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**If marketers do not use framing, more people will become obese
OR if marketers use framing, healthier people will be the result**

A mixed method study on the persuasiveness of gain-framed and loss-framed messages for promoting obesity cessation

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Abstract

The aim of this research was to examine the relationship between framed messages and making healthy choices to combat obesity. Making healthy choices in this study consists of physical activity, dietary choices, sleeping enough and checking your BMI regularly. 156 individuals completed the survey where they were randomly exposed to certain framed messages. In addition, 7 in-depth interviews were conducted to investigate what the perception of loss- and gain-framed messages is for Dutch citizens. Although Tversky and Kahneman's (1979) theory predominates in the literature, this study demonstrated that gain-framed messages are only more effective for increasing the fruit and vegetable consumption. Contrary to this theory, when promoting enough sleep, loss-framed messages are more persuasive. For the healthy choices 'physical activity' and 'checking your BMI regularly', there appeared to be no relationship between message framing and the promotion of these healthy choices. Subsequently, during the in-depth interviews it is investigated how these results could be explained. This showed that gain-framed messages are generally seen as more effective because it encourages people to make the healthy choice. At the same time, it is important to know when and with whom message framing is used, because its effectiveness is very person specific. Therefore, marketers should focus on different target groups and do their utmost to combat the growing health problem of obesity in the Netherlands. These results can be used for various purposes, such as marketing campaigns, policy plans and follow-up research.

Table of content

1.	Introduction	4
2.	Theoretical Framework	6
2.1	Message framing	6
2.3	Marketing communication	7
2.5	The disease obesity	8
2.5.1	Causes of obesity	10
2.5.2	Healthy choices	11
2.6	Results of previous studies on framed messages and obesity	12
2.6.1	Literature gap	12
2.6.2	Distinction between the persuasiveness of framed messages for obesity prevention and detection ...	13
2.6.3	Distinction between the persuasiveness of framed messages for women and men	14
2.6.4	Autonomy	14
2.7	Conclusion	15
3.	Research questions and sub questions	16
4.	Conceptual model	18
5.	Methodology	19
5.1	Introduction to mixed methods	19
5.2	Quantitative method	20
5.2.1	Introduction	20
5.2.3	Applying message framing	20
5.2.4	Measuring effectiveness	20
5.2.5	Measuring intentions	21
5.2.6	Measuring autonomy	21
5.2.8	Distribution of the survey	22
5.2.9	Determining sample size	22
5.2.10	The course and aim of the survey	23
5.2.11	Reliability	23
5.3	Qualitative method	24
5.4	Privacy and ethical considerations	25
6.	Results	26
6.1	Quantitative results	26
6.1.1	Descriptive results	26
6.1.2	Pre-manipulation results	28
6.1.3	Effectiveness of gain-framed and loss-framed messages	29
6.1.3.1	Effectiveness of framed messages on physical activity	29
6.1.3.2	Effectiveness of framed messages on fruit and vegetable consumption	30
6.1.3.3	Effectiveness of framed messages on hours of sleep	30
6.1.3.4	Effectiveness of framed messages on obesity detection	30
6.1.4	Effect of framed messages on the emotions of individuals	31
6.1.5	correlations	33
6.1.6	regressions	36

6.1.7 Accepting or rejecting hypotheses	37
6.1.7.1 Hypothesis 2.....	37
6.1.7.2 Hypothesis 3.....	40
6.1.7.3 Hypothesis 4.....	43
6.1.7.4 Hypothesis 1.....	44
6.1.8 Conclusion	45
6.2 Qualitative results	45
6.2.1 Conducting the interviews and the analysis.....	45
6.2.2 Results.....	46
6.2.2.1 Explanations for the non-significant results.....	46
6.2.2.1 Context of the effectiveness of message framing.....	47
6.2.2.2 Increasing effectivity by segmenting	49
6.2.2.3 Other relevant marketing strategies.....	50
6.2.2.4 Conclusion.....	51
7. Conclusion and discussion.....	52
7.1 Quantitative results	52
7.1.1 Hypothesis 1.....	52
7.1.2 Hypothesis 2.....	52
7.1.3 Hypothesis 3.....	53
7.1.4 Hypothesis 4.....	53
7.2 Qualitative results	54
7.3 Relevance.....	54
7.4 Limitations and recommendations.....	55
8. References	57
9. Appendices	63
a. Appendix 1 – Survey.....	63
b. Appendix 2 – Tables of results.....	90
c. Appendix 3 – Topiclist interviews	91
d. Appendix 4 – Informed Consent Form	95
e. Appendix 5 – Code tree.....	99

1. Introduction

In 2016, the World Health Organization (2021) measured that more than 1.9 billion adults worldwide were overweighted. From the 1.9 billion adults, 650 million people were diagnosed with obesity. This number is growing rapidly over the last 150 years. In 2017, the risk factor obesity caused 5 million deaths (World Health Organization, 2021). Therefore, obesity is a growing worldwide problem.

Obesity is a diagnosed when someone has an abnormal large accumulation of body fat. Obesity has a negative effect on the health of someone. For example, obesity is related with certain types of cancer, diabetes, heart diseases and sleep and breathing problems (Kopelman, 2000). Although there are a lot of factors that causes obesity, like genetic, environmental, physiological, psychological, social and economic factors, this study focuses only on the physical activity, dietary choices, sleeping enough and checking your Body Mass Index (BMI) regularly because these factors are within the consumer's own control.

Communication, and in particular marketing communications has an impact on this growing problem. Marketing communication is what marketers use for messages and channels to reach their target audience. It is proven that in the traditional media people of every age group are exposed to and influenced by companies that promote unhealthy products (Anderson, de Bruijn, Angus, Gordon & Hastings, 2009; Cairns, Angus, & Hastings, 2009). But also, newer media, like social media, affects the behavior of people. Vaterlaus, Patten, Roche and Young (2015) claim that social media could both be a barrier and motivator for young adults to exercise. Because the majority of young adults spends a large part of the day online, people get exposed several times a day to the marketing of both healthy and unhealthy products (Vaterlaus et al., 2015). Marketing communication and message content can contribute to obesity cessation by promoting healthy products with the right reach to customers, but it can also exacerbate the problem by showing misleading advertisement.

Although the content of the advertisement matter, the way how it is said is also important. It is not only about what to say, but also how to say it (Nan, Daily & Qin, 2018). An advertisement can be showed positively or negatively. For example, health institutions can spread an advertisement with the content "*if you undergo a screening test for cancer, your survival will be prolonged*" or the health institution can frame it like "*if you don't undergo screening test for cancer, your survival will be shortened*". The framing of messaging influences the behavior of people and is therefore relevant for this study that focuses on choosing healthy behavior. This cognitive bias observes not only the information itself but also how the information is worded. This provides a better and deeper understanding in how people choices are influenced. Framing messages can be powerful (Altay & Mercier, 2020) and therefore this bias is interesting to investigate because if messages are framed in a way that it stimulates people to choose healthy behavior for a long term, message framing can contribute to obesity cessation.

The choice behavior of consumers is thus influenced by promotions, surroundings, but also how the message is framed. This research focuses on gain-framed messages and loss-framed messages. Gain-framed messages focus on the advantage of choosing the recommended behavior while loss-framed messages focus on the disadvantages of non-compliance (Nan et al., 2018). For example, a gain-framed message could be: *“When you exercise 2-3 times a week, it will be likely to maintain a healthy BMI”*, while *“When you exercise less than 2-3 times a week, it will be harder to maintain a healthy BMI”* is a loss-framed message. Framed messages can be powerful because it can influence the attitude and behavior of individuals (Altay & Mercier, 2020). Therefore, the goal of this research is to examine if and how framed messages may contribute to one of the biggest problems the world is facing today, the increasing obesity rates. This is both beneficial for science and for policy makers to explain what kind of health programs are efficient to implement.

This research will investigate whether promoting healthy choices has more effect when it is gain-framed or when it is loss-framed. Therefore, the research question is as follows:

“What is the persuasive impact of framed messages on the behavioral intentions for making healthy choices by Dutch citizens?”

The definition of impact in this study consists of two components. On the one hand impact is defined as the respond to framed messages of individuals (Detweiler et al., 1999). On the other hand, impact is defined as the perception of framed messages for Dutch citizens.

To answer the research question the extent of framing messages will be examined. This research will build upon the already existing literature by examining what the impact of framed messages is for making healthy choices and therefore cessation obesity. This research also investigates for whom framed messages are persuasive. This study should contribute to the existing literature because it will resolve the contradicting gap in the literature, and it will investigate whether and to whom framing message are persuasiveness in the Netherlands. This is lacking in the existing literature. Another aim of this research is to identify effective marketing communication using message framing. The results of this research can also be used by policy makers to nudge people to make healthy choices.

Moreover, this research is also socially relevant. Kopelman (2000) shows that it is expected that 2% to 7% of total health costs in developed countries consist of costs of obesity. Therefore, it is highly beneficial to assist policy makers and health planners with advising how to reach and how to communicate with their inhabitants to fight obesity. Costs are not only incurred by obesity, but costs for associated diseases, like diabetes, are also incurred.

This research proposal proceeds as follows. Section 2 presents the central concepts of this study, the related literature and the hypotheses, section 3 presents the research question and the sub questions, section 4 shows a visual conceptual model, section 5 describes both the quantitative and the qualitative methodology and section 6 presents the data analysis. Section 7 represent the conclusion and discussion.

2. Theoretical Framework

This study examines the effect of framing messages on making healthy choices. Therefore, the central concepts of this study are message framing, marketing communication, marketing strategies, obesity and health. These concepts will first be conceptualized. Furthermore, what is already known about the relationship between framing messages and making healthy choices will be discussed.

2.1 Message framing

Firstly, it is important to define the key concept of this research: message framing. Message framing refers to the situation in which problems either emphasize the positive information of the message or emphasize the negative information of the message (Davis, 1995; Rothman et al., 1933). Emphasizing either the negative information, meaning the costs of a choice, or the positive information, meaning the benefits of a choice, can be used in different situations and for different problems and outcomes (Davis, 1995; Smith & Petty, 1996). How messages are framed affects the amount of persuasion it elicits. Researchers compare the persuasiveness of gain-framed messages, that stresses the benefits of choosing a certain type of healthy behavior, and loss framed messages that emphasize the costs of choosing a certain type of unhealthy behavior (Wilson, Purdon & Wallston, 1988). There is disagreement in the literature about which framed messages are more persuasive. Some argue that gain-framed messages are more effective, while others argue that loss-framed messages are more effective. There are also researchers who claim that it does not matter how a message is framed. But in order to make claims about the persuasive power of framed messages, it is important to understand the theory behind these claims.

How message framing can be implemented and how the persuasiveness of message framing is predicted can be explained by the prospect theory. The prospect theory explains how decisions are made under risk (Kahneman & Tversky, 1979). This theory arose as a critique of the expected utility theory: the standard economic theory of choices of individuals. The expected utility theory assumes individuals will choose the option that give them the highest utility given the probability of outcomes. Within the expected utility theory, it is known what the probability of an outcome is (Levy, 1992). Therefore, individuals choose the highest weighted outcome by weighting the utilities of an outcome by their probability. When choosing between risky options, individuals maximize their expected utility. But the observed behavior of individuals is not always consistent with the predictions of the expected utility theory (Levy, 1992). Therefore, Kahneman and Tversky developed an alternative to the expected utility theory: the prospect theory.

The well-known prospect theory predicts the real behavior of people. The prospect theory argues that losses and gains are valued differently by consumers. A certain reference point of an individual determines if outcomes are perceived as gains or losses (Van Osch, van den Hout & Stiggelbout, 2006). The theory shows that losses outweigh gains. Therefore, the function of the risky choices is convex for

losses and is concave for gains. In addition, the function is steeper for losses than for gains (Tversky & Kahneman, 1979). This means that people are generally risk averse. People rather avoid loss because it is more painful than the fulfillment of a gain.

Moving on to the prospect theory in relation with framing message, the prospect theory can explain why individuals' decisions can change by framing. In contrast to the expected utility theory, the prospect theory is able to do that. Kahneman and Tversky (1979) argues that the riskiness of behavior will determine the relative persuasiveness of gain-framing or loss-framing messages. Kahneman and Tversky (1979) conclude that if options are gain-framed, people tend to be more risk averse, while if options are loss-framed, people tend to be more risk seeking. This is proven in the well-known "Asian-Disease problem". Here, people get informed that 600 people are infected with a deadly disease. Half of the sample have to choose between the following policy options:

Option A: If program A is implemented, 200 individuals are saved.

Option B: If program B is implemented, with a probability of 1/3, 600 individuals are saved and with a probability of 2/3, 600 individuals will not survive the disease.

The other half of the sample have to choose between the following options:

Option A: If program C is implemented, 400 individuals die.

Option B: If problem D is implemented, with a probability of 1/3, 600 individuals will survive and with a probability of 2/3, 600 individuals will die.

Although the outcomes of the two pairs of options are the same, participants prefer in the first two options A over B while in the second two options participants prefer B over A. The only difference between the two pairs of options is how the information is described. In the first pair of options choices are described in terms of saved lives, while in the second pair of options choices are described in terms of lost lives. Therefore, preferences are influenced by the way choices are framed and the Asian Disease problem shows that for risky behavior loss-framed messages will be more persuasive while for low-risk behavior, gain-framed messages will be more persuasive. Although these findings of Tversky and Kahneman were significant, other replications did find smaller framing effects (Druckman, 2001). Therefore, it is interesting to investigate what the framing effect will be in the context of obesity.

2.3 Marketing communication

Marketing communication refers to advertising but includes all other contact points with potential and current customers as well (Rossiter & Bellman, 2005). These contact points can for example consist of live communication, but also consist of communication via billboards, posters, mobile devices, newspapers, e-mail, radio, tv and social media. Marketing communication is the key for creating a

successful product or service (Rossiter & Bellman, 2005). Even a product of the best quality, will not be bought without the right reach to customers and engaging with them in the right way (Eagle, Czarnecka, Dahl & Lloyd, 2020).

Within the marketing communication the sender tries to deliver a message to the audience. In order to do this, it is important that the sender focus on the mission, the proposition, the concept and the execution (Van Raaij, 1997). The mission refers to the communication a sender uses to target its audience and the long-term message the sender wants to spread. Next, the proposition is defined as the theme of the campaign. In addition, the concept is necessary to translate the proposition to the language of the people the sender is trying to target. Finally, the execution is used for delivering the message in an attractive way. For instance, the style, typography and how it looks plays a role (Van Raaij, 1997).

The framing of messages is an element of marketing communication because it questions how to engage with your (potential) customers. How do you want to reach out to customers and what and how do you want to say to them? Suppose the municipality wants to protect the greenery in the park. They can put a sign with the message *“please stay on the established paths and trails”* or they can put a sign with the message *“please don’t go off the established path and trials.”* Hence, marketers have to decide what message they want to deliver to their audience and how they want to do this. Therefore, the framing effect can be very relevant for marketers.

In addition, when focusing on how to promote healthy choices in practice, it is helpful to know what marketing strategies can be implemented to encourage healthy choices. Chan and Prendergast (2014) investigated what marketing communication strategies for adolescent should be used to promote healthy eating. The theory of planned behavior predicts that attitude, subjective norm and perceived behavior determines behavioral intention and behavioral intention determines the observed behavior (Chan & Prendergast, 2014). They find that perceived behavioral control is the best predictor of healthy eating intentions. This is useful information for marketers that want to promote healthy eating.

2.5 The disease obesity

Obesity is a complex and chronic disease which has a negative impact on individuals. Obesity increases the chances of different concomitant diseases and increases mortality rates and national health costs (Upadhyay et al., 2018). Someone is obese when the person has a BMI above 30 (Jiang et al., 2016). The BMI is a scale to measure whether someone is at a healthy weight. This is measured with the following formula: $BMI = \frac{Weight}{(Height^2)}$, where weight is measured in kilograms and height in centimeters. Research shows that obesity is a complex medical condition that is caused by various factors, for example genetic, environmental, behavioral, and metabolic factors. Although different factors influence someone’s medical condition, this study focuses only on the factors that individuals themselves can influence: physical activity, dietary choices, sleeping enough and checking your BMI regularly.

To highlight the relevance of the obesity problem, Figure 1 shows how obesity has evolved globally over 41 years. In addition, Figure 2 shows, that the obesity rate in the Netherlands continues to rise persistently. As a result, more and more people are dying from obesity or its consequences. In addition, health costs are rising due to rising obesity rates. The next section shows how the rising obesity rates can be explained.

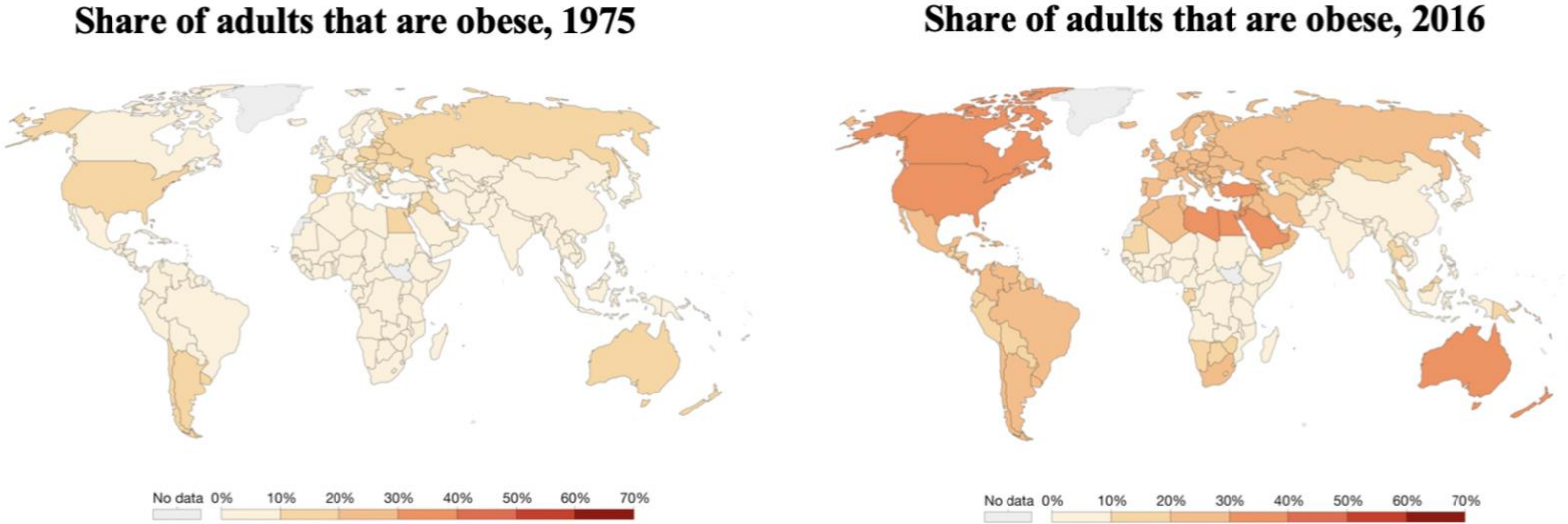


Figure 1: Evolution of the number of people who are obese over 41 years. Reproduced of WHO, Global Health Observatory, 2022.

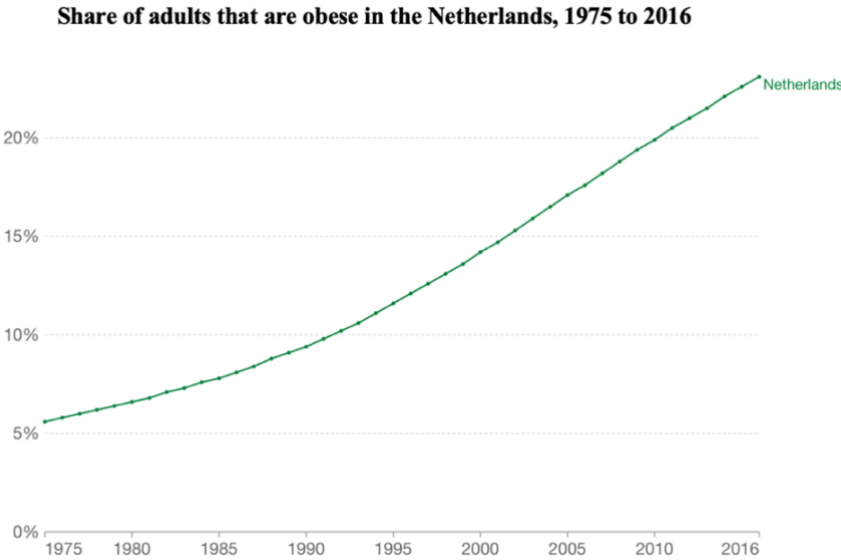


Figure 2: Evolution of the number of people who are obese over 41 years in the Netherlands. Reproduced of WHO, Global Health Observatory, 2022.

2.5.1 Causes of obesity

First of all, a lot of people have trouble maintaining a healthy lifestyle. This is caused by a lack of physical activity, a lack of eating fruits and vegetables and excessive alcohol and tobacco consumption. But another cause is the consumer style of people. Consumer style is defined as the way how people make choices and choose to buy certain products (Verplanken et al., 2005). For instance, consumers that are impulsively are also associated with impulsively eating. Often, unhealthy food is easily accessible and displayed in tempting places or heights which makes it easy to choose for these products. Furthermore, unhealthy eating often becomes a habit. An unhealthy habit is a situation where unhealthy eating happens often, is hard to control, and in which an individual has little awareness of the behavior (Verplanken et al., 2005). Therefore, in this world where unhealthy products are promoted all the time and obesity rates are rising, it is important to investigate how to promote healthy products.

In addition to the consumer style, consumerism also plays a role in the rising obesity rates. The concept consumerism is defined as a way of life. This is a way of life in which it is important to own many and varied products or use many and varied services (Assadourian, 2010). When this is achieved, it is believed that personal happiness, power and success lie ahead. Individuals believe they can find satisfaction, meaning and acceptance by the way how they consume. This way of thinking is anchored in today's society (Assadourian, 2010). Therefore, consumerism focuses on the social and cultural practices that are related to the economic practice of buying a product (Miles, 1998). Consumerism negatively affects physical health and wellbeing (Assadourian, 2010; Jackson, Harrison, Swinburn & Lawrence, 2014). For instance, food that is high in sugar and highly processed is promoted as tastiest and most satisfying food. This are cultural norms that are normalized throughout time. Marketing is used as a tool to stoke this consumerism. An average consumer is exposed to hundreds of advertisements each day (Assadourian, 2010). Therefore, using marketing for promoting healthy options instead of unhealthy options can make a difference.

Thirdly, the increasing calorie intake contributes to the rising obesity rates. In most parts of the world the calorie intake is larger than the calorie expenditure. In addition, most societies are characterized by accumulation and consumption (Jackson et al., 2014). The overconsumption of certain food and beverages, mostly processed and nutrient poor, is growing. Therefore, the public health crisis, where obesity rates rise, can be partially explained by the overconsumption (Jackson et al., 2014). Overconsumption is considered as an essential in the capitalistic society. Consumerism gives individuals the opportunity to express their selves, be part of a culture and get accepted by others. Besides the overconsumption of unhealthy products, commercial companies have a strong position in the promotion of unhealthy food in the western society. Therefore, this leads to health crises and increasing rates for diseases like obesity.

Furthermore, people also exercise too little. 60% of people worldwide do not manage to exercise at least 30 minutes a day each day (Saxena, et al., 2005). Specifically in the Netherlands, it is also estimated that less than half of the adults fulfill the recommended exercise time each day (Van 't Riet et al., 2010).

This lack of exercise even leads to 2 million deaths every year, which could have been prevented (World Health Organization, 2002). The level of physical inactivity is rising (Gaetano, 2016). The lack of movement can be explained, because in the past 50 years there are less jobs where physical work is needed, time that is spend on cycling and walking decreases and there is an increasing use of motorized transport instead of shopping local by bike or walk (Fox & Hillsdon, 2007). In addition, the Covid pandemic has caused us to move less and do more from home. By this developments people miss out on the benefits of physical activities. Enough exercise reduces the risk of various chronic diseases. But there is also a relationship between physical activity and mental health. For example, increasing evidence shows that physical activity is an effective therapy for depression and anxiety (Saxena et al., 2005).

2.5.2 Healthy choices

To combat obesity, this research looks at how certain marketing techniques can encourage people to make healthy choices. But what is considered as making healthy choices?

It is difficult to give a clear definition of healthy choices. What is considered as a healthy choice for one person may not be a healthy choice for another. Yet researchers have tried to define what a healthy lifestyle is. For example, Bloch (1984) states that a healthy lifestyle is one that prevents health problems and maximizes personal wellbeing. A healthy lifestyle includes thousands of choices made throughout the day, such as flossing and brushing your teeth, drinking enough water, using sunscreen, not drinking alcohol, not smoking, using condoms, and taking the stairs instead of the lift (Kraft and Goodell, 1993). But in defining a healthy lifestyle, the most common focus is on dietary choices and physical activity (Kraft and Goodell, 1993). This study will use this common focus because these factors are related to obesity. In addition, this focus is also used often in obesity related research (Flora & Gillespie, 2009; Jacoby, 2004; Sacks, Swinburn & Lawrence, 2009).

Furthermore, specific research on the relationship between framing messages and obesity often focuses on one healthy choice. For instance, the research of Bannon and Schwartz (2006) focuses on the persuasiveness of framed messages for snack choices, while Jones, Sinclair and Courneya (2003) focuses on the persuasiveness of framed messages for stimulating students to exercise more. Similarly, Elbert and Ots (2018) examine only one factor, namely fruit and vegetable consumption. This research will combine these factors to create a more complete picture of the persuasive power of framed messages to encourage individuals to make healthy choices and thus reduce the obesity rates. Therefore, healthy choices are defined as getting enough sleep each night, eating enough fruit and vegetables, doing enough sport and exercise, and regularly monitoring whether someone is at a healthy weight. This definition, where different factors will be examined, is what sets this research apart from other studies. For example, this study not only tests whether framed messages influence physical activity, but also tests what effect framed messages has on the number of hours of sleep per night, fruit and vegetable intake and regularly

checking your BMI. This allows to examine the relation between framed messages and both the prevention and detection of obesity.

2.6 Results of previous studies on framed messages and obesity

2.6.1 Literature gap

In the literature there is already known a lot about the relationship between the concepts. As already mentioned, the prospect theory argues that the riskiness of behavior will determine the relative persuasiveness of gain-framed or loss-framed messages (Kahneman & Tversky, 1979). The Asian disease showed that for risky behavior loss-framed messages will be more persuasive while for low-risk behavior, gain-framed messages will be more persuasive. For example, looking specifically at obesity, low-risk behavior could be exercising while high-risk behavior could be disease detection.

In addition, research has been done on the specific relation between framing messages and obesity cessation or factors that contribute to obesity cessation. However, the results of different studies are contractionary. Firstly, O’Keefe and Jensen (2015) used a meta-analytic review to investigate whether gain-framed or loss-framed messages are more persuasiveness to achieve obesity cessation. They found out that neither gain-framed nor loss-framed messages have a significant persuasiveness effect on choosing healthy food. But for physical activity, gain-framed messages encouraged individuals significantly more than loss-framed messages. Another research of Bassett-Gunter et al. (2014) underline this found effect of gain-framed messages on physical activity. Bassett-Gunter et al. (2014) investigated with an experiment making use of head-mounted eye tracker how the cognitive process of gain-framed and loss-framed messages proceeds. They tracked the dwell time, fear appeal, personal relevance and thought-listing. For gain-framed messages the dwell time was greater, this indicates that gain-framed messages may be more persuasive for physical activity. An explanation for this could be that loss-framed messages are perceived as more unnatural and uncomfortable and therefore people are less willing to process the loss-framed message (Gamliel, 2007). In addition to the study of O’keefe and Jensen (2015) and Bassett-Gunter et al. (2014), the study of Gallagher and Updegraff (2012) conclude that gain-framed messages significantly have a more positive effect when it comes to the encouraging of illness prevention. This is not a specific study on obesity, but it showed significant results on physical activity.

Furthermore, Rosenblatt et al. (2018) did an experiment to examine the effect of health warnings on dietary choices. Health warnings could become an important factor of reducing obesity in the future. The researchers made a distinction between text-only and text-and-graphic warnings. They found out that health warnings that were negatively framed had a greater effect on dietary choices than other framed messages. The most effective messages were the loss-framed graphic warnings.

Thus, the results of the research are contradictory. Therefore, there is a gap in the literature. Although some researchers show that gain-framed messages are most effective, other researchers show

that loss-framed messages are most effective. It is therefore relevant to investigate the relationship, in order to contribute to solving the gap in the literature with the following hypothesis:

Hypothesis 1

Hypothesis 1a: Gain-framed messages will improve obesity cessation.

Hypothesis 1b: Loss-framed messages will improve obesity cessation.

2.6.2 Distinction between the persuasiveness of framed messages for obesity prevention and detection

Furthermore, in the literature a distinction has been made between prevention and detection behavior. Loss-framed messages should be more persuasive for detection while gain-framed messages should be more persuasive for prevention (Rothman & Salovey, 1997; Rothman et al., 1998). Therefore, this research investigated next to the general effect of framing messages on obesity cessation tested by hypothesis 1 also the specific elements of the disease obesity: prevention and detection.

Framing messages positively creates the attitude of ‘play it safe’ (Dijkstra, Rothman & Pietersma, 2011). Detection behavior is riskier than prevention behavior because people may discover there is something wrong with them and in this case discover they have obesity (Detweiler et al., 1999). Therefore, loss-framed messages create the attitude of ‘nothing to lose’. As a result, the risk of an outcome influences the persuasiveness of framed messages. Another meta-analytic review of O’Keefe and Jensen (2006), where previous research was pieced together, confirms the relationship between prevention or detection and framing messages. They conclude that gain-framed messages are more persuasive for disease prevention than loss-framed messages.

In this study, the healthy choices aimed at preventing obesity are exercising enough, eating enough fruits and vegetables and sleeping enough (Reeves & Rafferty, 2005). Increasing these factors will be not considered as risky strategies, therefore the positive frame is expected to be effective. For riskier strategies, like obesity screening, loss framed messages would be considered as effective. For example, a loss-framed message for obesity detection could be as follow: “*If you don’t screen on obesity regularly, you reduce your chances of detecting obesity and secondary diseases, like heart diseases*”. This insight in the distinction between prevention and detection leads to the following hypotheses:

Hypothesis 2

Hypothesis 2a: Gain-framed messages are effective for increasing exercising.

Hypothesis 2b: Gain-framed messages are effective for increasing fruit and vegetable consumption.

Hypothesis 2c: Gain-framed messages are effective for increasing hours of sleep per night.

Hypothesis 2d: Loss-framed messages are effective for obesity detection.

2.6.3 Distinction between the persuasiveness of framed messages for women and men

In addition to the difference between detection and prevention, researchers have also found a difference between the persuasiveness for women and men. Rothman et al. (1993) conclude that women who read gain-framed messages about wearing sunscreen for skin cancer prevention were more likely to request sunscreen than women who read loss-framed messages. This relationship was not found for men in the research. For obesity, the difference between men and women has not been tested yet, therefore based on Rothman et al. (1993) the following hypothesis has been formulated:

Hypothesis 3

Hypothesis 3: For women gain-framed messages will be more persuasive for obesity prevention.

2.6.4 Autonomy

Finally, there is one study that have investigated the possible moderating effect of autonomy on the persuasiveness of framed messages. Churchill and Pavey (2013) state that gain-framed messages only stimulate the fruit- and vegetable consumption if individuals have a high level of autonomy. Hence, this study claims that autonomy is a key role in identifying the persuasiveness for promoting fruit- and vegetable consumption. It is therefore interesting to investigate this effect, which has been observed for fruit and vegetable consumption, further and in greater depth, also for different factors, such as the hours of sleep and physical activity.

Autonomy is defined as the psychological need of an individual to have freedom to choose its own behavior and have this under voluntary control (Deci and Ryan, 2000). This is directly opposite to behavior that is determined and controlled by external forces. Someone has a high level of autonomy when the individuals surrounding is autonomy-supportive and the behavior that the individual displays come from autonomous motives (Deci and Ryan, 2000). It is expected that high levels of autonomy increase the aim of individuals to minimize unhealthy choices after they have read information about the risks of the unhealthy behavior. This is the case because individuals with a high level of autonomy will process the messages with the health risks as less threatening than individuals with a low level of autonomy (Churchill and Pavey, 2013). Individuals with a low level of autonomy process the messages as threatening because these messages will not be well integrated with personal behavior and goals. Therefore, the framed messages will be considered as externally regulation. For individuals with a high level of autonomy, the opposite is true. The framed messages suit well with the personal goals and values. Consequently, framed messages, and in particular gain-framed messages will be more persuasive for individuals with a high level of autonomy (Churchill and Pavey, 2013).

Hence the fourth hypothesis is formulated as follow:

Hypothesis 4

Hypothesis 4: Gain-framed messages are more persuasive for individuals with a high level of autonomy.

2.7 Conclusion

To conclude, the central concepts of the research are defined in this section. The methodology section explains how these central concepts are made measurable. Furthermore, existing literature shows that there is no consensus on the persuasiveness of framed messages. Therefore, this research tries to solve the literature gap. In addition, this research distinguishes itself by focusing on four aspects of making healthy choices (getting enough sleep, eating enough fruit and vegetables, exercising enough and monitoring BMI regularly), while previous research only focuses on one of these factors.

3. Research questions and sub questions

This research will investigate if and to what extent framing messages affects making healthy choices. The theoretical framework showed the context of this research and gave insight in the clearly present distinction between prevention and detection. Therefore, the research question presented in this section has changed slightly from the one given in the introduction. The question is somewhat more specified and reads as follows:

“What is the persuasive impact of framed messages on the behavioral intentions for both obesity prevention and obesity detection for Dutch citizens?”

To answer the research question, sub questions are formulated. The following sub questions will be investigated:

1. To what extent are gain- and loss-framed messages effective for reducing obesity rates?
2. To what extent are gain- and loss-framed messages effective for increasing fruit and vegetable consumption?
3. To what extent are gain- and loss-framed messages effective for increasing exercising?
4. To what extent are gain- and loss-framed messages effective for increasing hours of sleep per night?
5. To what extent are gain- and loss-framed messages effective for obesity detection?
6. Does gender and if, to what extent, affects the persuasiveness of framed messages?
7. Does the autonomy level of an individual, and if, to what extent, affects the persuasiveness of framed messages?
8. What is the perception of gain- and loss-framed messages for Dutch citizens?

Question 1, which suits to hypothesis 1, tests to what extent framed messages influence individuals and therefore help to reduce obesity rates in general. Reducing obesity rates will be tested by making healthy choices. However, the literature showed that the persuasiveness of framing messages can be influenced when it comes to disease prevention or detection. Therefore, in addition to the general effect of framing messages on reducing obesity rates, question 2, 3, 4 and 5 will be investigated. These questions will help to make a distinction between the effect on framing messages on obesity prevention and the effect on obesity detection. Obesity prevention consists of fruit and vegetable consumption, exercising and sleeping enough (Hingorjo, Syed & Qureshi, 2009). Therefore, question 2, 3 and 4 help to investigate the relationship between framed messages and obesity prevention. Next, obesity detection consists of obesity screening (BMI, blood pressure and body fat percentages) (McTigue et al., 2003; US Preventive Services Task Force, 2003). Accordingly, question 5 helps to examine the effect of framed messages on obesity detection. Question 2, 3, 4 and 5 fits hypothesis 2.

Next, question 6 help to answer if there is a difference in the perception of persuasiveness by gender. This question suits to hypothesis 3. Furthermore, question 7 examine if autonomy is a key role when investigating the effect of framed messages and suits to hypothesis 4. Lastly, question 8 investigates what the perception of gain- and loss-framed messages is. This is investigated by conducting in-depth interviews. These interviews help to get behind the deeper explanations, attitudes, feelings of individuals to complement the results found.

4. Conceptual model

In this section the conceptual model is given. The conceptual model is a visual representation of the relationship being studied. The independent variable is shown on the left. The dependent variable, healthy choices which consists of vegetable and fruit consumption, exercising, and hours of sleep, and checking your BMI regularly is shown on the right. The relationship of framed messages and healthy choices is influenced by the three moderators' risk of choice, gender, and autonomy. Risk of choice is the risk that a certain choice brings, for example the risk of wearing sunscreen is small, while the risk of getting a skin cancer screening is big (Detweiler et al., 1999). In this study choosing to exercise is a choice with low risk, while screening for obesity or screening for comorbidities is a choice with high risk (Reeves & Rafferty, 2005). Furthermore, it is expected that the other moderators, gender, and autonomy, have an effect on healthy choices when messages are gain-framed (Churchill and Pavey, 2013; Rothman et al., 1993).

Hypothesis 1 is relevant for the relationship between framed messages and healthy choices in general. Hypothesis 2 investigates on the one hand the relationship between gain-framed messages and the preventive activities, fruit and vegetable consumption, exercising and hours of sleep. On the other hand, hypothesis 2 investigates the relationship between loss-framed messages and obesity detection, which includes checking your BMI regularly. Furthermore, hypothesis 3 is relevant for the relationship between gain-framed messages and healthy choices, and the influence of gender on that relationship. Finally, hypothesis 4 is relevant for the relationship between gain-framed messages and healthy choices, and the influence of autonomy on that relationship.

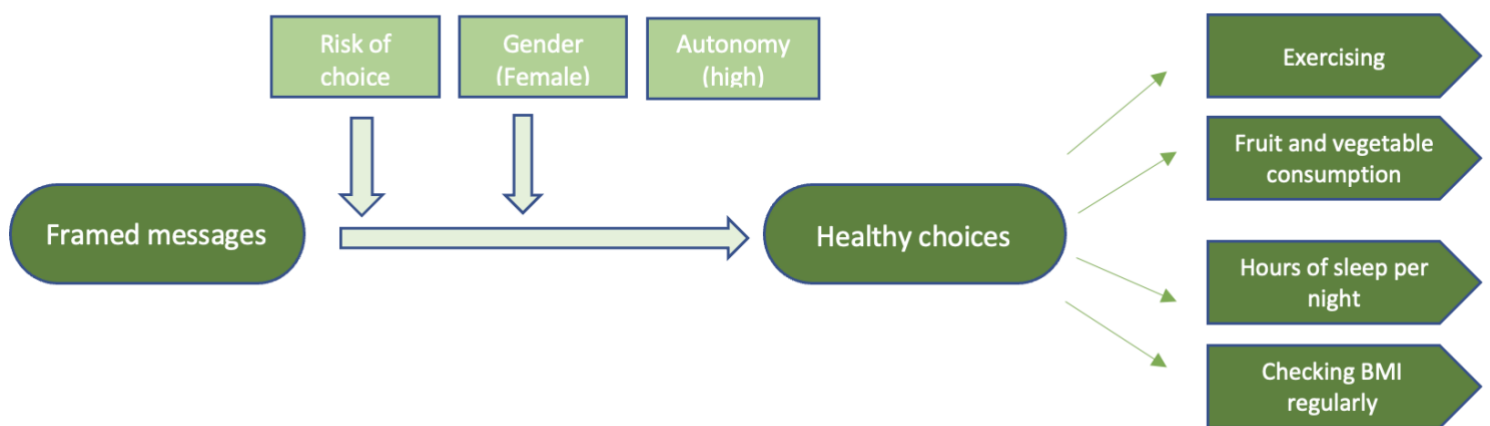


Figure 3: Conceptual model for framed messages.

5. Methodology

5.1 Introduction to mixed methods

To measure the relationship between the persuasiveness of framed messages and healthy choices, this study used a mixed method approach. This means that both quantitative and qualitative methods are used to gain a full understanding of the investigated relationship (Babbie, 2016). One of the methods, in this case quantitative research, was used as a basis for the collection of the other method.

A mixed method research is used to create a more coherent and complete picture of the framing domain (Kelle, 2006). Furthermore, triangulation increases also both the validity and reliability of the study (Moon, 2019). Although the research question is quantitative formulated, qualitative research will be done to get deeper insights in framing effects and the perception of the effectiveness of framed messages. By first conducting quantitative research and then conducting qualitative research, the results of the quantitative part can be further examined. Results of the quantitative research are further explained, and qualitative research can help explain unexpected results of the quantitative research (Terrell, 2012). Thus, qualitative research helps to better understand the results of the quantitative part, which is why quantitative research takes place first and qualitative research takes place next. Therefore, the qualitative served as a complement (Halcomb & Hickman, 2015). Results from the quantitative section are discussed or clarified in more detail. In this research, the quantitative research provides data about what the intentions of people are, how they engage with the framed message, how they feel after reading a framed message. In addition, the qualitative research examines why people feel like this after reading a message, what the underlying thoughts are about framing messages, and why gain- or loss-framed messages are persuasive. Therefore, the qualitative part is a complement to the quantitative part. For example, if a respondent is more engaged with a loss-framed message, the interview could discuss why this is the case. Therefore, the qualitative research provides a deeper explanation on the central concepts in this study. The qualitative research can also comment on given results of the quantitative research, for example, if a variable is found to be significant, this can be discussed.

First, a survey was conducted as part of the quantitative study. This was followed by in-depth interviews to explain the statistical results (Creswell & Poth, 2018). For example, if the quantitative results show that gain-framed messages are significantly more persuasive than loss-framed messages, the interviews will be used to ask why this is the case. If it turns out that there are no significant results, the interviews will be used to look for other factors that may influence the relationship.

This section proceeds as follows: firstly, the quantitative method will be discussed, next the qualitative method will be discussed and lastly the privacy and ethical considerations will be discussed.

5.2 Quantitative method

5.2.1 Introduction

Data for the quantitative method was collected by conducting a survey. Within these surveys, existing measurement scales were used to measure the central concepts (Godinho, Alvarez & Lima, 2016; Li et al., 2022; Van 't Riet et al., 2010).. For example, multiple statements were used to measure the same concept to ensure internal consistency. The value of Cronbach's alpha shows whether the statements are consistent with each other and measure the same concept. In addition, self-created questions were added when there was no appropriate scale for a specific topic. Thus, the survey is a combination of existing surveys and own questions.

5.2.3 Applying message framing

Firstly, framed messages were measured by showing gain-framed messages and loss-framed messages. Respondents were assigned randomly to either a gain-framed message or a loss-framed message. Hence, for all the healthy choices, physical activity, fruit and vegetable consumptions, hours of sleep and obesity detection, respondents would read a gain-framed or loss-framed message. The content of the message was about physical activity, eating fruit and vegetables, sleeping enough and checking your BMI regularly. The gain- and loss-framed messages can be found in Appendix 1. The messages that are used in the survey were adapted from similar studies that investigated the persuasiveness of framed messages. For the physical activity component, the questionnaire from Van 't Riet et al. (2010) was used for conducting the framed message. The physical activity message was adopted and translated into Dutch. In addition, the framing message of the component fruit and vegetable consumption was adopted from the study of Godinho, Alvarez and Lima (2016). Further, for the component enough sleep there was no appropriately framed message from previous research. Therefore, the framed message for promoting enough sleep was self-created. Finally, for the component obesity detection, the research of Shen and Dillard (2007) was used as input to create a framed message about keeping track of your weight and BMI.

5.2.4 Measuring effectiveness

After respondents read the gain-framed or loss-framed message, they were asked a series of questions about the effect of the message on themselves. Respondents were asked both how they felt after reading the message and how engaged they felt with the message. For example, respondents answered questions like "To what extent do you feel happy after reading the message about being active daily?" and "To what extent do you agree with the following statement: The message about eating fruits and vegetables is thought-provoking". All questions were asked on a 5-point Likert scale.

For physical activity, the research of van 't Riet et al. (2010) was followed to measure effectiveness. Various questions of this research were adopted and translated to Dutch to measure the

acceptance of the message and the engagement with the message. This scale contains a good internal consistency of $\alpha = 0.81$. For the fruit and vegetable consumption, the research of Godinho, Alvarez and Lima (2016) was used to measure the message involvement. This scale contains excellent internal consistency of $\alpha = 0.94$. Furthermore, for measuring the effectiveness of promoting sleep, survey questions were taken from the survey of Robbins and Niederdeppe (2019). Finally, for measuring the effectiveness of promoting checking your BMI regularly, the study of Godinho, Alvarez and Lima (2016) was used again to measure the engagement respondents have with the message. For this component, the questions have been modified to the engagement with the message about checking your BMI instead of with the message about fruit and vegetable consumption.

5.2.5 Measuring intentions

Complementing to the rating of framing messages, respondents were asked about their motivation and intentions regarding the healthy choices. These questions were asked before reading a framed message. Respondents' intentions were measured by asking, for example, if they plan to exercise this week, eat enough fruits and vegetables, get enough sleep and check their BMI regularly. For instance, respondents would answer questions like "To what extent do you agree with the following statement: I plan to sleep 7-9 hours most nights of the week" and "To what extent do you agree with the following statement: I plan to eat at least 5 servings of fruits and vegetables a day, starting today". These questions were also asked on a 5-point Likert scale.

Various existing scales were used to measure the intentions for the healthy choices. First of all, the scale from the research of van 't Riet et al. (2010) was used to measure the intentions for physical activity. This scale consists of three items that asked about the intentions to exercise. This scale has an excellent internal consistency of $\alpha = 0.92$. Next, the survey also contained questions about the intentions of respondents to eat enough fruit and vegetables. These questions were taken from the survey of Godinho, Alvarez and Lima (2016). This scale contains three items and has an excellent internal consistency of $\alpha = 0.96$. Furthermore, to measure the intentions for sleeping enough each night, the research of Li et al. (2022) was used. The scale for measuring the sleeping intentions has a good internal consistency of $\alpha = 0.82$. Finally, to measure the intentions for checking your BMI regularly, two items were used. These questions were self-created and not reproduced from another survey.

5.2.6 Measuring autonomy

Finally, respondents would answer questions that determine the degree of autonomy. Autonomy was measured using 21 statements, where respondents can indicate on a 5-point Likert scale the extent to which they agree with the statement. This concerned statements such as "I generally feel free to express my ideas and opinions", "In my daily life I often have to do what I am told" and "Mostly I get

a sense of accomplishment from what I do”. These 21-items were reproduced from the survey of Johnston and Finney (2010).

5.2.8 Distribution of the survey

The survey was distributed to people who are part of the population. The population is defined as Dutch citizens aged 16 or older. This broad group was chosen because obesity is a health problem that is relevant to the entire population, because half of the Dutch population is overweighted (CBS, 2021). Furthermore, distinctions between gender, educational level and age will be made when analyzing the data. This distinction is relevant to research if there is a different preference for framed messages between these groups.

The survey was created in Qualtrics. Furthermore, the survey will be spread on the internet, for example on social media and private messaging. Before the survey will be spread, two people took the survey to check if all questions are clear.

Furthermore, the respondents took the survey online so access to the internet is necessary. The descriptive research was a cross section because respondents were observed on a specific moment and the respondents were not followed over time.

5.2.9 Determining sample size

The aim is that at least 100 people take the survey. The sample size of the survey was determined based on statistical and budgetary resources (Roscoe, 1975). While large sample sizes are preferred over smaller ones, a sample size should not be indefinite because data must be weighted up against the available time (Martin & Bateson, 1986). A survey that consists out of a sample from 30-500 respondents is recommended (Hill, 1998). In addition, Israel (1992) examined recommended sample sizes taking the population, confidence intervals and precision levels into account. The recommended sample size for this research with a population larger than 100.000, which is the case, would be 400 individuals when a 95% confidence interval and a precision level of 5% is maintained. This means that if this research finds that 40% of the people in the sample find gain-framed message more persuasive with a precision level of 5%, then the researchers can conclude that between 45% and 55% of the people of the sample find gain-framed messages more persuasive (Israel, 1992). When taking the same population and confidence interval, but changing the precision level to 10%, a sample size of 100 individuals is recommended based. The recommended sample sizes are based on the following formula:

$n = \frac{N}{1+N(e)^2}$. Where n is the sample size, N is the population size and e is the level of precision.

This research based their sample strategy on the published tables of Israel (1992) and the recommended sample sizes of Hill (1998), Martin and Bateson (1986) and Roscoe (1975). In the ideal scenario, a sample size of 400 would be realized to make the survey results as accurate as possible. However, due to time constraints, a sample size of 100 is chosen. This number is still in line with the

published tables, the given formula and the recommended sample sizes. Although a precision level of 5% is preferred, this research will be satisfied with maintaining a precision level of 10% due to time constraints.

5.2.10 The course and aim of the survey

The survey started with an introduction why this research is important and what it is about, what respondents could expect, and some privacy issues were mentioned. The first survey questions were socio-demographic questions, for example regarding age, income, gender, and the level of education. After the socio-demographic questions, questions regarding the intentions and motivation of respondents were asked. Afterwards, they read a framed message and answered questions about the framed message. This was done for all healthy choices. The survey was self-created, but for some topics, like the effectiveness and intentions, questions of previous research were used (van 't Riet et al., 2010; Godinho, Alvarez & Lima, 2016; Li et al., 2022). These varied scales were followed because they demonstrated good or excellent internal consistency. Therefore, by using these existing scales the validity of this study was ensured.

The data of the survey helped to answer the research questions and gave answers to sub question 1, 2, 3, 4 and 5. Within the survey, existing measurement scales were used to measure the central concepts of framed messages and healthy choices. For the healthy choices 'physical activity', 'fruit and vegetable consumption', 'hours of sleep' and 'checking your BMI regularly' intentions and motivation questions and effectiveness questions were asked to measure the effectiveness of framing. Questions on a 5-points Likert scale such as "To what extent do you agree with the following statement: I feel strong emotions when reading the message about BMI measurement and obesity" and "To what extent do you agree with the following statement: I plan to talk to my family about the message with the topic of sleep" helped to answer the research question and the sub questions.

5.2.11 Reliability

This study aims to get at least 100 respondents, because this sample size lies between the 30-500 recommended respondents (Roscoe, 1975) and is in line with the sample size formula (Israel, 1992). Still, this is not perfectly representative for the Dutch population. Furthermore, it is likely that students, often in the age group between 20-30 will be overrepresented due to the personal circle of the researcher.

To prevent students from being overrepresented, several sampling strategies were considered. Although random sampling would be the best way to create a sample, because each individual of the population would have equal chances to be selected and therefore an unbiased and representative sample is created, this is not possible for this research (Sharma, 2017). Random sampling is not applicable in this study because there is no complete list of all the members of the population which is necessary to apply random sampling. Therefore, another appropriate sampling strategy has been chosen that is suitable when researchers are unable to create a probability sample, but the researchers still try to obtain

a sample that is as representative as possible of the population (Sharma, 2017). This sampling strategy is called Quota Sampling. This strategy divides the population into subgroups that are proportional to the population (Sharma, 2017). In this study the population will be divided into the following subgroups: gender, age, and educational level. The next step for quota sampling would be giving weightage of subgroups. For example, if the population consists out of 300.000 females and 100.000 males, women will have the weight 0,75 and men 0,25. When taking the survey, these percentages were applied to the sample in the same way. In addition to the benefit of creating the greatest possible representativeness, quota sampling also ensures that certain subgroups are not over presented (Sharma, 2017).

Both the sample size and the possible over representativeness of a certain group could influence the reliability of this study. However, these biases were minimalized by using formulas for creating a feasible sample size and using the sample strategy Quota Sampling to make the sample as representative as possible.

5.3 Qualitative method

In addition to quantitative survey data, this study also used semi-structured qualitative interviews. Therefore, this research utilizes triangulation (Creswell & Poth, 2018). These interviews provided an additional and more in-depth data source. Furthermore, this mixed-methods research was highly suitable for forming a more complete picture about the previously established quantitative hypotheses.

The qualitative interviews were used to generate meaningful themes. The analysis of the qualitative interviews with the aim of identifying different themes went through several stages. First, the interviews were transcribed. After this, all interviews were coded. These codes were linked to overarching categories (Smith & Firth, 2011). Later in this section, we will provide insight into how the coding process was conducted. After this, a code tree was created, visually displaying recurring themes.

To recruit respondents for the interviews, the survey was used. At the end of the survey, respondents were given the opportunity to enter their email address if they are interested in participating in an in-depth interview.

A topic list was used for the interviews so that there is an overview of the topics that were discussed. The topic list mainly contained questions about the perception of framed messages. How do respondents feel about the framed messages? What emotions do they experience? Here, it is not about the 'how many' but the focus is more on the 'how', 'what' and 'why'. This provided a more in-depth data source. Therefore, these interviews helped to explain the results if the hypotheses were rejected or helped to find other factors that may influence the relationship if the hypotheses were not rejected.

After the interviews were conducted, the interviews were coded. The coding process consisted of several stages: open coding, axial coding and selective coding. This provided insight into the analysis process; this is important because the researcher's own interpretation was central to this process. In the

first phase of coding, codes were assigned to all transcripts. This is done at a detailed level (Gioia, Corley & Hamilton, 2013). Next, the codes were compared and ordered in relation to each other in the axial coding process. Which statements were similar and which ones were different from each other? In this phase, the codes were reduced compared to the open coding. Finally, the selective coding phase took place. The codes got even more reduced to abstract concepts (Gioia, Corley & Hamilton, 2013). Here explanations and motivations were given at the most abstract level. The process of coding is shown in Appendix 5 in a code tree.

Because this research used triangulation, an attempt was made to increase the validity of this research. Triangulation leads to higher validity because the research is not focused on one perspective, but on multiple perspectives (Babbie, 2016). During the interviews, member checking was used (Creswell & Poth, 2018). By doing so, the researchers presented the results of the quantitative study to the respondents and ask them whether the respondents agreed with the interpretation and conclusions of the quantitative data. This technique returned the given results of the quantitative analysis to the respondents to investigate and check the precision and resonance with the experiences of the respondents. Therefore, member checks helped to check if respondents recognize itself in the results.

This research also tried to increase the reliability by using a topic list. This ensured that all interviews discuss largely the same topics. In addition, the probing technique was used during the interviews. This means that interesting areas could be further questioned. In this way the respondent was stimulated to give more explanation and information (Brantley & Wogalter, 1999). This allowed for some interpretation on the part of the researcher, but at the same time adheres to the topic list.

5.4 Privacy and ethical considerations

The privacy of the respondents was guaranteed as much as possible in this research. First, a consent form was added at the beginning of the survey. In this form, respondents were asked if they consent with the use of their given answers. It also explained how this was done and mentioned that the data will be removed when the research is finished. It is necessary to agree those terms, otherwise respondents would not proceed to the substantive questions of the survey questions. This voluntary nature was very important in this study because several sensitive personal data, like weight, were being asked for. By making it clear that respondents have no obligation to answer these sensitive questions, the emotional impact of doing so was minimized without losing valuable research data.

In the qualitative part of this research, the consent form was also used. Here, respondents were asked for their permission to record the interview and use the obtained data. It was also mentioned that used data will not be traceable to the respondent. If names are mentioned, a pseudonym will be used.

6. Results

In this study, quantitative data was collected by means of a survey. A total of 166 people started the survey. Of these, two people did not agree to the consent form presented at the beginning of the survey. Therefore, these two people could not start the survey questions and were not included in the data analysis. Furthermore, 8 people stopped after agreeing the consent form. Because these people do not contribute to the study, as they did not answer any substantive questions, these people are not included in the analysis. Therefore, the final sample size consists of 156 individuals.

6.1 Quantitative results

6.1.1 Descriptive results

The 156 people who completed the survey were asked various questions about demographic characteristics, such as age, height, weight, gender, and level of education. These questions were asked, because literature showed that there is a relationship between some of the demographic variables and the persuasiveness of framed messages, for instance gender (Rothman et al., 1993). An overview of the results of the demographic variable can be found in Table 1 and Table 2. In the table the overall statistics are presented, but they are also computed for females and males separately.

A number of results are remarkable. Firstly, 59.6% of the sample size identifies most with the gender female, while 40.4% identifies most with the gender male. Hence, women are overrepresented in this sample. This could influence the relationship between message framing and making healthy choices. The regressions that follow later, therefore also control for gender. Next, the average age of the respondents is 42.61 years. The ages of the sample size are spread out, ranging from 17 to 80 years old. For educational level, the data is also spread out. But most of the respondents completed a bachelor diploma HBO or master diploma WO. Furthermore, the height and weight of the respondents are presented in table 1. The average length of the sample size is 176.12 centimeters while the average weight is 74.12 kilogram. These data are used to calculate the BMI. It is noticeable that the majority of the sample size has a healthy weight. However, just under 30 percent of the sample size is overweight. It is also striking that a larger proportion of men are overweight compared with women. Therefore, it could be interesting for marketers to focus on males when promoting healthy choices.

Furthermore, there was data that influenced the analysis extremely. For instance, one individual entered 8070 as her age, most likely a typo. This information has not been included in the data analysis for the variable age, because this outlier will influence the mean extremely. Therefore, a condition was applied that allowed a maximum age of 100. In addition, three females entered 2 as her height, while it was asked in centimeters. This kind of data has not been included in the data analysis for the variable height, but it is included in the overall analysis. For example, height 2 is not included in the average length of respondents, but the rest of the answers of the person who completed height 2 are included. This is because it is still useful to see what this person has filled in on the questions that were about the

effect of a gain- or loss-framed message, for example. In the case of outliers, we therefore looked at each case to see how it affected the analysis in order to conclude how best to include or exclude it.

Table 1: Demographic variables

Demographic variables	N	Mean	Minimum	Maximum	SD
<i>Gender</i>	156	1.4 (59.6% female, 40,4% male)	1	2	0.492
<i>Age</i>	155	42.61 (38.57 year for females, 48.51 year for males)	17	80	17.629
<i>Height (in cm)</i>	147	176.12 (170.60 cm for females, 183.89 cm for males)	158	204	9.478
<i>Weight (in kg)</i>	151	74.13 (67.70 kg for females, 83.35 kg for males)	43	117	14.310

Table 2: Level of education

Level of education	Overall		Females		Males	
	N	%	N	%	N	%
<i>VMBO/ HAVO/ VWO</i>	30	18.1	22	23.7	8	12.7
<i>Bachelordiploma HBO</i>	36	21.7	25	26.9	11	17.5
<i>Masterdiploma HBO</i>	22	13.3	6	6.5	16	25.4
<i>Bachelordiploma WO</i>	15	9.0	11	11.8	4	6.3
<i>Masterdiploma WO</i>	46	27.7	25	26.9	21	33.3
<i>Doctoraat/ PhD</i>	7	4.2	4	4.3	3	4.8
<i>Total</i>	156	94	93	100	63	100

Note: The percentage of the overall level of education does not add up to 100, but to 94, because the remaining 6 percent is missing.

Table 3: Body Mass Index

<i>BMI</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>< 18.5</i> <i>(Underweight)</i>	<i>18.5-24.9</i> <i>(Healthy weight)</i>	<i>25-29.9</i> <i>(Overweight)</i>	<i>30-34.9</i> <i>(Obese)</i>	<i>35-39.9</i> <i>(Severely obese)</i>	<i>≥ 40</i> <i>(Morbidly obese)</i>
<i>Overall</i>	17.96	42.98	23.78	4 (2.8%)	97 (67.4%)	36 (25%)	6 (4.2%)	0 (0%)	1 (0.7%)
<i>Females</i>	17.01	42.98	23.01	3 (3.6%)	65 (78.3%)	10 (12.1%)	4 (4.8%)	0 (0%)	1 (1.2%)
<i>Males</i>	17.96	31.86	24.70	1 (1.6%)	32 (52.5%)	26 (42.6%)	2 (3.3%)	0 (0%)	0 (0%)

Note: The Body Mass Index is presented for the whole sample size (N=144) but is also presented for females (N=83) and males (N=61).

6.1.2 Pre-manipulation results

In the survey, respondents answered several questions about intentions to make healthy choices. for example, they were asked whether you planned to exercise for 30 minutes every day in the near future, whether you planned to eat enough fruits and vegetables every day, whether you planned to sleep 7-9 hours every night, and whether you planned to check your BMI regularly.

The analysis shows that 113 out of 156 respondents plan to exercise this week and the respondents who plan to exercise on average plan to exercise 2.69 times per week (See Appendix 2, table 23).

First, the mean of the intentions for physical activity is equal to 4.034 on a scale with a maximum of 5. This means that many respondents plan to exercise regularly. For the fruit and vegetable consumption, the mean of the intention to eat enough fruit and vegetables in the near future is equal to 2.567 on a scale with a maximum of 5. This means that on average respondents are in the middle of the scale and therefore there are some respondents who do not plan to eat enough fruits and vegetables and some on the other hand plan to. Next, for the intention to sleep 7-9 hours every night, the mean of the intentions of respondents is equal to 4.032 on a scale with a maximum of 5. This mean corresponds to the mean of the intentions to exercise, which means that most of the respondents intend to sleep enough. Finally, the mean of obesity detection, that asked if respondents plan to check their BMI regularly, is equal to 6.772 on a scale with a maximum of 10. This means that the average is about 0.75 of the scale and therefore a large part of the respondents intends to check their BMI regularly, but there is also a group, which does not intend to do so.

These averages of intentions are further used for the correlations and regressions, to see if the intentions of respondents affect the intended relationship between the framing of messages and their effectiveness.

Table 4: Intentions for all the healthy choices.

<i>Intentions</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>	<i>Cronbach's Alpha</i>
<i>Physical activity</i>	150	1.43	5.00	4.034	0.845	0.836
<i>Fruit and vegetable consumption</i>	137	1.00	5.00	2.567	1.346	0.874
<i>Hours of sleeping</i>	127	1.00	5.00	4.032	1.103	0.712
<i>Obesity detection</i>	123	2.00	9.33	6.772	1.264	0.604

6.1.3 Effectiveness of gain-framed and loss-framed messages

In addition to the descriptive results, it was also investigated whether gain-framed and loss framed messages are actually effective and how convincing they are. Various scales were used to measure effectiveness. These scales are based on previous studies. How effectiveness was measured for each component is described in the methodology section. This section provides a brief explanation what the results are for those components.

6.1.3.1 Effectiveness of framed messages on physical activity

To measure the effectiveness of a framed message on the healthy choice 'physical activity' various questions were asked. The questions were answered on a 5-point Likert scale, where 1 was the least and 5 the most. Cronbach's alpha measures the internal reliability of the scale. Cronbach's alpha is equal to 0.779, which means the internal reliability is acceptable. In table 25, which can be found in Appendix 2, the overall results of the effectiveness of physical activity are presented. But what matters most is what the results are after reading a gain-framed or a loss-framed message. Does the effectiveness after reading a gain-framed message differ from the effectiveness observed after reading a loss-framed message? As can be seen in Table 5, the average effectiveness of people who have read a gain-framed message is 4.021 out of 5. For people who read a loss-framed messages the average effectiveness is equal to 3.981 out of 5 (Table 6). So, there is a difference between the effectiveness of gain-framed and loss-framed messages. Gain-framed messages are more effective than loss-framed messages in terms of physical activity, but this difference is very small. An independent t-test was used to test whether the differences in the means of effectiveness of loss- and gain-framed messages were significant. With a p-value of 0.736, the null hypothesis cannot be rejected, so there is no difference between the effectiveness of gain-framed messages compared to loss-framed messages.

6.1.3.2 Effectiveness of framed messages on fruit and vegetable consumption

For the fruit and vegetable consumption component, as with physical activity, a scale was drawn up to measure the effectiveness of the framed messages. This showed that the effectiveness for people who have read a gain-framed message is equal to 6.631 out of 10, while the effectiveness for people who have read a loss-framed message is equal to 5.926 out of 10. The fact that gain-framed messages are more effective than loss-framed messages in an aspect such as fruit and vegetable consumption, which falls under obesity prevention, confirms the results of existing literature. An independent t-test shows that this difference is significant, as the corresponding p-value is 0.008. This means that the null hypothesis can be rejected and that there is a significant difference between the effectiveness of gain-framed messages on fruit and vegetable consumption, compared to loss-framed messages.

Furthermore, it is remarkable that the standard deviation of this scale is fairly high. This means that the spread of the perceived effectiveness of respondents is large. Lastly, the Cronbach's alpha of this scale is equal to 0.864, which means that the Cronbach's alpha is good. If the item "to what extent do you agree with the following statement: I feel strong emotions when reading the message about eating fruit and vegetables" were to be removed, the Cronbach's alpha would rise from 0.864 to 0.876. But because this difference is very small, this item is not removed.

6.1.3.3 Effectiveness of framed messages on hours of sleep

A scale was also used to measure the effectiveness of framed messages on the hours of sleep. The mean of the effectiveness after reading a gain-framed message is 1.905 out of 5 while the mean of the effectiveness after reading a loss-framed message is 2.159 out of 5. Both means of the effectiveness are low which means that showing a framed message for promoting enough sleep seems not that effective. The internal reliability of this scale is good, because Cronbach's Alpha is equal to 0.807. Contrary to expectations of the literature, which expects gain-framed messages to be more effective for prevention, loss-framed messages are more effective for promoting enough sleep. But the difference is small. The independent sample t-test shows that this difference is significant on a level of 0.1 ($p = 0.09$). Therefore, the null hypothesis can be rejected. This means there is a significant difference between the effectiveness after reading a gain-framed message instead of a loss-framed message for promoting enough sleep.

6.1.3.4 Effectiveness of framed messages on obesity detection

Finally, a scale for obesity detection was applied in the same way. The effectiveness of a gain-framed message on obesity detection is equal to 5.014 out of 10 and the effectiveness of a loss-framed message on obesity detection is equal to 4.786 out of 10. This result goes against expectations, as loss-framed messages were expected to be more effective for risky behavior, such as obesity detection or cancer screenings. Whether this result is statistically significant is tested with an independent sample t-test. The test shows that the difference is not statistically significant ($p = 0.370$). This means the null

hypothesis, that there is no difference, cannot be rejected. Therefore, there is no difference between the effectiveness of loss-framed messages on obesity detection, compared to gain-framed messages. The Cronbach's Alpha has a value of 0.856, which means the internal reliability is good.

Table 5: Effectiveness of the gain-framed messages on promoting healthy choices

<i>Effectiveness of gain-framed messages</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
<i>Physical activity</i>	70	2.25	5.00	4.021	0.662
<i>Fruit and vegetable consumption</i>	65	1.86	10.00	6.631	1.449
<i>Hours of sleeping</i>	58	1.00	3.00	1.905	0.752
<i>Obesity detection</i>	56	1.56	7.56	5.014	1.305

Table 6: Effectiveness of the loss-framed messages on promoting healthy choices

<i>Effectiveness of loss-framed messages</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
<i>Physical activity</i>	67	1.00	5.00	3.981	0.727
<i>Fruit and vegetable consumption</i>	62	1.71	9.00	5.926	1.518
<i>Hours of sleeping</i>	66	1.00	4.00	2.159	0.886
<i>Obesity detection</i>	66	1.78	8.22	4.786	1.462

6.1.4 Effect of framed messages on the emotions of individuals

In addition to the demographic characteristics, the pre-manipulation questions and the effectiveness questions, people were also asked about the emotions they felt after reading a gain framed message or a loss framed message. This was tested using questions on a 5-points Likert scale such as: "To what extent do you agree with the following statement: I feel happy after reading the message about physical activity" or "To what extent do you agree with the following statement: When I read the message about sleeping, I felt scared." Respondents were also asked twice to assess the tone of the message by answering the following question: "How do you rate the language used from -4 to 4 (positive or negative) in the message about eating fruit and vegetables."

How respondents felt after reading a gain framed or a loss framed message was compared. This is relevant in order to investigate whether reading a framed message makes an impression and whether this influences the emotions of respondents. As shown in table 7, respondents who have read a gain-framed message about being physical active feel in general happier than respondents who have a read a loss-framed message about being physical active. On the contrary, people who have read a loss-framed message about physical activity generally feel more relieved, anxious, and sad than people who have read the gain-framed message (table 8). For the message about sleeping, almost the same applies. People who read the gain-framed message about sleeping feel more happy and more satisfied than people who read the loss-framed message, while people who read the loss-framed message feel more anxious and

sadder than people who read the gain-framed message. Lastly, for the factors 'fruit and vegetable consumption' and 'obesity detection', language use was asked for. For gain-framed messages people rated the messages about fruit and vegetable consumption and obesity detection on a scale from minus four to plus four on average a 1.631 and 0.769 respectively. This means respondents rate the messages more positive than negative, but not extremely positive. For loss-framed messages, people rated the messages about fruit and vegetable consumption and obesity detection on a scale from -4 to 4 on average -0.21 and 0.5 respectively. Logically, respondents rated the loss-framed messages more negatively than the gain-framed messages. However, when looking at the scale (from -4 to 4), these averages are not very low, contrary to expectations.

In conclusion, although some differences are small, it is showed that people feel differently after reading a gain-framed or a loss-framed message. People who have read a gain-framed message feel in general happier than people who have read a loss-framed message. In addition, people who have read a loss-framed message feel in general more scared and sadder than people who have read a gain-framed message. This means that, as expected, framed messages influence how people feel. This does not mean that it actually influences the behavior people display.

Table 7: Emotional state after reading a gain-framed message

		<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
Physical activity	Happy	70	2	5	3.69	0.753
	Relieved	70	1	5	3.01	0.876
	Sad	70	1	4	1.76	0.824
	Anxious	70	1	4	1.67	0.717
Fruit and vegetable consumption	Language use	65	-4	4	1.631	1.719
Hours of sleep	Happy	58	1	5	3.40	0.990
	Satisfied	58	2	5	3.62	0.875
	Angry	58	1	5	1.81	0.847
	Anxious	58	1	5	1.76	0.779
Obesity detection	Language use	56	-3	4	0.769	1.918

Note: This table presents how respondents feel after reading a gain-framed message. On a 5-point Likert scale respondents had to indicate to what extent they felt happy or anxious after reading the gain-framed message, for example.

Table 8: Emotional state after reading a loss-framed message

		<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
Physical activity	Happy	67	1	5	3.22	1.042
	Relieved	67	1	5	3.00	0.985
	Sad	67	1	4	2.3	1.073
Fruit and vegetable consumption	Anxious	67	1	4	2.3	1.015
	Language use	62	-4	4	-0.21	2.166
Hours of sleep	Happy	66	1	5	2.86	0.892
	Satisfied	66	1	5	3.21	0.869
	Angry	66	1	5	1.94	0.875
	Anxious	66	1	4	1.89	0.844
Obesity detection	Language use	66	-4	3	0.5	1.994

Note: This table presents how respondents feel after reading a loss-framed message. On a 5-point Likert scale respondents had to indicate to what extent they felt happy or anxious after reading the loss-framed message, for example.

6.1.5 correlations

Using the tables 9, 10, 11 and 12, the correlation between variables was measured. Bivariate correlations show the relationship between effectiveness, framed messages, intentions, gender, age, BMI and educational level.

For the healthy choices physical activity and regularly checking your BMI there is no relationship between framing messages and the effectiveness. But the tables show that for the healthy choices fruit and vegetable consumption and hours of sleep, there is a relationship between framing messages and the effectiveness. This means that it is expected that a gain-framed message will increase the effectiveness of the fruit and vegetable consumption with 0.233. This correlation is significant on a level of 0.01. For the hours of sleep, it is expected that a gain-framed message decreases the effectiveness with -0.153. This relation is significant on a level of 0.1.

Furthermore, it is remarkable that the intentions that respondents have for physical activity are correlated with the effectiveness of a framed message. The same is true for respondents' intentions to consume fruits and vegetables and to check their BMI regularly. This means that people who plan to exercise on a daily basis, plan to eat a lot of fruit and vegetables and plan to monitor their BMI regularly are expected to feel more engaged with the content of the framed message than people who do not have these intentions. Thus, people are expected to find the message they read more interesting, relevant and emotional when they have high intentions for these healthy choices.

Additionally, it is interesting that the control variables for the healthy choices, physical activity, fruit and vegetable consumption and hours of sleep are not significant. This would therefore suggest that these variables have no influence on the effectiveness. However, for the healthy choice 'monitor your

BMI regularly', the control variables gender, age and BMI are significant. It is expected that men, older people and people with a higher BMI will report higher effectiveness after reading a framed message about obesity detection.

Finally, the self-reported autonomy, which is measured with 21 items, is also remarkable. For the effectiveness of framed messages on promoting physical activity, the self-reported autonomy is significant on a level of 0.01. This means that if self-reported autonomy goes up by 1 unit (on a scale of up to 5), the effectiveness of a framed message in promoting physical activity is expected to go up by 0.298. For the other healthy choices, the variable 'self-reported autonomy' was not significant.

Table 9: Bivariate correlation between variables for physical activity

	1	2	3	4	5	6	7
1. Effectiveness framed messages on physical activity							
2. Gain-framed message	0.029						
3. Intentions	0.280***	0.044					
4. Gender	0.008	0.039	0.031				
5. Age	-0.009	0.023	0.043	-0.278***			
6. BMI	0.044	0.004	-0.144*	-0.222***	0.501***		
7. Educational level	-0.007	0.016	0.094	-0.121	0.209***	0.000	
8. Self-reported autonomy	0.298***	0.127	0.314***	0.035	0.186**	0.051	0.093

* Significant at a level of 10%
 ** Significant at a level of 5%
 *** Significant at a level of 1%

Table 10: Bivariate correlation between variables for fruit and vegetable consumption

	1	2	3	4	5	6	7
1. Effectiveness framed messages on fruit and vegetable consumption							
2. Gain-framed message	0.233***						
3. Intentions	0.434***	0.133					
4. Gender	-0.009	-0.024	0.032				
5. Age	-0.079	0.029	-0.160	-0.278***			
6. BMI	-0.039	0.095	-0.128	-0.222***	0.501***		
7. Educational level	-0.118	0.065	-0.072	-0.121	0.209***	0.000	
8. Self-reported autonomy	0.100	-0.111	0.028	0.035	0.186**	0.051	0.093

* Significant at a level of 10%

** Significant at a level of 5%

*** Significant at a level of 1%

Table 11: Bivariate correlation between variables for hours of sleep

	1	2	3	4	5	6	7
1. Effectiveness framed messages on hours of sleep							
2. Gain-framed message	-0.153*						
3. Intentions	-0.040	0.138					
4. Gender	0.049	-0.021	0.052				
5. Age	-0.006	0.083	-0.029	-0.278***			
6. BMI	0.005	0.110	-0.079	-0.222***	0.501***		
7. Educational level	-0.110	0.006	0.122	-0.121	0.209***	0.000	
8. Self-reported autonomy	0.038	0.013	0.214**	0.035	0.186**	0.051	0.093

* Significant on level of 10%

** Significant on level of 5%

*** Significant on level of 1%

Table 12: Bivariate correlation between variables for obesity detection

	1	2	3	4	5	6	7
1. Effectiveness framed messages on obesity detection							
2. Loss-framed message	-0.082						
3. Intentions	0.520***	-0.109					
4. Gender	-0.197**	0.028	0.023				
5. Age	0.224**	0.103	0.011	-0.278***			
6. BMI	0.318***	-0.050	0.226**	-0.222***	0.501***		
7. Educational level	-0.001	0.082	0.004	-0.121	0.209***	0.000	
8. Self-reported autonomy	0.116	-0.019	0.216**	0.035	0.186**	0.051	0.093

* Significant on level of 10%
 ** Significant on level of 5%
 *** Significant on level of 1%

6.1.6 regressions

In addition to the correlations, hierarchical regressions were also performed to predict the effectiveness of framed messages on promoting the healthy choices. For this, the method described by Churchill and Pavey (2013) was followed. Hierarchical regressions are applicable for estimating the contribution of additional variables (Lewis, 2007). Therefore, incremental validity can be investigated.

The variables ‘framed message’ and ‘gender’ were coded as dummy variables. For gender, men were given the value ‘0’ and women the value ‘1’. The regressions thus reflect the value of change from male to female. The variable ‘framed message’ was also coded as a dummy variable. The loss-gained messages were given a value of ‘0’, and the gain-framed messages a value of ‘1’ for the regressions on physical activity, fruit and vegetable consumption and the hours of sleep. For the regression on obesity detection, the opposite is true: the gain-framed message was assigned a value of ‘0’, and the loss-framed message a value of ‘1’. These values are inverted, because for obesity detection, loss-framed messages are expected to be more effective, whereas for physical activity, fruit and vegetable consumption and hours of sleep, gain-framed messages are expected to be more effective. It is more insightful to give the more effective message a value of 1.

First of all, the relationship between a gain- or loss-framed message and the effectiveness for a certain healthy choice was investigated. This is shown in step 1 in tables 13, 14, 15 and 16. For instance, table 14 shows that the effectiveness of a framed message on promoting physical activity increases by 0.04 when someone reads a gain-framed message. However, this result is not significant.

In the next step, the respondents' intentions regarding the healthy choices were also checked. The intentions of respondents contribute significantly to the effectiveness for the healthy choices 'physical activity', 'fruit and vegetable consumption' and 'obesity detection'. For physical activity, the intentions of respondent to exercise regularly, contribute significantly to the effectiveness ($p < 0.01$), explaining an additional 7.6% of the variance, $\Delta R^2 = 0.076$. Next, for the fruit and vegetable consumption, the intentions of respondents to eat enough fruit and vegetables, contribute significantly to the effectiveness ($p < 0.01$), explaining an additional 16.2% of the variance, $\Delta R^2 = 0.162$. Finally, the intentions of respondent to regularly check his or her BMI, contributes significantly to the effectiveness ($p < 0.01$), explaining an additional 25,6% of the variance, $\Delta R^2 = 0.256$. This means that people who intend to exercise regularly, eat a lot of fruit and vegetables and regularly check their BMI report higher effectiveness, and are thus more engaged with the framed message and find it more interesting than people who have low intentions for the particular healthy choice.

In step 4, step 5, step 6 and step 7, the regression controlled for the variables gender, age, BMI and education level. In the regressions of physical activity, fruit and vegetable consumption and hours of sleep, these control variables significantly contributed to predicting effectiveness. For the regression of obesity detection, the variables gender and age were significant at the 10% level, but only explaining an additional 4.9% and 2.3% of the variance respectively.

Finally, the self-reported autonomy only contributed significantly to the predicted effectiveness for physical activity ($p < 0.1$), explaining an additional 6.6% of the variance, $\Delta R^2 = 0.066$.

6.1.7 Accepting or rejecting hypotheses

For each hypothesis, a test was carried out to determine whether the hypothesis can be accepted or rejected. Therefore, this section briefly explains how the hypothesis was tested and what the results were for each hypothesis.

6.1.7.1 Hypothesis 2

Several regressions were performed to test the following hypothesis:

Hypothesis 2a: Gain-framed messages are effective for increasing exercising.

Hypothesis 2b: Gain-framed messages are effective for increasing fruit and vegetable consumption.

Hypothesis 2c: Gain-framed messages are effective for increasing hours of sleep per night.

Hypothesis 2d: Loss-framed messages are effective for obesity detection.

First of all, table 13 shows that there is no significant relationship between gain-framed messages and the effectiveness. This means that gain-framed messages are not more effective than loss-framed messages. Therefore, the null hypothesis cannot be rejected. This means there is no significant effect

and the Hypothesis 2a: “Gain-framed messages are effective for increasing exercising” is rejected.

Secondly, table 14 shows a significant relationship between gain-framed messages and the reported effectiveness. The variable ‘message framing’ is significant ($p < 0.01$) and contributes to the additional variance with 5.4%. This means that it is predicted when an individual reads a gain-framed message about fruit and vegetable consumption, the effectiveness increases with 0.705 on a scale with minimum 1 and maximum 5. Therefore, the null hypothesis, that there is no effect, is rejected and Hypothesis 2b: “Gain-framed messages are effective for increasing fruit and vegetable consumption” is accepted.

Thirdly, table 15 shows that for promoting hours of sleep loss-framed messages are more effective than gain-framed message. This relationship is significant ($p < 0.1$) and contributes to the additional variance with 2.3%. This means that when an individual reads a loss-framed message about hours of sleep, the effectiveness increases with 0.254 on a scale with minimum 1 and maximum 5. The hypothesis is not accepted, because it was expected that gain-framed messages would be more effective for promoting hours of sleep to decrease obesity, but the opposite is true. Loss-framed messages are more effective for promoting hours of sleep. Therefore, the Hypothesis 2c “Gain-framed messages are effective for increasing hours of sleep per night” is rejected.

Lastly, table 16 shows that there is no significant relationship between loss-framed messages and the effectiveness. This means that loss-framed messages are not more effective than gain-framed messages for obesity detection. Therefore, the null hypothesis cannot be rejected. This means there is no effect and Hypothesis 2d: “Loss-framed messages are effective for obesity detection” is rejected.

Table 13: Hierarchical regressions of message framing on promoting physical activity

Step	Added variables	β (step 1)	β (step 2)	β (step 3)	β (step 4)	β (step 5)	β (step 6)	β (step 7)
1	Gain-framed message	0.040	0.012	0.011	0.026	0.030	0.012	-0.052
2	Intention		0.232***	0.233***	0.236***	0.240***	0.219***	0.216***
3	Gender			0.017	0.032	0.029	0.053	0.030
4	Age				0.000	0.001	-0.004	-0.005
5	Educational level					-0.021	0.003	0.016
6	BMI						0.028	0.025
7	Self-reported autonomy							0.329*
	R^2	0.001	0.078	0.078	0.083	0.085	0.087	0.153
	ΔR^2	0.001	0.076	0.000	0.005	0.002	0.002	0.066

* Significant on level of 10%
 ** Significant on level of 5%
 *** Significant on level of 1%

Table 14: Hierarchical regressions of message framing on promoting fruit and vegetable consumption

Step	Added variables	β (step 1)	β (step 2)	β (step 3)	β (step 4)	β (step 5)	β (step 6)	β (step 7)
1	Gain-framed message	0.705***	0.514**	0.514**	0.506**	0.527**	0.546**	0.532**
2	Intention		0.460***	0.461***	0.461***	0.454***	0.434***	0.447***
3	Gender			-0.077	-0.091	-0.109	-0.012	-0.007
4	Age				-0.001	0.001	0.001	0.001
5	Educational level					-0.091	-0.098	-0.119
6	BMI						0.000	0.004
7	Self-reported autonomy							0.215
	R^2	0.054	0.216	0.217	0.217	0.226	0.247	0.255
	ΔR^2	0.054	0.162	0.001	0.000	0.009	0.021	0.008

* Significant on level of 10%
 ** Significant on level of 5%
 *** Significant on level of 1%

Table 15: Hierarchical regressions of message framing on promoting enough sleep

Step	Added variables	β (step 1)	β (step 2)	β (step 3)	β (step 4)	β (step 5)	β (step 6)	β (step 7)
1	Gain-framed message	-0.254*	-0.249*	-0.245	-0.247	-0.260*	-0.263*	-0.249
2	Intention		-0.015	-0.017	-0.017	-0.005	-0.033	-0.035
3	Gender			0.072	0.081	0.070	-0.019	-0.016
4	Age				0.001	0.002	-0.002	-0.002
5	Educational level					-0.062	-0.045	-0.049
6	BMI						0.005	0.009
7	Self-reported autonomy							0.170
	R^2	0.023	0.024	0.026	0.026	0.039	0.041	0.044
	ΔR^2	0.023	0.001	0.002	0.000	0.013	0.002	0.003

* Significant on level of 10%
 ** Significant on level of 5%
 *** Significant on level of 1%

Table 16: Hierarchical regressions of message framing on promoting checking BMI regularly

Step	Added variables	β (step 1)	β (step 2)	β (step 3)	β (step 4)	β (step 5)	β (step 6)	β (step 7)
1	Gain-framed message	-0.228	-0.049	-0.049	-0.074	-0.067	-0.039	-0.042
2	Intention		0.574***	0.577***	0.572***	0.573***	0.531***	0.536***
3	Gender			-0.575***	-0.428*	-0.436*	-0.415*	-0.407
4	Age				0.013*	0.013**	0.009	0.009
5	Educational level					-0.054	-0.028	-0.028
6	BMI						0.044	0.043
7	Self-reported autonomy							-0.073
	R^2	0.007	0.263	0.312	0.335	0.339	0.307	0.307
	ΔR^2	0.007	0.256	0.049	0.023	0.004	-0.032	0.000

* Significant on level of 10%
 ** Significant on level of 5%
 *** Significant on level of 1%

6.1.7.2 Hypothesis 3

In addition, it is investigated if for women gain-framed messages are more persuasive for obesity prevention with the following hypothesis:

Hypothesis 3: For women gain-framed messages will be more persuasive for obesity prevention.

Obesity prevention only includes the healthy choices of 'physical activity', 'fruit and vegetable consumption' and 'enough sleep'. Table 18 and Table 19 presents the means of effectiveness for females. First, the effectiveness for physical activity for females after reading a gain-framed message is equal to 4.052, while this effectiveness is equal to 3.955 when females have read a loss-framed message. Whether this difference is statistically significant was tested with an independent sample t test. With an p-value of 0.529 it can be concluded that there is no difference in the effectiveness of gain-framed and loss-framed messages on physical activity for females. Therefore, hypothesis 3 cannot be accepted for physical activity.

Secondly, the effectiveness after reading a gain-framed message instead of a loss-framed message is 0.466 higher for the fruit and vegetable consumption. It is also tested whether this difference is significant. The difference of 0.466 is not significant ($p=0.927$). Hence also, for the fruit and vegetable consumption the hypothesis cannot be accepted and therefore it cannot be concluded that gain-framed messages are more effective than loss-framed messages.

Finally, table 17 and table 18 show that the mean of effectiveness for hours of sleep after reading a gain-framed message is 1.794 while this mean is equal to 2.298 when females have read a loss-framed message. It is remarkable that loss-framed messages seem to be more effective than gain-framed messages. But this difference is also not significant with a p-value of 0.527. Therefore, hypothesis 3 cannot be accepted for promoting enough sleep. Hence, it cannot be concluded which framed message is more effective for promoting enough sleep.

Table 17: Effectiveness of gain-framed messages on healthy choices for females

<i>Effectiveness of gain-framed messages for females</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
<i>Physical activity</i>	43	2.25	5.00	4.052	0.621
<i>Fruit and vegetable consumption</i>	40	1.86	10.00	6.504	1.648
<i>Hours of sleeping</i>	34	1.00	3.00	1.794	0.770
<i>Obesity detection</i>	34	1.56	7.56	4.824	1.434

Table 18: Effectiveness of loss-framed messages on healthy choices for females

<i>Effectiveness of loss-framed messages for females</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
<i>Physical activity</i>	39	1.00	5.00	3.955	0.769
<i>Fruit and vegetable consumption</i>	38	1.71	8.71	6.038	1.623
<i>Hours of sleeping</i>	42	1.00	4.00	2.298	0.849
<i>Obesity detection</i>	40	1.78	7.89	4.542	1.471

For males, it is also tested whether gain-framed or loss-framed messages are more effective for promoting healthy choices. From tables 19 and 20 it seems that loss-framed messages are more effective for promoting physical activity, gain-framed messages are more effective for promoting eating enough fruit and vegetables and gain-framed messages are more effective for promoting enough sleep. To test if the differences in means are statically significant, an independent sample t test were performed. With a p-value of 0.811 the effectiveness after reading a gain-framed message or loss-framed message does

not differ significantly for physical activity. For the fruit and vegetable consumption the same applies. Neither gain-framed messages nor loss-framed messages are more effective for promoting fruit and vegetable consumption ($p = 0.974$). Lastly, the difference in means for promoting enough sleep is also not significant ($p = 0.336$).

To conclude, this study does not prove that gain-framed or loss-framed messages are more effective for promoting healthy choices for males.

Table 19: Effectiveness of gain-framed messages on healthy choices for males

<i>Effectiveness of gain-framed messages for males</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
Physical activity	27	2.25	5.00	3.972	0.732
Fruit and vegetable consumption	25	4.43	8.57	6.834	1.054
Hours of sleeping	24	1.00	3.00	2.063	0.712
Obesity detection	22	3.44	7.00	5.308	1.038

Table 20: Effectiveness of loss-framed messages on healthy choices for males

<i>Effectiveness of loss-framed messages for males</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
Physical activity	28	2.50	5.00	4.018	0.678
Fruit and vegetable consumption	24	3.43	9.00	5.75	1.348
Hours of sleeping	24	1.00	4.00	1.917	0.917
Obesity detection	26	2.56	8.22	5.162	1.391

6.1.7.3 Hypothesis 4

It is also investigated if there is a relationship between message framing and autonomy with the following hypothesis:

Hypothesis 4: Gain-framed messages are more persuasive for individuals with a high level of autonomy.

Table 21 and Table 22 presents the mean of effectiveness for each healthy choice, separated by respondents who reported a high level of autonomy and respondents who reported a low level of autonomy. The mean of the self-reported autonomy is equal to 4.08. Therefore, a low level of autonomy is defined as a value of smaller than 4, while a high level of autonomy is equal or higher to 4. Furthermore, 71 respondents reported a high level of autonomy, while 50 respondents reported a low level of autonomy.

For physical activity and obesity detection, the effectiveness is higher when respondent have reported a high level of autonomy. But for the fruit and vegetable consumption and hours of sleep the effectiveness after reading a gain-framed message is higher when respondents reported a low level of autonomy. Hence, only for the healthy choices ‘physical activity’ and ‘obesity detection’, the theory of Churchill and Pavey (2013) may be applicable.

With an independent sample t test, it is checked whether the findings that gain-framed messages are more persuasive for individual with a high level of autonomy for the healthy choices ‘physical activity’ and ‘obesity detection’ are statistically significant.

For physical activity the mean of effectiveness after reading a gain-framed message for respondents with a high level of autonomy is equal to 4.147, while this mean for people with a low level of autonomy is equal to 3.815. This difference is statistically significant ($p < 0.001$) and therefore it can be concluded that gain-framed messages are more persuasive for individuals with a high level of autonomy for promoting physical activity.

For obesity detection was similarly tested to see if the difference in means is significant. This difference is not significant ($p = 0.112$). Therefore, it can be concluded that gain-framed messages are not more persuasive for individuals with a high level of autonomy for promoting obesity detection.

To conclude, hypothesis 4 can only be accepted for the healthy choice physical activity. For physical activity gain-framed messages are more persuasive for individuals with a high level of autonomy. For the other healthy choices, the theory of Churchill and Pavey (2013) is not applicable.

Table 21: Effectiveness of gain-framed messages on healthy choices for respondents with high self-reported autonomy

Effectiveness of gain-framed messages	N	Minimum	Maximum	Mean	SD
Physical activity	39	2.25	5.00	4.147	0.633
Fruit and vegetable consumption	37	1.86	10.00	6.548	1.537
Hours of sleep	34	1.00	3.00	1.824	0.727
Obesity detection	35	2.78	7.56	5.064	1.147

Table 22: Effectiveness of gain-framed messages on healthy choices for respondents with high self-reported autonomy

Effectiveness of gain-framed messages	N	Minimum	Maximum	Mean	SD
Physical activity	23	2.25	4.75	3.815	0.654
Fruit and vegetable consumption	26	2.57	9.00	6.731	1.394
Hours of sleep	23	1.00	3.00	2.065	0.773
Obesity detection	21	1.56	7.00	4.931	1.560

6.1.7.4 Hypothesis 1

Finally, it was examined whether gain-framed messages and loss-framed messages overall contribute to obesity cessation with the following hypotheses:

Hypothesis 1a: Gain-framed messages will improve obesity cessation.

Hypothesis 1b: Loss-framed messages will improve obesity cessation.

It can be concluded that both hypotheses cannot be accepted, because the effect of gain-framed and loss-framed messages on obesity cessation differs per healthy choice. For increasing physical activity, neither gain-framed nor loss-framed message help to reduce obesity. For promoting fruit and vegetable consumption, gain-framed messages are more effective than loss-framed message and therefore help to reduce obesity. Thirdly, for promoting enough sleep, loss-framed messages are significantly more effective than gain-framed messages and therefore contribute to obesity cessation. Lastly, for promoting obesity detection, so regularly checking your BMI, neither gain-framed nor loss-framed messages have an effect.

Hence, there is no general conclusion on how best to achieve obesity cessation. It is important to use different marketing strategies for the various aspects that contribute to obesity reduction (getting enough exercise, eating enough fruit and vegetables, getting enough sleep and regularly checking your BMI). For instance, supermarkets can best promote the consumption of enough fruit and vegetables by means of a campaign 'stay healthy, eat your veggies and fruit' instead of 'not eating enough veggies and fruits make you unhealthy'. For promoting adequate sleep, marketers are better off using a loss framed message, such as "chronic sleep deprivation can lead to heart disease, hypertension, brain hemorrhage and diabetes. For marketers, this research shows that in general message framing is not very effective for promoting healthy choices.

6.1.8 Conclusion

To conclude, this study shows that employing message framing is effective in promoting getting enough sleep and eating enough fruits and vegetables. The regressions showed that promoting getting enough sleep is best done by employing loss framing messaging. Whereas when promoting eating enough fruits and vegetables, gain-framed messaging is better used to see the greatest possible results. For the components of promoting enough exercise and monitoring your BMI regularly, both gain-framed messages and loss-framed messages do not appear to contribute significantly to this.

In the next section, the qualitative interviews conducted will elaborate on these results.

6.2 Qualitative results

In addition to the quantitative analysis, in-depth interviews were conducted in order to obtain a deeper and more complete picture of the hypotheses tested. A total of 7 in-depth interviews were conducted with people of different ages, gender and education levels.

6.2.1 Conducting the interviews and the analysis

The in-depth interviews were conducted online. Before the interview took place, the respondent was given an Informed Consent form which had to be read through and signed. At the beginning of the interview, this was briefly gone through again and additional questions were asked if the respondent agreed to recording the conversation. After this, the recording started.

Afterwards, the interview was transcribed. These transcriptions were uploaded in the program Atlas. In this program the process of coding was carried out. The coding process consisted of three phases: open coding, axial coding and selective coding (Gioia, Corley & Hamilton, 2013). Various topics were discussed and coded and these were made transparent in a code tree. The code tree can be found in Appendix 5.

6.2.2 Results

6.2.2.1 Explanations for the non-significant results

The quantitative analysis showed that overall message framing is not significantly effective for promoting healthy choices. Nevertheless, for some healthy choices gain-framed or loss-framed messages were found to have a significant impact on promoting these healthy choices. During the interviews it appeared that the non-significant results were expected by some respondents. An example of this is that respondents said that everything, but anything, should be done to get people to make healthy choices. Although message framing is an appropriate instrument for promoting healthy behavior, it is only one part of a larger combination of strategies. For example, in the following quote a respondent indicates that a strategy should be implemented that suits everyone and that every effort should be made to get people to make healthy choices:

“You must go all out. So, one wants to prove movement with a gadget on his watch. The other wants to be in an Ommetjes app and they want to compete against others. The next one wants to wear, I don't know, fun sports socks. And the next one wants to read about it. Hence, you have to pull out all the stops you can to influence somebody. So, I also think that there's not one tool that's very effective, but it's everything a little bit. If someone in a group that you feel related to suddenly runs a mile every day, people think if they do it, I can do it too. I think you have to put in a whole mix, where not one instrument is going to yield the most, but where the total is going to yield the most”.

In addition, another respondent explains that just message framing is not enough. Politics is also needed to develop policies, making healthy things more attractive and unhealthy things more unattractive. For example, a sugar tax could be considered. But in addition to politics, psychology is also needed to study behavioral processes:

Therefore, you really have to pull out all the stops. A lot of psychology is involved. How can you convince people to change their behavior? And really changing their behavior is the very hardest thing in the world.

This proves that it is an interdisciplinary problem, which also involves a piece of policy and psychology, in addition to marketing.

6.2.2.1 Context of the effectiveness of message framing

Furthermore, respondents were divided on whether gain-framed messages or loss-framed messages work better. Arguments were presented for both sides. For example, respondents indicated that gain-framed would work better because it would be motivating. In addition, gain-framed messages help to promote positive activities, such as exercising. Exercising is supposed to be something fun and relaxing for people, so a positive approach should be part of that. When the dangers of non-sports are used, sports are more likely to become something negative in people's minds.

On the other hand, loss-framed messages could also be effective because they are hard and clear messages. A real confrontation is sometimes needed to spur people into action. The following quotations illustrate this contradiction:

For example, I think that with things that are positive, such as exercise and fruit and vegetables, the gain-framed messages work very well. But I think, for example, that it also differs per person, because if you have someone who is obese or has obesity, it's also important to explain the dangers. That can also be just the eye-opener or the button to turn, that the person knows what the risks are. Furthermore, I think in order to make a big change, it may be important to make the negative part clear, but I do think you need the positive to be able to change it for the long term. But then in small steps. So that you make it small success experiences.

Another cite shows that gain-framed messages are seen as more effective, except when the negative framing comes from the immediate environment:

I think positive often works better than negative anyway. Because it's better to tempt people than to punish them. And negative framing, is also punishing. Unless the influence comes from the immediate environment. If I had been smoking and my children said, "Dad, we don't want you to die 10 years earlier", well, that's different. And that could also be people who are not in your immediate surroundings, but further away, but whom you trust. So, if a Dutch celebrity says, 'I've stopped smoking, otherwise I will die early', that has an impact on a certain group in the Netherlands.

Furthermore, the existing literature showed that gain-framed messages are more effective for prevention, while loss-framed messages are more effective for detection. Respondents confirm this theory. Respondents think that preventive activities, such as exercising, should be promoted by gain-framed messages:

Because with those relatively small preventive things, you have a kind of control there. Then you have something like I can now take a decision that I really will walk those 5 kilometers every day. Or really every day, not take those chips, but those tomatoes. Or that every day one hour before I go to bed, I don't go on my screen, because then I sleep better. Those are small things that you have control over and by using gain-framed messages, these decisions get are rewarded.

Although preventive activities with little risk are better approached in a gain-framed way, respondents see this differently for the preventive activity 'sleep'. Here several respondents think that loss-framed can also be effective because many people are unaware of the effect of getting enough sleep and are quick to think that they get enough and sleep well.

Yet most respondents are convinced that gain-framed messages are more effective in actually changing behavior. Gain-framed messages give people a push to choose the healthy choice. Although loss-framed messages are generally seen as less effective by respondents, these messages do affect people. After reading the messages, respondents sometimes feel anxious, fearful, and gloomy. Loss-framed messages therefore can be a real eye-opener for certain groups.

Besides the fact that there is no consensus on whether gain-framed or loss-framed messages work better, context also plays a role. For example, respondents claim that gain-framed messages work better for people who are already engaged in a healthy lifestyle:

I think people who are already planning it at all you might want to give them a gain frame to give them the final push as it were. Whereas people who don't really intend to do it at all might be better off being loss-framed to encourage them to do something in the first place.

It is more difficult to reach the people who do not care about a healthy lifestyle. This group needs to be encouraged to make healthy choices. How can people be encouraged to go from exercising 0 times to exercising 2 times a week? Therefore, loss-framed messages can be effective, to wake these people up. This is where a clear and hard-hitting message can help, presenting the risks of unhealthy choices. For people who are already engaged in a healthy lifestyle, gain-framed messages can further motivate and encourage them.

In addition to the (existing or non-existing) intentions of people, how people feel can also influence the effectiveness of framing. For example, how you feel mentally or physically can affect whether loss-framed or gain-framed is more appropriate. For example, someone may want to see a different message when watching a sporting event at night than at a time during the day when that same person is under a lot of stress.

To conclude, respondents think in general that gain-framed messages are more effective to change behavior. Healthy eating, exercising and enough sleep should be something positive, so

emphasizing what these healthy choices can bring people is better than emphasizing the risks of not doing so. But sometimes, loss-framing can be a real eye-opener and people become aware of the consequences of an unhealthy lifestyle. Also, the context has an influence, for instance are people already living a healthy lifestyle and how do they feel at the moment of reading a framed message. This section shows that message framing is not a technique that can simply be deployed, and its effectiveness easily measured. For marketers, there is a lot involved in determining what will have the greatest effect. Therefore, marketers should be aware when and for whom they apply message framing.

6.2.2.2 Increasing effectivity by segmenting

It also came up frequently in the interviews that marketers need to consider segments when they want to use message framing as a marketing strategy. For instance, respondents think that elderly people need to be aware of the risks of unhealthy choices. Therefore, loss-framed messages could be more effective for them. For younger people, respondents think educating is very important. Healthy choices should be normalized among children in a positive way. Therefore, gain-framed messages could be more effective for children. Furthermore, marketers should focus on culture, gender, income, certain character traits and residence. For instance, people who live in the city could be more sensitive to loss-framed messages, while people from the countryside could be better be approached with gain-framed messages, because they are more down-to-earth. Either way, marketers should segment groups and target people with the right message:

Yes, different target groups would be possible anyway. You have places where more of the one culture comes, or the other culture comes. So, I think you can really do something with that. And what we already said the children and adults. So partly at school, partly at work, I think you can definitely do something about that. And in terms of, yes, the character traits themselves, so the persistence or just if you're flexible, I think you can do something with that as well. Of course, you can also bring out one advertisement in different ways. So maybe you don't have the same advertisement every hour, but every other hour, one positive and the other negative, in order to try and reach all target groups.

This respondent indicated how marketers might segment in practice. For example, a particular advertisement might be delivered in different ways. Another respondent also indicates that one advertisement can be released in different ways and different media channels can be used for certain segments:

In certain magazines and journals, some are really only read by older people. I think for example a paper newspaper there is also really a certain group in it, that are also somewhat older people. And you also have many things where, for example, many young people are relatively active. For example, I think many young people who watch or read the news go to NU.nl or AD. So, you could then do another message. So, in this way you can distinguish between real groups in an easy way.

To conclude, segmented groups are necessary to make framing as effective as possible for marketers.

6.2.2.3 Other relevant marketing strategies

In addition to message framing, respondents think that other marketing strategies are also needed for promoting healthy choices. For instance, introducing financial incentives can work very well to get people to make healthy choices. Insurers can offer a sports watch. If the buyer exercises a lot, a discount can be given on the premium. Respondents think that people are very sensitive to this. In this way people get a financial incentive and at the same time they are engaged in a healthy lifestyle. But respondents also realize that this can be fraudulent.

Furthermore, respondents think it is helpful to set up campaigns with well-known people. This is effective if people feel connected to the Dutch celebrity. When that somebody they feel connected can do it, they can do it too.

Another marketing strategy that could help, is changing the default option. This can be applied for healthy eating, for example at work or at school. Instead of always offering high-calorie food, canteens can only offer healthy food. If someone wants something else, for example meat, they must be explicitly asked. This requires people to make more of an effort and they are more likely to be satisfied with the option that is given: the healthy choice.

A lot of people don't really have a preference. So, if you get the vegan or the vegetarian lunch then, a lot of people are probably fine with that. And vice versa as well. So that has a lot of effect, I think. So that's a really good one.

Another strategy which could help to make people more aware, is showing what the real price of product would be:

And I also think that it would then help if there are bad things in it, that it says what kind of things are in it. For example, if you buy a fatty snack, how many liters of water are wasted in the making of one frikandel. What the real price would be of a product.

This strategy makes people more aware. Information about nutritional information, getting enough sleep, what a healthy lifestyle entails for children also makes people more aware. A lot of respondents find healthy lifestyle a very interesting topic and they would have liked to get educated about it. They also recommend this to today's children. In order to combat childhood obesity, education can be provided as a standard part of the curriculum. But also, the free distribution of fruits and vegetables at school can help. People must become familiar with healthy choices in a fun way. This could also be offered with serious games, where people can score points. This stimulates people to change behavior.

To conclude, the respondents of the interviews suggested various strategies to promote healthy choices, ranging from the use of Dutch celebrities to the use of game elements.

6.2.2.4 Conclusion

The qualitative analysis showed that the relationship between framing and the effectiveness for making healthy choices is very complex. Just framing is not enough to let people make healthy choices. Although respondents think using gain-framed or loss-framed messages can be very effective, other marketing techniques should be also applied to change behavior of people. Therefore, marketing, psychology and policy is needed to promote healthy choices.

7. Conclusion and discussion

This study investigated the following research question: “*What is the persuasive impact of framed messages on the behavioral intentions for both obesity prevention and obesity detection for Dutch citizens?*” An answer was sought to this research question by conducting both quantitative and qualitative methods. Quantitative tests were conducted in order to test the hypotheses that were formulated. After this, in-depth interviews were conducted in order to examine the results and to investigate the perception of Dutch citizens of the effectiveness of framing. This section proceeds as following: first of all, the findings and conclusions of this study will be discussed, followed by the limitations of this study. Finally, suggestions for follow-up research follow.

7.1 Quantitative results

7.1.1 Hypothesis 1

The relationship between framing and making healthy choices is investigated by answering several hypotheses. The first hypothesis, Hypothesis 1a: *Gain-framed messages will improve obesity cessation* and Hypothesis 1b: *Loss-framed messages will improve obesity cessation*, was rejected. Although the quantitative analysis showed that for some healthy choices gain- and loss-framed messages are effective, this was not found to be the case for all healthy choices. In addition, the salient results that were found by conducting independent t-test and regression, involved small differences. Therefore, the answer to the research question is that overall, it cannot be said that message framing is significantly effective for reducing obesity rates.

7.1.2 Hypothesis 2

Secondly, hypothesis 2 was tested with a quantitative analysis. Hypothesis 2a: *Gain-framed messages are effective for exercising*, was rejected. The regressions showed that there is no significant relationship between gain-framed messages and the effectiveness. This does not confirm the existing literature of O'keefe and Jensen (2015), Bassett-Gunter et al. (2014) and Updegraff (2012), which showed that gain-framing messages have a more positive effect for increasing physical activity. Therefore, the answer to the sub question “*To what extent are gain- and loss-framed messages effective for increasing exercising?*” is that the deployment of gain-framed messages is not significantly more effective than the deployment of loss-framed messages. In contrast, Hypothesis 2b: *Gain-framed messages are effective for increasing fruit and vegetable consumption*, was accepted. The quantitative analysis proved that gain-framed messages are more persuasive than loss-framed messages. Therefore, the answer to the sub question “*To what extent are gain- and loss-framed messages effective for increasing the fruit and vegetable consumption?*” is that gain-framed messages are significantly more effective than loss-framed messages for increasing the fruit and vegetable consumption of Dutch citizens. This does not confirm the literature of Rosenblatt (2018) and O'Keefe and Jensen (2015) who

found, respectively, that loss-framed messages work better and that there is no relationship between framing and choosing healthy food. But these results confirm the theory of Kahneman and Tversky (1979): gain-framed messages are more persuasive than loss-framed messages for preventive activities with low risk.

Furthermore, Hypothesis 2c: *Gain-framed messages are effective for increasing hours of sleep per night*, was rejected. Contrary to the expectations of the literature, loss-framed messages turned out to be significantly more effective for promoting enough sleep than gain-framed messages. Therefore, the answer to the sub question “*To what extent are gain- and loss-framed messages effective for increasing hours of sleep per night?*” is that loss-framed messages are significantly more effective than gain-framed messages for promoting sleep. This does not confirm the theory Kahneman and Tversky (1979) and Gallagher and Updegraff (2012), which claims that for preventive activities with low risk, such as getting enough sleep, gain-framed messages would be more effective.

Finally, Hypothesis 2d: *Loss-framed messages are effective for obesity detection*, was rejected. Regressions showed that there is no significant relationship between loss-frames messaged and the effectiveness for obesity detection. Therefore, the answer to the sub question “*To what extent are gain- and loss-framed messages effective for obesity detection?*” is that loss-framed messages are not significantly more effective than gain-framed messages. This does not confirm the theory of Kahneman and Tversky (1979), which claims that loss-framed messages are more persuasive for risky behavior.

7.1.3 Hypothesis 3

The quantitative analysis also investigated if there is a relationship between gender and persuasiveness of framed messages. The corresponding hypothesis, Hypothesis 3: *For women gain-framed messages will be more persuasive for obesity prevention*, was rejected. This effect is investigated for obesity prevention, which includes physical activity, fruit and vegetable consumption and enough sleep. The data-analysis showed that for women, gain-framed messages are not more persuasive than for men. Therefore, the answer to the sub question “*Does gender and if, to what extent, affects the persuasiveness of framed messages?*” is that gender does not significantly affect the persuasiveness of framed messages.

7.1.4 Hypothesis 4

Finally, the quantitative analysis also investigated whether the level of autonomy affects the persuasiveness of framed messages. The corresponding hypothesis, Hypothesis 4: *Gain-framed messages are more persuasive for individuals with a high level of autonomy*, was rejected. Therefore, the answer to the sub question “*Does the autonomy level of an individual and if, to what extent, affect the persuasiveness of framed messages?*” is that the autonomy level of an individual does significantly affect the persuasiveness for promoting physical activity. But for the other healthy choices, this

relationship has not been found and therefore the autonomy level of an individual does not significantly affect the persuasiveness of framed messages for promoting the fruit and vegetable consumption, hours of sleep and obesity detection.

To conclude, the research showed that gain-framed messages are effective for promoting fruit and vegetable consumption and loss-framed messages are effective for promoting enough sleep. To come back to the research question, gain-framed messages have a significantly persuasive impact on the intentions of fruit and vegetable consumption and loss-framed messages have a significantly persuasive impact on the intentions of sleeping enough for Dutch citizens. For the other healthy choices, physical activity and checking your BMI regularly, there was not found a significantly persuasive impact of framed messages on the intentions of Dutch citizens.

7.2 Qualitative results

In addition to the quantitative analysis, the in-depth interviews showed that overall respondents think that gain-framed messages are more effective than loss-frames messages. Getting people to change their behavior works best if it is done in a positive way that emphasizes the benefits of doing so. For example, respondents believe that physical activity should be something fun for people and that people should experience the pleasure of exercising. The respondents felt that this would work best by using gain-framed messages because the benefits would be emphasized. However, loss-framed messages can also work well in some cases. For example, if people are obese or have no intention of adopting a healthy lifestyle. Hence, for some occasions it is necessary for people to have a wake-up call and make them aware of the risks of unhealthy choices. Respondents of the in-depth interview can endorse with the result found that loss-framed messages may be more effective because sleep is a topic that many people are still appalled at, or many people think they sleep enough anyway. In that case awareness or being awakened to the risks of not sleeping enough is efficient.

To conclude, the qualitative research shows the relationship between message framing and making healthy choices is very complex. Character traits, context, target audiences and other marketing strategies are all also relevant and affect the relationship. Coming back to the research question, respondents find gain-framed messages more persuasive in general, but the persuasiveness is dependent of the context and marketers should focus on segmented groups when applying message framing.

7.3 Relevance

The findings of this study are both scientifically relevant and socially relevant. First, this research helps bridge the literature gap that exists. Although the theory of Tversky and Kahneman predominates in the literature, this research has shown that it is not the case that gain-framed messages are more persuasive for prevention activities and loss-framed messages are more persuasive for

detection activities for every healthy choice. This research is also scientific because it focuses on four factors at once in order to combat obesity. Likewise, this research is scientifically relevant because it uses both quantitative and qualitative methods. By conducting interviews after the analysis, the quantitative can be nuanced and the perceptions of Dutch citizens can be examined. For example, the qualitative results showed, that people see framing as an effective marketing strategy. Yet this is only a small component that can contribute to obesity reduction. It has also been shown that it is a multi-disciplinary problem, involving many fields of study.

Besides contributing scientifically, this research also contributes socially. The results found can be used by marketers, psychologists, and policy makers. They can use them to implement rules, strategies, or campaigns. As an idea, policy makers can set up campaigns that show the real price, marketers can apply message framing in a segmented way, and they can set up campaigns with role models or people with whom the Dutch feel connected. Finally, psychologists can conduct further research into message framing and how actual behavior can be changed. This advice is based on the quantitative results, but also on the qualitative results that showed that everything must be done to reduce the obesity problem. Message framing is a good way to stimulate people, but there are many other strategies that can be implemented. With message framing it is also very important to consider when and for whom what works best.

7.4 Limitations and recommendations

Although the findings of this study are scientifically and socially relevant, this research also has some limitations. First of all, with a large population it is advised to acquire a larger sample size. However, this was not realized due to time constraints. Furthermore, this study attempted to measure the effectiveness of framed messages. However, because this study only measured one time point, it is not possible to determine whether people's behavior was actually changed by reading framed messages. Thirdly, although Quota Sampling was applied, women were overrepresented in the survey. 60% identify with the gender 'female'. Therefore, this overrepresentation may affect the results. Finally, the sequence of the research, conducting first quantitative and then qualitative research, may affected the results as well. The qualitative analysis is used in this research to get a deeper understanding of the quantitative results and help to explore contradictory results. However, due to this sequence a “prestudy” is lacking. The qualitative method could serve as prestudy and would shape the following quantitative methods (Walker & Baxter, 2019).

From the limitations of this study, a number of suggestions for follow-up research have been made. First of all, it is recommended that a longitudinal study be conducted, as this would examine the same people over time. This could examine what the actual effect of framing is on the behavior they exhibit. For example, by having them read a framed message on a regular basis, it could be determined whether results are achieved on lifestyle changes over months or years. Secondly, it is advised to use a more specific target group. The qualitative results showed that the effectiveness of framing is very

person specific. Also, follow-up research can, for example, focus specifically on a certain income group, because healthy choices are not achievable for everyone, simply because it is too expensive. For example, the effectiveness differs for someone who already has the intentions to realize a healthy lifestyle and someone who does not want to do so. Thus, the effect of framing can be further explored among many groups to make more concrete social contributions.

In conclusion, this study shows that gain-framed messages are more persuasive than loss-framed messages for increasing the fruit and vegetable consumption of Dutch citizens. Furthermore, loss-framed messages are more effective for increasing the number of hours of sleep per night for Dutch citizens. For the healthy choices 'physical activity' and 'checking your BMI regularly' this study shows that neither gain-framed nor loss-framed messages are significantly effective for promoting those healthy choices. In addition to the marketing strategy message framing, the qualitative analysis showed that other marketing strategies also play an important role in countering obesity and it is important to segment marketing techniques on different groups in society.

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9. Appendices

a. Appendix 1 – Survey

1 – Informed consent

1. Beste respondent,

Voor het afronden van mijn bachelor studie Economie en Bedrijfseconomie aan de Erasmus Universiteit doe ik onderzoek naar de relatie tussen framen van berichten en het maken van gezonde keuzes. Het doel is het tegengaan van de ziekte obesitas.

Jaarlijks overlijden minstens 2,8 miljoen mensen aan obesitas. Obesitas verhoogt ook het risico op andere ziekten, zoals hart- en vaatziekten. Omdat obesitas een wereldwijd groeiend probleem is, is het relevant om te onderzoeken hoe dit probleem terug te dringen en welke marketingstrategieën het beste werken.

U bent uitgenodigd om deel te nemen aan deze korte enquête die ongeveer 10-15 minuten zal duren. U heeft op elk moment de mogelijkheid te stoppen en een volgende keer verder te gaan. De antwoorden die u geeft, zullen volledig anoniem blijven.

Graag wil ik u vragen onderstaand formulier te lezen en aan te geven of u akkoord gaat met uw deelname.

Waarom dit onderzoek?

In dit onderzoek wordt onderzocht wat de invloed is van het framen van berichten op het maken van gezonde keuzes. Dit onderzoek wordt gebruikt voor de scriptie van de bachelor Economie en Bedrijfseconomie. Met behulp van uw bijdrage kan dit onderzoek gerealiseerd worden.

Verloop

In dit onderzoek wil ik graag informatie verkrijgen door u een korte vragenlijst te laten invullen, deze kan online worden ingevuld. In de survey zullen verschillende vragen worden gesteld. Zo wordt er naar uw intenties voor het maken van bepaalde keuzes en uw gevoelens na het lezen van bepaalde berichten gevraagd. Ook zijn er enkele persoonlijke vragen opgenomen, waaronder vragen over uw leeftijd en gender. Deze vragen worden meegenomen, omdat eerder onderzoek heeft aangetoond dat deze factoren van invloed kunnen zijn op het verband tussen framen en het maken van gezonde keuzes. Als u geen antwoorden op deze vragen wilt geven, kunt u op ieder moment stoppen.

Vertrouwelijkheid

In dit onderzoek doe ik er alles aan om de privacy te waarborgen. Uw persoonsgegevens zullen nooit direct te herleiden zijn. In deze survey hoeft u geen vragen in te vullen als u dat niet wilt. Uw deelname is geheel vrijwillig. Als u ervoor kiest tijdens de survey te stoppen, zullen uw eerder geregistreerde antwoorden niet meegenomen worden in de analyse van dit onderzoek.

Dataopslag

Voor het gebruik van uw data zal een beveiligde dataopslag worden gebruikt. Na maximaal 3 maanden zullen de data vernietigd worden.

Indienen van een vraag op klacht

Wanneer u specifieke vragen of klachten heeft over het gebruik van uw persoonsgegevens, kunt u contact opnemen met Tamar Kip via: 541401tk@eur.nl

U kunt daarnaast een klacht indienen bij de Autoriteit Persoonsgegevens indien u vermoedt dat uw gegevens verkeerd zijn verwerkt.

Alvast hartelijk bedankt voor het invullen van deze enquête!

Door dit toestemmingsformulier te hebben lezen en ondertekenen, erken ik het volgende:

- Ja, ik geef toestemming en zal deelnemen aan het onderzoek
- Nee, ik geef geen toestemming en zal niet deelnemen aan het onderzoek

2 - Demographic questions

2. Met welk gender identificeert u zich het meeste?

- Vrouw
- Man
- Non-binair
- Overig
- Zeg ik liever niet

3. Wat is uw hoogst behaalde opleidingsniveau?

- Geen diploma
- Basisonderwijs
- VMBO/ HAVO/ VWO
- Bachelorsdiploma HBO
- Mastersdiplom HBO
- Bachelorsdiploma WO
- Masterdiploma WO
- Doctoraat/ PhD

4. Wat is uw leeftijd (in getallen)

- Open vraag

5. Wat is uw gewicht? (in kilogrammen)

- Open vraag, invullen in Qualtrics
- Zeg ik liever niet

6. Wat is uw lengte? (in centimeters)

- Open vraag, invullen in Qualtrics
- Zeg ik liever niet

3 - Physical activity - pre-manipulation questions

7. Bent u van plan om deze week te sporten?

- Ja
- Nee
- Anders, namelijk: [tekst box]

(Als ja wordt beantwoord bij vraag 6, gaat de respondent door naar vraag 7. Als nee wordt beantwoord bij vraag 6, gaat de respondent door naar vraag 8).

8. Hoe vaak bent u van plan te sporten deze week?

- 1 keer
- 2 keer
- 3 keer
- 4 keer
- 5 keer
- Meer dan 5 keer

9. Hoe waarschijnlijk is het dat u deze week minimaal 5 dagen per week 30 minuten beweegt?

(Onder bewegen vallen intensieve sporten, zoals als voetballen of hardlopen, maar onder bewegen vallen ook minder intensieve sporten, zoals wandelen en fietsen).

- Zeer waarschijnlijk
- Waarschijnlijk
- Geen mening
- Onwaarschijnlijk
- Zeer onwaarschijnlijk

10. In hoeverre overweegt u het om deze week minimaal 5 dagen per week 30 minuten te bewegen?

- Zeer waarschijnlijk
- Waarschijnlijk
- Geen mening
- Onwaarschijnlijk
- Zeer onwaarschijnlijk

11. Hoe waarschijnlijk is het dat u de komende zes maanden ten minste 30 minuten per dag op ten minste vijf dagen van de week lichamelijk actief zult zijn?

- Zeer waarschijnlijk

- Waarschijnlijk
- Geen mening
- Onwaarschijnlijk
- Zeer onwaarschijnlijk

12. In hoeverre bent u het eens met de volgende stelling: “Ik vind het goed om minstens 5 dagen per week 30 minuten per dag lichamelijk actief te zijn”.

- Zeer goed
- Goed
- Geen mening
- Slecht
- Zeer slecht

13. In hoeverre bent u het eens met de volgende stelling: “Ik vind het belangrijk om minstens 5 dagen per week 30 minuten per dag lichamelijk actief te zijn”.

- Heel erg belangrijk
- Belangrijk
- Geen mening
- Onbelangrijk
- Zeer onbelangrijk

14. In hoeverre bent u het eens met de volgende stelling: “Ik ben er gevoelig voor om minstens 5 dagen per week 30 minuten per dag lichamelijk actief te moeten zijn van mijzelf”.

- Zeer gevoelig
- Gevoelig
- Geen mening
- Ongevoelig
- Zeer ongevoelig

15. In hoeverre bent u het eens met de volgende stelling: “Ik vind het leuk om minstens 5 dagen per week 30 minuten lichamelijk actief te zijn”.

- Zeer leuk
- Leuk
- Geen mening
- Stom
- Zeer stom

4 - Physical activity - manipulation– framing message

Vervolgens krijgen mensen een framed bericht te zien. Respondenten worden random toegewezen aan een gain-framed of een loss-framed bericht en zien dus of vraag 16 of vraag 17.

Als respondenten worden toegewezen aan een gain-framed message, zullen zij het volgende bericht zien:

16. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Dagelijks actief bezig zijn verbetert je gezondheid. Veel mensen zijn bekend met de voordelen van bewegen en sporten. Maar er zijn ook voordelen waar niet iedereen bewust van is.

Sterke spieren en botten

Wist u bijvoorbeeld dat u uw spieren en botten gezond kunt houden door lichamelijk actief te zijn? Dit is vooral belangrijk voor mensen die ouder dan 30 jaar zijn, omdat spieren en botten na verloop van tijd zwakker worden. Bovendien houdt lichaamsbeweging u lenig en energiek.

Een gezond hart

Voldoende lichaamsbeweging verhoogt de kans op een gezond en sterk hart. Als u voldoende actief bent, zult u geen last hebben van overtollige vetten en zult u meer kans hebben op een gezond leven.

Actief en ontspannen zijn

Actieve mensen ervaren minder stress en kunnen er beter mee omgaan als dat wel het geval is. Met andere woorden, actieve mensen zijn meer ontspannen. Ook voelen ze zich jonger, energiever en beter. Kortom, actief zijn kan je helpen om je goed te voelen.

Gezond gewicht

Wanneer u actief bent, verbrandt u veel calorieën. Dit kan je helpen een gezond gewicht te behouden.

Uithoudingsvermogen

Als je actief bent, ben je sterker en heb je een beter uithoudingsvermogen, iets om trots op te zijn!

Kortom, voldoende actief zijn heeft vele voordelen!

Als respondenten worden toegewezen aan een loss-framed message, zullen zij het volgende bericht zien:

17. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Inactief zijn verhoogt uw kans op ziekten. Veel mensen zijn bekend met de nadelen van het gebrek aan sporten en bewegen. Maar inactiviteit heeft ook nadelen waar niet iedereen bewust van is.

Zwakke spieren en botten

Wist u bijvoorbeeld dat door lichamelijk inactief te zijn, uw spieren en botten verslechteren? Dit is vooral belangrijk voor mensen die ouder dan 30 jaar zijn, omdat spieren en botten na verloop van tijd zwakker worden. Bovendien zorgt fysiek inactief zijn ervoor dat je minder lenig wordt en je minder energiek voelt.

Een ongezond hart

Onvoldoende lichaamsbeweging verhoogt het risico op hart- en vaatziekten. Hart- en vaatziekten zijn doodsoorzaak nummer één in Nederland, dus reden genoeg om ervoor te zorgen dat u niet lichamelijk inactief bent.

Kanker

Inactief zijn kan ook het risico op kanker verhogen. Uit onderzoek blijkt dat inactieve mensen een veel grotere kans hebben op darmkanker, wat naast huid-, long- prostaat- en borstkanker de meest voorkomende vorm van kanker is in Nederland. Voor vrouwen geldt dat inactief zijn ook het risico op borstkanker verhoogt. En borstkanker is de meest voorkomende vorm van kanker bij vrouwen.

Diabetes

Uit onderzoek blijkt dat inactief zijn de belangrijkste oorzaak is van diabetes. Diabetes wordt veroorzaakt door een klein vetlaagje dat de organen omringt. Dit vet kan veel schade aanrichten aan uw gezondheid. Als u onvoldoende actief bent, zullen deze vetten uw gezondheid bedreigen.

Inactief en gespannen zijn

Inactieve mensen ervaren meer stress en hebben meer moeite om ermee om te gaan als ze stress ervaren. Met andere woorden, inactieve mensen zijn meer gespannen. Ook voelen ze

zich ouder, minder energiek en slechter. Kortom, inactief zijn kan ervoor zorgen dat je je slecht gaat voelen.

Overgewicht

Als je inactief bent, verbrand je niet veel calorieën. Hierdoor kun je overgewicht krijgen.

Uithoudingsvermogen.

Als je inactief bent, ben je minder sterk en heb je een slechter uithoudingsvermogen, niet iets om bijzonder trots op te zijn!

Kortom, inactief zijn heeft veel nadelen!

5 – Physical activity – manipulation – the questions

18. In hoeverre voelt u zich blij na het lezen van het bericht over dagelijks actief zijn?
- Heel erg blij
 - Blij
 - Geen mening
 - Niet blij
 - Helemaal niet blij
19. In hoeverre voelt u zich opgelucht na het lezen van het bericht over dagelijks actief zijn?
- Heel erg opgelucht
 - Opgelucht
 - Geen mening
 - Niet blij
 - Helemaal niet blij
20. In hoeverre voelt u zich verdrietig na het lezen van het bericht over dagelijks actief zijn?
- Heel erg verdrietig
 - Verdrietig
 - Geen mening
 - Niet verdrietig
 - Helemaal niet verdrietig

21. In hoeverre voelt u zich bang na het lezen van het bericht over dagelijks actief zijn?
- Heel erg bang
 - Bang
 - Geen mening
 - Niet bang
 - Helemaal niet bang
22. In hoeverre vindt u de gelezen informatie over dagelijks actief zijn relevant?
- Heel erg relevant
 - Relevant
 - Geen mening
 - Niet relevant
 - Helemaal niet relevant
23. In hoeverre vindt u de gelezen informatie over dagelijks actief zijn interessant?
- Heel erg interessant
 - Interessant
 - Geen mening
 - Niet interessant
 - Helemaal niet interessant
24. In hoeverre vindt u de gelezen informatie over dagelijks actief zijn overdreven?
- Heel erg overdreven
 - Overdreven
 - Geen mening
 - Niet overdreven
 - Helemaal niet overdreven
25. In hoeverre bent u het eens met de gelezen informatie over dagelijks actief zijn?
- Helemaal mee eens
 - Mee eens
 - Geen mening
 - Mee oneens
 - Helemaal mee oneens

6 – Fruit and vegetables consumption - pre-manipulation questions

26. Hoeveel porties groenten (100 gram) heeft u de afgelopen week gegeten? (Onder een portie groenten wordt bijvoorbeeld soep, een salade of boontjes verstaan. Aardappelen vallen niet onder een portie groenten).
- Minder dan één portie per dag
 - Eén portie per dag
 - Twee porties per dag
 - Drie porties per dag
 - Vier of meer porties per dag
27. Hoeveel porties fruit (100 gram) heeft u de afgelopen week gegeten? (Onder een portie fruit wordt bijvoorbeeld een glas versgeperste sap, een schaalpje druiven of een los stuk fruit, zoals een appel verstaan).
- Minder dan één portie per dag
 - Eén portie per dag
 - Twee porties per dag
 - Drie porties per dag
 - Vier of meer porties per dag
28. In hoeverre bent u het eens met de volgende stelling? *“Ik ben van plan om vanaf vandaag minstens 5 porties fruit en groenten per dag te eten”*.
- Helemaal mee eens
 - Eens
 - Geen mening
 - Oneens
 - Helemaal mee oneens
29. In hoeverre bent u het eens met de volgende stelling? *“Vanaf nu wil ik 5 of meer porties fruit en groenten per dag eten”*.
- Helemaal mee eens
 - Eens
 - Geen mening
 - Oneens
 - Helemaal mee oneens

30. In hoeverre bent u het eens met de volgende stelling? *“Ik wil elke dag minstens 5 porties fruit en groenten eten”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

7 – Fruit and vegetables consumption - manipulation–framing message

Vervolgens krijgen mensen een framed bericht te zien. Respondenten worden random toegewezen aan een gain-framed of een loss-framed bericht.

Als respondenten worden toegewezen aan een gain-framed message, zullen zij het volgende bericht zien:

31. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Als u minstens 5 porties fruit en groenten per dag eet...

-Kan één op de vijf maag- en darmkankers voorkomen worden.

-Kan u beschermd worden tegen ziekten als kanker.

-Krijgt u vitaminen en minerale zouten binnen die de fundamentele rol vervullen in de bescherming van het lichaam. Dit helpt de functies van het immuunsysteem, die werken om u gezond te houden.

-Zult u een toename van energie, een toename van positieve emotionele toestanden en een gevoel van tevredenheid en plezier ervaren.

-Zult u trots zijn op zichzelf, omdat u in staat bent geweest om gezond te doen.

-Kan dit bijdragen aan het voorkomen van een aantal ziekten.

-Zult u zich goed voelen over uzelf.

-Heeft u een betere gezondheid.

Als respondenten worden toegewezen aan een loss-framed message, zullen zij het volgende bericht zien:

32. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Als u niet minstens 5 porties fruit en groenten per dag eet...

-Is de kans op maag- en darmkanker groter. Eén op de vijf maag- en darmkankers wordt veroorzaakt door te weinig fruit en groenten consumptie.

-Kan u niet beschermd worden tegen ziekten als kanker.

-Zal dit resulteren in een gebrek aan vitamines en minerale zouten die de fundamentele rol vervullen om het lichaam te beschermen. Dit brengt de werking van het immuunsysteem in gevaar, waardoor het niet in staat is u gezond te houden. Dit kan ziekten als kanker uitlokken.

-Zult u een vermindering van energie, een vermindering van positieve emotionele toestanden en een gevoel van tevredenheid en plezier ervaren.

-Draag dit bij aan het uitlokken van een aantal ziekten.

-Zult u teleurgesteld zijn in uzelf, omdat je er niet toe in staat bent geweest gezond bezig te zijn.

-Zult u zich slecht voelen over uzelf

-Heeft u een slechtere gezondheid.

8 – Fruit and vegetables consumption – manipulation – the questions

Vraag 33 tot en met 39 wordt een sleepoptie in Qualtrics toegevoegd waar respondenten van 1 tot 10 kunnen aangeven in hoeverre zij het eens zijn met de stelling. Voor vraag 40 wordt eenzelfde sleepoptie toegevoegd waar respondenten van -4 tot 4 kunnen aangeven in hoeverre zij het eens zijn met de stelling.

33. In hoeverre bent u het eens met de volgende stelling: *“Ik raak betrokken met de inhoud van de boodschap over het eten van groenten en fruit”*.

- 1 Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Helemaal mee eens

34. In hoeverre bent u het eens met de volgende stelling: *“De boodschap over het eten van groenten en fruit is relevant voor mij”*.

- 1 - Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

35. In hoeverre bent u het eens met de volgende stelling: *“De boodschap over het eten van groenten en fruit is tot nadenken stemmend”*.

- 1 - Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

36. In hoeverre bent u het eens met de volgende stelling: *“De boodschap over het eten van groenten en fruit is zeer interessant”*

- 1 - Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

- 10 – Helemaal mee eens

37. In hoeverre bent u het eens met de volgende stelling: *“Ik voel sterke emoties bij het lezen van de boodschap over het eten van groenten en fruit”*.

- 1- Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

38. Hoe overtuigend was de boodschap over het eten van groenten en fruit volgens u?

- 1 – Helemaal niet overtuigend
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Zeer geloofwaardig

39. Hoe geloofwaardig beoordeelt u de boodschap over het eten van groenten en fruit?

- 1 – Helemaal niet geloofwaardig
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

- 10 – Zeer geloofwaardig

40. Hoe beoordeelt u het taalgebruik (positief of negatief geladen) van het bericht over het eten van groenten en fruit?

- -4 – Vooral negatief
- -3
- -2
- -1
- 0
- 1
- 2
- 3
- 4 – Vooral positief

9 – Hours of sleep - pre-manipulation questions

41. In hoeverre bent u het eens met de volgende stelling? *“Ik ben van plan de meeste nachten van de week 7-9 uur te slapen”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

42. In hoeverre bent u het eens met de volgende stelling? *“Ik zal de meeste nachten van de week 7-9 uur slapen”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

10 - Hours of sleep – manipulation – framing message

Vervolgens krijgen mensen een framed bericht te zien. Respondenten worden random toegewezen aan een gain-framed of een loss-framed bericht.

Als respondenten worden toegewezen aan een gain-framed message, zullen zij het volgende bericht zien:

43. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Als u op de lange termijn genoeg slaapt, zorgt dit ervoor dat er geen schade aan uw gezondheid wordt veroorzaakt. Genoeg slapen voorkomt het risico op hartziekten, een te hoge bloeddruk, hersenbloedingen en diabetes. Ook draagt genoeg slapen bij aan het hebben van positieve gedachten, een gezonde huid, een goed geheugen en een gezond gewicht.

Kortom, genoeg slaap heeft vele voordelen!

Als respondenten worden toegewezen aan een loss-framed message, zullen zij het volgende bericht zien:

44. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Als u chronisch te weinig slaapt, wordt zowel zichtbare als onzichtbare schade veroorzaakt aan uw gezondheid. Chronische slaapttekorten kunnen leiden in hartziekten, een te hoge bloeddruk, hersenbloedingen en diabetes. Ook kan een gebrek aan slaap zorgen voor depressieve gedachten, een valse huid, vergeetachtigheid en overgewicht. Een chronisch tekort aan slaap kan er dus voor zorgen dat u minder lang leeft.

Kortom, een slaapttekort heeft vele nadelen!

11 - Hours of sleep – manipulation – the questions

45. In hoeverre bent u het eens met de volgende stelling “*Toen ik het bericht over slapen las, voelde ik me blij*”.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

46. In hoeverre bent u het eens met de volgende stelling *“Toen ik het bericht over slapen las, voelde ik me tevreden”*.
- Helemaal mee eens
 - Eens
 - Geen mening
 - Oneens
 - Helemaal mee oneens
47. In hoeverre bent u het eens met de volgende stelling *“Toen ik het bericht over slapen las, voelde ik me boos”*.
- Helemaal mee eens
 - Eens
 - Geen mening
 - Oneens
 - Helemaal mee oneens
48. In hoeverre bent u het eens met de volgende stelling *“Toen ik het bericht over slapen las, voelde ik me bang”*.
- Helemaal mee eens
 - Eens
 - Geen mening
 - Oneens
 - Helemaal mee oneens
49. In hoeverre bent u het eens met de volgende stelling *“Ik ben van plan om met mijn familie te praten over het bericht met het onderwerp slapen”*.
- Helemaal mee eens
 - Eens
 - Geen mening
 - Oneens
 - Helemaal mee oneens
50. In hoeverre bent u het eens met de volgende stelling *“Ik ben van plan om met mijn vrienden te praten over het bericht met het onderwerp slapen”*.
- Helemaal mee eens
 - Eens
 - Geen mening

- Oneens
- Helemaal mee oneens

12 – Obesity detection - pre-manipulation questions

Vraag 50 tot en met 52 wordt een sleepoptie in Qualtrics toegevoegd waar respondenten van 1 tot 10 kunnen aangeven in hoeverre zij het eens zijn met de stelling.

51. In hoeverre bent u het eens met de volgende stelling: *“Ik ben bezorgd over het krijgen van obesitas”*.

- 1 – Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

52. In hoeverre bent u het eens met de volgende stelling: *“Ik denk dat het gevaarlijk is om een te hoog BMI* te hebben”*.

* De Body Mass Index (BMI) is de verhouding tussen lengte en gewicht en wordt gebruikt om een indicatie te krijgen of iemand op gezond gewicht zit of dat er sprake is van onder- of overgewicht. De BMI wordt berekend met de volgende formule: (uw gewicht in kg / uw lengte in centimeters in het kwadraat).

- 1 – Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8

- 9
- 10 – Helemaal mee eens

53. In hoeverre bent u het eens met de volgende stelling: *“Ik vind obesitas een ernstig gezondheidsprobleem”*.

- 1 – Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

13 - Obesity detection – manipulation – framing message

Vervolgens krijgen mensen een framed bericht te zien. Respondenten worden random toegewezen aan een gain-framed of een loss-framed bericht.

Als respondenten worden toegewezen aan een gain-framed message, zullen zij het volgende bericht zien:

54. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Wist u dat wereldwijd minstens 2.8 miljoen mensen per jaar overlijden als gevolg van overgewicht of obesitas?

Op tijd zijn kan gunstig zijn!

Het regelmatig in de gaten houden van uw BMI en uw vetpercentage bevordert een leven zonder obesitas. Door regelmatig uw BMI en vetpercentage te checken en dat op een gezond peil te houden, heeft u weinig kans om obesitas te krijgen. Daarmee kunt u gemakkelijk jaren aan uw leven toevoegen. Door het in de gaten houden van uw lichaamsgewicht, kunt u zich ontspannen en veilig voelen over een obesitasvrije toekomst. Ook bent u beter beschermd

tegen ziekten, zoals verschillende vormen van kanker, hart- en vaatziekten, diabetes en ademproblemen.

Als respondenten worden toegewezen aan een loss-framed message, zullen zij het volgende bericht zien:

55. Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Wist u dat wereldwijd minstens 2.8 miljoen mensen per jaar overlijden als gevolg van overgewicht of obesitas?

Uitstel kan duur zijn!

Het niet regelmatig in de gaten houden van uw BMI en uw vetpercentage bemoeilijkt een leven zonder obesitas. Door niet regelmatig uw BMI en vetpercentage te checken en er niet mee bezig zijn om dit op een gezond peil te houden, heeft u meer risico om obesitas te krijgen. Daarmee kunt onnodig jaren van uw leven te verliezen. Door het niet in de gaten houden van uw lichaamsgewicht kunt u zich angstig en onveilig voelen over een obesitasvrije toekomst. Ook heeft u een verhoogd risico op ziekten, zoals verschillende vormen van kanker, hart- en vaatziekten, diabetes en ademproblemen.

14 – Obesity detection – manipulation – the questions

56. Hoe waarschijnlijk is de kans dat u in de komende maanden uw BMI zal meten?

- Zeer waarschijnlijk
- Waarschijnlijk
- Geen mening
- Onwaarschijnlijk
- Zeer onwaarschijnlijk

57. Hoe zeker bent u ervan dat u uw BMI elke twee maanden in de gaten zal houden?

- Zeer zeker
- Zeker
- Geen mening
- Onzeker
- Zeer onzeker

58. In hoeverre bent u het eens met de volgende stelling? *“Ik raak met de inhoud van de boodschap over BMI meten en obesitas”*.

- 1 Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Helemaal mee eens

59. In hoeverre bent u het eens met de volgende stelling? *“De boodschap over BMI meten en obesitas is relevant voor mij”*.

- 1 - Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

60. In hoeverre bent u het eens met de volgende stelling? *“De boodschap over BMI meten en obesitas is tot nadenken stemmend”*.

- 1 - Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

- 10 – Helemaal mee eens

61. In hoeverre bent u het eens met de volgende stelling? *“De boodschap over BMI meten en obesitas is zeer interessant”*

- 1 - Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

62. In hoeverre bent u het eens met de volgende stelling? *“Ik voel sterke emoties bij het lezen van de boodschap over BMI meten en obesitas”*.

- 1- Helemaal mee oneens
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Helemaal mee eens

63. Hoe overtuigend was de boodschap over BMI meten en obesitas volgens u?

- 1 – Helemaal niet overtuigend
- 2
- 3
- 4
- 5
- 6
- 7
- 8

- 9
- 10 – Zeer overtuigend

64. Hoe geloofwaardig beoordeelt u de boodschap over BMI meten en obesitas?

- 1 – Helemaal niet geloofwaardig
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 – Zeer geloofwaardig

65. Hoe beoordeelt u het taalgebruik (positief of negatief geladen) van het bericht over BMI meten en obesitas?

- 4 – Vooral negatief
- 3
- 2
- 1
- 0
- 1
- 2
- 3
- 4 – Vooral positief

14 - Autonomy

66. In hoeverre bent u het eens met de volgende stelling? *“Ik heb het gevoel dat ik vrij ben om zelf te beslissen hoe ik mijn leven wil leiden”.*

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

67. In hoeverre bent u het eens met de volgende stelling? *“Ik hou echt van de mensen met wie ik omga”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

68. In hoeverre bent u het eens met de volgende stelling? *“Ik voel me vaak niet erg competent”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

69. In hoeverre bent u het eens met de volgende stelling? *“Ik voel me onder druk gezet in mijn leven”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

70. In hoeverre bent u het eens met de volgende stelling? *“Mensen die ik ken, zeggen me dat ik goed ben in wat ik doe”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

71. In hoeverre bent u het eens met de volgende stelling? *“Ik kan goed opschieten met mensen waarmee ik in contact kom”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens

- Helemaal mee oneens

72. In hoeverre bent u het eens met de volgende stelling? *“Ik ben nogal op mezelf en heb niet veel sociale contacten”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

73. In hoeverre bent u het eens met de volgende stelling? *“Ik voel me over het algemeen vrij om mijn ideeën en meningen te uiten”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

74. In hoeverre bent u het eens met de volgende stelling? *“Ik beschouw de mensen met wie ik regelmatig omga als mijn vrienden”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

75. In hoeverre bent u het eens met de volgende stelling? *“Ik heb de laatste tijd interessante nieuwe vaardigheden kunnen leren”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

76. In hoeverre bent u het eens met de volgende stelling? *“In mijn dagelijks leven moet ik vaak doen wat mij gezegd wordt”*.

- Helemaal mee eens

- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

77. In hoeverre bent u het eens met de volgende stelling? *“Mensen in mijn leven geven om mij”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

78. In hoeverre bent u het eens met de volgende stelling? *“Meestal krijg ik een gevoel van voldoening door wat ik doe”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

79. In hoeverre bent u het eens met de volgende stelling? *“Mensen met wie ik dagelijks contact heb, houden rekening met mijn gevoelens”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

80. In hoeverre bent u het eens met de volgende stelling? *“In mijn leven krijg ik niet vaak de kans om te laten zien hoe capabel ik ben”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

81. In hoeverre bent u het eens met de volgende stelling? *“Er zijn niet veel mensen met wie ik hecht ben”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

82. In hoeverre bent u het eens met de volgende stelling? *“Ik heb het gevoel dat ik veelal mezelf kan zijn in het dagelijks leven”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

83. In hoeverre bent u het eens met de volgende stelling? *“De mensen met wie ik regelmatig omga, lijken me niet erg aardig te vinden”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

84. In hoeverre bent u het eens met de volgende stelling? *“Ik voel me vaak niet erg capabel”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

85. In hoeverre bent u het eens met de volgende stelling? *“Er is niet veel gelegenheid voor mij om zelf te beslissen hoe ik dingen in mijn dagelijks leven doe”*.

- Helemaal mee eens
- Eens
- Geen mening

- Oneens
- Helemaal mee oneens

86. In hoeverre bent u het eens met de volgende stelling? *“Mensen zijn over het algemeen vrij vriendelijk tegen mij”*.

- Helemaal mee eens
- Eens
- Geen mening
- Oneens
- Helemaal mee oneens

15 – Closing

87. U bent aangekomen bij de allerlaatste vraag van deze survey. Hartelijk bedankt voor uw deelname! Uw bijdrage helpt mij enorm. Het delen van deze survey wordt gewaardeerd.

Bent u geïnteresseerd om deel te nemen aan een interview over de onderwerpen van deze enquête?

- Ja
- Nee

(Als ja wordt beantwoord bij vraag 87, gaat de respondent door naar vraag 88. Als nee wordt beantwoord bij vraag 87, is de respondent aangekomen bij het einde van de survey en zal de survey worden afgesloten).

88. Wat is uw e-mailadres waarmee ik contact kan opnemen voor een interview?

[Tekst box]

b. Appendix 2 – Tables of results

Table 23: Intentions to exercise

<i>Intentions to exercise</i>	<i>N</i>	<i>Yes</i>	<i>No</i>	<i>Other</i>	
<i>Plan to exercise this week</i>	156	113	35	8	
		<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
<i>How many times plan to exercise this week</i>	116	1	6	2.69	1.212

Table 24: Effectiveness of physical activity, fruit and vegetable consumption, hours of sleeping and obesity detection

<i>Effectiveness (overall)</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>	<i>Cronbach's Alpha</i>
<i>Physical activity</i>	137	1	5	4.002	0.692	0.779
<i>Fruit and vegetable consumption</i>	127	1.7	10	6.287	1.518	0.864
<i>Hours of sleeping</i>	124	1	4	2.040	0.833	0.807
<i>Obesity detection</i>	122	1.56	8.22	4.891	1.391	0.856

Table 25: descriptives of the scale of autonomy

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>α</i>
<i>Scale of autonomy</i>	121	3.24	4.95	4.0803	0.36417	0.842

*Cronbach's Alpha would be 0.846 if item 'in hoeverre bent u het eens met de volgende stelling: "ik heb de laatste tijd interessante nieuwe vaardigheden kunnen leren" is deleted. But the difference from 0.842 to 0.846 is small, therefore this item is not deleted.

c. Appendix 3 – Topiclist interviews

Interviewvragen

<i>Introductie</i>	Interviewer stelt zichzelf voor														
	Interviewer legt het doel van het onderzoek uit.														
	Informed Consentformulier benoemen en vragen of de respondent nog steeds akkoord gaat met het opnemen van het interview.														
	Interviewer benadrukt dat er geen foute antwoorden zijn, alles gezegd mag worden en anonimiteit zo veel als mogelijk gewaarborgd wordt.														
<i>Demographic questions</i>	Kunt u zichzelf voorstellen?														
	Wat is uw leeftijd?														
<i>Topic 1: Obesitas</i>	Wat is uw opleidingsniveau?														
	In hoeverre bent u zich bewust van het gezondheidsprobleem obesitas op een schaal van 1 tot 5?														
<i>Topic 2: Marketingstrategieën</i>	In hoeverre bent u zelf bezig met een gezonde levensstijl op een schaal van 1 tot 5?														
	Kunt u dit verder toelichten?).														
	Hoe denkt u dat marketers het beste mensen kunnen stimuleren om voor een gezonde keuze te gaan?														
	Verschillende marketingstrategieën langsgaan: <ul style="list-style-type: none"> 1. Nutritional information strategy 2. Promoties van bepaalde dranken en eten verbieden 3. Bepaalde keuzes verbieden 4. Financiële incentives 5. Default option 														
<i>Table 10.1 The intervention ladder</i>															
<table border="1"> <thead> <tr> <th><i>Level</i></th> <th><i>Description</i></th> </tr> </thead> <tbody> <tr> <td>Eliminate choice</td> <td>Introduce laws that entirely eliminate choice</td> </tr> <tr> <td>Restrict choice</td> <td>Introduce laws that restrict the options available to people</td> </tr> <tr> <td>Guide through disincentives</td> <td>Introduce financial or other disincentives to influence behaviour</td> </tr> <tr> <td>Guide through incentives</td> <td>Introduce financial or other incentives to influence people's behaviour</td> </tr> <tr> <td>Guide choices</td> <td>Changing the default policy</td> </tr> <tr> <td>Enable choice</td> <td>Help individuals to change their behaviour</td> </tr> </tbody> </table>		<i>Level</i>	<i>Description</i>	Eliminate choice	Introduce laws that entirely eliminate choice	Restrict choice	Introduce laws that restrict the options available to people	Guide through disincentives	Introduce financial or other disincentives to influence behaviour	Guide through incentives	Introduce financial or other incentives to influence people's behaviour	Guide choices	Changing the default policy	Enable choice	Help individuals to change their behaviour
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Guide through incentives	Introduce financial or other incentives to influence people's behaviour														
Guide choices	Changing the default policy														
Enable choice	Help individuals to change their behaviour														
(Adapted from Nuffield Council on Bioethics 2007)															
<i>Topic 3: Message framing</i>	Wat voor reclames spreken u zelf aan?														
	Waar bent u gevoelig voor bij het kopen van iets gezond/ongezond?														
	Wat voor invloed heeft een loss-framed bericht op u? Hoe voelt u zich daardoor? (Voorbeeld geven van een loss-framed bericht).														
	Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:														

Als u niet minstens 5 porties fruit en groenten per dag eet...

- Is de kans op maag- en darmkanker groter. Eén op de vijf maag- en darmkankers wordt veroorzaakt door te weinig fruit en groenten consumptie.
- Kan u niet beschermd worden tegen ziekten als kanker.
- Zal dit resulteren in een gebrek aan vitamines en minerale zouten die de fundamentele rol vervullen om het lichaam te beschermen. Dit brengt de werking van het immuunsysteem in gevaar, waardoor het niet in staat is u gezond te houden. Dit kan ziekten als kanker uitlokken.
- Zult u een vermindering van energie, een vermindering van positieve emotionele toestanden en een gevoel van tevredenheid en plezier ervaren.
- Draag dit bij aan het uitlokken van een aantal ziekten.
- Zult u teleurgesteld zijn in uzelf, omdat je er niet toe in staat bent geweest gezond bezig te zijn.
- Zult u zich slecht voelen over uzelf
- Heeft u een slechtere gezondheid.

*Een ongezond hart

Onvoldoende lichaamsbeweging verhoogt het risico op hart- en vaatziekten. Hart- en vaatziekten zijn doodsoorzaak nummer één in Nederland, dus reden genoeg om ervoor te zorgen dat u niet lichamelijk inactief bent.

Wat voor invloed heeft een gain-framed bericht op u? Hoe voelt u zich daardoor?
(Voorbeeld geven van een gain-framed bericht).

*Een gezond hart

Voldoende lichaamsbeweging verhoogt de kans op een gezond en sterk hart. Als u voldoende actief bent, zult u geen last hebben van overtollige vetten en zult u meer kans hebben op een gezond leven.

*Lees onderstaand bericht graag zorgvuldig door en klik daarna door voor de vragen die over dit bericht gaan:

Als u minstens 5 porties fruit en groenten per dag eet...

- Kan één op de vijf maag- en darmkankers voorkomen worden.
- Kan u beschermd worden tegen ziekten als kanker.
- Krijgt u vitamines en minerale zouten binnen die de fundamentele rol vervullen in de bescherming van het lichaam. Dit helpt de functies van het immuunsysteem, die werken om u gezond te houden.
- Zult u een toename van energie, een toename van positieve emotionele toestanden en een gevoel van tevredenheid en plezier ervaren.
- Zult u trots zijn op zichzelf, omdat u in staat bent geweest om gezond te doen.
- Kan dit bijdragen aan het voorkomen van een aantal ziekten.
- Zult u zich goed voelen over uzelf.
- Heeft u een betere gezondheid.

Topic 4: Autonomy

Denkt u dat het zinvol is om message framing te gebruiken bij het promoten van gezonde keuzes? (Uitleggen wat daaronder wordt verstaan, voorbeelden geven, en terugwijzen op de survey waarin loss-framed en gain-framed berichten stonden)

Denkt u dat gain-framed bij alle gezonde keuzes (genoeg bewegen, genoeg groenten en fruit eten, genoeg slapen en regelmatig BMI checken) de beste optie zijn?

Denkt u dat loss-framed bij alle gezonde keuzes (genoeg bewegen, genoeg groenten en fruit eten, genoeg slapen en regelmatig BMI checken) de beste optie zijn?

Denkt u dat er verschil zit tussen het effect van of een gain-framed bericht of een loss-framed bericht bij verschillende factoren om obesitas tegen te gaan? (Bijvoorbeeld het gebruik maken van een gain-framed bericht voor genoeg beweging en het gebruik maken van een loss-framed bericht voor genoeg groenten en fruit eten)

Uitleggen wat autonomie is

Terugwijzen op de vragen die de respondent daarover heeft ingevuld.

* Autonomie wordt gedefinieerd als de psychologische behoefte van een individu om de vrijheid te hebben om zijn eigen gedrag te kiezen en dit onder vrijwillige controle te hebben (Deci en Ryan, 2000). Dit staat lijnrecht tegenover gedrag dat bepaald en gecontroleerd wordt door externe krachten. Iemand heeft een hoge mate van autonomie wanneer de omgeving van het individu autonomie-ondersteunend is en het gedrag dat het individu vertoont voortkomt uit autonome motieven

*Ik heb het gevoel dat ik vrij ben om zelf te beslissen hoe ik mijn leven wil leiden

*Mensen die ik ken, zeggen me dat ik goed ben in wat ik doe

*Ik heb het gevoel dat ik veelal mezelf kan zijn in het dagelijks leven

In hoeverre u dat er een relatie is tussen de autonomie van iemand en de effectiviteit van framed berichten op een schaal van 1 tot 5?

In hoeverre zouden gain-framed berichten bijvoorbeeld beter werken voor mensen die zichzelf een hoge mate van autonomie geven op een schaal van 1 tot 5?

Topic 5: Member checks

Resultaten voorleggen en hierop ingaan.

Waarom denkt u dat uit dit onderzoek blijkt dat message framing weinig effect heeft.

Heeft u hier een verklaring voor?

Wat zou dan een goede benadering zijn voor marketers en marketingcampagnes om mensen te stimuleren gezonde keuzes te maken?

*Autonomy high & gain framed messages geen relatie. Alleen voor physical activity.

* Hypothesis 3: For women gain-framed messages will be more persuasive for obesity prevention. -> niet geaccepteerd

*Obesity detection -> loss framed niet effectief

*Hours of sleep -> verwacht werd gain framed meer effectieve, maar tegenovergestelde is waar. Loss-framed is significant meer effectief.

*Fruit and vegetable consumption. Gain-framed messages significant, dus gain-framed meer effectief.

*For physical activity niet significant.

Topic 6: Afsluiting

Vertellen dat alle vragen vanuit de interviewer zijn gesteld en vragen of de respondent nog dingen wil toevoegen.
Hartelijk bedanken voor de tijd.
Benadrukken dat de interviewer de resultaten graag opstuurt als de respondent dit interessant vindt.

d. Appendix 4 – Informed Consent Form

Informatieblad voor onderzoek naar de invloed van het framen van berichten op het maken van gezonde keuzes om het gezondheidsprobleem obesitas tegen te gaan.

Onder begeleiding van Edgar Keehnen onderzoekt bachelorstudent Tamar Kip van de Erasmus Universiteit Rotterdam het verband tussen het framen van berichten en het maken van gezonde keuzes. Dit onderzoek wordt gebruikt voor het afronden van de Thesis en daarmee wordt de bachelorstudie Economie en Bedrijfseconomie met afstudeerrichting marketing afgerond. Met behulp van uw deelname kan dit onderzoek worden gerealiseerd.

- Waarom dit onderzoek?** Met dit onderzoek willen we nagaan in hoeverre het framen van berichten effectief is bij het promoten van gezonde keuzes. Eerder literatuuronderzoek heeft aangetoond dat bij preventieve dingen, zoals sporten gain-framed beter werkt, terwijl bij detectie loss-framed beter zou werken. Nog niet eerder is dit in Nederlands onderzocht op de vier vlakken: lichaamsbeweging, fruit en groenten consumptie, genoeg slapen en BMI regelmatig in de gaten houden. Dit onderzoek neemt in totaal ongeveer 5 maanden in beslag en met dit onderzoek wil ik een beter beeld krijgen van de effectiviteit van de marketingstrategie ‘framing’.
- Verloop** U neemt deel aan een onderzoek waarbij we informatie zullen vergaren door: U te interviewen en het gesprek op te nemen via audio-opname. Dit interview zal ongeveer 30 minuten duren. Als u akkoord gaat, wordt er een transcript uitgewerkt van het interview. Deze wordt later gebruikt voor de analyse. Als er in het transcript persoonsgegevens worden genoemd, zullen deze worden gepseudonimiseerd. Dit geldt ook voor persoonsgegevens die in de analyse worden benoemd. Deze zullen eveneens onder een pseudoniem worden weergegeven.
- Vertrouwelijk** Er wordt alles aan gedaan om uw privacy zo goed mogelijk te beschermen. Naast de student zal alleen de thesisbegeleider en de tweede lezer toegang krijgen tot de door u verstrekte gegevens.

Er wordt op geen enkele wijze direct te herleiden vertrouwelijke informatie of persoonsgegevens van of over u naar buiten gebracht, waardoor iemand u zal kunnen herkennen.

In het onderzoek wordt u aangeduid met een verzonden naam of nummer (pseudoniem).

Vrijwilligheid U hoeft geen vragen te beantwoorden die u niet wilt beantwoorden. Uw deelname is vrijwillig en u kunt stoppen wanneer u wilt.

Als u tijdens het onderzoek besluit om uw medewerking te staken, zullen de gegevens die u reeds hebt verstrekt tot het moment van intrekking van de toestemming in het onderzoek niet gebruikt worden.

Dataopslag In het onderzoek zullen anonieme gegevens of pseudoniemen worden gebruikt. De verzamelde data worden beveiligd opgeslagen.

De onderzoeksgegevens worden bewaard voor een periode van maximaal 4 maanden. Uiterlijk na het verstrijken van deze termijn zullen de gegevens worden verwijderd.

Indienen van een vraag of klacht Indien u specifieke vragen heeft over hoe er met uw persoonsgegevens wordt omgegaan, kunt u deze stellen aan Tamar Kip (541401tk@eur.nl) U kunt daarnaast een klacht indienen bij de Autoriteit Persoonsgegevens indien u vermoedt dat uw gegevens verkeerd zijn verwerkt.

Potentiele voordelen of risico's Tegenover uw deelname aan dit onderzoek staat geen directe (financiële) vergoeding. Uw deelname helpt echter wel om een beter beeld te krijgen van de effectiviteit van het framen van berichten op het promoten van gezonde keuzes.

Tijdens dit onderzoek zullen naar enkele persoonlijke gegevens worden gevraagd, maar u bent niet verplicht om deze gegevens te delen. Uw deelname aan het

onderzoek blijft tenslotte volledig vrijwillig. Als u besluit om deze gegevens te delen, zal hier uiterst zorgvuldig mee omgaan worden.

Door dit toestemmingsformulier te ondertekenen erken ik het volgende

- | | JA | NEE |
|--|--------------------------|--------------------------|
| 1 Ik ben voldoende geïnformeerd over het onderzoek. Ik heb het informatieblad gelezen en heb daarna de mogelijkheid gehad vragen te kunnen stellen. Deze vragen zijn voldoende beantwoord en ik heb voldoende tijd gehad om over mijn deelname te beslissen. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Ik neem vrijwillig deel aan dit onderzoek. Het is mij duidelijk dat ik deelname aan het onderzoek op elk moment, zonder opgaaf van reden, kan beëindigen. Ik hoef een vraag niet te beantwoorden als ik dat niet wil. | <input type="checkbox"/> | <input type="checkbox"/> |

Voor deelname aan het onderzoek is het bovendien nodig dat u voor verschillende onderdelen specifiek toestemming geeft.

- | | | |
|---|--------------------------|--------------------------|
| 3 Ik geef toestemming om de gegevens die tijdens dit onderzoek over mij worden verzameld te verwerken zoals is uitgelegd in het bijgevoegde informatieblad. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Ik geef toestemming om tijdens het gesprek geluid-opnames te maken en mijn antwoorden uit te werken in een transcript. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Ik geef toestemming om mijn antwoorden te gebruiken voor gepseudonimiseerde quotes in de verslaglegging van het onderzoek. | <input type="checkbox"/> | <input type="checkbox"/> |

Naam deelnemer:

Naam student:

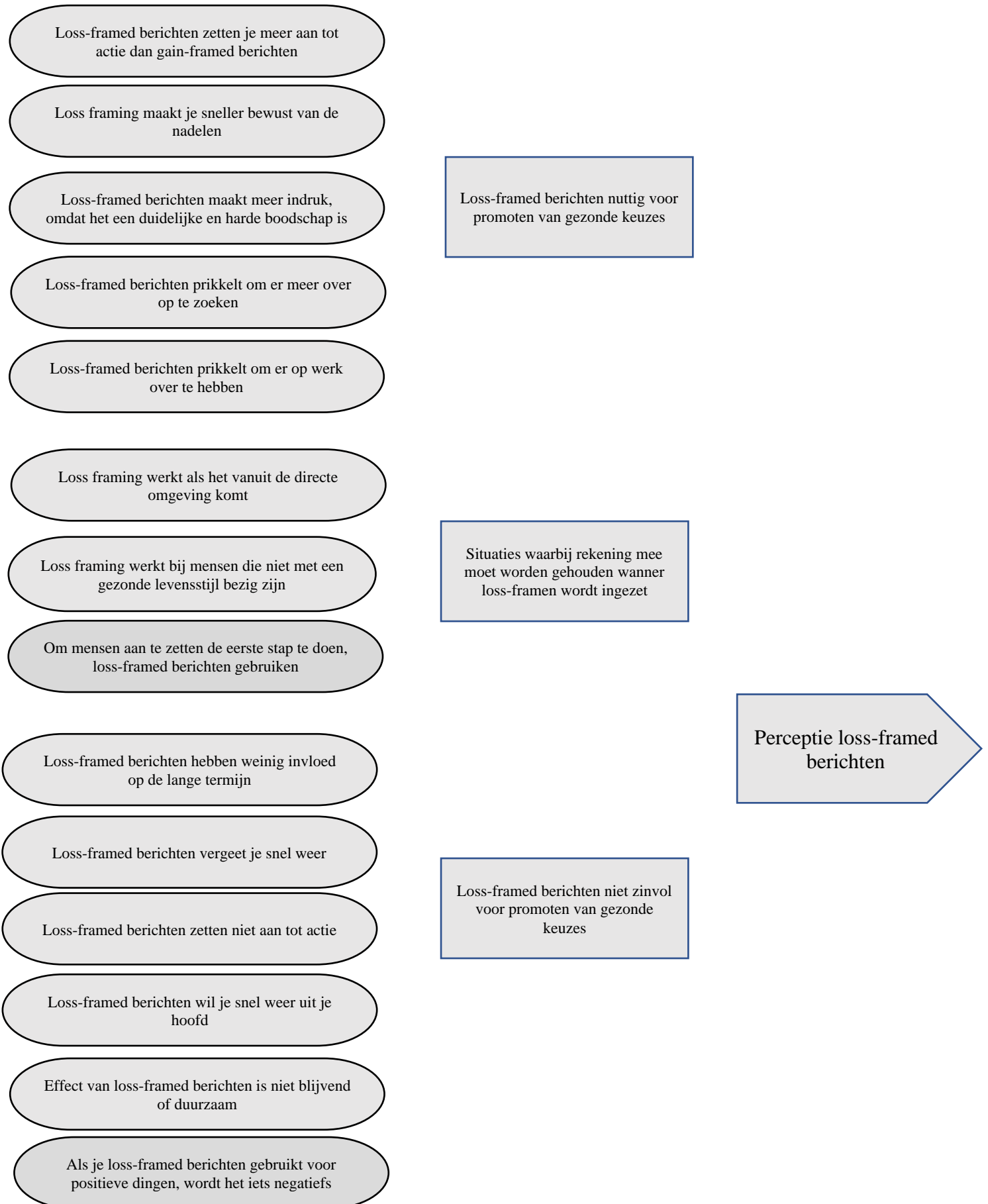
Handtekening:

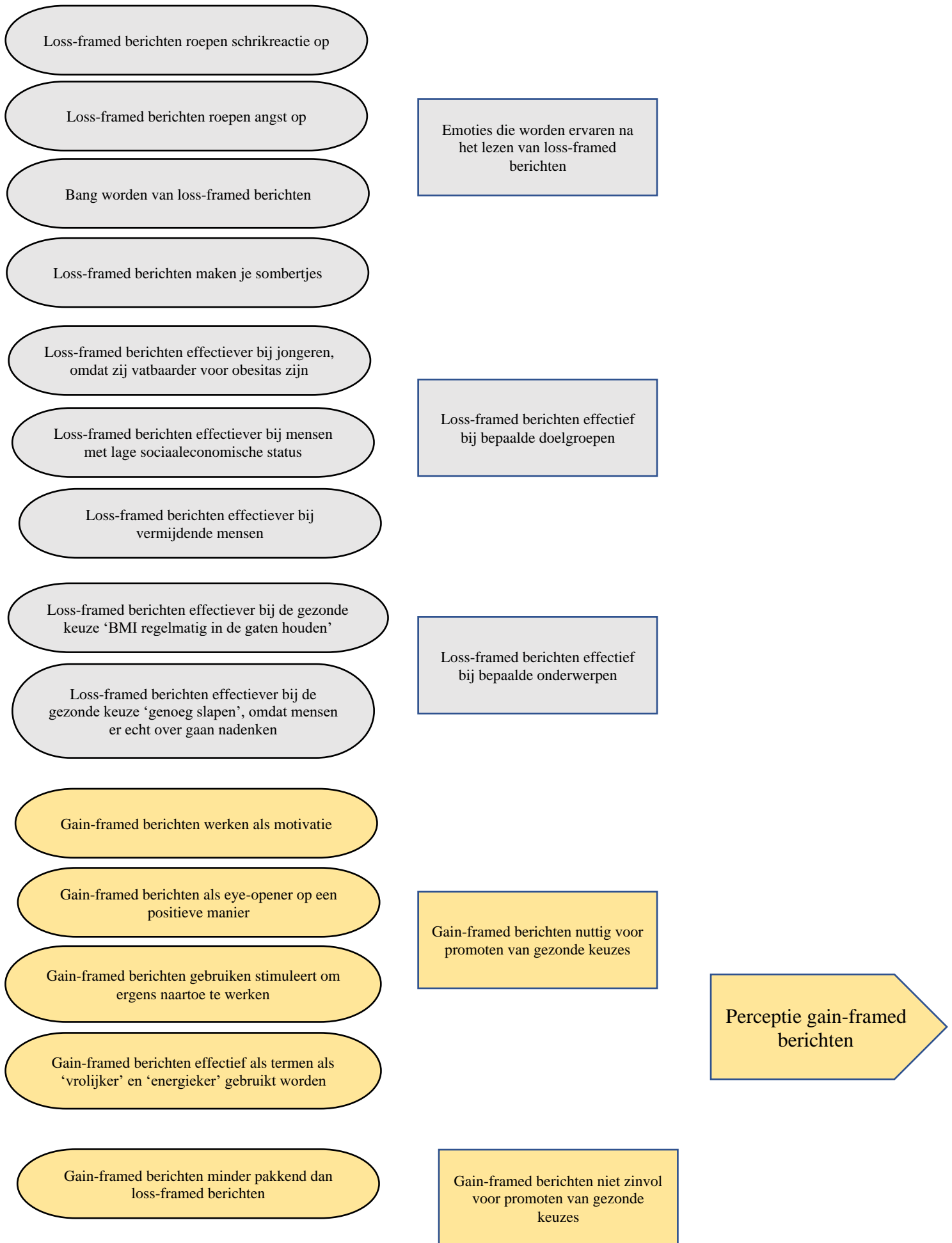
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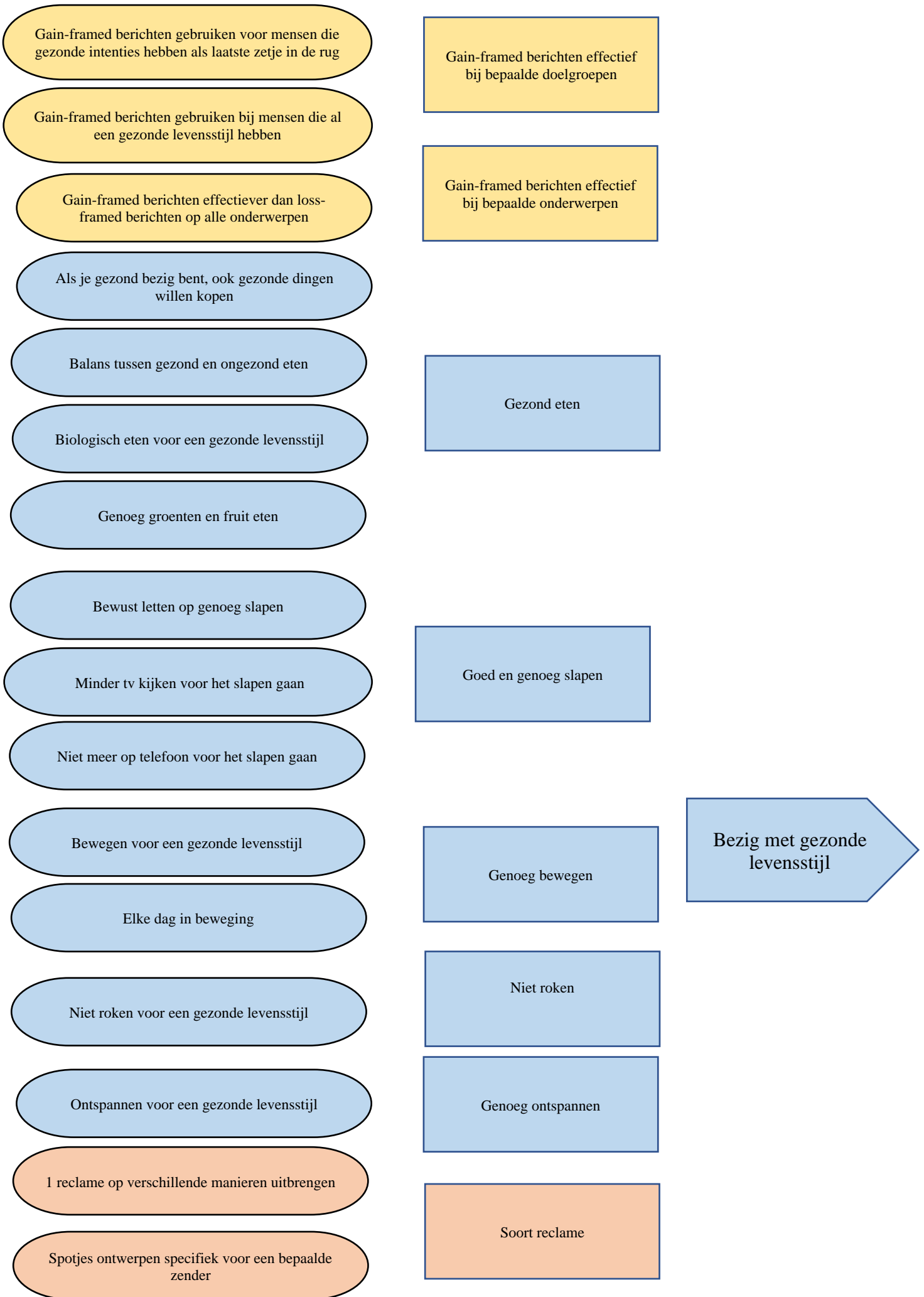
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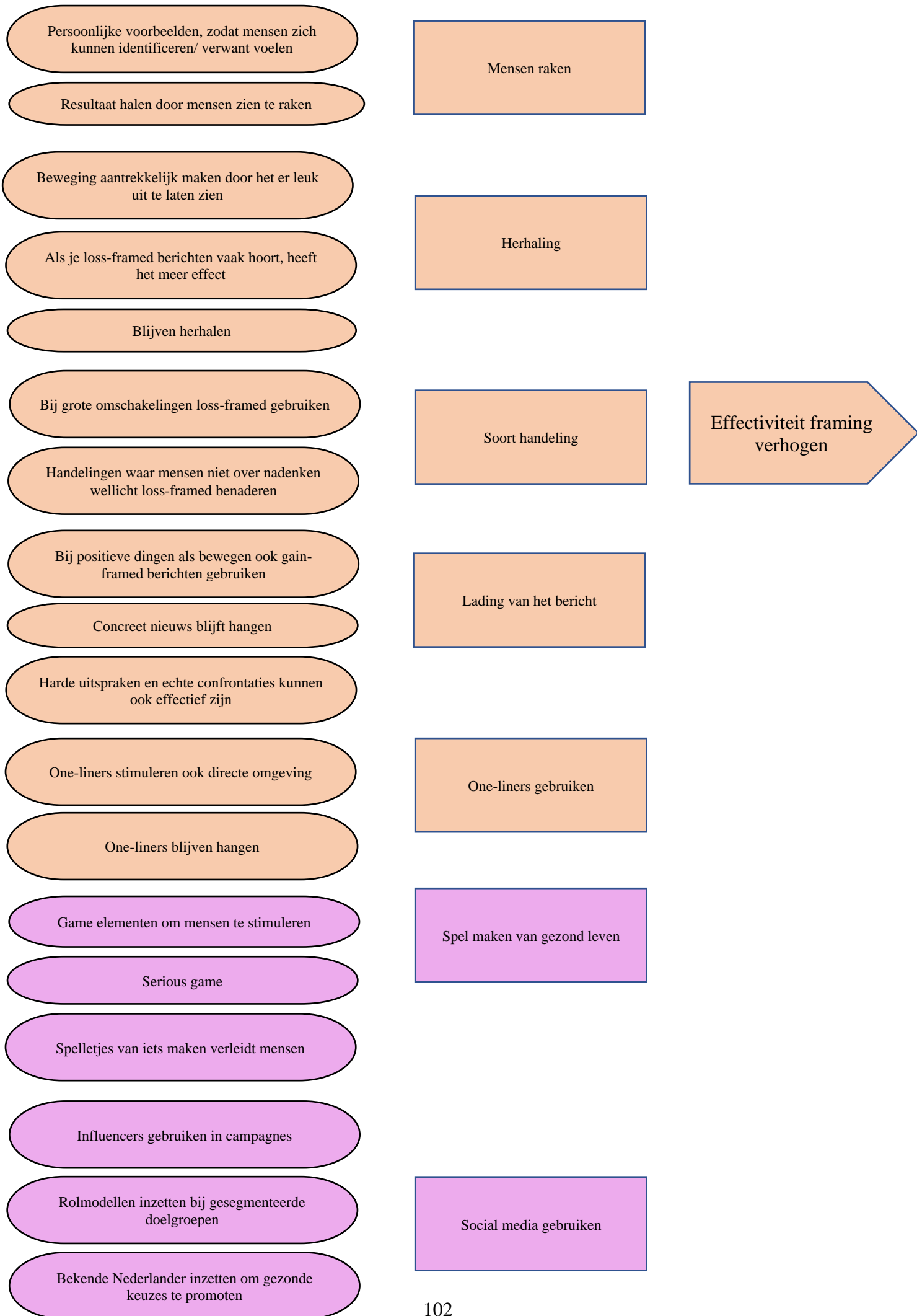
Datum:

e. Appendix 5 – Code tree









Sociale media gebruiken om gezonde keuzes te promoten

Default option effectief, omdat het een gewoonte wordt

Default option veranderen kan je op veel verschillende plekken/ situaties toepassen

Default option veranderen heeft veel effect

Mensen hebben geen voorkeur dus 'default option' is effectief

Financiële incentives zijn moeilijk controleerbaar/ fraudegevoelig

Mensen zijn gevoelig voor financiële incentives

Financiële incentives werken voor mensen met een laag inkomen

Marketingstrategie 'nutritional information' maakt je bewust

Marketingstrategie 'nutritional information' werkt bij mensen die al geïnteresseerd zijn

Voorlichting geven over nutriscores, zodat mensen weten wat het betekent

Marketingstrategie 'nutritional information' werkt niet bij mensen met weinig budget

Marketingstrategie 'nutritional information' werkt niet voor de doelgroep die dat het meeste nodig heeft

Verschillende strategieën combineren voor het beste resultaat

Meerdere instrumenten inzetten, omdat het totaal het meeste gaat opleveren

Alles uit de kast halen om gezonde keuzes te stimuleren

Default option

Financiële incentives

Nutritional information

Meerdere strategieën gebruiken voor grootste effect

Additionele marketingstrategieën

Meerdere instrumenten inzetten, omdat het totaal het meeste gaat opleveren

Meer dan alleen feitelijke informatie presenteren

Educatie geven over deze onderwerpen

Kinderen onderwijzen

Voorlichting geven over genoeg slapen/ te weinig slapen

Belangrijk om de gevaren uit te leggen

Voordelen benadrukken en uitleggen

Marketingstrategie 'verbieden' effectief

Verbieden werkt niet, want lastige keuzes voor de overheid

Verbieden werkt niet, want mensen komen er toch wel aan

Marketingstrategie 'verbieden' niet effectief

Eetwissel als middel om gezond eten te promoten

What the real price would be

Marketingstrategie 'touch, tell, sell' effectief

Goed om preventieve dingen, zoals smartwatch en cholesterolverlagende boter in te zetten

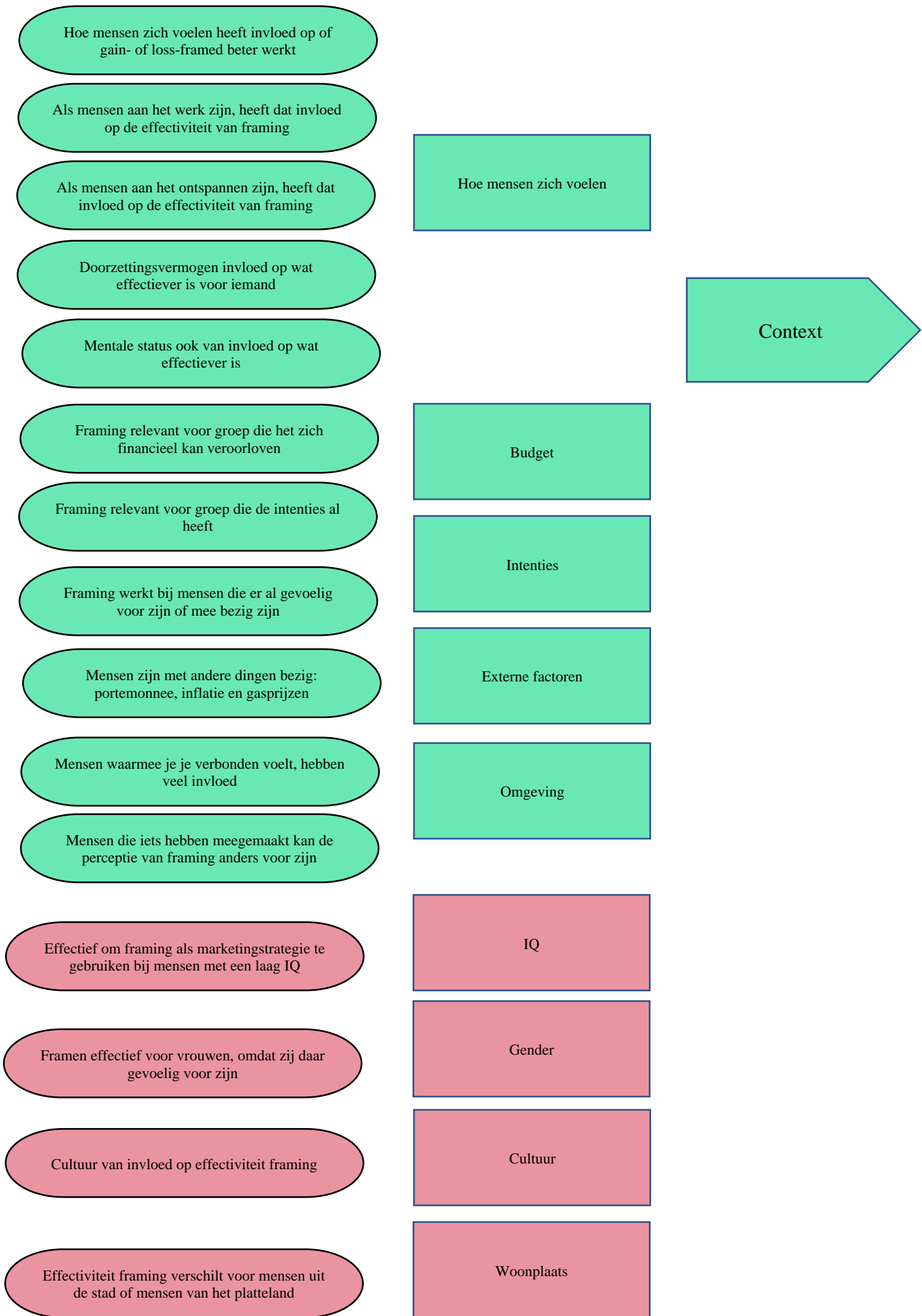
Iets gezonds aanbieden in plaats van het ongezonde verbieden

In plaats van verbieden, bemoeilijken of belasten

Voorlichting

Verbieden

Verbieden



Voor kinderen gratis groenten en fruit aanbieden

Kinderen

Jongeren benaderen door voorlichting

Jongeren motiveren in plaats van bestraffen

Jongeren

Jongeren worden veel beïnvloed door directe omgeving en door influencers

Beweging bij ouderen stimuleren vanuit werk

Sommige magazines worden alleen door ouderen gelezen

Ouderen

Bij bejaarden focussen op de risico's

Ouderen stimuleren met geld

Effectiefste manier verschilt per persoon

Marketers moeten kijken naar de situatie, de groep en de effectiviteit van framens

Segmenteren

Bepaalde doelgroepen worden niet bereikt

Marketers moeten segmenteren op verschillende doelgroepen

Persoonsgebonden

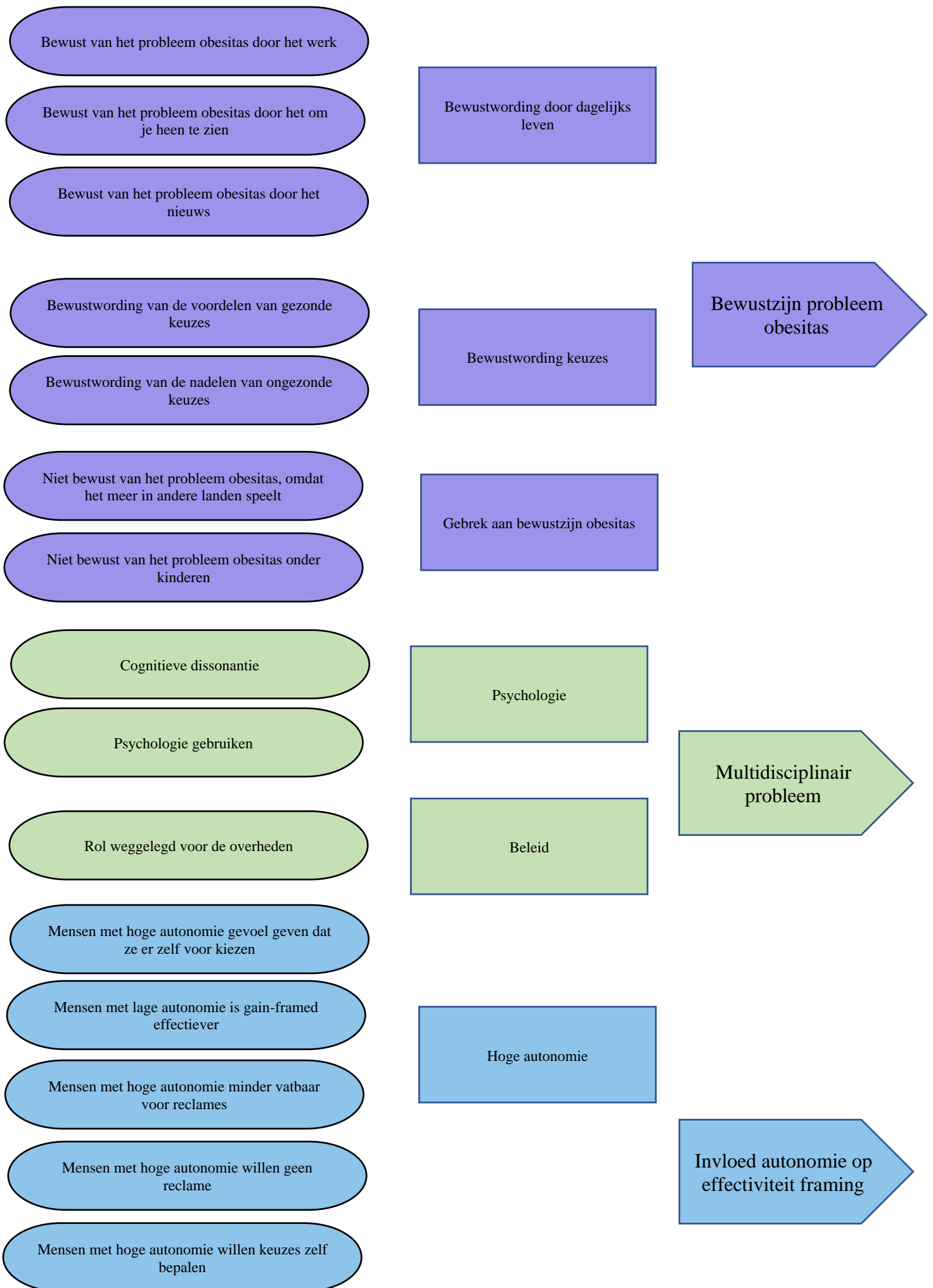
Niet focussen op individueel niveau, maar op grotere gesegmenteerde groepen

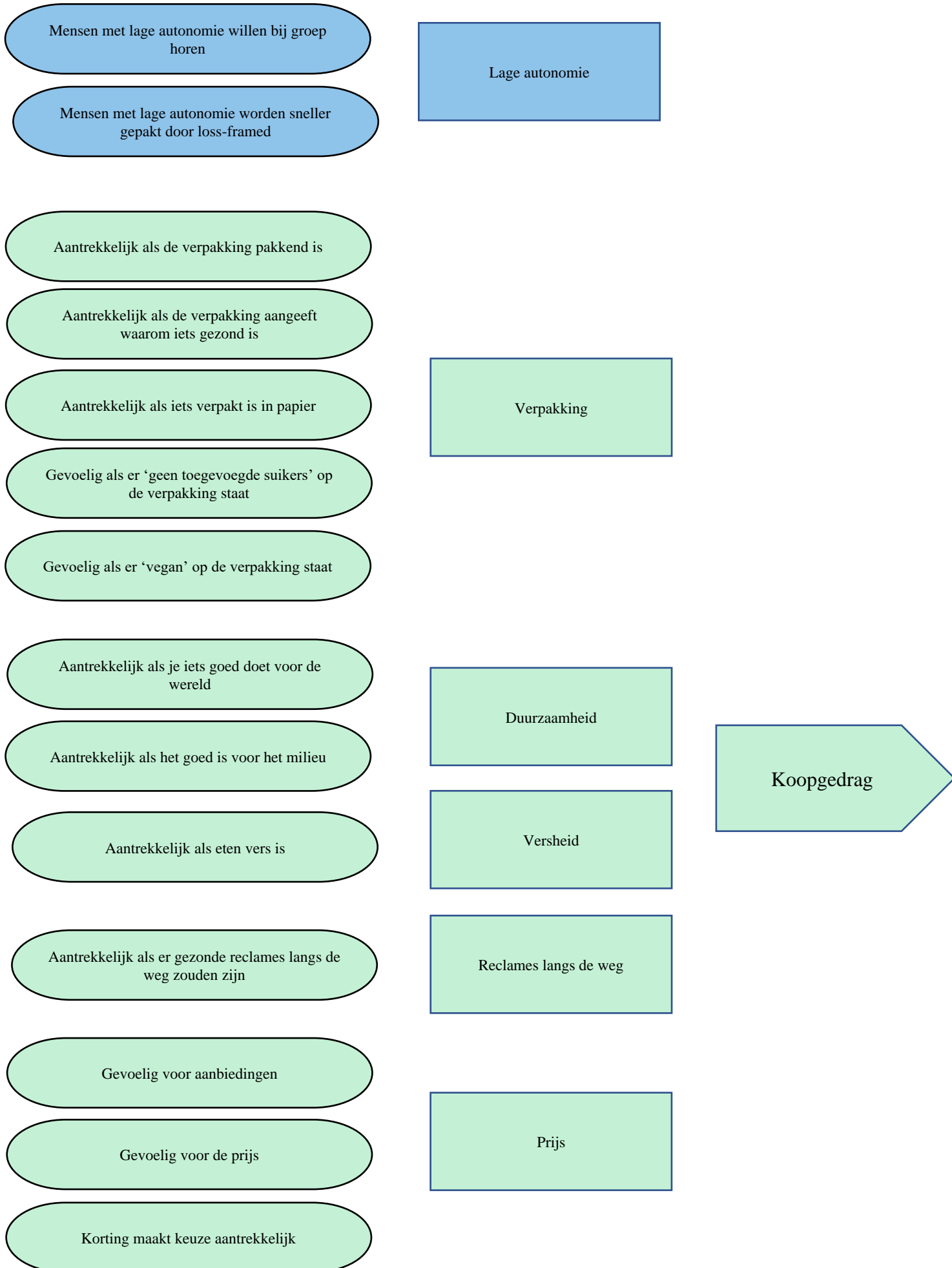
Mensen bereiken door zo veel mogelijk te specificeren

Mensen die te weinig bewegen worden nu niet bereikt

Juiste doelgroep bereiken

Mensen die je wil bereiken zijn minder gevoelig voor framing





Gezonde dingen van jongs af aan normaal maken

Vroeg beginnen

Gezonde keuzes promoten door er iets motiverends/ positiefs van te maken

Gezonde keuzes leuk maken voor kinderen

Gezond leuk maken

Gezonde keuzes normaliseren

Mensen laten ontdekken hoe leuk bewegen is

Gezonde keuzes standaard in lesprogramma's

Maak het onderwerp bespreekbaar onder verschillende groepen

Praten over gezonde keuzes

Mensen bekend laten maken met de voordelen van sporten

Mensen moeten beter geïnformeerd worden

Op werk gratis groenten en fruit aanbieden

Op werk promoten