-	-
Cover the image with a piece of paper	3	1,6%	3	1,6%
Swap the pack with a friend	1	0,5%	1	0,5%
Ignore the box photo	3	1,6%	3	1,6%
Know people who ask not to be given a pack	1	0,5%	1	0,5%
Total	183	100%	8	4,4%



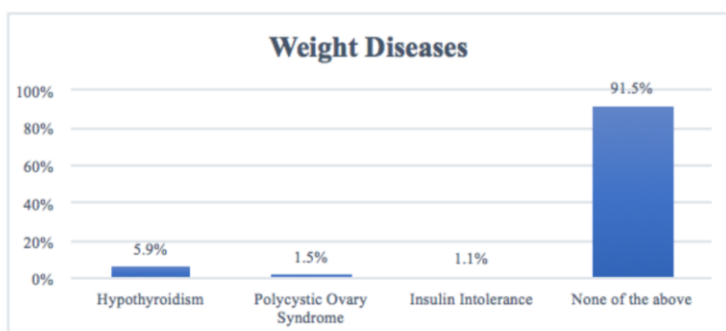
**Current AD Effectiveness**

	Frequency	Valid Percentage
Effective	63	34,4%
Not effective	120	65,6%
Total	183	100%



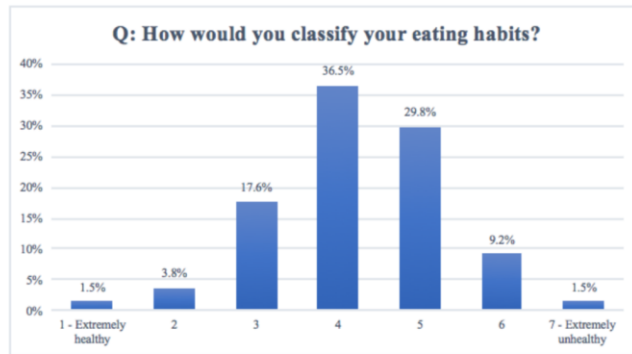
**Appendix F – SPSS Output: Overweight characterization**

Weight Diseases	Frequency	Valid Percentage
Hypothyroidism	16	5,9%
Polycystic Ovary Syndrome	4	1,5%
Insulin Intolerance	3	1,1%
None of the above	249	91,5%
Total	272	100%



**Q: How would you classify your eating habits?**

	Frequency	Valid Percentage
1 - Extremely healthy	2	1,5%
2	5	3,8%
3	23	17,6%
4	48	36,5%
5	39	29,8%
6	12	9,2%
7 - Extremely unhealthy	2	1,5%
<b>Total</b>	<b>131</b>	<b>100%</b>

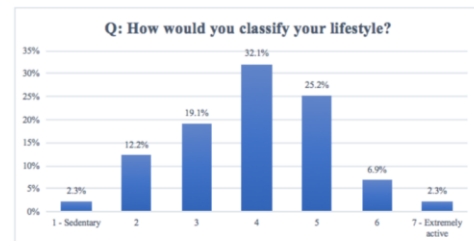


**Q: How would you classify your lifestyle?**

	Frequency	Valid Percentage	Frequency for the study	Cumulative percentage for the study
1 - Sedentary	3	2,3%	3	2,3%
2	16	12,2%	16	12,2%
3	25	19,1%	25	19,1%
4	42	32,1%	-	-
5	33	25,2%	33	25,2%
6	9	6,9%	9	6,9%
7 - Extremely active	3	2,3%	3	2,3%
<b>Total</b>	<b>131</b>	<b>100%</b>	<b>86</b>	<b>-</b>

➔ 34% Sedentary

➔ 34% Active



**Q: Classify how much you agree with the following statements**

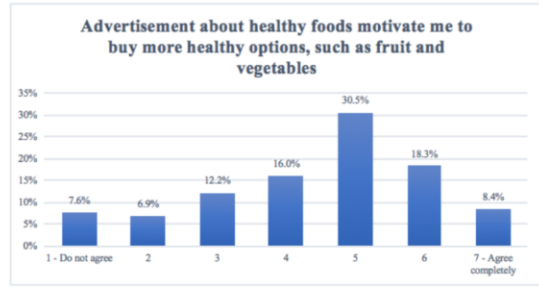
**Nutrition labelling guide me through buying more healthy foods**

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Do not agree	9	6,9%	-	-
2	15	11,5%	-	-
3	17	13,0%	-	-
4	23	17,6%	-	-
5	30	22,9%	30	22,9%
6	23	17,6%	23	17,6%
7 - Agree completely	14	10,7%	14	10,7%
<b>Total</b>	<b>131</b>	<b>100%</b>	<b>67</b>	<b>51,2%</b>



**Advertisement about healthy foods motivate me to buy more healthy options, such as fruit and vegetables**

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Do not agree	10	7,6%	-	-
2	9	6,9%	-	-
3	16	12,2%	-	-
4	21	16,0%	-	-
5	40	30,5%	40	30,5%
6	24	18,3%	24	18,3%
7 - Agree completely	11	8,4%	11	8,4%
Total	131	100%	75	57,2%



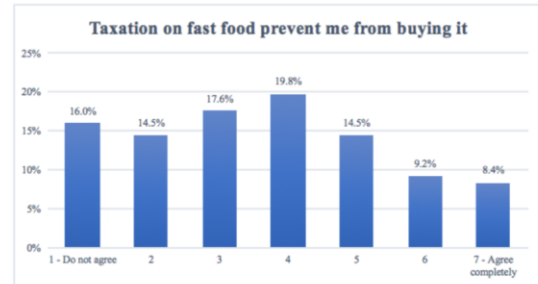
**Lower prices on healthy food motivate me to buy them**

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Do not agree	6	4,6%	-	-
2	3	2,3%	-	-
3	12	9,2%	-	-
4	12	9,2%	-	-
5	19	14,5%	19	14,5%
6	37	28,2%	37	28,2%
7 - Agree completely	42	32,1%	42	32,1%
Total	131	100%	98	74,8%



**Taxation on fast food prevent me from buying it**

	Frequency	Valid Percentage	Frequency for the study	Percentage for the study
1 - Do not agree	21	16,0%	-	-
2	19	14,5%	-	-
3	23	17,6%	-	-
4	26	19,8%	-	-
5	19	14,5%	19	14,5%
6	12	9,2%	12	9,2%
7 - Agree completely	11	8,4%	11	8,4%
Total	131	100%	42	32,1%



**Appendix G – SPSS Output: Regulation characterization**

Self-Regulation	Frequency	Valid Percentage
Low	105	38,6%
High	167	61,4%
Total	272	100%

