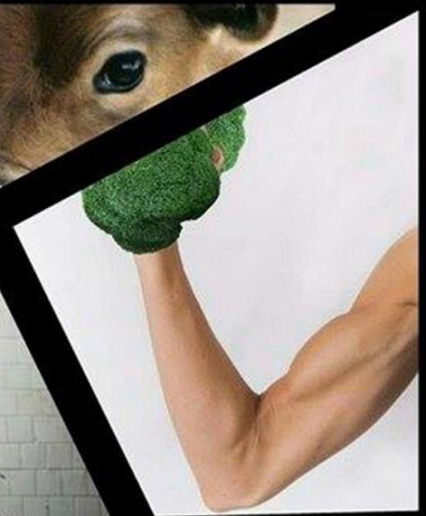


Designing **HEALTH** Communication Campaign Material



How to raise awareness on the relationship between
Men's consumption of meat and cancer risks



Master Thesis - 4th semester - 30 ECTS

Title: Designing health communication campaign material

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Supervisor: Helene Christine Reinbach

Msc Integrated Food Studies

Department of Development and Planning

Aalborg University Copenhagen

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Authors and study number:

Vaiva Cekatauskaite (20142996)

A handwritten signature in blue ink, appearing to read "Vaiva", written over a faint grid background.

Sandra Vilhelmsen (20147571)

A handwritten signature in blue ink, appearing to read "Sandra Vilhelmsen", written over a faint grid background.

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Preface

This study is developed as a final project of the interdisciplinary Master of Science Program Integrated Food Studies (IFS) at Aalborg University in Copenhagen. The study program offers a holistic approach combining natural science, design and social science perspectives. The three pillars of the program focus on design and gastronomy, food policy and innovation and public health nutrition (IFS, n.d.). The present study aimed at integrating all three study areas of the education program, in order to address the topic of designing health communication campaign material for raising awareness of men's consumption of meat and cancer risk.

The design approach, and specifically the process of presenting visual material, has been used throughout the entire IFS education. Therefore, the idea to design a poster, to be used as health communication campaign material, was implemented in the current study based on the knowledge and experience gathered throughout the educational program. The public health nutrition element in the current study has guided the entire process of analyzing the evidence of the relationship between meat and cancer, which was essential for developing the poster. The social science perspective is represented in this project by theories related to health communication, as well as considerations for the methodological approaches used in the current study.

Another important experience that led to the formation of this study was the Public Health and Nutrition project that was carried out by the student researchers in their 3rd semester. The goal of the study project was to increase awareness regarding the environmental and health impacts of meat consumption through intervention. The aim of this intervention was to investigate whether exposing participants to differently framed messages related to environmental sustainability had any influence on their food choices. As the study concluded that there is a significant relationship between the exposure to the message and a participant's choice of food, it was of interest to the student researchers to further investigate this phenomenon from a different perspective.

Abstract

Danish men consume an excessive amount of red and processed meat compared to the Danish nutritional guidelines. According to the WHO, processed meat is carcinogenic to humans while red meat is classified as probably carcinogenic and has furthermore been linked to the development of colorectal cancer, which is the third most prevalent type of cancer among Danish men. This study aims at investigating the process behind designing health communication campaign material in order to raise awareness on the relationship between men's consumption of meat and cancer risks.

A mixed methods approach was used in this study, as the combination of quantitative and qualitative approaches better addressed the research problem. A literature review established a positive association between colorectal cancer and the consumption of red and processed meat. Another literature review helped to identify the theoretical frameworks such as McGuire's communication/persuasion model and CDC's 10 step model for planning health communication (Roper, 1993). This review also provided a methodological framework that was used in designing health communication campaign material. An extreme consumer questionnaire was conducted among men, who have reduced or eliminated meat from their diet, for inspiration prior to the design phase. Based on suggestions from the extreme consumer questionnaire and identified health communication theories, a draft including six different health communication campaign posters was developed with an overall message encouraging men to reduce red and processed meat in order to prevent the development of colorectal cancer. The main theories used when developing the posters were: the prospect theory, with positive and negative message frames; the extended parallel process model, with the focus of fear and scare tactics, emotional appeals, positive appeals such as humor, rhetoric appeals, and credibility of the sources; and Fisher's narrative theory. The six posters were then tested in a focus group and three of the posters favored by the participants were further developed based on their suggestions. The focus group participants' demographics narrowed the target group for the study to consist of Danish male students between 18-34 years. Experts in the field of health communication (The Danish Cancer Society, Danish Agriculture and Food Council, PETA, The Whole Grain Partnership and a design expert) were consulted and either interviewed or provided expert opinions in relation to the three remaining posters, as well as providing an insight to their own knowledge and processes of developing health campaign material. Subsequently, one more poster was eliminated and the two remaining posters were tested among the target group in an awareness questionnaire. Data collected suggested that the use of scare tactics together with a valid source were most efficient in raising awareness on the association between colorectal cancer and red and processed meat.

Keywords: Red meat, processed meat, colorectal cancer, health communication, health communication campaign material

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1. Background

In recent years the burden of noncommunicable diseases, such as cancer, diabetes and cardiovascular diseases, has increased dramatically, causing a major public health challenge. According to the World Health Organization (WHO), annually there are 14 million new cases of cancer incidents and 8.2 million cancer related deaths worldwide. These numbers are expected to rise by approximately 70% during the next two decades, which makes cancer the leading cause of morbidity and mortality (WHO, 2015a). Colorectal cancer is currently the third most prevalent type of cancer worldwide as stated by World Cancer Research Fund (WCRF) (2014a) and third most prevalent type of cancer among men in Denmark (Kræftens Bekæmpelse, 2013a). One of the main risk factors that has been identified as relating to the development of cancer is unhealthy diets, accompanied by a low intake of fruits and vegetables (WHO, 2015a).

The risk factor for cancer development that was identified as an unhealthy diet, recognized both red and processed meat as a convincing cause of colorectal cancer, this was confirmed by the World Cancer Research Fund/American Institute for Cancer Research (2011). Furthermore, in 2015 the WHO released a report assessing the connection between colorectal cancer and the consumption of red meat and processed meat (WHO, 2015b). They carried out a thorough evaluation of the accumulated scientific research on the subject and concluded that red meat could be classified as “probably carcinogenic to humans, based on the limited evidence that the consumption of red meat causes cancer in humans and strong mechanistic evidence supporting a carcinogenic effect”, while “processed meat was classified as *carcinogenic to humans* (Group 1), based on *sufficient evidence* in humans that the consumption of processed meat causes colorectal cancer” (WHO, 2015b).

The importance of evidence emphasizing the link between meat and cancer has also affected national dietary guidelines. Danish Veterinary and Food administration (Fødevarestyrelsen) introduced new official guidelines in 2013, and for the first time the guidelines included a recommendation for a maximum of 500 grams of red and processed meat per week. This amount is estimated to apply to 2-3 meals with red meat and a small amount of processed meat (Fødevarestyrelsen, 2013). Furthermore, the same guidelines also acknowledged that consuming too much red meat and especially processed meat is associated with certain types of cancer (Fødevarestyrelsen, 2013). The evidence behind the new Danish guidelines are shown in a report from 2013 (DTU Fødevareinstituttet, 2013), where the guidelines were taken

into consideration from various reports including: WCRF/AICR (2007), Gyldendal Undervisning (Den store matvaretabellen, 2001), Nasjonalt råd for ernæring, Helsedirektoratet (2011) WHO/FAO (2009), Evidence-based guidelines for cardiovascular disease prevention in women (Mosca et al., 2007), and Primary prevention of ischemic stroke: a guideline from the American Heart Association (Goldstein et al., 2006).

In a recent report by Denmark's Technical University (DTU), the daily intake of red meat and processed meat were investigated. Danish men consume on average 151 grams per day (1.06 kg per week), while women consume 90 grams per day (630 grams per week) (DTU, 2016). This study from DTU (2016) concludes that men are consuming significantly higher amounts of red and processed meat compared to women. This evidence of men consuming more than women can be partially explained by a strong relationship between meat consumption and masculine identity (Buerkle, 2009). Particularly in the western culture, eating is usually represented as a manly activity, with meat being portrayed as an ideal 'manly' food and playing the central role in a 'manly' lifestyle (Buerkle, 2009). Additionally, it is argued that this pattern of men consuming gender appropriate food is especially prevalent among those who are not in a marriage relationship (Sobal, 2005). In Denmark, on average, men get married for the first time at 34.8 years of age (Statistics Denmark, 2015). This statistic suggests that Danish men under 34 are more subject to embracing their masculinity through meat consumption.

The previously presented association between colorectal cancer and men's consumption of red and processed meat highlights a public health concern that needs to be addressed.

Consequently the WHO (2013) has identified voluntary targets in relation to cancer prevention, emphasizing the importance of developing tools that would help to guide the implementation of interventions for prevention. The WHO articulates the importance of developing informational products for communication that would aid in reducing cancer risks (2013).

Health communication is the main communication field that focuses on disease prevention, health promotion and quality of life (Rimal and Lapinski, 2009). However, in the recent years a more specific field known as cancer risk communication, has emerged with new research providing new knowledge on cancer risk (Ersig, 2014). One of the topics that cancer risk communication addresses is the presentation of risk information on behaviors that can either increase or reduce the risk of cancer (Ersig, 2014). Even so, the complexities of communicating cancer risk and also the significant amount of information on cancer that is now available, make

it a difficult task to communicate cancer risk effectively (Ersig, 2014, Emmons, Cuite and Waters, 2009).

As communication can come in differing forms, such as verbal, numerical or visual (graphical), it can also facilitate various outcomes and responses (Ersig, 2014). Specifically, studies have concluded that using visual or graphical communication can yield a more favorable result, and more effectively, in an easier and more understandable way, communicate risk information (Garcia-Retarmero and Galesic, 2010). These studies also reflected on specifics of how to develop visuals, emphasizing the use of framing health information in order “to communicate information about risks in a way that is truly consistent with informed decision making” (Garcia-Retarmero and Galesic, 2010, p.1327). Though research discusses the value of visual communication, there is a lack of information available on which visual formats are the most efficient ones. This deficiency creates a need for research which would examine the impact of different visual displays on health risk as they can impact the way people perceive health risks (Emmons, Cuite and Waters, 2009).

Another recommendation from the WHO (2013), in the voluntary targets to prevent cancer risk, was to focus on gender-based approaches for the prevention of cancer in order to better tailor the approach. This was also emphasized by other studies that suggest focusing on the intended audience in order to develop the message according to their characteristics (Wansink and Pope, 2015). By doing this, the communication campaign will elicit greater responsiveness and compliance from the target group (Wansink and Pope, 2015). This hypothesis has also been established by Ersig, claiming that tailored messages on risk information can succeed in improving knowledge and risk perceptions of the individual (Ersig, 2014). Therefore in this study, a visually based health information will be tailored to a gender specific target group, men, in compliance with the evidence stated here.

1.1 Aim and focus

As previously discussed, a relationship between the consumption of red meat and processed meat and the risk of cancer has been identified and explored. This risk is evident in Danish society since records indicate that Danish men are consuming 1.06 kg of red and processed meat per week, while official Danish guidelines recommend maximum 500 grams per week. While colorectal cancer is ranked as the third most prevalent type of cancer among Danish men, a prevention campaign for reducing red and processed meat targeting men may benefit public

health. Therefore, this thesis will investigate the theories behind how health communication campaigns are designed to work most efficiently. The purpose of the tailored health communication campaign materials is to raise awareness among men about the relationship between ingesting red and processed meat and the risk of developing colorectal cancer; this will be done using different approaches for designing health communication campaign materials. This leads us to the following research question:

How to design health communication campaign material to raise awareness on the relationship between men's consumption of meat and cancer risk.

1.2 Delimitation

As the purpose of this study is to explore possible methods of designing health communication campaign material in relation to raising awareness of men's consumption of red and processed meat and the risk of colorectal cancer, it is important to identify the boundaries that have been established by the student researchers.

Due to the importance of source credibility throughout the entire process of the current study, it is important to emphasize that this study will take into consideration sources that were available at the given time and that also provided evidence based information on the relationship between red and processed meat and cancer risks. It is also important to emphasize that this study will not aim at advising people to stop eating red and processed meat, but on the contrary, the aim is to raise awareness on the evidence based information focusing on high consumption of meat and cancer risk.

In this study, the development of health communication campaign material is solely focusing on visual posters. While this study does not attempt to develop an entire health communication campaign, it is important to acknowledge the process of developing a full campaign based on relevant theories and models. Therefore, only steps and procedures that apply to the development of the current health communication material will be considered and followed.

2. Conceptual clarifications

Red meat - “refers to all types of mammalian muscle meat, such as beef, veal, pork, lamb, mutton, horse, and goat” (WHO, 2015b).

Processed meat - “refers to meat that has been transformed through salting, curing, fermentation, smoking, or other processes to enhance flavour or improve preservation. Most processed meats contain pork or beef, but processed meats may also contain other red meats, poultry, offal, or meat by-products such as blood” (WHO, 2015b).

Carcinogenic - Carcinogens are a contributing factor for the development of cancer, and are referred to as a cancer causing substance (Shaw, 2011).

Colorectal cancer (CRC) - “Colorectal cancer is cancer that starts in the colon or rectum. The colon and the rectum are parts of the large intestine, which is the lower part of the body’s digestive system” (Cancer.gov, 2016).

Detection behaviour - The primary purpose of detection behavior is to detect the existing health problem (Rothman et al., 2006)

Prevention behaviour - The main function of prevention behavior is to prevent a person from an illness and maintain the healthy status of a person (Rothman et al., 2006).

Health communication campaign - a purposeful attempt to inform, persuade or motivate behavior change in a target audience, typically for non-commercial benefits for individuals and/or society, within a given period of time and by organized communication activities (Downer, 1996).

The message (health communication) - “passes on information about a health concern, helps to build knowledge, and aids in negotiating a health issue” (Mattson and Basu, 2010, p.276).

3. Theory

This section provides insight into theories and models used in health communication campaigns and is divided into three parts: introduction to health communication, overall theories and models used for health communication campaigns, and more specific theories that fall under the input variable categories of the communication/persuasion model by McGuire (1989).

3.1 Introduction to health communication

As previously mentioned in the background, there is a special field of studies that originated from communication, known as health communication, where the goal is to prevent diseases, promote health and better quality of life (Rogers, 1994; Rimal and Lapinski, 2009). Health communication is the broader field that provides the base for communicating cancer risk which is the interest of this thesis. That is why it is essential to introduce an overall definition of health communication as well as other concepts related to it, which were found in the literature.

There were two sources derived from the literature review that provided a definition for health communication. The first definition was by Schönfeldt and Gibson (2010) where health communication was identified as a process through which individuals are informed about the recommendations and suggestions regarding food. A similar definition was introduced in the report by Roper (1993) which had been carefully constructed by Centers for Disease Control and Prevention (CDC). In this report health communication was referred to as “the crafting and delivery of messages and strategies, based on consumer research, to promote the health of individuals and communities” (Roper, 1993, p.181).

The previously mentioned study by Schönfeldt and Gibson (2010) highlighted not only the importance of the definition of health communication but also its role in the society today, mainly due to the fact that food is no longer associated just with nutrition, it also plays a “key role in the promotion and maintenance of long-term health” (p.128). Health communication is used to provide information for consumers towards healthier choices. Furthermore, a “consumer-driven trend towards health is affecting changes within the entire food chain, from policy and dietary guidelines to food production and retail” (Schönfeldt and Gibson, 2010, p.129). It is also explained in the study that food is considered as the cause for lifestyle related health problems by consumers and health experts, thus leading individuals to search for possible solutions

(Schönfeldt and Gibson, 2010). Schönfeldt and Gibson (2010) suggested using health communication to encourage consumers to make the correct food choices which would then provide a possibility to improve nutritional status across the globe.

3.2 Theory for planning health communication campaign

This section provides an overview of theories and models used for planning health communication campaigns that were found in one of the literature search strategies that focused on health and communication as the key concepts (see table 1).

Table 1: Overview of theories and models for planning health communication campaigns

Author	Theory - Model
McGuire (1989)	The Communication/Persuasion Model
Noar (2012)	Audience-Channel-Message-Evaluation (ACME) framework
Roper (1993)	CDC's 10-step model for health communication
Donovan (1995)	Review of CDC's 10-step model for health communication
Crawford and Okigbo (2014)	9 elements necessary for designing an effective health communication campaign
Noar and Head (2011)	Marketing principles
Mattson and Basu (2010)	Social Marketing, Four Ps of Marketing, Message Design Tool (MDT)

The first model on the list is McGuire's (1989) communication/persuasion model. McGuire's model serves as an overall framework for analyzing a large amount of research found in the literature search related to developing new public communication campaigns. This model consists of inputs - the independent variables that are used for constructing communication to change attitudes and actions; and outputs - the dependent variables or response steps that the communication must evoke in the target person in order for the persuasive impact to occur (McGuire, 1989). For this study, only the input factors will be analyzed, as they are the components for developing and constructing persuasive communication which is the aim of the current study. The communication input variables fall into five categories: source, message, channel, receiver and destination (McGuire, 1989) (See figure 1). The first category is the source variables that "refer to characteristics of the perceived communicator to whom the message is attributed" (McGuire, 1989, p.46). As an example, in a prevention message of forest fires the perceived communicator can be the forest ranger, or the secretary of agriculture, but

not the person in the creative department or the forest service who actually developed the message (McGuire, 1989). The second category in the input variables is the message, which has a wide range of subcategories starting from styles of delivery, types of appeal and organization of the material included. The third category describes the channel factors, or the media “through which persuasive messages are transmitted” which includes audio versus visual variables (McGuire, 1989, p.47). The next category analyzes the audience characteristics including such variables as age, education, intelligence, gender, personality, and other variables. McGuire (1989) emphasized that even campaigns for a wide public may have a more specific focus for a subpopulation. As an example for the prevention message of forest fires a more specific audience could be forest users or parents of preschoolers, where both groups have distinctive demographic profiles (McGuire, 1989). The final input category in McGuire’s (1989) model is the destination variables that target the behavior at which the communication is aimed. The examples of such variables could be immediate versus long-term change, or a change on a specific issue versus a broader one (McGuire, 1989). This communication/persuasion model will later on be used as an overall framework for additional theories that relate to these five input variables.



Figure 1: The communication input variables by McGuire, 1989

A similar model to McGuire’s (1989) communication/persuasion model, is introduced by Noar (2012) with a slightly different approach towards the entire process of health communication. This framework known as an audience-channel-message-evaluation (ACME) framework, can be used for designing, implementing and evaluating health campaigns (Noar, 2012). The concepts of this model by Noar (2012) consists of the audience category which is focused on audience segmentation and tries to identify the target audience for the health campaign. The channel category tries to identify the channel preferences for the selected audience. This category also involves strategic implementation of the campaign. The other part of this model is the message, which focuses on developing a message strategy that would fit the target audience. The last category is the evaluation, which splits up into formative evaluation, process evaluation and outcome evaluation. The formative evaluation focuses on understanding audience, examining

the message and channel, as well as pretesting the materials. The process evaluation examines the implementation process of the campaign, where the outcome evaluation examines if the campaign had an impact on the targeted audience (Noar, 2012).

The third model found in the literature search is the 10-step model for health communication, developed by Centers for Disease Control and prevention (CDC) originally introduced by Roper (1993). The original 10-step model guides the entire process of health communication from the very beginning with the steps in reviewing background of the specific topic, till the very end where the evaluation of the communication campaign is carried out. These 10 steps of health communication framework are: 1. Review of background information; 2. Set communication objectives; 3. Analyze and segment target audiences; 4. Identify message concepts and pretest; 5. Select communications channels; 6. Create messages and materials and pretest; 7. Develop promotion plan; 8. Implement communication strategies; 9. Assess effects; 10. Feedback (Roper, 1993) (see figure 2). However, the study by Donovan (1995) provided a review of this 10-step model and suggested some changes. The first suggestion is related to the overall goals of the program, which should be stated prior to the specific communication objectives. In this way, stating the overall objectives for the behavior change would “provide a clear focus for the literature review and formative research phases that lead to the development of communication objectives” (Donovan, 1995, p. 215). Another suggestion by the author was to identify and analyze the target audience before setting the communication objectives (Donovan, 1995).

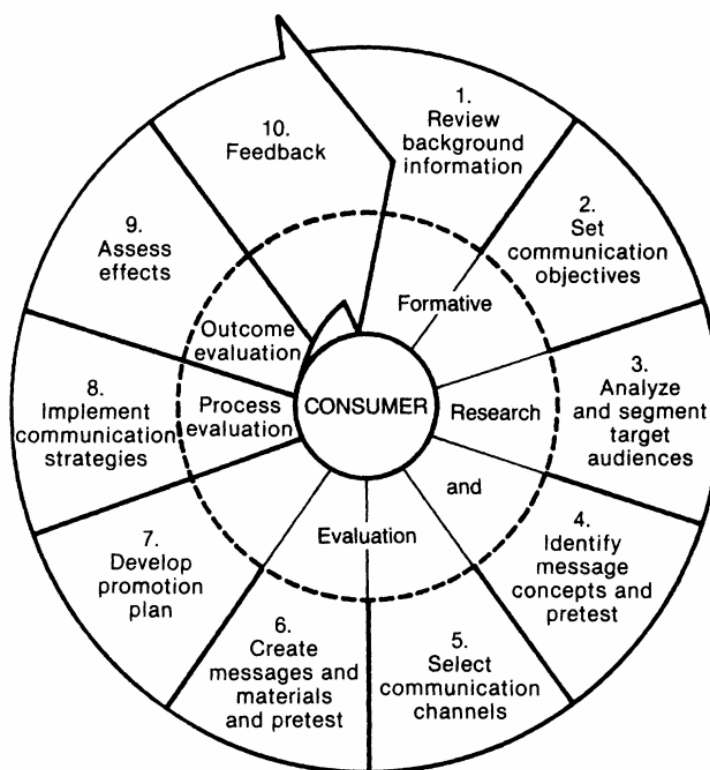


Figure 2: The original “10 step model for health communication” (Roper, 1993).

Another study that provided a similar approach as the 10 step model (Roper, 1993) towards an entire process of health communication campaigns was developed by Crawford and Okigbo (2014). This model suggested nine elements that are necessary for designing an effective health communication campaign (Crawford and Okigbo, 2014). The first step is to analyze the health problem that needs to be communicated by looking into its history, previous studies, failures and successes that would help to improve the future communication campaign. After the analysis of the situation or a health problem, goals and objectives of the campaign need to be identified. The goals and objectives in the health communication campaign need to aim for the impact and the outcome of the analyzed health problem. The third element in planning a health communication campaign, as noted by Crawford and Okigbo (2014), is to identify the target audience and its characteristics. Strategy comes as step four, as good strategy plays a key role in any health communication campaign, linking all the components. Strategy provides a roadmap and an overall direction for generating messages. Tactics, which is the next step in the model, are the specific activities that need to be undertaken in order to meet the objectives of the campaign. As health communication campaigns need to use some kind of media, a specific media has to be chosen in order to reach the target audience, which is step six in Crawford and

Okigbo's (2014) model. The seventh step is the use of calendar or a timeline for implementing campaign activities. Budget, step number eight, is also an important part of a health communication campaign if specific materials need to be purchased or additional services need to be paid. Finally, the last step in the campaign process is the evaluation, which relates to all the previous steps (Crawford and Okigbo, 2014).

Quite a different approach of using marketing principles towards planning health communication campaigns is introduced by Noar and Head (2011) and Mattson and Basu (2010). One of the main trends in health communication campaigns mentioned by Noar and Head (2011) was the use of marketing principles. Mattson and Basu (2010) also acknowledged this by mentioning social marketing, which is the "application of commercial marketing techniques to marketing attitudes and behaviors that might benefit the community" as a widely used framework for planning health communication programs (Roger, 1999, p.109 as quoted in Mattson and Basu, 2010, p.278). Furthermore, the four Ps of marketing – product, price, place and promotion were suggested by Mattson and Basu (2010) as key principles used in sustaining proposed health behavior changes. A study by Mattson and Basu (2010) analyzed a campaign which used the social marketing principle as its framework. This campaign, that aimed at increasing teenagers' physical activity, was identified as a successful campaign that used the messaging process which is a "dynamic and iterative practice of creating, disseminating, and sharing meaning with the goal of mutual understanding" (Mattson and Basu, 2010, p.280). This specific campaign used paid advertising and marketing strategies in order to promote physical activity for teenagers. To be more specific, the core of the campaign was "to create a positive, long-term association between the audience and physical activity" (Mattson and Basu, 2010, p.280).

Together with proposing the use of social marketing, Mattson and Basu (2010) proposed a new tool for message development in health communication that will help to contextualize the message component in the stages of planning, implementing and evaluating. Mattson and Basu (2010) introduce a message design tool (MDT) that is designed to help health campaign practitioners make a connection between campaign goals, messages and outcomes. The tool consisted of 4 phases. Phase 1 helps to gather relevant scientific evidence that needs to be communicated. Phase 2 is about developing the strategic plan for communicating the issue to the target audience. Phase 3 and 4 "involve implementation, evaluation, and correction of the campaign with a continued focus on the messaging process" (Mattson and Basu, 2010, p.284).

From this overview of theories and models used for planning health communication campaigns, some valuable insights have been gathered in order to be used later in the study. The specific models and theories that will be used when planning health communication material in this study will be identified in the results sections.

3.3 Theories according to McGuire's model

This theory section is an additional section to the previous one, as it provides an overview of specific theories and studies that were categorized according to McGuire's (1989) communication/persuasion model which was introduced in the previous section. The theories found in the literature review consist of studies analyzing different theories, as well as primary studies introducing the theories. Based on the relevance of the subject, the theories were grouped into five categories according to McGuire's (1989) communication/persuasion model input variables: source, message, channel, receiver, and destination (see table 2).

Table 2: Overview of theories from the literature review according to McGuire's model

SOURCE	MESSAGE	CHANNEL	RECEIVER	DESTINATION
<p>Activation model, extended parallel process model and Fisher's Narrative Theory Edgar and Volkman (2012)</p> <p>Narrative communication: Janssen et al (2013) and Hesse et al (2015)</p> <p>Source characteristics: Schönfeldt and Gibson (2010)</p>	<p>Framed messages: Tewksbury and Scheufele (2009) Gallagher and Updegraff (2012) Kahneman & Tversky (1979) Rothman et al (1993) Bartels, Kelly and Rothman (2010)</p> <p>Tailored messages: Campbell and Quintiliani, (2006) Quintiliani (2006)</p> <p>Message components: Activation model; extended parallel process model (Edgar and Volkman (2012) Affective appeals Dutta and Vanacker (2000) Downer (1996) Theoretical appeals Ramirez, (2013)</p>	<p>Visual Cognitive Theory, Attribute Activation, Pictorial Superiority Effect and Dual Coding Theory, Cognitive Load Theory, Visual Persuasion McWhirter and Hoffman-Goetz (2014)</p> <p>Using visual channels : Lee et al (2011) Noar, Benac and Harris (2007) Crawford and Okigbo (2014) Schönfeldt and Gibson (2010)</p> <p>New media: Noar and Head (2011) Downer (1996) Clar et al (2014) Cassell, Jackson, Cheuvront (1998) Chou et al (2013) Hesse et al (2015) Quintiliani (2006)</p>	<p>Downer (1996) Donovan (1995) Mattson and Basu, (2010) Dutta and Vanacker (2000) Emmons et al (2004) Sobal (2005) Ramirez (2013) Aspara and Van Den Berg (2013)</p>	<p>Behavioral prediction theory Fishbein and Yzer (2003)</p> <p>Media priming Fishbein and Yzer (2003) Roskos-Ewoldsen et al (2009)</p> <p>Social cognitive theory of mass communication Bandura (2001)</p>

3.3.1 Source

The first input variable according to McGuire's (1989) communication/persuasion model is the source. The source category will focus on theories and articles that explain the characteristics of the perceived communicator who is proclaiming the message.

The theory section on source characteristics starts with Fisher's narrative theory as analyzed by Edgar and Volkman (2012) that helps to develop an ideal narrative for the health communication. Storytelling, which is an essential part of Fisher's narrative theory, could also be used in developing the source characteristics of the health communication. In the same way that "an illness experience helps us understand more about the illness itself", so also does storytelling help us to better understand the relevant subject (Edgar and Volkman, 2012, p.589). Fisher's theory claims that people judge a story based on its consistency and truthfulness. If these two aspects are present in the story, a person is more likely to change beliefs and behaviors. On the contrary, if the story sounds "fake" or lacks consistency and truthfulness, then the person is less likely to change beliefs and behaviors (Edgar and Volkman, 2012). A drug prevention campaign for school kids serves as an example of an effective use of storytelling. This campaign video consisted of language, setting and peer norms that follow real-life situations based on the narratives of the school kids. In this example, kids themselves are the source of the communication campaign, which helps other kids to relate to the campaign. Thus using storytelling in the source of the message might contribute immensely to the way the target audience can relate to the identified problem.

The study by Janssen et al. (2013) compared the influence of narrative and non-narrative risk communication on feelings of cancer risk. In the study, narrative risk communication is defined as different from factual or numerical risk communication, because it includes real-life, personal stories. The findings of the study revealed that "narrative risk communication is effective in influencing feelings of cancer risk" (Janssen et al., 2013, p.414). Hesse et al. (2015) also pointed out that compelling narrative risk communication helps to transform the mindset of the individual.

Hesse et al. (2015) and Schönfeldt and Gibson (2010) reflected on source characteristics in their studies; when analyzing the sources for communication, Hesse et al. (2015) pointed out that "messages are much more effective if they come from sources with high perceived status and credibility" (p.202). [1] [2] The study by Schönfeldt and Gibson (2010) added a suggestion of using credible scientific nutritional data as the foundation of any health campaign. The authors recommended, that the evidence used "should be the most recent, accurate and applicable information translated within the context in which it is to be used" (Schönfeldt and

Gibson, 2010, p.132). The goal of providing scientific data related to nutritional guidelines is to help individuals understand, apply and trust the information (Schönfeldt and Gibson, 2010).

3.3.2. Message

The second category in the input variables by McGuire (1989) is the message, which is an important component in health communication as well as in any other kind of communication (Mattson and Basu, 2010). The study defined messaging as a “dynamic and iterative process of creating, disseminating, and sharing meaning with the goal of mutual understanding” (Mattson and Basu, 2010, p.283). Specifically for health communication, the message “passes on information about a health concern, helps to build knowledge, and aids in negotiating a health issue” (Mattson and Basu, 2010, p.276). However, messaging is a complex and dynamic concept that is part of a “cyclical process of designing, testing, revising, implementing, evaluating, and correcting campaign messages” (Mattson and Basu, 2010, p.284). Framed and tailored messages were found to be one of the most commonly researched messages in relation to health communication campaigns. The following overview describes the theory on these two types of messages. Furthermore, theories on specific message components are also included in the overview (See table 2 for overview).

Framed messages

As artists choose the frame for their painting in order to help the audience to see the image in the right way, so do all authors of any kind of communication go through a similar process of deciding how to communicate their information to their audiences: “They choose images and words that have the power to influence how audiences interpret and evaluate” (Tewksbury and Scheufele, 2009, p.17). This concept is known as framing the message. In relation to health communication, Gallagher and Updegraff (2012) emphasized their support of “using framing to increase persuasiveness of health messages” (p.101).

One of the frames used for messages discussed by Tewksbury and Scheufele (2009) was gains vs. loss frames by Kahneman and Tversky (1979), which was also found as a prominent theory in the research by Gallagher and Updegraff (2012), Rothman et al. (1993) and Bartels, Kelly and Rothman (2010). The gain and loss frames originate out of the work on the Prospect theory by Kahneman and Tversky (1979). The Prospect theory was developed by Kahneman and Tversky (1979) in order to oppose the utility theory for decision making under risk.

According to the original text by Kahneman and Tversky (1979) Prospect theory suggested that people make choices based on the perceived risk on the subject. People tend to be risk averse when choices involve certain gains, and on the contrary, people tend to be risk seeking when choices involve certain losses. An example of a gain-framed message could be: "Exercising regularly can help you lose weight" (Gallagher and Updegraff, 2012, p.101). Contrary to this, a loss-framed message could be: "Not exercising regularly can make you gain weight" (Gallagher and Updegraff, 2012, p.101). Gallagher and Updegraff (2012) explain an assumption of Prospect theory by suggesting that "when faced with two choices - one posing little risk and one posing some higher degree of risk - a person's preference for one option over the other will be influenced by the manner in which the choices are framed" (p.102). As in the previous example the loss-framed message presents a higher risk for the person as it emphasizes the possibility of gaining weight, compared to the gain-framed message which provides a solution.

After introducing the overall framing concept, the review by Gallagher and Updegraff (2012) specified the concept of health message framing based on the Prospect theory: "Health messages can be framed to highlight either the benefits of engaging in a particular behavior (a gain-frame) or the consequences of failing to engage in a particular behavior (a loss-frame)" (p.101). However, "the practical benefit of health message framing can only be realized by examining behavior as an outcome" and not the intention to be engaged in the behavior (Gallagher and Updegraff, 2012, p.111). In terms of using message framing in health communication, it has been used mainly to promote dental hygiene, safe-sex, exercise, breast cancer detection, skin cancer detection, and smoking prevention (Gallagher and Updegraff, 2012).

In terms of using framing for behavior studies, Rothman et al. (1993) derived a hypothesis stating "that the relative influence of positively and negatively framed information is sensitive to the nature of the behavior promoted" (Rothman et al., 1993, p.413). More specifically, the authors pointed out that positively framed messages should work better with prevention behaviors, and negatively framed messages should facilitate the effect in detection behaviors (Rothman et al., 1993). Bartels, Kelly and Rothman (2010) elaborated on "how the risk associated with performing a health behaviour moderates the effect of framed messages" (p. 822). The study concluded that in order to predict behavioral decisions, it is important to examine how individuals comprehend the value of a given outcome, and also how individuals understand the risk that is presented before them (Bartels, Kelly and Rothman, 2010). To clarify

their findings, the authors take an example of a detection test where people are screened for markers of health. Rather than providing people with bad news from the detection test, it is possible to provide people with information that lets them affirm their health status (Bartels, Kelly and Rothman, 2010).

Tailored messages

“Message tailoring is the process of developing a specific, behavior-focused communication based on an assessment of individual characteristics” (Kreuter, Strecher, and Glassman, 1999, as quoted in Campbell and Quintiliani, 2006, p.776). Campbell and Quintiliani (2006) investigated the field of tailored communication and how it relates to health interventions. The goal of the study was “to develop effective and cost-effective health communications for promoting health behavior change that also are culturally relevant and potentially sustainable in communities” (Campbell and Quintiliani, 2006, p.775). The study pointed out that tailored messages could help individuals with lower literacy, as the process of tailoring eliminates irrelevant information and focuses on the information that is relevant (p.776). Furthermore, it has been pointed out by the authors that tailored communication “may actually reduce the burden of reading and processing compared to receiving a generic health communication” which is directed to a large audience (Campbell and Quintiliani, 2006, p.776). Tailored messages were developed based on individual characteristics, as well as participant’s demographics, which serve as an effective health communication tool to individual behavior change. Interestingly, the authors provide some recommendations on how tailoring methods could also be used in developing communication messages for a larger group of individuals that share the same characteristics (Campbell and Quintiliani, 2006, and Quintiliani, 2006).

One of the opening arguments in Quintiliani’s (2006) dissertation reflect the potential for health communication interventions to connect individual behavior with the recommended health guidelines related to cancer incidences. Quintiliani (2006) argued that researchers have not sufficiently studied how to use tailored messages in cancer prevention intervention on multiple behaviors. In this study, the importance of the individual’s behavioral priority, which indicates the behaviors that participants want to work on the most, is compared to the expert picked recommendations. According to the study results, messages that were picked by health experts did not match individual’s behavioral priority, and were found to be less persuasive due to the fact that it provided less relevant information to the individual (Quintiliani, 2006). Thus it was stated that the most effective tailored message should be the one where the “match between a

participant's behavioral priority and expert advice regarding what they should be working on is stated explicitly" (Quintiliani, 2006, p.91). One of the points stated by Quintiliani (2006) argues that "tailored messages can utilize the factors of decreasing distraction and increasing relevance" for the individuals, which could influence long-term attitude and behavior changes (Quintiliani, 2006, p.7). The dissertation concluded by stating that tailoring messages according to individuals' behavioral priorities was found to be more efficient than messages tailored to expert-knowledge. Overall, Quintiliani (2006) stated that tailored health communication campaigns which are "effective in facilitating healthful nutrition and physical activity choices have the potential to impact cancer incidence population-wide" (Quintiliani, 2006, p.IV).

Message components

After analyzing the most common message types in the area of health communication, it is also essential to look into theories on specific message components. Activation model is a theory discussed by Edgar and Volkman (2012) that recommends creating messages with high sensation value for sensation seekers. Sensation seeking is referred to as a desire for "varied, novel, complex, and intense sensations and experiences and the willingness to take physical, social, legal and financial risks for the sake of such experiences" (Zuckerman, 1994, p.27 as quoted in Edgar and Volkman, 20120, p.588). Those people that appear high on the sensation seeking scale are more likely to engage in risky health-related behaviors, such as heavy alcohol consumption (Edgar and Volkman, 2012). In the development of a message, the high sensation value is reached when the sensation seeking experience is presented in the content of the message. This kind of message would need to have such characteristics as being novel, creative, emotionally powerful, and graphic (Noar, Palmgreen, Zimmerman, Lustria, and Lu, 2010, p. 24, as quoted in Edgar and Volkman, 20120, p.588). Data from a number of initiatives based on the activation model which aimed at young sensation seekers around issues, such as condom use and drug use, have demonstrated positive results (Edgar and Volkman, 2012).

The second theory on specific message components is the extended parallel process model which provides detailed guidance about the message content. This specific theory focuses on constructing "effective risk messages that are grounded in fear appeals and scare tactics" (Edgar and Volkman, 2012, p.588). The theory explains that there are two cognitive appraisals that recipients engage in when faced with a health risk message. The first response is the threat appraisal, where the recipients of the message determine "if the unpleasant outcome associated

with not changing behavior is serious enough to be concerned about” and the actual probability of the unpleasant outcome (Edgar and Volkman, 2012, p.588). The recipient ignores the message if the results of the threat appraisal are not sufficiently severe. However, if the recipient identifies the message to have high severity and susceptibility, then the recipient is engaged in the second appraisal which is the efficacy appraisal. At this stage, the recipient evaluates the ability to perform the intended behavior, which is also known as self-efficacy form. After that, response efficacy takes place, where message recipients look further and evaluate the outcome and the difference that this behavior will make in their life (Edgar and Volkman, 2012). According to the extended parallel process model, the fear appeal will only be successful if the two forms of appraisal are combined together. As described in an example of a gun safety campaign, the message evoked threat appraisal by focusing on vulnerable children and providing numbers on how many kids die from accidental gunshot wounds. Then the message steered the target group into response efficacy appraisal by portraying kids who play with a gun that has a trigger lock on. Finally, the message ends with a self-efficacy appraisal where the target group is encouraged to call and get the trigger lock for free (Edgar and Volkman, 2012).

In relation to message components, Dutta and Vanacker (2000) also pointed out the importance of using affective appeals in communication campaigns. It was pointed out by Dutta and Vanacker (2000) that the biggest challenge in creating an effective communication is to capture the attention of the audience with the help of positive and negative affective appeals. Emotions were identified as a possible appeal for capturing attention, the same as humor. However, using humor in a communication campaign requires expert knowledge (Downer, 1996). The use of negative appeals such as fear are quite tempting in health communication campaigns. In relation to the use of negative appeals, the study conducted by Downer (1996) pointed out that audience exposed to negative appeals tend to reject the intended message. This statement is based on an argument that “The goal of health communication is not to make people less comfortable with aspects of their lives, but rather to make them more comfortable” (Downer, 1996, p.105).

Visual message components are important for developing a visual communication campaign. Visual communication design emerged as a new field of design where the focus on graphical and industrial products is combined with human interaction and environmental systems (Ramirez, 2013). The study by Ramirez (2013) pointed out that the human centered design

methods, which aimed at making the product more useful and usable by the consumer, have overlooked the aesthetics of the design and only focused on the “practical information such as ergonomics, practical communication, and usability” (Ramirez, 2013, p.2). Ramirez has pointed out, that “A trend in graphic design is to value simplicity to achieve comprehension of content; it is the core of design products such as information graphics and visualizations” (2013, p.7). The visual argument theory also adds to the previous argument by suggesting the use of images as arguments, where images have meaning that is consistent, images are consistent with the context and there has to be a link between representation and resemblance (McWhirter and Hoffman-Goetz, 2014).

The main goal of Ramirez's (2013) study is to provide an overview of the theoretical appeals in graphic design when developing design methods that would encourage individuals to change their attitudes and behaviors. “The particular focus is on rhetorical appeals, which included three modes of persuasion: logos is an appeal to reason, pathos to emotion, and ethos to character and credibility” (Ramirez, 2013, p.1). As explained by Ramirez (2013), in classical rhetoric, appeals to logos have to provide the truth with rational arguments behind it, where appeals to pathos raises emotions in the audience. Finally, the appeals to ethos provide the source of credibility in a way the message is delivered. As an example of the application of rhetorical appeals in graphic design Ramirez (2013) suggested Ehsses (2008) approach, where logos strategies refer to “the organization of information, choice of fonts, hierarchy and consistency with the goal of facilitating understanding” (Ehsses, 2008, as quoted in Ramirez, 2013, p.27). Furthermore, “Pathos strategies refer to special arrangements, visual symbolism, and choice of images and colors with the goal of triggering emotions” (Ehsses, 2008, as quoted in Ramirez, 2013, p.27). And finally, “ethos strategies refer to the conceptual approach to provide credibility, empathy, and reliability” (Ehsses, 2008, as quoted in Ramirez, 2013, p.27).

The study concluded with rules of thumb for design principles that are based on the findings, where one of main findings suggested the use of all three kinds of appeals logos, pathos and ethos in order to reach a wider audience. It should be noted, when using all the appeals, it is important to balance them depending on the context and the target group. Another rule of thumb similar to what Downer, (1996) also mentioned, recommended the use of emotions in the design, as they help to grasp the attention of the target audience. Furthermore, it has been pointed out that using emotion and credibility in the design help the target audience to engage in the behavior change, not depending on the amount of sufficient knowledge that the target

audience has (Ramirez, 2013). As for health topics, they are more ethos-driven compared to other appeals (Ehse, 2008, as quoted in Ramirez, 2013, p.27).

3.3.3 Channel

The third category in this theory section describes the channel factors, or the media that transmits the message. This section mainly focuses on providing the advantages of using visual communication channels compared to audio or textual information.

“Visual communication is defined as any optically stimulating message” (Lester, 2006, as quoted in McWhirter and Hoffman-Goetz, 2014, p.738). Research on health communication pointed out that visual images affect attention, recall and understanding of health information (McWhirter and Hoffman-Goetz, 2014). Thus the authors of the study conducted a systematic review of literature on skin cancer and tanning in order to see what visual communication theories were used, the evaluation of the images, and the use of images in the research studies (McWhirter and Hoffman-Goetz, 2014). The authors of the study claimed that “The extent to which visual communication theories guide health communication research is unknown” (McWhirter and Hoffman-Goetz, 2014, p.739). Following this statement, the authors provided an overview of prominent theories in visual communication, which include Visual Cognitive Theory, Attribute Activation, Pictorial Superiority Effect and Dual Coding Theory, Cognitive Load Theory, Visual Persuasion.

The first theory supporting the use of visual information is the Visual cognitive theory. This theory helps to understand the mind process of the recipient of the visual information, and helps to identify which behavior is based on that information (McWhirter and Hoffman-Goetz, 2014). Based on the visual cognitive theory, when a person is exposed to an image, he or she is not only witnessing an image, but also drawing conclusions on what is being perceived (Lester, 2006 as mentioned in McWhirter and Hoffman-Goetz, 2014, p.740). These conclusions originate from mental activities such as memory, expectation, culture, words and others that have been affected by the visual image (McWhirter and Hoffman-Goetz, 2014).

Another theory explaining visual communication channels is an attribute activation theory. This theory helps to understand how people process, select, critique and create visual representations. This theory is concerned with image components and how they represent the

information to the viewer. An example of a red circle is an attribute of the image indicating one's position on a map, which also indicates their location in space (McWhirter and Hoffman-Goetz, 2014).

Pictorial superiority effect and dual coding theory also claim that visual information has a greater effect compared to verbal or textual information (Paivo, 1996, as quoted in McWhirter and Hoffman-Goetz, 2014, p.740). This argument explains that pictures are dual-coded into verbal and visual memory, thus it is easier to recall them. Furthermore, pictures are easier to recall and recognize because they are encoded uniquely and have meaning in human brains (McWhirter and Hoffman-Goetz, 2014).

Cognitive load theory provides additional insight on how visual information is perceived by the target group. This theory is based on information processing patterns, which consist of short term memory and long term memory. This theory implies that there is a limited amount of information, both verbal and visual, that a person is able to receive at one point. If the amount of information exceeds the limits, then the person is unable to process it and learn from it (McWhirter and Hoffman-Goetz, 2014).

Visual persuasion theory, also known as visual rhetoric, "focuses on how an image is communicated to and persuades the viewer (Foss, 2005, as quoted in McWhirter and Hoffman-Goetz, 2014, p.741). Emotional appeals is one of the aspects used in promoting a desired behavior as suggested by visual persuasion theory. This theory is a prominent theory used in health related attitudes and behaviors (McWhirter and Hoffman-Goetz, 2014).

The study by McWhirter and Hoffman-Goetz (2014) concluded that there is a lack of information on the images used, the source of the image, the description of the image, the selection, and development of the image as well as examples of the images in the literature in health communication research. The study argues that using visual communication theories should be considered when using the images for health communication, as it would be strengthened the validity of the study (McWhirter and Hoffman-Goetz, 2014).

Recommendations on channel use

After an insightful overview on theories of channel characteristics in communication some authors provided their reflections on using visual communication as a channel in health campaigns.

Lee et al. (2011) pointed out that there is a lack of guided research for using imagery in health messages, compared to a large amount of research focused on textual information. When using a computer-based program for providing information about risk for heart disease the authors of the study concluded that these kinds of programmes can be effective in short-term behavior changes related to heart disease risk. The findings of the study confirmed that using images together with textual information in the content of the message increased participant's understanding of risk (Lee et al, 2011). A study conducted by Noar, Benac and Harris (2007) added that certain print materials that had greater visual elements were more effective compared to those that did not have visual aids.

Crawford and Okigbo (2014) elaborated on the complexity of creating effective health communication campaigns where developers need to have a “thorough understanding of the various media channels available, as well as the issues and appropriate strategies for delivering the messages to achieve the best results possible” (Crawford and Okigbo, 2014, p.12). The authors highlight the campaign approach for health communication, as it helps to design and distribute the intended message in a consistent and strategic manner. When discussing the channels used for health communication campaigns, the authors of the study mentioned the integration of both mass media as well as intrapersonal communication as a possible solution (Crawford and Okigbo, 2014). The study by Schönfeldt and Gibson (2010) has pointed out that nowadays, consumers receive a lot of contradictory health advice from media, industry and health professionals and are thus confused when making the correct food choices. That is why it is important to use suitable channels “to communicate scientifically based information on a food commodity to consumers with the aim of improving nutrition through behaviour change” (Schönfeldt and Gibson, 2010, p.132).

New media as a channel

One of the main trends in health communication campaigns suggested by Noar and Head (2011) emphasized “the increased use of new media technologies in campaigns” (p.426). This

trend has been pointed out as the most transformative, as the change is within the new media tools and technical improvements that provide broader opportunities for the health communication campaigns (Noar and Head, 2011 and Downer, 1996). Due to the rapid advancement in technology, digital media is used more and more frequently in health communication (Clar et al., 2014). Clar et al. (2014) stated that health promotion and prevention was the biggest category of health topics targeted through digital media. However, the Clar et al. (2014) also emphasized the use of digital media based on the traditional approaches. Therefore, there is a need to engage users in an interactive process when using digital media for public health communication (Clar et al., 2014).

Another article on health communication analyzed the use of Internet as an effective channel for persuasive health interventions (Cassell, Jackson, Cheuvront, 1998). The authors suggest that Internet is a great platform for creating awareness that helps individuals to change to a recommended health behavior on a global scale (Cassell, Jackson, Cheuvront, 1998). The study by Chou et al. (2013) pointed out that there is a great need for innovative study design as well as critical evaluation of intervention effectiveness in regards to health promotion. One of the suggestions was to use social media, as valuable data can be gathered from audience feedback on an intervention or a message (Chou et al., 2013).

More specifically, for cancer risk communication a study by Hesse et al. (2015) pointed out the importance of improving the communication process in the field of cancer with the help of new media. This could in turn save lives and reduce the burden of health care on the society. The authors of the study pointed out that “The challenge of health communication is figuring out how to give individuals the information they need at the time they need it, in order to make the best decisions possible for their health” (Hesse et al, 2015, p.199). Quintiliani (2006) suggested that “innovative intervention designs can further enable the spread of cancer prevention information and encouragement of cancer preventive choices” (Quintiliani, 2006, p.13).

3.3.4 Receiver

The receiver category of McGuire’s (1989) communication/persuasion model analyzes the audience characteristics. As no theories were found in the literature search in relation to audience characteristics, this section will provide an overview of recommendations and insights from various studies.

Based on the expert interviews that were carried out in the study by Downer (1996), it was suggested that the target audience should be carefully identified in order to allocate appropriate resources and to develop relevant messages. Similar to Donovan (1995), Downer (1996) pointed out that when aiming for an effective health communication, the target audience has to be the highest concern. Furthermore, Downer (1996) and Mattson and Basu, (2010) pointed out the importance of accepting your target audience as it is and developing the campaign based on what the target audience wants and likes. Another interesting point mentioned by Dower (1996) emphasized respect for the target audience which “is the foundation of an effective health campaign and sets the tone for message delivery” and has to be carried out through all stages of the communication (Downer, 1996, p.88). Understanding the target group is also essential from a design point of view, as design products are made in order to interact within the context and also suggest or influence possible behaviors of the target group (Ramirez, 2013).

Continuing with the importance of target audience, the study by Dutta and Vanacker (2000) examined the “role played by certain personality traits in determining the effectiveness of health campaigns” (p.122). The previous perspectives on health communication have ignored personality as a factor when segmenting the target audience. The findings of the study emphasized that personality serves “as an important factor for predicting the attitudinal reactions to various appeals” (Dutta and Vanacker, 2000, p.122).

However, the study conducted by Emmons et al. (2004) demonstrated an unsuccessful approach in reaching the target audience. The study did not reach statistical significance due to the highly educated sample, as well as a high number of participants that practiced preventive health behaviors in the prevention study. When working with the selected target group in the cancer risk, the authors of the study emphasized that an “Accurate perception of one’s risk is an important part of making informed decisions regarding one’s health and well-being” (Emmons et al., 2004, p.138). If the individual is too optimistic about one’s risk for cancer, this could lead to missed opportunities to reduce the risk (Emmons et al., 2004).

In relation to identifying the targeted gender in health communication campaigns related to meat consumption, study by Sobal (2005) described foods in general as objects representing many factors such as nationality, ethnicity, age, class, culture sexuality and possibly the most important, gender. The author further established the connection between men and meat, and in

particular the relation to red meat (Sobal, 2005). It is argued that men and women tend to consume gender appropriate foods, however it seems that this pattern does not apply to those who are married, as there may be conflicts in relation to the amount and type of meat consumed. As an example, foods in the US that are considered masculine are beef (steak), hamburgers, beer and potatoes, while feminine foods would normally include salad, fruits, yoghurt, pasta and chocolate (Sobal, 2005).

In relation to design concepts that target a specific gender, a survey conducted by Aspara and Van Den Berg (2013) suggests that gender images are reliably associated to certain colours. Dark and cold colours such as black, brown, grey, green and blue are considered masculine while warm and light colours such as red, light red, yellow, orange, light blue and purple are considered feminine, and white was classified as a neutral colour (Aspara and Van Den Berg, 2013)

The results from Downer's study (1996) combined a few recommendations related to target audience when working with health communication campaigns. One of them stressed that the health communication campaign has to be audience-centered. Furthermore, the author suggested "using segment techniques that do not rely solely on demographic characteristics to define the audience" (Downer, 1996, p.114). Finally, on a practical note, Downer (1996) recommended testing the health communication campaign and the message with the audience prior to the final production.

3.3.5 Destination

The final input category in McGuire's (1989) model is the destination variables that target the behavior at which the communication is aimed. The following is an overview of relevant behavior theories when developing health communication campaign material that were found in the literature review.

Fishbein and Yzer (2003) provided an overview of two theories that "provide powerful tools for identifying the specific beliefs that need to be addressed if one wishes to change or maintain a given behavior" (p.164). These two theories are the behavioral prediction model and media priming theory. The first theory analyzed in the article is the behavioral prediction theory which highlighted "that changing beliefs underlying the intention to perform a behavior ultimately

results in changes in intention” (Fishbein and Yzer, 2003, p.164). This theory originates from three main theories: Health Belief Model, Social Cognitive Theory and Theory of Reasoned Action. Taken together these three theories identify the key determinants of person’s intention and behaviors which are incorporated in a model of behavioral prediction:

“(a) the person’s attitude toward performing the behavior, which is based upon one’s beliefs about the positive and negative consequences (i.e., costs and benefits) of performing that behavior; (b) perceived norms, which include the perception that those with whom the individual interacts most closely support the person’s adoption of the behavior and that others in the community are performing the behavior; and (c) self-efficacy, which involves the person’s perception that she or he can perform the behavior under a variety of challenging circumstances” (Fishbein and Yzer, 2003, p.166).

The second theory analyzed by Fishbein and Yzer (2003) is media priming theory. Media priming has also been discussed by Roskos-Ewoldsen et al. (2009) where it is referred to as “the effects of the content of the media on people’s later behavior or judgments related to the content that was processed” (Roskos-Ewoldsen et al., 2009, p.75). This theory emphasized the relationship between a person’s beliefs and intention and an assumption that if this relationship could be strengthened it could result in a change in intention (Fishbein and Yzer, 2003). An important aspect to remember is that the effect of priming is time bound, and thus fades quickly (Roskos-Ewoldsen et al., 2009). However, media priming research is disconnected where the main areas being researched are related to politics, violence and stereotypes (Roskos-Ewoldsen et al., 2009).

As mentioned in the beginning of this section, Social cognitive theory is one of the main theories in relation to behavioral science. Social cognitive theory by Bandura (1986) introduces a framework for understanding determinants and mechanics of human behavior. This theory holds a central role in understanding self-regulatory and self-reflective processes (Bandura, 2001). Understanding the cognitive process helps to understand how environmental events are comprehended by individuals, if they will have a lasting effect, and what emotional factors they will trigger; “Through symbols, people give meaning, form, and continuity to their experiences” (Bandura, 2001, p.122).

Due to the widespread media, Bandura took the effort to elaborate further on social cognitive theory of mass communication (2001). In his work, Bandura (2001) argued that people seek information that could be useful for them. Therefore, the main effectiveness and use of different media sources is based on the accessibility and likelihood of finding the useful information (Bandura, 2001). Furthermore, Bandura (2001) claimed that people are reluctant to adopt new behaviors unless clear advantages are presented to them by early adopters. In relation to fostering change on a larger scale, Bandura (2001) identifies two possible pathways: a direct pathway where media communication is used to inspire behavior change by informing, enabling, motivating and guiding people; another pathway is the socially mediated pathway where people are linked together via social networks and community, which provides natural incentives and support (Bandura, 2001). Finally, the author concluded, that there is no single way to measure social influence in mass communication (Bandura, 2001).

Concluding thoughts on theory

This section presented an overview of all theories, models and literature inputs found in the literature review on planning health communication campaigns as well as developing health communication campaign material based on the five variables - source, message, channel, receiver, destination (McGuire, 1989). Later on in the process, all theories will be evaluated based on relevance to the current study and especially to the design of the health communication campaign material. This will be further elaborated in the results section of this study.

4. Methodology

There are three main research approaches used in scientific research: quantitative, qualitative and mixed methods (Creswell, 2013). The qualitative approach aims at exploring and understanding the meaning individuals or groups assigned to a specific problem (Creswell, 2013). On the other hand, the quantitative approach tests objective theories and the relationship between identified variables (Creswell, 2013). The mixed methods approach collects both quantitative and qualitative data by incorporating the elements of both approaches. The main use of the mixed methods is based on the assumption that the combination of quantitative and qualitative approaches provides a better understanding of the research problem (Creswell, 2013). Furthermore, the multi-phase research design will be used where both qualitative and quantitative methods are used over time to support the development of the health campaign (Creswell and Clark, 2007).

The research question of this study is to find out how to design health communication campaign material that would raise awareness on the problem of Danish men's high consumption of meat and the associated risk of cancer. In order to answer this question a mixed research method approach will be used. The methods used in the present study are: systematic literature reviews, extreme consumer questionnaire, focus group, expert interview, awareness questionnaire. The systematic literature reviews involved both qualitative and quantitative research aspects. The extreme consumer questionnaire, focus group and expert interviews represent the qualitative research method. The awareness questionnaire was used as a quantitative research approach in the current study.

In the present study, the CDC 10 step model (Roper, 1993) is used as guidance to complete the tasks in the right sequence throughout the entire process of health communication campaign. Therefore, the 10 steps were applied when applicable to the current study process (See figure 3 illustrating major events on timeline).



Figure 3: Overview of events during the study

Role of the researcher

In relation to epistemological conceptions and the philosophy of science, a hermeneutical and phenomenological approach was applied in this study. In an attempt to comprehend the life-world and understanding of young men, a semi-structured focus group was conducted. This approach was chosen in order to achieve a deeper insight into, and knowledge about, the young males and their life-world and get precise descriptions of how they perceived the material they were presented (Kvale, 2007). Further adjustment in the design of the posters would then be based on the findings from the focus group. In relation to the expert interviews conducted, this was also carried out as semi-structured interviews. The purpose was to get insight and deeper understanding of the processes related to their work with health communication, design or both (Kvale, 2007). All interviews and the focus group were semi-structured, meaning it was neither a normal everyday conversation or closed questionnaire, as it involves a specific technique and approach (Kvale, 2007), which will be further elaborated later in this method part.

4.1 Reviewing background information

The first step that was taken in order to develop health communication campaign material, was to review background information, which consisted of a systematic literature review for both, studies analyzing the relationship between meat and cancer, as well as health communication studies. Furthermore, a background search for posters as well as an extreme consumer questionnaire was conducted in order to gain better insights.

4.1.1 Systematic literature review

This part introduces the systematic literature review, which was used in the present study as a method in order to make sense of large bodies of information and thus in a way contribute to answer the research question on how to design health communication campaign material in order to raise awareness on men's consumption of red and processed meat and cancer risk (Petticrew and Roberts, 2005). Furthermore, systematic literature reviews also serves as a tool to map out areas of uncertainty in the health communication field in relation to the research question, and identify relevant research or the absence of it (Petticrew and Roberts, 2005). In this study, systematic literature reviews will be used to provide evidence based information on the relationship between high consumption of red and processed meat, and to provide support when developing health communication campaign material to raise awareness on this issue.

Search strategy

The systematic literature reviews were conducted in November 2015 using the guidelines of Petticrew and Roberts (2005), and a similar study done by McWhirter and Hoffman-Goetz (2014), in order to get literature on designing health communication to raise awareness on men's consumption of red and processed meat and the risk of colorectal cancer. The search strategy was divided into two areas. This was carried out due to the fact that combining both subjects in the search strategy did not result in significant and meaningful findings. The first search area, also referred to as search A, was covering the research found on colorectal cancer and dietary habits, in this case focusing on the relationship between colorectal cancer and the consumption of red meat and processed meat. The second search, which is referred to as search B, was focusing on health communication, investigating previous methods used when constructing health communication strategies. The searches were carried out through several databases which were chosen based on the scope of the present study and recommendations from the library experts. The databases used for search were as follows: ProQuest, Scopus, Web of Science and Ebsco. Also, hand-searching of references list and search for additional meta analyses was conducted. The searches were not limited to studies conducted in Denmark specifically, as valuable information might have been cut out, if doing so (See appendix A + B for search criteria for systematic literature review A + B).

Search terms were generated for the two separate search areas based on a brainstorm, which was carried out on a white board in relation to the research question (see table 3 and 4). This was done prior to a session with a librarian, where the purpose was to help strengthen the

search in form of attaining knowledge about tools used for literature searches and how the search strategy table could be improved as well.

Table 3: Search A terms - men, meat and cancer relationship

Men	Red meat	Diet	Colorectal cancer
Male	Processed meat	Dietary patterns	Colon cancer
Masculinity	Saturated Fat	Protein	carcinogens
	Beef		
	Meat intake		

Table 4: Search B terms - communication and health

Behavior change	Health
Risk communication	Nutrition guidance
Framed messages	Public health
Public health marketing	Global health
Health communication	Prevention
Campaign	

Selection criteria

The inclusion criteria for the literature in the review for this study were as follows: studies published in English, peer-reviewed, available in full text, published in 2005-2015, with the subject area (A) focusing on the relationship between colorectal cancer and the consumption of red meat and processed meat or with the subject area (B) focusing on health communication. Studies were excluded if they focused in smoking, lung cancer, breast cancer, screening or physical activities. Furthermore, studies that targeted women, adolescents or children were also excluded as it did not match the target group of the study, which was men. Specifically to the search on colorectal cancer and meat consumption, only studies with humans were included, and those conducted with animals were not included in the review.

Literature search outcomes

The total number of studies included in the current study from the literature search is 61. From the total of all studies, 28 were focusing on the colorectal cancer and dietary habits and 33 were focusing on health communication aspects. Total search outcomes for the first search strategy (A) combine results from ProQuest, Scopus and Web of Science databases accordingly (see figure 4). After reviewing the outcomes, it was necessary to find additional epistemological studies with focus on the dose-response between red and processed meat and colorectal cancer. The additional studies were acquired through a database search using Primo. Search words “Meta-analysis AND dose-response AND red and processed meat AND colorectal cancer” generated 19 studies which were reduced to 4 based on relevance for the study. For the second search strategy (B), search outcome combines results from ProQuest, Scopus, Ebsco and additional studies based on hand search of reference list (See figure 5).

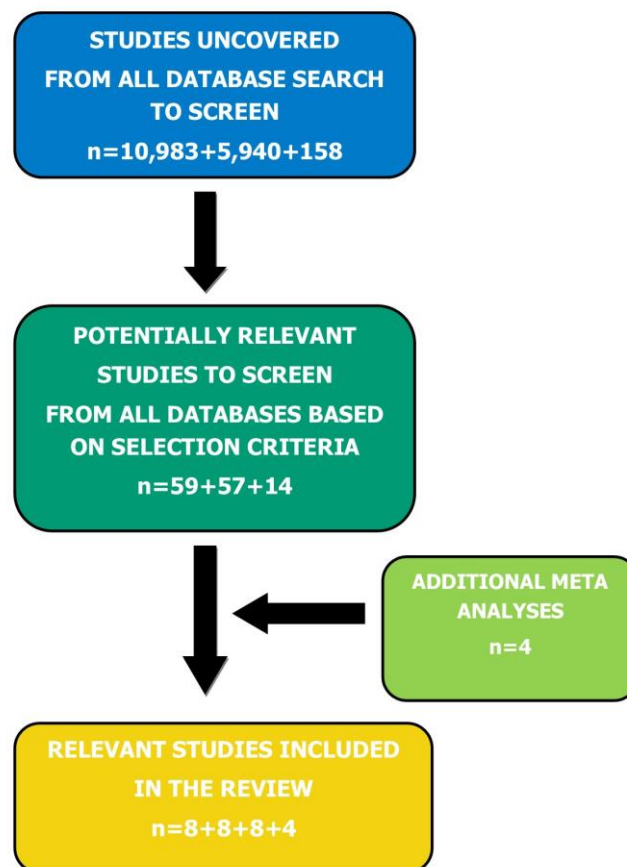


Figure 4: Overview of literature search process A

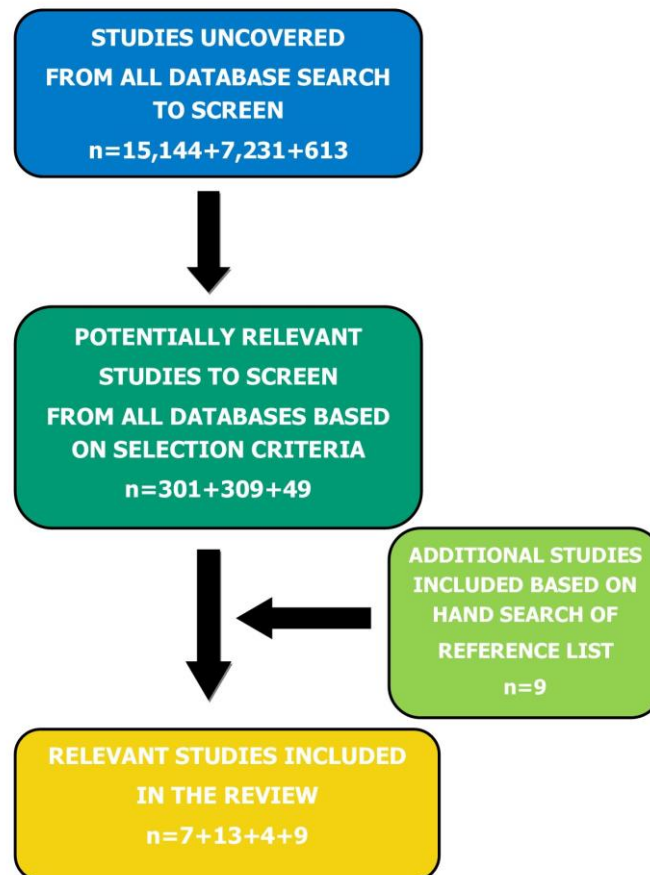


Figure 5: Overview of literature search process B

4.1.2 Background search for posters

Following the 10 step model for health communication (Roper, 1993), together with the literature review, a search for similar campaigns and posters was initiated. It was essential to review posters that were already published. Therefore, a background search on posters on the Internet was initiated, using some of the keywords used for literature search: colorectal cancer, diet, red meat, men, health promotion. These posters were only used as an inspiration and as an insight to see what has been done previously in order to communicate similar types of messages (see appendix C for visual presentation).

4.1.3 Extreme consumer questionnaire

In the initial stage of the design process, after conducting the literature reviews, it was decided that an online open-ended questionnaire would be conducted within the divergent research

potential. A questionnaire was conducted among men who had already decided to either reduce or completely eliminate their intake of meat, while these consumers are referred to as extreme consumers. This was done in order to explore new opportunities for ideas and concepts prior to the actual design process of the health communication campaign materials (Bjørner, 2015).

A total of 8 questions were asked in the online questionnaire (see appendix D for extreme consumer questionnaire). The first five questions focused on participants' demographic information such as age, education, and dietary habits. The next three questions for the questionnaire were inspired by the health communication theories. The final three questions were open-ended and asked participants to elaborate and provide their opinion in relation to their choice of reducing their meat intake and come up with suggestions on how to approach other men with the message of reducing their meat intake.

The questionnaire was carried out through social media, based on the immense recommendations of using new media from the literature review, as pointed out in the theory section. This extreme consumer questionnaire targeted men who have reduced their meat intake; these men identified as being either vegan, vegetarian or semi-vegetarian. The questionnaire was developed using typeform.com and distributed on the social media, primarily in social network group on Facebook "Vegansk Mad" for vegans, vegetarians and others interested in reducing their meat consumption. This specific group was chosen, due to the easy accessibility, high amount of members and approval of the group's administrator to post the survey. This purposeful sampling technique of conducting a questionnaire in a selected social media group was chosen due to the fact that the goal of the questionnaire was to reach men who have already reduced their meat intake. After conducting the questionnaire, participant's answers were summarized and analyzed using a coding technique.

4.2 Set communication objectives

After conducting a literature review together with search for health campaign posters, a brainstorm was carried out in relation to the research problem and more specifically to the ideas and keywords that were found to be relevant to the topic. The research question was modified in order to set one clear objective for the research campaign, which was to figure out what are the best methods for developing health communication campaign material that would raise men's awareness on the relationship between high consumption of meat and risk of cancer.

4.3 Analyze and segment target audience

Selection of the target group was done in several stages. In the initial research stage while looking up background information and carrying out literature searches, the target group was men in general. When developing the objectives and research questions, the target group was narrowed down to Danish men in the age between 18 and 64 years of age, as these are included in the Nordic Nutrition Recommendations (Norden.org, 2014) for a normal diet. Furthermore, together with background information on men and masculinity it was decided to focus on Danish men at the age 18-34. Target group was later in the process further specified based on the data collected from a focus group, which will be elaborated later on in this methodology part.

4.4 Select communication channels

The selection of a communication channel was based on the findings from the literature review and McGuire's (1989) communication/persuasion model (see theory section for further description), as a medium is required to transmit the message. For this study, designing posters with visual communication and textual information on men's consumption of red and processed meat and the relation to colorectal cancer as selected. This was determined as a channel based on the experience of the student researchers together with the input from extreme consumer questionnaire. Furthermore, working with design, especially visual communication, is a main pillar of the education of the student researchers, and therefore an evident and familiar option (process) to work with. The next step will describe the development of posters.

4.5 Create health communication material and pretest

The process of creating and pretesting health communication campaign material consisted of several stages. First of all the six posters were developed based on the background information. After the focus group was conducted, three posters were eliminated, and a second draft with the three remaining posters were re-designed. Finally, after expert interviews and opinions, the final draft with two posters, referred to as third draft was developed and tested with the target group in the awareness questionnaire.

4.5.1 Designing the posters

In the process of developing posters used in different stages of the current study, theories on health communication as well as findings from the literature search on the relationship between

men, meat consumption and colorectal cancer were taken into consideration. Furthermore, results from the extreme consumer questionnaire as well as background search on posters were also included, as they provided information on factors that were not pointed out in the literature findings. All posters were created in Adobe photoshop, using images from the Internet. During the first and second drafts, a consultation with two graphical designers were carried out, and feedback on only design components, such as alignments, spacing, aesthetic properties and fonts were provided.

4.5.2 First draft posters

In order to include all the selected theories and information, a total of six posters were developed which is referred to as the first draft. The first draft also had theoretical and methodological considerations that applied to all of the six posters, which include visual cognitive theory as explained in the theory section. Based on the visual cognitive theory, when a person is exposed to an image, he or she is not only witnessing an image, but is also drawing conclusions on what is being perceived (Lester, 2006 as mentioned in McWhirter and Hoffman-Goetz, 2014, p.740). Other design components such as colour choices was also considered important in relation to targeting a male audience. As mentioned by Aspara and Van Den Berg (2013) in the theory section, certain colours are associated with gender images. Therefore, dark colours, such as grey and black were the most used colours in the posters and black background with white text was used in all the posters, except for one. Furthermore, credible sources were used according to the findings of the literature search in several posters. More specific theories were applied for each poster, such as positive and negative frames, emotional appeal, scare and fear tactics as well as storytelling with a role model. See the results and analysis section for pictures of full size first draft posters.

4.5.3 Focus group

In order to pretest the posters, a focus group discussion was initiated. "A focus group discussion is a unique method of qualitative research that involves discussing a specific set of issues with a pre-determined group of people" (Hennink, 2007, p.4). Furthermore, the use of focus group is more evident not only in qualitative methods but also in mixed method research designs, which tries to integrate both qualitative and quantitative methods (Hennink, 2007). A focus group for this study was chosen in order to collect a wider range of information from a group rather than collecting information through one on one interviews (Hennink, 2007). Following Hennink's (2007) focus group characteristics, the focus group discussion for this study consisted of 8

individuals, who were recruited via available channels such as posters (see appendix E for poster advertisement) on the university campus and social media (Facebook). Convenient sampling technique was used for recruiting participants for the focus group due to their convenience and availability to participate (Creswell, 2013). The title of the focus group was “Testing health communication material.” The discussion focused on a specific topic, in this case, discussing six posters and participants’ feedback in relation to them. Participants were simply exposed to the posters and asked their thoughts about them and recommendations for improving the posters. Focus group discussion was guided by the student researchers, while one was the moderator who introduced the posters and facilitated the discussions and the other took notes and kept track of time.

In order to gather important information on participants’ demographics as well as their meat consumption, a short questionnaire was made (see appendix F for focus group questionnaire). This questionnaire was based on the Slow Food survey on meat consumption and animal welfare (Slow Food, 2013). Only the questions on demographics and meat consumption from Slow Food’s survey (2013) were used for the focus group questionnaire in the current study. Later on, the findings from the questionnaire were analyzed using descriptive statistics.

In order to prepare for the focus group, a list of steps recommended by Hennink’s (2007) focus group research handbook were implemented and discussed prior to the focus group. A protocol was established where the step by step guide for the focus group was developed (see appendix G for focus group protocol). This included a pre-discussion stage, where all the practicalities related to the setting of the discussion were taken care of. Furthermore, the introductory stage of the discussion was implemented, which involved an introduction of research to the participants, introducing the moderator and the note-taker, signing consent forms (see appendix H for consent form for focus group participants), introducing a small questionnaire, starting recording, outlining the discussion process. The central discussion stage consisted of managing group dynamics, keeping discussion focused and encouraging discussion between participants. For the closing stage, the discussion was shortly summarized. Finally, in the post-discussion stage, participants were provided incentives, which in this case was a dinner.

After conducting the focus group where the first draft of campaign posters were presented, the target group was further defined. The study will then be representative for male students living in Copenhagen or Copenhagen area, between 18 and 30 years of age.

4.5.4 Second draft posters

After conducting a focus group with a presentation of the first draft posters, the feedback was discussed and the amount of posters was reduced to three, based on how the messages were perceived by the focus group and what kind of attitude they expressed towards the posters. The same theories were kept for the remaining posters, however some facts and images were modified according to the suggestions. See the results and analysis section for pictures of full size second draft posters (Section 5.2).

4.5.5 Expert Interviews

After conducting the focus group, it was decided to also ask experts for their opinion of the materials when finalizing the posters before pretesting on the target group. This was also done in order to get a broader variety of feedback as well as getting an insight in their processes when developing a health campaign. Conducting expert interviews helped to shorten a relatively time consuming data-collection process, especially as the experts possessed a certain insider knowledge and works in a field that is not easy to gain access to (Bogner, Littig and Menz, 2009). Purposeful sampling was used for expert interviews, as participants were intentionally selected based on their experience in health communication (Creswell and Clark, 2007).

The selected experts who were able to meet or provide written feedback included a representative from the Danish Cancer Society (Kræftens Bekæmpelse), Susanne Tøttenborg, who is experienced in risk communication. Furthermore, Susanne is currently working on a project similar to this current study. A representative from PETA (People for the Ethical Treatment of Animals), Marissa Price, was able to provide written feedback, as she is experienced with visual communication. PETA is very productive in producing visual campaigns where it is encouraged to reduce meat intake and increase fruit and vegetables intake. A representative from the Danish Agricultural and Food Council (DAFC), Line Damsgaard, was able to schedule an interview. Unfortunately she had to cancel and offered written feedback on the posters instead. Besides from the external experts a supervision was held with one of the design teachers at Aalborg University, Tenna Doktor Olsen Tvedebrink, in order to discuss and get feedback on the design properties in the posters. Finally, Rikke Neess, a campaign manager from the Danish Whole Grain Partnership was contacted, as Susanne Tøttenborg highly recommended her due to her experience in campaigns similar to this current study. Rikke Neess and Line Damsgaard were not able to provide their written feedback before conducting

the final awareness questionnaire, however their input were still analysed and discussed along with the other interviews and expert opinions.

Prior to the expert interviews, an interview guide (see appendix I for expert interview guide) was developed along with a consent form (see appendix J for consent form for experts). Mainly it was based on the 10 step model from CDC (Roper, 1993) as well as McGuire's model (1989), as introduced earlier. Besides from receiving feedback on the posters it was also intended to get an insight on the process of developing health communication campaign material in larger organizations. The interview guide for the design expert from Aalborg University was also based on the same guides as the other expert interview guides, however the questions related to planning health communication was taken out, as the expert had no previous experience in this field (see appendix K for the designer's interview guide).

Transcribing and coding

In order to analyse results, the raw data from focus groups and expert interviews was converted into a useful form of data analysis which in this case was transcribed into a word-processing file for analysis (Creswell and Clark, 2007). Verbatim interview transcription was used and this approach refers to an exact reproduction word-for-word of the verbal data as they are recorded. Furthermore, nonverbal clues such as silences and emotional aspects such as laughing were included as well (Halcomb and Davidson, 2006). After transcribing focus group and expert interviews, the following step was to code the data in order for it to prepare for analysis. According to Auerbach and Silverstein "The central idea of coding is to move from raw text to research concerns in small steps, each step building on the previous one" (2003, p.35). A deductive approach to coding was implemented, with the objective to test and verify theories and models that were found in the literature review (Creswell, 2013). Furthermore, value coding was also used for guidance when coding, as it reflects participants' values, attitudes and beliefs in relation to the analyzed topic, with the more specific focus on attitude for this present study (Saldana, 2009). In the present study, the focus group transcript and the expert interview transcripts were coded separately, as they were based and validated by different theories.

The focus group transcripts as well as expert interview transcripts were coded according to the step by step process suggested by Auerbach and Silverstein in order to achieve a higher level of understanding (2003). However, due to the focus of the study only the first three steps were used. The first step with the transcriptions was to read through and identify the relevant text that

was related to the research question of the present study. In order to summarize the main idea expressed in the passage of the relevant text, brief notes were also added. The second step suggested by Auerbach and Silverstein (2003) was to identify repeating ideas found in the data from the different interviews. Due to the fact that four out of five expert interviews and expert opinions were semi-structured and based on identical interview guide, coding continued by not only identifying repeating ideas but also by highlighting ideas that were worth mentioning in relation to the research question. The relevant quotes were then assigned labels. The next step after assigning labels to quotes, was the grouping of them into overall themes. The labels were grouped into specific themes when they were identified to have something in common (Auerbach and Silverstein, 2003). The coding process helped to rephrase the research question of the current study.

4.5.6 Third draft posters

After conducting expert interviews as well as reading expert opinions, one more poster was eliminated in order to continue further pretesting the poster with the target group. The final draft for the remaining two posters were partially based on the feedback received from the experts. See the results and analysis section for pictures of full size third draft posters.

4.5.7 Awareness questionnaire

In order to test the two final posters with the target group, a short qualitative awareness questionnaire was developed in order to provide a quantitative description of target group's awareness towards the posters (Creswell, 2013). All the seven questions used in the questionnaire were closed ended questions that were administered by the student researchers. The first three questions in a questionnaire were about demographics (age, education and meat consumption) which were based on Slow Food's (2013) survey on meat consumption. The second part of the questionnaire exposed the participant to the posters and asked to what extent they agree that each poster raised their awareness about the relationship between processed and red meat and colorectal cancer risk. The question on participants' immediate awareness after being exposed to each the posters was inspired by a study measuring the impact of national cancer awareness campaigns for bowel and lung cancer (Moffat et al., 2015). After a question on awareness after each poster, there were also two questions, asking to reflect on the effectiveness of the theories used for each poster, which for poster 3 was the scare and fear tactics and for poster 6 was the use of the role model. Both types of questions, measuring poster awareness and theory effectiveness, were developed using 5 point Likert

scale as this instrument helps to measure participant's values, attitudes and beliefs (Losby and Wetmore, 2012 and Saldana, 2009) (See appendix L for awareness questionnaire).

Based on the defined target group, the decision was made to collect data in two universities (Aalborg University and Copenhagen Business School) based on accessibility of the place and high turnover of students. As the questionnaire was administered by the student researchers of the present study, the participants were selected using convenience sample technique based on their availability and willingness to answer the questionnaire. Based on time limitations the data was collected in two days and later on analyzed.

Observational log

During the collection of the awareness questionnaire, observational notes were written down. Monitoring the participants is considered a fundamental form of qualitative data collection and can help demonstrate a larger picture of the context. Furthermore, it would give an opportunity to get an insight to their behaviour beyond their verbal interactions (Bjørner, 2015) (See appendix M for observational log).

5. Results and analysis

This part will give a presentation of all results and analysis conducted throughout the entire study, presented chronologically.

5.1 Background search

This chapter will present the results and analysis of the entire background search carried out in the current study. This will include the systematic literature review, summaries of the findings and concluding thoughts on the findings. Furthermore the extreme consumer questionnaire is presented and the results are summarized along with concluding thoughts on the findings. All the gathered information on the background is utilized in the process of designing the health communication campaign.

5.1.1 Systematic literature reviews

Two systematic literature reviews were carried out in this study. The first section combined the findings related to the consumption of red and processed meat and the risk of colorectal cancer. This review is referred to as search A. The second part of the systematic literature search as presented in the theory section focused on gathering knowledge on health communication, models and frameworks used in developing health communication campaign materials. This review is referred to as search B.

Search A: Relationship between red and processed meat and colorectal cancer

In this systematic literature review, a total of 24 studies were selected (see inclusion and exclusion criteria in method section). The studies were categorised into three sub themes as some studies focused on the dose-response relationship (n=12), types of cooking and preparation methods (n=8) and dietary patterns (n=4). Subsequently, the studies are summarised and compared in the following (see table 5 for all studies categorised according to the sub themes).

Table 5: Themes from search on cancer and meat, sorted into sub-categories

Sub theme 1: Dose- Response	Sub theme 2: Cooking methods & preparation	Sub theme 3: Dietary patterns
Abid, Cross and Sinha, 2014 Alexander et al., 2010 Alexander et al., 2011 Alexander and Cushing, 2011 Chadha, 2011 Egeberg et al., 2013 Gonzales, 2006 Gonzales and Riboli, 2006 Hu et al., 2008 Joshi, 2011 Santarelli, Pierre and Corpet, 2008 Wie et al., 2014	Cross et al., 2010 Joshi, 2007 Murtaugh et al., 2005 Ognjanovic et al., 2006 Squires et al., 2010 Tabatabaei et al., 2011 Wang, 2008 Zheng and Lee, 2009	Flood et al., 2008 Fung et al., 2010 Miller, 2010 Miller et al., 2010

Dose-Response

The reviewed studies in the dose-response sub theme provided mixed conclusions on the relationship between meat and colorectal cancer (see table 6 for sub theme 1 - Dose-Response literature list). There was consensus between six studies, Abid, Cross and Sinha (2014), Chadha (2011), Gonzalez (2006), Gonzalez and Riboli (2006), Hu et al. (2008) and Wie et al. (2014) as they concluded an association between red and processed meat and colorectal cancer. Alexander et al. (2010), Alexander et al. (2011) and Alexander and Cushing (2011) concluded that data were not sufficient to conclude a clear dose-response relationship, while Egeberg et al. (2013) concluded no association between certain red meat subtypes, however other subtypes showed an association. Santarelli, Pierre and Corpet (2008) found the evidence weak due to biases and confounding. The studies are described in relation to the findings on dose-response in the following.

Abid, Cross and Sinha (2014) reviewed cohort studies from the National Cancer society since 2007 and they conclude that the studies reviewed are supporting the role of red meat and processed meat in colorectal cancer. Summary Risk Ratios (SRR) were established based on the 25 cohort study results. For red meat were highest and lowest quartile were compared; SRR (CI 95%) = 1.22(1.11-1.34), >50 g/day SRR (CI 95%) = 1.21(1.07-1.37) and 100/g day SRR (CI 95%) = 1.22(1.04-1.42). For processed meat highest vs. lowest quartile SRR (CI 95%) = 1.16(1.10-1.23) and for >50 g/day SRR (CI 95%) = 1.18(1.10-1.28).

Alexander et al. (2010) and Alexander et al. (2011) reviewed the association between processed meat and red meat, respectively, while Alexander and Cushing (2011) summarised prospective epidemiological studies, focused on processed meat, red meat and colorectal

cancer. In the three reviews the general conclusion is that the current available data is not sufficient and does not support a positive association between the consumption of red meat and processed meat and the risk of colorectal cancer. Alexander et al. (2010) established Summary Relative Risk Estimate (SRRE) for highest vs. lowest intake of processed meat among men: SRRE (CI 95%) = 1.23(1.07-1.42) based on 13 studies. For women the SRRE (CI 95%) were 1.05(0.94-1.16), based on the average of both genders, the conclusion is that the summary associations are weak in magnitude, as they are below 1.20 (SRRE). The other study by Alexander et al. (2011) red meat were assessed and SRRE were also established. Comparing highest vs. lowest quartile among men, SRRE (CI 95%) = 1.21(1.04-1.42) while both genders were SRRE (CI 95%) = 1.12(1.04-1.21). Again conclusion was based on the average opposed to concluding the risks related to genders separately.

Chadha (2011) reviewed the evidence published in the past ten years (2011-2011) investigating dietary factors and risk of colorectal cancer and concluded an increased risk of colorectal cancer associated with meat consumption, based on the RR's from the studies that ranged from 1.14 to 1.35.

Egeberg et al. (2013) conducted a cohort study investigating the associations between red meat and colorectal cancer, with focus on the different types of meat, and was able to conclude that there was no association between red meat, processed meat, poultry or fish and risk of getting colorectal cancer. However, there was a potential risk factor according to which subtype of red meat consumed, such as lamb and pork. Incidence Rate Ratio (IRR) were established for lamb and pork, respectively; 5 g/day lamb, IRR (CI 95%) = 1.07(1.02-1.13), 25 g/day pork, IRR (CI 95%) = 1.18(1.02-1.36). For cancer prevention, they recommend to replace red meat with fish or other meat sources (Egeberg et al., 2013).

In a review by Gonzales (2006), he examines the current evidence between nutrition and cancer. He concludes a positive association between red and processed meat and colorectal cancer and furthermore that the relationship between cancer and nutrition is rather complex and in order to improve scientific knowledge on the subject, it would be necessary to carry out large prospective studies within a population with a heterogeneous diet. This approach would then reduce the level of measurement errors (Gonzales, 2006).

Gonzalez and Riboli (2006) conducted a cohort study on diet and cancer prevention and concluded an association between colorectal cancer and red and processed meat consumption based on their results, comparing highest and lowest quartiles showed a RR (CI 95%) of 1.49(0.91-2.43) for 100 g/day of red meat. For 100 g/day of processed meat showed a RR (CI95%) of 1.70(1.05-2.76).

Hu et al. (2008) conducted a case-control investigating the relationship between meat, fish and cancer. The results on colorectal cancer were divided into two categories were amount of servings were documented and based on those numbers OR (odds ratio) (CI 95%) were established. In relation to colon cancer, the servings (mean, SD) per week for red and processed meat were respectively, 4.8(3.7) and 4.5(5.5). The OR (CI 95%) for red and processed meat were respectively, 1.4(1.1-1.8) and 1.5(1.2-1.8). For rectal cancer same calculations were established. Servings (mean and SD) per week for red and processed meat were respectively 4.8(4.9) and 4.5(5.4). The OR (CI 95%) for red and processed meat were respectively, 1.5(1.0-1.5) and 1.5(1.2-2.0). Based on the results Hu et al. (2008) concluded that red and processed meat consumption was directly related to colorectal cancer.

Joshi (2011) points out that it is not well understood what mechanisms by which type of meat may cause CRC. The study focused on identifying the contributing factor to risk of CRC, investigating whether it was the accumulation of carcinogens during high temperatures when cooking the meat or due to high levels of doneness of the meat. Joshi (2011) investigated six different types of meat after pan-frying them, where beef, sausage and spam (canned meat) were identified as having a significant increased risk of colorectal cancer.

Santarelli, Pierre and Corpet (2008) carried out a review focusing on processed meat and colorectal cancer, studying the epidemiological and experimental evidence available. In their general conclusion they point out that it seems established by the published meta-analyses of epidemiological studies, that processed meat intake increases the risk of colorectal cancer. However, they suggest that this evidence is weak, especially when compared to established risk factors such as smoking cigarettes being associated with lung cancer. They further conclude, instead of dietary recommendations for prevention where it is advised to avoid or reduce the consumption of processed meat, it would be a better solution to find a way to produce non-toxic processed meat. They suggest it could be done by removing potential toxic agents or add calcium to block heme in the digestive tract, which could ultimately reduce the incidences of

colorectal cancer without ending consumption and production of processed meats (Santarelli, Pierre and Corpet, 2008).

Wie et al. (2014) conducted a cohort study on the association between meat and cancer risk. Among men HR (CI 95%) were established when 43 grams of red meat were consumed daily: 1.41(1.02-1.94). A positive association between red meat and colorectal cancer risk were concluded.

Table 6: Sub theme 1 - Dose-Response

Author & year	Country	Sample size & study design	Findings/ outcome/ conclusion (association)	Dose/risk
Abid, Cross, and Sinha, 2014	Maryland, United States	Review of cohort studies by National Cancer Institute (NCI) and meta-analyses published after 2007	"The epidemiologic studies reviewed in this article provide data to support a role of red and processed meat in colorectal cancer".	Summary Risk Ratio (SRR) Red meat: highest vs. lowest intake of red meat and CRC risk: SRR (CI95%) 100 g/day: 1.22(1.04-1.42) >50 g/day: 1.21(1.07-1.37) Processed meat and CRC risk, SRR (CI95%) High vs. low: 1.16(1.10-1.23) >50 g/day: 1.18(1.10-1.28)
Alexander et al., 2010	United States of America	Review of 20 prospective epidemiological studies	"The currently available epidemiologic evidence is insufficient to support a clear and unequivocal independent positive association between processed meat consumption and colorectal cancer." Summary associations (SRRE) less than 1.20 are considered weak in magnitude.	High vs. low intake of processed meat and CRC risk in men, SRRE (CI95%): Red meat 1.23(1.07-1.42) Pr. 30g increment: 1.10(1.05-1.15)
Alexander et al., 2011	United States of America	Review. Meta-analysis of 25 prospective studies	"The available epidemiologic data are not sufficient to support an independent and unequivocal positive association between red meat intake and CRC. This conclusion is based on summary associations that are weak in magnitude, heterogeneity across studies, inconsistent patterns of associations across the subgroup analyses, and the likely influence of confounding by other dietary and lifestyle factors".	CRC risk, high vs. low intake of red meat among men, SRRE (CI95%): 1.21(1.04-1.42)
Alexander and Cushing, 2011	Washington, United States of America	Review of 35 prospective epidemiological studies	"Associations between red meat consumption and colorectal cancer are generally weak in magnitude, with most relative risks below 1.50 and not statistically significant. "The currently available epidemiologic evidence is not sufficient to support an independent positive association between red meat consumption and colorectal cancer".	-
Chadha, 2011	Texas, United States of America	Review of studies published in the past 10 years (2001-2011)	"Recommend the use of fruits and vegetables to be protective against colorectal cancer. Also, meat consumption increase the risk of colorectal cancer".	All studies on meat consumption reported RR between 1.14 and 1.35

Egeberg et al., 2013	Denmark	Cohort study. 644 cases of colon cancer and 345 cases of rectal cancer occurred among 53,988 participants	Study suggests that risk for CRC differ according to the specific red meat subtype consumed.	Incidence Rate Ratio (CI95%) CRC: 5 g/day lamb: 1.07(1.02-1.13) 25 g/day pork: 1.18(1.02-1.36)
Gonzalez, 2006	Spain	Review of current epidemiological evidence	“Consumption of red and processed meat is positively associated with colorectal cancer”.	-
Gonzalez and Riboli, 2006	Spain/ United Kingdom	Cohort study. 366,521 women and 153,457 men), most aged 35–70 years. Participants from Denmark, France, Germany, Greece, Italy, the Netherlands, Norway, Spain, Sweden, and the United Kingdom	Consumption of red and processed meat is positively associated with colorectal cancer.	Colorectal cancer risk, HR (CI95%) Per 100 g/day increase red meat = 1.49 (0.91–2.43) Per 100 g/day increase processed meat = 1.70 (1.05–2.76)
Hu et al., 2008	Canada/ Italy	Case-control study. 10,725 males and 9,007 females	High consumption of red and processed meat is directly related to risk of colorectal cancer.	Colon cancer risk, OR (CI95%) Red meat: 1.4 (1.1-1.8) Processed meat: 1.5 (1.2-1.8) Rectal cancer risk, OR (CI95%) Red meat: 1.2 (1.0-1.5) Processed meat: 1.5 (1.2-2.0)
Joshi, 2011	California, United States of America	Case-control study. 3,364 probands, 1,942 familial controls (siblings/spouse) and 1,620 population based controls	“6 meat types for which we had pan-frying information, three (beef, spam and sausage) showed a statistically significant increased risk of colorectal cancer”. “cooking practices revealed a positive association for diets high in high temperature cooked red meats, especially diets high in pan-fried red meats”.	Red meat and CRC risk: g/1000kcal/day: p-for-trend 0.085 Processed meat and CRC risk: g/1000kcal/day: p-for-trend 0.105
Santarelli, Pierre and Corpet, 2008	France	Review of epidemiological and experimental evidence	Evidence is weak as studies never fully avoid biases and confounders. However the excess risk per gram of processed meat intake is clearly higher than red fresh meat.	-
Wie et al., 2014	Korea	Cohort study. Total of 8024 participants. 387 subjects were identified as cancer patients and the remaining were assigned to the control group (n 7637).	“Positive association between red meat and Na intakes and cancer risk”.	CRC risk and red meat: HR (CI95%) 43 g/day = 1.41(1.02-1.94)

Types of cooking and preparation

Eight of the studies were focusing on the different cooking methods and ways to prepare meat before consumption (see table 7 for sub theme 2 - types of cooking and preparation literature list). Furthermore, two of the studies investigated the heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs), which are a formation of carcinogens that occur when meat is cooked, processed or cured. Six studies, Cross et al. (2010), Joshi (2007), Murtaugh et al. (2005), Ognjanovic et al. (2006), Squires et al. (2010) and Zheng et al. (2009) reached

consensus on the association between colorectal cancer and consumption of red well-done meat. Tabatabaei et al. (2011) concluded that data does not support an association between colorectal cancer and consumption of meat, while Wang et al. (2008) argued that genetic susceptibility plays a role in relation to developing colorectal cancer and consuming well-done red meat. The findings in relation to cooking and preparation methods in red meat and the association of colorectal cancer are further described below.

Cross et al. (2010) carried out a large prospective study on the association of meat consumption and the potential underlying mechanisms of colorectal cancer risk. They also found a positive association between colorectal cancer and red and processed meat, possible due to nitrate, nitrite, HCAs, and heme iron in meat cooked at high temperatures.

Joshi (2007) investigated the risk of colorectal cancer related to meat consumption, focusing on exposure variables such as the frequency of red meat, cooked red meat and poultry, the level of doneness, inside and on the outside. He concludes that more than three servings per week of either red meat or cooked red meat would statistically significantly increase the risk of CRC (Joshi, 2007).

Murtaugh et al. (2005) investigated the relationship between colorectal cancer and meat consumption. OR (CI 95%) were established in relation to medium done, 1.16(0.91-1.47) and well done red meat, 1.37(1.06-1.71) among men. Conclusion points out that colorectal cancer risk increases with the preference of well-done red meat.

A study carried out by Ognjanovic (2006) investigated the association between meat consumption, colorectal cancer and the NAT2 phenotype. The data from the study supported that a diet rich in red meat would increase colorectal cancer risk. This was caused by the HCAs developed in well-done meat in combination with a rapid or intermediate NAT2 phenotype.

Squires et al. (2010) investigated the association between the consumption of pickled meat (salted and pickled meat, such as trimmed navel beef and pork riblets) and colorectal cancer, and concluded that there was a positive association. OR (CI 95%) 2.07(1.37-3.15) were established for >3 servings/week of pickled meat among men, while OR (CI 95%) were established for >5 servings/week of red meat among men. OR (CI 95%) 1.44(0.76-2.72) were established for >2 servings of well-done red meat among men.

Tabatabaei et al. (2011) investigated meat consumption, including different cooking methods, such as baking and pan-frying, its level of doneness and the risk of colorectal cancer in case-control study. Amount of servings/week were established among cases and controls, respectively, mean 3.04 (SD) 2.86 and mean 3.06 (SD) 3.11. OR (CI 95%) = 0.80(0.57-1.13) were established when consuming 3 servings/week of red pan fried meat among quartile 4, which equals a decrease of 20% risk of colorectal cancer. Also a decreased risk in baked, barbecued and stewed meat were found. It was concluded that their data did not support the hypothesis of meat consumption being a risk factor for development of colorectal cancer.

Wang (2008) investigated meat intake, carcinogen metabolism genes and colorectal cancer. Wang (2008) studied the different types of cooking, the level of doneness of red meat on the outside. The study concludes that diets high in red meat that are prepared in a way that would cause it to be heavily browned or blackened are associated with colorectal cancer. Also a significant increased risk was found in individuals with the genotype DSTP1 Ile105Val.

Zheng and Lee (2009) reviewed epidemiological studies from the past 10 years, focusing on the association between well-done meat intake along with meat carcinogen exposure and cancer risk. More specifically, the exposure to Heterocyclic Amines (HCAs) was investigated. Zheng and Lee's (2009) conclusion suggests that there may be a risk of cancers, including colorectal cancer, in relation to a high meat intake or high exposure to HCAs.

Table 7: Sub theme 2 - Types of cooking and preparation

Author & year	Country	Sample size & study design	Findings/ outcome/ conclusion (association)	Dose/risk
Cross et al., 2010	United States of America	Prospective cohort study. 300,948 men and women	"Positive association for red and processed meat intake and colorectal cancer; heme iron, nitrate/nitrite, and heterocyclic amines from meat cooked at high temperatures may explain these associations".	Red meat HR (CI95%) 1.24(1.09-1.42) Processed meat HR (CI95%): 1.16(1.01-1.32)
Joshi, A., 2007	California, United States of America	Case-control study. 3,364 probands, 1,942 familial controls (siblings/ spouse) and 1,620 population based controls.	"Consumption of more than 3 servings of red meat or cooked red meat per week statistically significantly increased the risk of colorectal cancer".	>3 servings of red meat per week: OR (CI95%): 1.8(1.3-2.5) More than 3 servings of pan fried, oven broiled or grilled meat per week: OR (CI95%): 1.6(1.3-2.5)

Murtaugh et al., 2005	Utah/ California, United States of America	Case control study. A total of 952 rectal cancer cases and 1205 controls + 1346 colon cancer cases and 1544 controls	Increased risk of CRC with preference of well done red meat among men.	CRC risk and red meat among men: OR (CI95%) Medium done: 1.16(0.91-1.47) Well done: 1.37(1.06-1.77)
Ognjanovic et al., 2006	Hawaii, United States of America	Ecological study. Age-standardized CRC incidence rates for 27 countries.	“Data provide additional support for the hypothesis that a diet rich in meat, and, in particular, in heterocyclic amines from well-done meat, combined with a rapid/intermediate NAT2 phenotype may increase CRC risk”.	CRC risk and consumption of overall meat among men: Regression Coefficient (RC) Standard Errors (SE): 0.38 (0.05)
Squires et al., 2010	New Foundland, Canada	1,204 residents of Newfoundland and Labrador. 518 individuals diagnosed with colorectal cancer and 686 controls.	“The findings in this study provide evidence for the hypothesis that the intake of pickled meat is positively associated with the risk of CRC in the study subjects”.	Cancer risk among men: OR (CI95%) >3 servings/week of pickled meat: 2.07(1.37- 3.15 >5 servings red meat/week: 0.75(0.43- 1.29 >2 servings well done meat/week: 1.44(0.76- 2.72)
Tabatabaei et al., 2011	Australia	Case-control study. 567 incident CRC cases and 713 controls	“The amount of red baked meat consumed had a statistically significant inverse trend of association with CRC.” “Data do not support the hypothesis that meat consumption is a risk factor for CRC.”	CRC risk and red pan fried meat. 3 servings/week, OR (CI95%): 0.80(0.57-1.13)
Wang, 2008	California, United States of America	Case-control study. Proband-only sample (N=577) and then further examined in proband-sibling pairs (307 pairs)	“Our results also suggest that CYP1A2 may exert effects on risk of colon cancer and rectal cancer through different pathways when associated with cooked red meat intake or levels of doneness of red meat on the outside. In particular, when interacting with levels of doneness of red meat on the outside, individuals carrying AC or CC genotype had lower risk of colon cancer but much higher risk of rectal cancer”.	Significant risk of CRC with genotype GSTP1 Ile105Val, OR (CI95%): 1.7(1.05-2.63)
Zheng and Lee, 2009	Tennessee, United States of America	Review	“High intake of well-done meat and/or high exposure to certain HCAs may be associated with the risk of cancers including cancers of the colorectum.”	-

Dietary patterns

In the third sub theme, four studies investigated dietary patterns and the association of colorectal cancer (see table 8 for sub theme 3 - dietary patterns literature list). There was consensus on the association between colorectal cancer and consumption of red and processed meat among the four studies, Flood et al. (2008), Fung et al. (2010), Miller (2010) and Miller et al. (2010).

Flood et al. (2008) conducted a prospective cohort study analysing the factors between dietary patterns and colorectal cancer. High scores on red meat factor among men were RR (CI 95%) 1.17(1.02-1.35) were associated with increased risk of colorectal cancer.

Fung et al. (2010) investigated two different dietary approaches and risk of colorectal cancer. Each increase of one serving/day of red and processed meat among men were established RR (CI 95%) = 1.08(0.97-1.21). Lower intake of red and processed meat were associated with a decreased risk of colorectal cancer.

Findings from Miller's (2010) case-control study also support the connection to increased risk of colorectal cancer when there is a exposure of HCAs and PAHs (polycyclic aromatic hydrocarbons), nitrites and nitrates, as these are a plausible mechanism for the risk of CRC. The "meat and potato" pattern (red and processed meat, potatoes/french fries and refined carbohydrates) highest and lowest quartile established OR (CI 95%) = 1.56(0.84-2.90). Miller (2010) suggests a positive association between risk of colorectal cancer and the "meat potato" pattern.

Miller et al. (2010) reviewed epidemiological evidence on the association between dietary patterns and cancer risk. Like in the previous study, high scores in the "meat and potato" pattern were associated with a risk of colorectal cancer. The observed excess risk ranged from an OR (CI 95%) 1.18(1.02-1.35) to 1.80(1.28-2.15) and conclude an association with excess risk of colorectal cancer and high scores in the "meat and potato pattern".

Table 8: Sub theme 3 - Dietary patterns

Author & year	Country	Sample size & study design	Findings/ outcome/ conclusion (association)	Dose/Risk
Flood et al., 2008	United States of America	Cohort study. 293 615 men and 198 767 women.	“Results suggest that dietary patterns characterized by a low frequency of meat and potato consumption and frequent consumption of fruit and vegetables and fat-reduced foods are consistent with a decreased risk of colorectal cancer.”	CRC risk among men, RR (CI95%) For each increase of 1 serving of red and processed meat per day: 1.08(0.97-1.21)
Fung et al., 2010	United States of America	Cohort study. 87,256 women and 45,490 men (age 30–55 y for women and 40–75 y for men at baseline.	“Higher intakes of whole grains, fruit, and vegetables; moderate amounts of low-fat dairy; and lower amounts of red or processed meats, desserts, and sweetened beverages) was associated with a lower risk of colorectal cancer.”	Risk of CRC High scores on red meat factor men, RR (CI95%): 1.17(1.02-1.35)
Miller, P.E., 2010	Pennsylvania, United States of America	Case control study. 431 incident cases (225 men, 206 women) and 726 healthy controls (330 men, 396 women).	“Findings support the hypothesis that greater exposure to HCAs (heterocyclic amines), PAHs (polycyclic aromatic hydrocarbons), nitrites, and nitrates is a plausible mechanism by which red and processed meat may increase colorectal cancer risk.”	CRC risk among men, the pattern “meat and potatoes”, OR (CI95%): 1.56(0.84-2.90)
Miller et al., 2010	Pennsylvania, United States of America	Review of 16 studies	“A healthier pattern consisting of greater intakes of fruits and vegetables, and lower intakes of red and processed meat, appeared protective against colorectal adenoma and cancer incidence. Findings also suggest that a less healthy pattern characterized by higher intakes of red and processed meat, as well as potatoes and refined carbohydrates, may increase risk”.	High scores in the “meat and potato” pattern OR (CI95%) ranged from 1.18 (1.02-1.35) to 1.80(1.28-2.15)

Concluding thoughts on themes from search on cancer and meat

In the outcome from the 24 studies from this systematic literature review, 16 concluded an association between red and processed meat and colorectal cancer, while four concluded that existing findings are either vague or statistically insignificant and the remaining four were inconclusive. The dose-response relationship between consumption of red and processed meat and colorectal cancer were established by most of the studies. As it can be seen in table 6, some of the units used for establishing a specific dose-response differs and were not comparable. The findings on dose-response in the literature search are considered inconclusive and a clear dose-response relationship remains a scientific debate.

Therefore, meta-analyses of epidemiological studies investigating the dose-response relationship between meat and cancer, presenting a risk ratio/relative risk (RR) and confidence intervals (CI), were reviewed, in order to get a clearer dose-response relationship (see table 9). The overall findings from the four meta-analyses conclude high intake of red and processed meat to be associated with colorectal cancer and support limiting the intake.

Chan et al. (2011) investigated the dose-response rate while reviewing 24 prospective studies (2 case-cohort, 3 nested case-control, 19 cohort) while 21 were used for the dose-response meta-analysis. The summary RR (CI 95%) for 100 gram daily intake of red meat was 1.17(1.05-1.31), which is 17% increased risk of colorectal cancer. RR (CI 95%) for 50 gram daily intake of processed meat was 1.18(1.10-1.28), which is 18% increased risk of colorectal cancer. Chan et al. (2011) concludes that a high intake of red and processed meat is associated with a significant increased risk of colorectal cancer and furthermore support the recommendations on limiting red and processed meat consumption.

Larsson and Wolk (2006) conducted a meta-analysis based on 19 prospective studies investigating the relationship between meat consumption and risk of colorectal cancer. The summary RR (CI 95%) for 120 grams of red meat daily was 1.28 (1.15-1.42), which is 28% increased risk of colorectal cancer. The summary RR (CI 95%) for 30 gram of processed meat was 1.20 (1.11-1.31), which is 20% increased risk of colorectal cancer. Based on their results, Larsson and Wolk (2006) conclude that a high consumption of red meat and cancer is associated with colorectal cancer.

Norat et al. (2002) conducted a dose-response meta-analysis of epidemiological studies investigating meat consumption and colorectal cancer risk. A total of 48 studies were included (34 case-control and 14 cohort studies) and the summary RR (CI 95%) for 120 grams of red meat daily was 1.24 (1.08-1.41), which is 24% increased risk of colorectal cancer. The summary RR (CI 95%) for 30 grams of processed meat daily was 1.36 (1.15-1.61), which is 36% increased risk of colorectal cancer. Norat and Riboli (2002) conclude that the results support previous recommendations for adopting a diet with a low intake of red and processed meat.

Sandhu, White and McPherson (2001) conducted a meta-analysis on meat consumption and colorectal cancer risk reviewing 13 prospective cohort studies. The summary RR (CI 95%) for 100 grams of red meat daily was 1.17 (1.05-1.21), which is 17% increased risk of colorectal

cancer. Combining the results from all studies, the summary RR (CI 95%) for 25 grams of processed meat daily was 1.49 (1.22-1.81), which is 49% increased risk of colorectal cancer. Sandhu, White and McPherson (2001) conclude an association between meat consumption and colorectal cancer.

Comparing the outcomes from the meta-analyses establishes the consumption of 100-120 grams of red meat and 25-50 grams of processed meat daily is associated with an increased risk of colorectal cancer. Danish men consume 151 grams daily (1.06kg weekly), while the Danish guidelines recommend maximum 500 grams of both red and processed meat weekly, it can be established that the consumption of red and processed meat is considered high.

Based on these findings, the overall message in the health communication material designed for this study will strive to encourage young Danish men to reduce the intake of red and processed meat, in order to reduce the risk of developing colorectal cancer.

Table 9: Review of meta-analyses

Author & year	Country	Sample size & study design	Findings/ outcome/ conclusion (association)	Dose/Risk
Chan et al., 2011	United Kingdom / The Netherlands	Meta-analysis	"High intake of red and processed meat is associated with significant increased risk of colorectal"	Summary RR (CI 95%) for 100 gram daily intake of red meat was 1.17(1.05-1.31), which is 17% increased risk of colorectal cancer. RR (CI 95%) for 50 gram daily intake of processed meat was 1.18(1.10-1.28)
Larsson and Wolk, 2006	Sweden	Meta-analysis	High consumption of red meat and cancer is associated with colorectal cancer	Summary RR (CI 95%) for 120 grams of red meat daily was 1.28 (1.15-1.42), which is 28% increased risk of colorectal cancer. The summary RR (CI 95%) for 30 gram of processed meat was 1.20 (1.11-1.31)
Norat et al., 2002	France	Meta-analysis	Results support previous recommendations for adopting a diet with a low intake of red and processed meat	Summary RR (CI 95%) for 120 grams of red meat daily was 1.24 (1.08-1.41), which is 24% increased risk of colorectal cancer. The summary RR (CI 95%) for 30 grams of processed meat daily was 1.36 (1.15-1.61)
Sandhu, White and McPherson, 2001	United Kingdom	Meta-analysis	"The overall association between meat consumption and risk of colorectal cancer appears to be positive"	Summary RR (CI 95%) for 100 grams of red meat daily was 1.17 (1.05-1.21), which is 17% increased risk of colorectal cancer. The summary RR (CI 95%) for 25 grams of processed meat daily was 1.49 (1.22-1.81)

Search B: Health communication

The other part of the systematic literature review consists of a different search strategy aiming to investigate literature on health communication. This section represents an evaluation of literature that has met the inclusion criteria, in terms of its relevance to the current study.

Extended summaries of all literature findings can be found in the theory section. The overview of literature and theories that have been used and not used in the process of developing the health communication campaign for this study fall under the same categories as previously in the theory section: literature on planning health communication and literature based on five variables (source, message, channel, receiver, and destination).

Literature on planning health communication

In relation to planning health communication campaigns, only two theories were chosen due to their relevance of the study which were McGuire's (1989) communication/persuasion model and CDC 10 step model for health communication (Roper, 1993). McGuire's (1989) model was chosen due to the identified five input variables (source, message, channel, receiver, and destination) which are used for developing and constructing persuasive communication. CDC 10 step model was chosen due to the specific steps that were identified when planning health communication campaigns and which also fit the overall process of this current study (Roper, 1993) (see table 10).

Table 10: Studies on health communication planning used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
McGuire, W.I., 1989	The Communication/Persuasion Model	The input variables (source, message, channel, receiver, and destination) in the communication/persuasion model are the key components for developing and constructing persuasive communication campaign.
Roper, W.L., 1993	CDC's 10-step model for health communication	The 10-step model guides the entire process of health communication from the very beginning till the very end, where every step is explained in detailed.

Theories on health communication planning that were not chosen to be used in this study were eliminated based on their similarity to the previously mentioned theories. One of those theories were ACME (audience-channel-message-evaluation) framework by Noar (2012), which was similar to McGuire's (1989) model. Furthermore, Donovan's (1995) suggestions for changing the 10 step model by CDC as well as Crawford and Okigbo (2014) nine elements model were not used in this study, as some of the points mentioned were not relevant or applicable to the

current study. Quite different approaches for planning health campaigns based on marketing, such as Noar and Head (2011) and Mattson and Basu (2010) were also not used in this current study, as they did not provide detailed guidance of the entire planning process (see table 11).

Table 11: Studies on health communication planning not used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
Crawford, E.C. & Okigbo C.C., 2014	9 elements necessary for designing an effective health communication campaign	This model suggested nine elements that are necessary for designing an effective health communication campaign.
Donovan, R.J., 1995	Review of CDC's 10-step model for health communication	10 step model should be adjusted, so goals of the program are identified first and also the target group should be analyzed before setting communication objectives.
Mattson, M. & Basu, A., 2010	Social Marketing, Four Ps of Marketing, Message Design Tool (MDT)	Social marketing, with the use of four Ps of marketing – product, price, place and promotion, used as key principles in health communication campaigns. Message design tool (MDT) has a purpose in helping health campaign practitioners in making a connection between campaign goals, messages and outcomes.
Noar, S.M., 2012	Audience-Channel-Message-Evaluation (ACME) framework	The concepts of the model (audience, channel, message and evaluation) help to design, implement and evaluate health campaigns.
Noar, S.M. & Head, K.J., 2011	Marketing principles	One of the rising trends in health communication campaigns is the use of marketing principles.

Literature on health communication campaign material development

Literature findings that were used when developing the source component for the posters, included literature on narrative communication, such as Fisher's narrative theory (Edgar and Volkman, 2012) as well as studies by Janssen et al. (2013) and Hesse et al. (2015) as they suggested using storytelling as an effective communication strategy. Furthermore, studies by Hesse et al. (2015) and Schönfeldt and Gibson (2010) suggested the use of credible scientific sources which was essential for the poster development (see table 12).

Table 12: Studies on source characteristics used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
Edgar, T. and Volkman, J.E., 2012	Fisher's narrative theory	Storytelling is an essential part of Fisher's narrative theory can be used in developing the source characteristics in health communication. Consistency and truthfulness have to be at the core of the story.
Hesse,B.W., Beckjord,E., Finney Rutten,L.J., Fagerlin,A., Cameron,L.D., 2015	Narrative risk communication	Compelling narrative risk communication helps to transform the mindset of the individual.
Janssen, E., Osch, L., Vries, H. & Lechner, L. 2013	Narrative risk communication	The study findings provide support for the effects of narrative risk communication in influencing feelings of cancer risk.
Schönfeldt, H.C. & Gibson, N., 2010	Source characteristics	This study points out that consumers require accurate, applicable and trustworthy sources of information about nutrition to support informed food choices.

Moreover, literature on framed messages, such as Tewksbury and Scheufele (2009), Gallagher and Updegraff (2012), Kahneman and Tversky (1979), Rothman et al. (1993) and Bartels, Kelly and Rothman (2010) was used when developing messages with a positive and negative frame. As for tailoring messages to the target group, literature by Campbell and Quintiliani (2006) and Quintiliani (2006) were used. As for creating specific message components in the poster theories as Activation model (Edgar and Volkman, 2012) helped to create high sensation value, as well as extended parallel process model (Edgar and Volkman, 2012) which helped to create scare and fear tactics in the poster. The overall use of positive and negative appeals were guided by Dutta and Vanacker (2000), Downer (1996), where rhetorical appeals were introduced by Ramirez (2013) (see table 13).

Table 13: Studies on message characteristics used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
Bartels, R.D., Kelly, K.M. & Rothman, A.J., 2012	Framed messages	Study results revealed that when the risk associated with a health behaviour was low, participants responded more favourably to gain-framed messages. However, when the risk associated with the health behaviour was high, participants responded more favourably to loss-framed messages.
Campbell, M.K. & Quintiliani, L.M., 2006	Tailored messages	The study pointed out that tailored messages could help individuals to better understand information, as the process of tailoring eliminates irrelevant information and focuses on the information that is relevant.
Downer, A., 1996	Affective appeals	The study analyzes the use of negative appeals, such as fear, and positive appeals, such as humor.
Dutta, M.J. & Vanacker, B., 2000	Persuasive appeals	The study pointed out the importance of using affective appeals in communication campaigns.
Edgar, T. and Volkman, J.E., 2012	Activation model and extended parallel process model	High sensation value, which is the base of activation model, suggests to develop novel, creative, emotionally powerful, and graphic message content. Extended parallel process model suggests to use fear and scare tactics for effective risk messages.
Gallagher, K.M. & Updegraff, J.A., 2012	Framed messages	Gain-framed messages were found to be more effective than loss-framed messages in promoting prevention behaviors.
Kahneman, D. & Tversky, A. 1979	Prospect theory	Prospect theory suggested that people make choices based on the perceived risk on the subject. People tend to be risk averse when choices involve certain gains, and on the opposite, people tend to be risk seeking when choices involve certain losses.
Quintiliani, L.M., 2006	Tailored messages	Tailored health communications were found to be effective in providing health information and also have the potential to impact on cancer related risks.
Ramirez, G.M.M., 2013	Rhetorical appeals	The study analyzed the strength of the three rhetorical appeals (i.e., logos, pathos, and ethos) in a wide reception of graphic design products.
Rothman, A. J., Salovey, P., Antone, C., Keough, K., Martin, C. D, 1993	Framed messages	The authors pointed out that positively framed messages should work better with prevention behaviors, and negatively framed messages should facilitate the effect in detection behaviors.
Tewksbury, D., and Scheufele, D.A., 2009	Framed messages	The study introduces framing of the messages, and more specifically, gain versus loss messages.

As for literature on channel use, the use of visual communication channels were supported by McWhirter and Hoffman-Goetz (2014), however, specific theories like Visual Cognitive Theory, Attribute Activation, Pictorial Superiority Effect and Dual Coding Theory, Cognitive Load Theory, Visual Persuasion were not used to full extent and only acknowledged where needed. In relation to suggestions for channel use, studies by Lee et al. (2011), Noar, Benac and Harris (2007), Crawford and Okigbo (2014), Noar and Head (2011), Clar et al. (2014), Cassell, Jackson, Cheuvront (1998), Chou et al., 2013, Hesse et al. (2015) were taken into consideration when choosing new media and print materials for the channel of communicating health issues (see table 14).

Table 14: Studies on channel characteristics used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
Cassell,M.M.;Jackson ,C.;Cheuvront,B., 1998	The use of Internet in health communication	"It is concluded that if the Internet can be used for persuasive health communication and its reach continues to expand, it is time for public health professionals to explore the design and evaluation of Internet-based interventions directed at health behavior change."
Chou, W.S., Prestin, A., Lyons, C. & Wen, K., 2013	New media	The scarcity of empirical evidence on using new media in health communication, emphasizes the need for more interventions with participatory and user generated features.
Clar,C.; Dyakova,M.; Curtis,K.; Dawson,C.; Donnelly,P.; Knifton,L.; Clarke,A.,2014	Digital media in health communication	Due to the rapid advancement in the technology, digital media is used more and more frequently in health communication. There is a need to engage users in an interactive process when using digital media for public health communication.
Crawford, E.C. & Okigbo C.C., 2014	Integration of mass media	The authors of the study mentioned the integration of both mass media as well as intrapersonal communication as a possible solution for choice of channel.
Hesse,B.W., Beckjord,E., Finney Rutten,L.J., Fagerlin,A., Cameron,L.D., 2015	New media in cancer risk communication	More specifically for cancer risk communication a study pointed out the importance of improving the communication process in the field of cancer with the help of new media.
Lee,T.J.; Cameron,L.D.; Wünsche,B.; Stevens,C., 2011	Using imagery and text information	The findings of the study confirmed, that using images together with textual information in the content of the message increased participant's understanding of risk.
McWhirter,J.E.;	Visual Cognitive	The results highlight the need for greater theoretical and methodological attention

Hoffman-Goetz,L., 2014	Theory, Attribute Activation, Pictorial Superiority Effect and Dual Coding Theory, Cognitive Load Theory, Visual Persuasion	to visual images in health communication research in the future.
Noar,S.M.; Benac,C.N.; Harris,M.S., 2007	Using visual channels	Certain print materials that had greater visual elements were more effective compared to those that did not have visual aids.
Noar, S.M. & Head, K.J., 2011	New media in campaigns	The new media trend has been pointed out as the most transformative, as the change is within the new media tools and technical improvements that provide broader opportunities for health communication campaigns.

The importance of the target group or the receiver was emphasized by such as studies as Donovan (1995), Downer (1996), Mattson and Basu, (2010), Emmons et al. (2004). Study by Sobal (2005) was essential for the study as it emphasized the relationship between meat and masculinity, and a study by Aspara and Van Den Berg (2013) identified the masculine colors that were later on used in the posters (see table 15).

Table 15: Studies on receiver characteristics used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
Aspara, J. & Van Den Bergh, B., 2014	Masculine colors	The study analyzed gender preferences for products that differ in perceived masculinity vs. femininity The study suggested that gender images are reliably associated to certain colors.
Donovan, R.J., 1995 , Downer, A.,1996	Importance of target group	The study suggested to carefully identify the target audience in order to allocate appropriate resources and to develop relevant messages.
Emmons,K.M.; Wong,M.; Puleo,E.; Weinstein,N.; Fletcher,R.; Colditz,G, 2004	Target group characteristics	When working with the selected target group in the cancer risk an "Accurate perception of one's risk is an important part of making informed decisions regarding one's health and well-being".
Mattson, M. & Basu, A., 2010	Importance of target group	The study pointed out the importance of accepting your target audience as it is and developing the campaign based on what the target audience wants and likes.
Sobal, J., 2005	Meat and masculinity	The study suggested that "Meat, especially red meat, is an archetypical masculine food. Men often emphasize meat"

Finally, for the destination of the campaign, as the objective was to raise awareness and not behavior change, studies on behavior theories such as behavioral prediction model (Fishbein and Yzer, 2003), media priming theory (Fishbein and Yzer 2003, Roskos-Ewoldsen et al., 2009) and social cognitive theory of mass communication (Bandura, 2001) were not used to their intended purpose and only used where applicable (see table 16).

Table 16: Studies on destination characteristics used in the study

Author & year	Theory/Model/Input	Findings/Outcome/Conclusion
Bandura, A., 2001	Social cognitive theory of mass communication	Bandura argued, that people seek information that could be useful for them. Therefore, the main effectiveness and use of different media sources is based on the accessibility and likelihood of finding the useful information.
Fishbein, M.; Yzer, M.C., 2003	Behavioral prediction and media priming theory	"Both the integrative model of behavioral prediction and media priming theory provide guidance with respect to the selection of beliefs to target in an intervention."
Roskos-Ewoldsen, D.R., Roskos-Ewoldsen, B. & Carpentier, F.R.D, 2009	Media priming	The study concludes, that the media influence later judgments and behavior of people. Also, the media operate as a prime in a number of different channels.

5.1.2 Extreme consumer questionnaire

According to the immense amount of theory focusing on using new media for health communication, a short online questionnaire was carried out in a closed (private) Facebook group, "Vegansk Mad", where members can share inspiration, pictures and recipes that are plant based. Therefore, it was seen as an opportunity to get in contact with men who have chosen to reduce their meat intake. A total of 65 answers were collected in four days. Even though it was requested that only men filled out the survey, 16 females filled out the survey as well. The female answers were taken out, and a total of 48 male answers were being analysed in this study. From the results of participants' demographics, the average age was 28 years of age and most of them have completed a university degree. Furthermore, majority of the participants followed vegan diet (see table 17).

Table 17: Subject characteristics from extreme consumer questionnaire

Group size	N		48
Age in years	Mean (SD)		28.5 (6.4)
Education	% (N)	Primary Education	2% (1)
		Secondary Education	4% (2)
		High School diploma	15% (7)
		University Undergraduate degree	75% (36)
		N/A	4% (2)
Diet	% (N)	Vegan (plant-based)	67% (32)
		Semi-vegetarian	19% (9)
		Vegetarian	13% (6)
		Omnivore	2% (1)
Period of following the diet	% (N)	Less than a year	38% (18)
		2-4 years	31% (15)
		4-8 years	31% (15)

The participants were also asked to answer an open ended question on what specifically encouraged them to change their dietary habits in relation to reducing meat consumption. Several themes emerged in relation to this question. Ethical considerations such as animal cruelty and animal welfare were the most highlighted themes and stated by 27 participants. One participant suggested that animal cruelty should be related to “not being masculine”. However, the second most common answer to what encouraged their choice of reducing meat was health reasons, as this was stated by 17 participants. Other reasons for reducing their meat consumption included environment (n=15), friends and girlfriends (n=7), exposure to documentaries (n=7), stated by upbringing (n=2) or just the fact of trying something new (n=2).

Another part of the open ended questions asked participants to reflect on what could help to encourage other men to reduce their meat intake in relation to media channels. The equal amount of people mentioned TV as well as social media as the main channels that could be used in order to encourage men to reduce their meat consumption. Furthermore, posters and radio were also mentioned as possible channels. Some participants added additional comments in relation to which platform they thought would be best suited for communicating to men and encouraging a meat reduced diet. Three suggested that either political campaigns or public

speaker would possibly make a difference, and another suggested that it should be a part of “real education” in the schools. Another participant added that more focus on non-meat products could be beneficial, while three suggested that communicating face to face method. Tasting good plant based foods, and exposure to vegan lifestyle showing that it is easy and simple was also suggested. Finally, a participant suggest that there should be a public exposure of farmers and slaughterhouses, along with another adding that men need be addressed more harshly.

The last question was an addition to the general survey, asking if the participant had other suggestions for strategies targeting men’s meat consumption and how to reduce it. Majority chose to answer this section and several themes could be drawn from the results. Some suggestions focused on guidance, such as creating a guide with local supermarkets, restaurants in Copenhagen along with recipes to help men transitioning to eat less meat, guidance in relation to effects of eating massive amounts of meat as well as guidance on how to consume enough protein on a plant based diet. Furthermore, it was suggested that people in general should be more informed about the impacts the meat industry has on the environment. One participant pointed out that men are prone to lacking imagination in the kitchen, especially when it comes to food without meat. Several suggest the use of having a public role model or a celebrity to advocate a meat reduced diet. Also popular men known from fitness or bodybuilding were mentioned as good role models. Furthermore, many of the participants point out a discourse among men: it is considered masculine to eat meat and suggest changing the perception of eating more vegetables and less meat. One suggest using females to advocate that “meat is for pussies”, and make it more cool and macho to eat vegetables, opposed to the current state, where it is seen as being “girly” to eat vegetables. One participant notes that those men who associated meat consumption with masculinity would be difficult to influence, and therefore it would be necessary to emphasize on health issues and environmental issues connected to meat consumption.

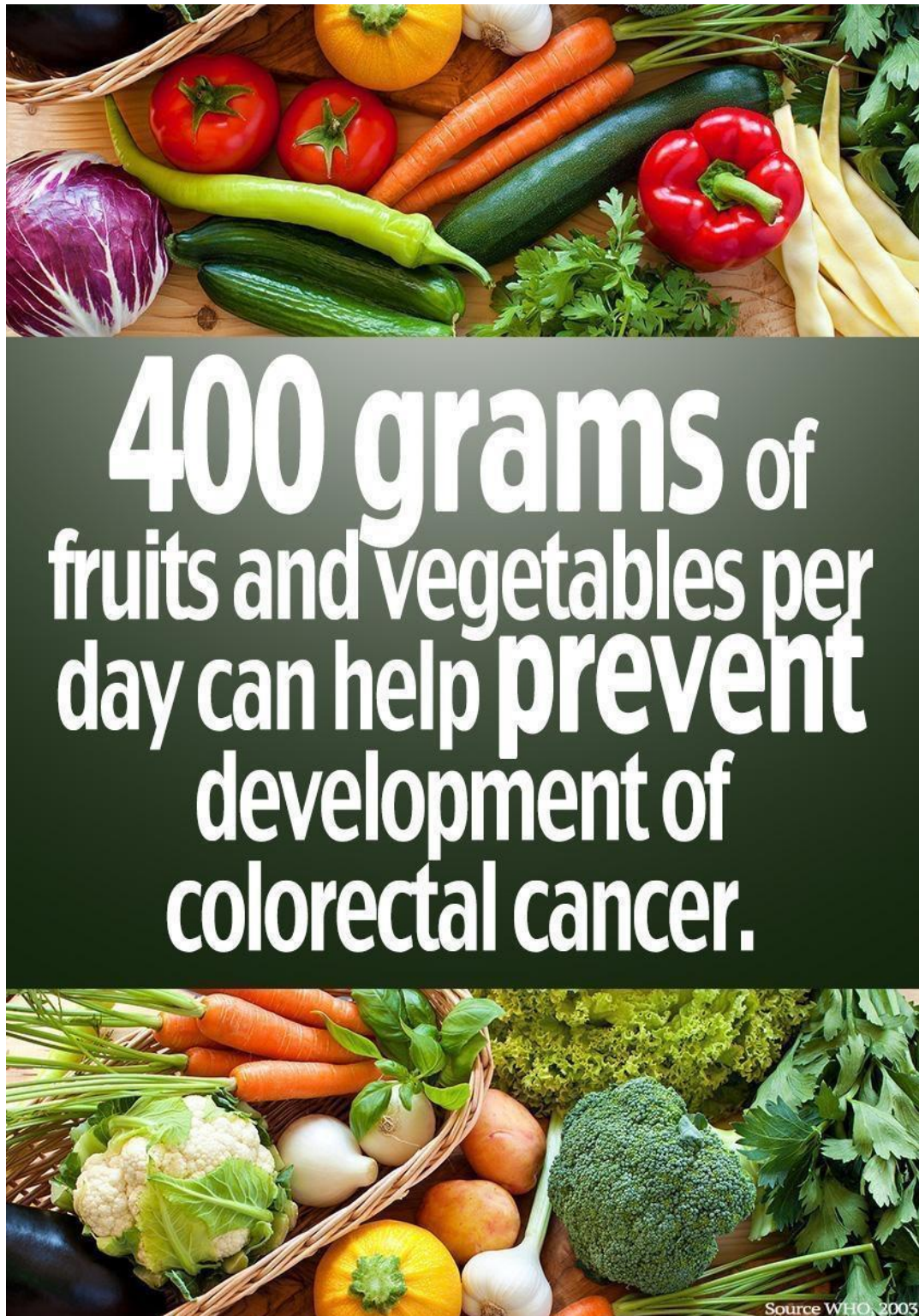
Several of the themes that derived from the extreme consumer questionnaire answers, such as ethical considerations, health, using a celebrity as a role model, focus on fitness and bodybuilding, were used when designing the first draft posters. The design of the first draft posters are illustrated in the following chapter.

5.2 Poster draft 1

In the following section, each poster for draft 1 will be described in relation to how it was created along with theories and considerations taken into account when designing them.

Poster 1

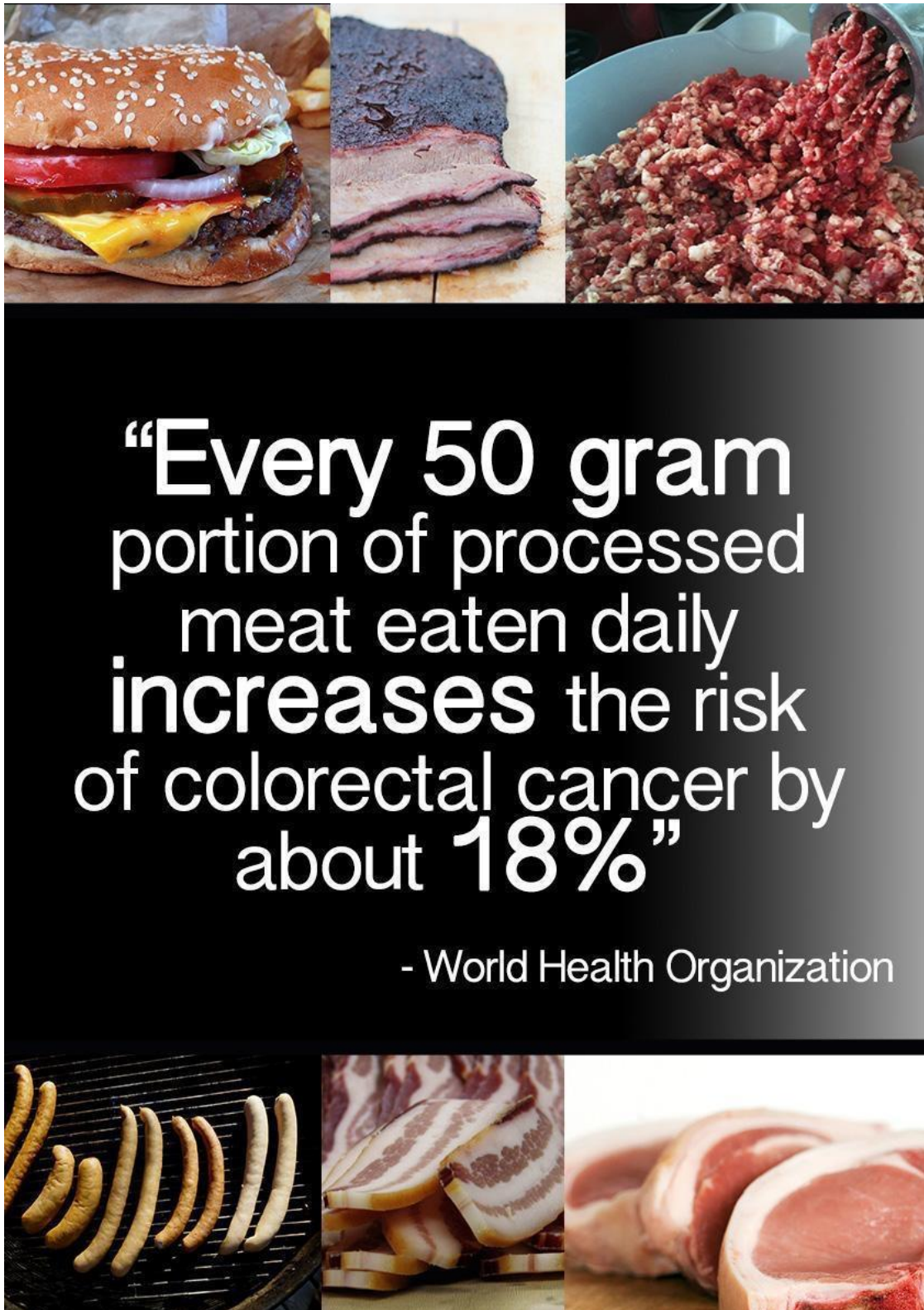
The first poster was designed based on the prospect theory where the positively framed message was used, where the benefits of engaging in the anticipated behavior are emphasized. The positively framed message was based on the fact from the World Health Organization (2015c) pointing out that “400 grams of fruits and vegetables per day can prevent development of colorectal cancer”. WHO was used as a source based on the literature review stating that messages are more effective when they come from credible and scientific sources. As for the visuals, they were bright coloured pictures of fruits and vegetables to further emphasize the positivity.



Poster 1: A positively framed message with a credible source

Poster 2

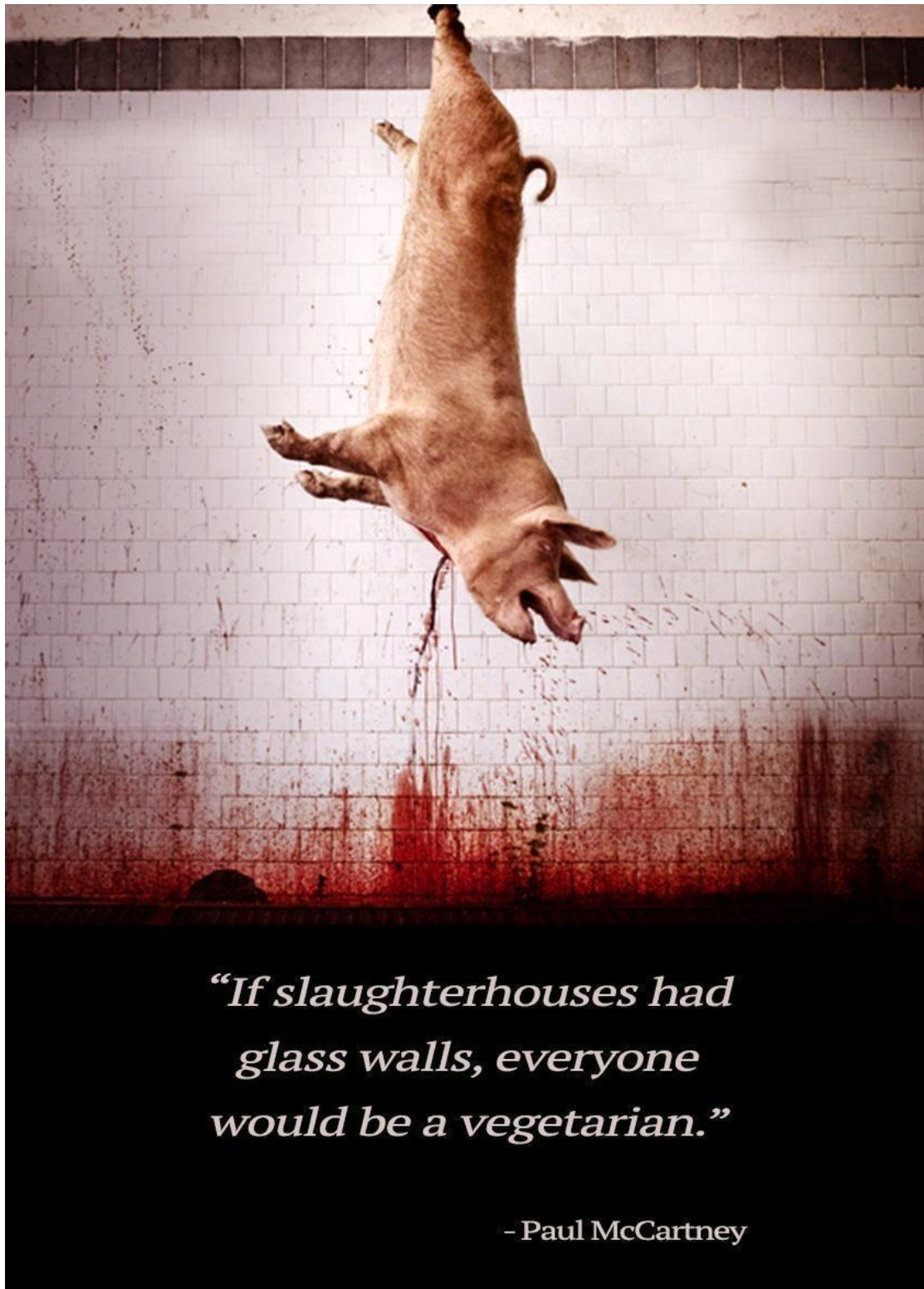
The second poster was also created according to the prospect theory (Kahneman and Tversky, 1979) having a negatively framed message, which emphasizes the risk of engaging in the described behavior. The message is based on information from WHO (2015d), which is used as a credible and scientific source: “Every 50 gram portion of processed meat eaten daily increases the risk of colorectal cancer by about 18%”. Furthermore, the extended parallel process model was used in the content of the message with the focus of fear and scare tactics (Edgar and Volkman, 2012). The goal was to make sure recipients determine that the outcome of not reducing meat is serious enough to raise their awareness and thus evaluate the ability to perform the intended behavior of reducing their meat consumption. The visuals focused on darker colors, pictures of processed types of meat that are associated with being carcinogenic (hamburger, bacon, sausages, minced meat, burnt meat, red meat) (WHO, 2015d).



Poster 2: A negatively framed message with fear and scare tactics

Poster 3

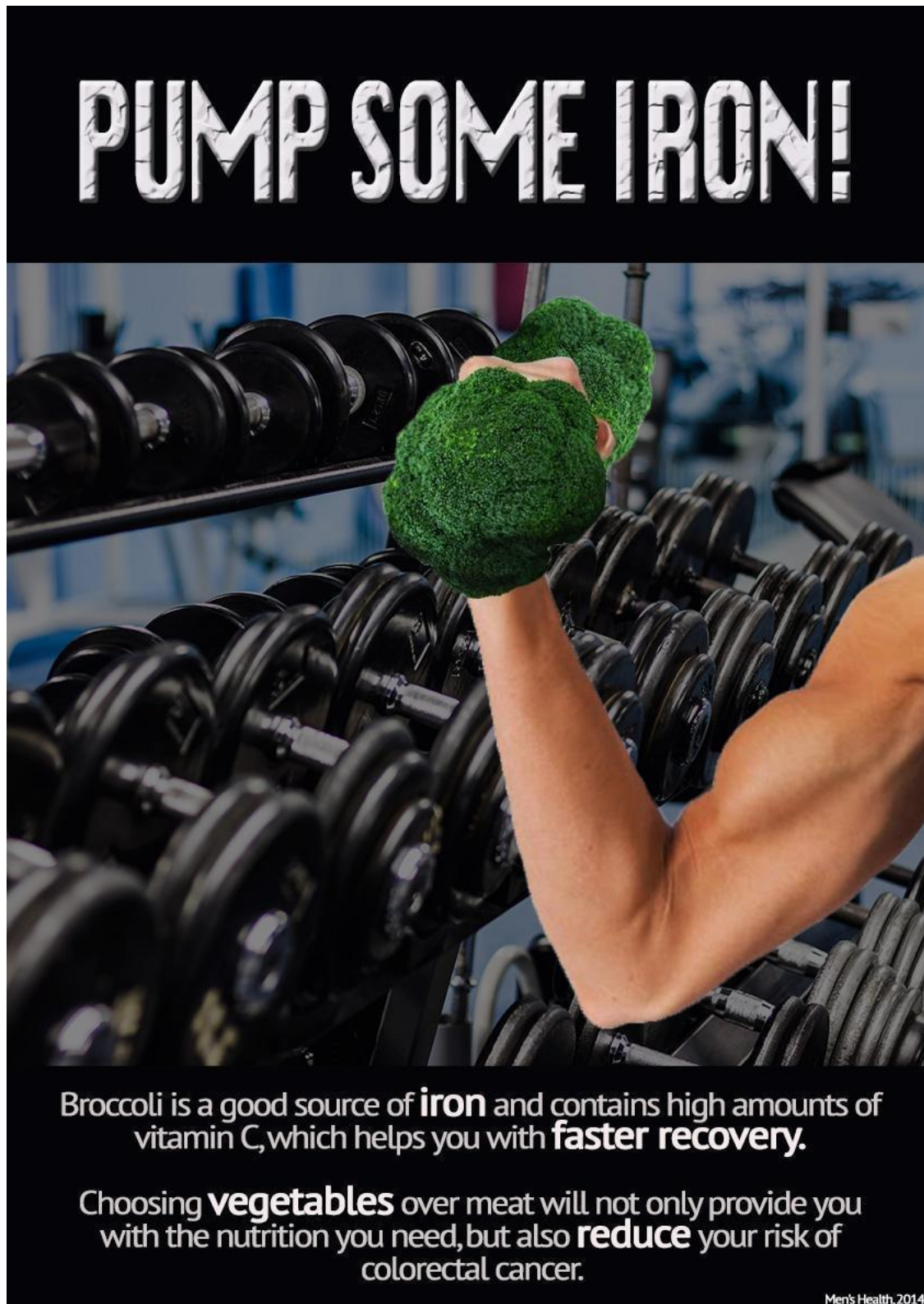
In the third poster theories on scare and fear tactics based on the extended parallel process model (Edgar and Volkman, 2012) were applied by having a visual of a pig hanging upside down in a slaughterhouse with blood on the floor and walls. This image was chosen based on the findings from the extreme consumer questionnaire, as the majority stated that they reduced their meat consumption due to ethical considerations. Furthermore, this image represents some of the high sensation value characteristics as being graphic and emotionally powerful (Edgar and Volkman, 2012). Pathos, appeal to emotion was also intended by the use of a scary image (Ramirez, 2013). Furthermore, a quote from Paul McCartney was used in the message content: "If slaughterhouses had walls, everyone would be a vegetarian" (PETA, 2009). The choice of a role model and celebrity was based on the extreme consumer questionnaire results, where the use of the famous person advocating to reduce meat consumption was one of the suggested strategies targeting men.



Poster 3: A message with scare and fear tactics, appeal to emotions

Poster 4

The image and the title for the fourth poster was based on theory of positive appeals, specifically humor (Downer, 1996). The visuals show an arm in a gym setting holding a broccoli instead of a hand weight. The image choice was inspired by Meatless Monday Campaign (meatlessmonday.com, 2016). Having a gym setting and adding darker color tones were done in order to appeal to masculinity. The headline of the message was “Pump some iron” and further explanation and information were added in the bottom: “Broccoli is a good source of iron and contains high amounts of vitamin C, which helps you with faster recovery” (Men’s health, 2014) and furthermore “Choosing vegetables over meat will not only provide all the nutrition you need, but also reduce your risk of colorectal cancer”.



Poster 4: A message with humor with masculine visual components

Poster 5

The fifth poster included the rhetorical appeals, also referred to as ethos (credibility), logos (reason), pathos (emotion) (Ramirez, 2013). As a credible and scientific source, the World Health Organization recommendations were used again in the message: “The World Health Organization found evidence showing positive association between eating red meat and developing colorectal cancer”. The message was based on one of the current press release from WHO which aimed at appealing to reason (2015b). The visual showed two calves, with one of the calves having eye contact with the camera and the viewer of the picture. The purpose of the picture was to appeal to the emotional side while reading the headline: “Choose more vegetables and less meat”. “Choose vegetables” was included in order to give a suggestion to a substitution rather than simplifying the message to only “reduce meat”. The intention of including emotional appeals was based on the visual persuasion theory as well as rhetorical appeals.

Choose more **Vegetables** and less meat



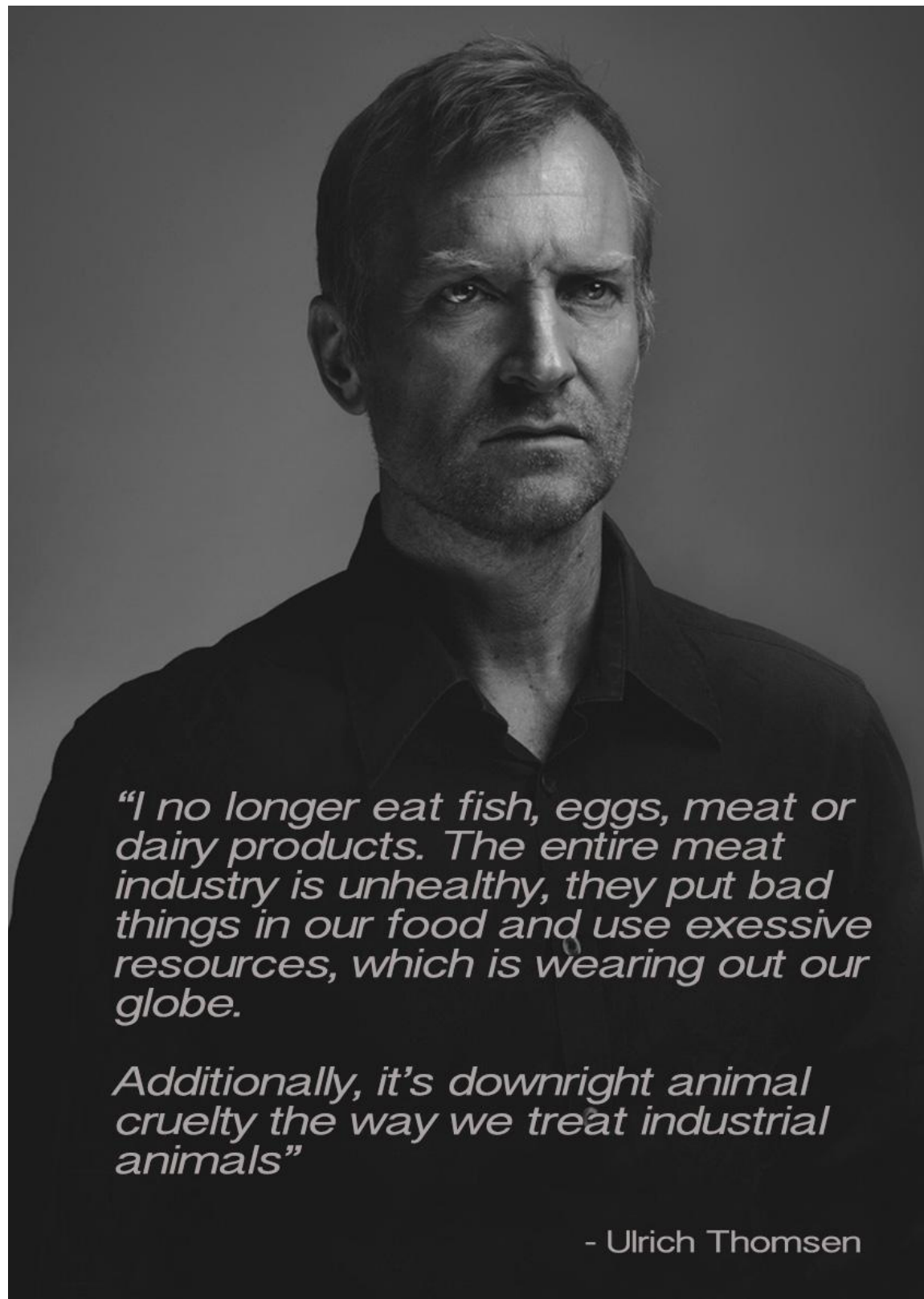
The World Health Organization
found evidence showing positive associations
between eating **red meat** and developing
colorectal cancer .

Source: WHO, 2015

Poster 5: A message with rhetoric appeals with a credible source

Poster 6

For the final poster, Fisher's narrative theory with a focus on storytelling (Edgar and Volkman, 2012) was used and Ulrich Thomsen was selected as a celebrity and role model figure based on the extreme consumer questionnaire input. A statement, translated from Danish, is written on top of a dark and serious portrait photo of him: "I no longer eat fish, eggs, meat or dairy products. The entire meat industry is unhealthy, they put bad things in our food and use excessive resources, which is wearing out our globe. Additionally, it's downright animal cruelty the way we treat industrial animals" (Globalen.dk, 2016). He was chosen in particular because of his long movie career while starring in many successful Danish movies as well as starring in an international action movies, such as the James Bond movie, *The World Is Not Enough* (1999) (Imdb, 2016). Findings from the extreme consumer questionnaire suggested that using a celebrity and a role model could increase the attention on the subject. Furthermore, the chosen picture of Ulrich Thomsen was dark and considered masculine, as it mainly contained black and dark grey tones in order to appeal to men (Aspara and Van Den Berg, 2013). Also the fact that he has chosen to eliminate meat and dairy from his diet, indicating that he now follow a plant based diet, may build this bridge between masculinity and fruits and vegetables, which was a suggestion from the extreme consumer questionnaire.



Poster 6: Storytelling with a role model

5.3 Pretesting message concepts

This chapter will focus on results and analysis from the focus group discussion. Participants' demographics from a questionnaire were conducted at the beginning of the focus group and are presented along with themes derived from the coding process from the focus group interviews.

5.3.1 Focus group participants' demographics

The average age for focus group participants was 24 years old. The highest level of education accomplished was high school and undergraduate degree, as all the participants were currently students. Results showed that all of the participants consume meat, as all of them indicated their weekly consumption where half of them consumed the minimum 1-5 meals a week. As for specific meats consumed, poultry followed by beef and veal ranked the highest (See table 18).

Table 18: Subject characteristics from focus group

Group size	N		8
Age in years	Mean (SD)		24.1 (4.2)
Education	% (N)	High School diploma	50% (4)
		University Undergraduate degree	37% (3)
		Postgraduate degree or above	13% (1)
Occupation	% (N)	Student	100% (8)
Weekly consumption of meat	% (N)	1-5 meals	50% (4)
		6-10 meals	37% (3)
		11-15 meals	13% (1)
Types of meat consumed	%	Poultry	38%
		Beef and veal	31%
		Pork	23%
		Lamb and goat	8%

5.3.2 Results and analysis from coding focus group

The second section of the results originating from the focus group discussion (see appendix N for transcription of focus group) based on posters is focusing on the themes that were derived from the coding process. The themes that emerged when the focus group was presented with posters, represented the input variables of the communication/persuasion model (McGuire, 1989). All five elements which are also the themes for each poster (source, message, receiver, channel and destination) were subcategorized by attitudes, as well as suggestions on changes and improvements on the specific elements in each poster. However, not all six posters reflected all five elements due to the semi-structured focus group structure. The overview of themes can be seen in the figure 6.

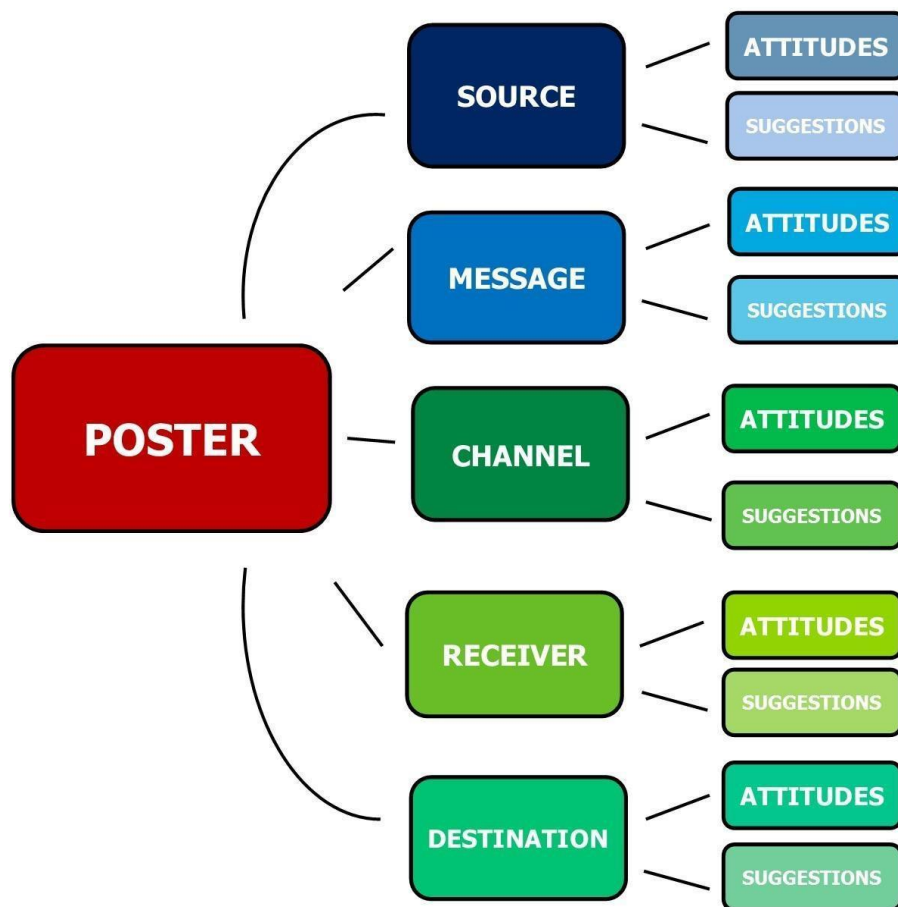


Figure 6: Coding themes from focus group in relation to the posters

Poster 1: Message

Attitudes and suggestions in relation to the message, both visual and textual in poster 1, which had WHO recommendations on the amount of fruits and vegetables were the focus of the discussion. Participants identified the poster as a “good poster”, “very powerful”, “self-explanatory”, “very precise”, “clear message”, and the images “appetizing”, “healthy”, also one participant emphasized that the colors and images are the essence of the poster (Participant 6, 3 March 2016). However, one participant suggested to use bigger font, as it could be associated with higher authority in the poster (Participant 1, 3 March 2016). Moreover, a couple of participants pointed out the difficulty in understanding the meaning of 400g in relation to food, thus also suggesting to simplify the message so it is easy to understand (Participant 1, 5, and 6, 3 March 2016). It was also pointed out, there is not enough information on this specific type of cancer and the prevention of it (Participant 5, 3 March 2016).

Poster 1: Channel/Destination

The remaining categories were briefly mentioned when discussing poster 1. For the channel used for this type of poster, one of the participants mentioned that “if I saw it on the street, honestly, I probably wouldn’t bother” meaning that the poster had too much text to read if it was placed in a public area (Participant 6, 3 March 2016). In relation to the intended destination, which is an intended behavior after seeing this poster, one of the first impressions from the participants were “Eat vegetables, it’s healthy!” and follow this recommendation in order not to get sick thus associating it with a specific guideline that would help them prevent diseases (Participant 1 and 2, 3 March 2016).

Poster 2: Message

Similarly to poster 1, the focus group discussion on poster 2 was also mainly focusing on participants’ attitudes and suggestions regarding the message of poster 2, which portrayed types of meat that should be avoided and also included a fact based statement. Participant attitudes toward poster 2, was described as “a bit scary, because it’s dark” and the other one mentioned that “It makes you go away” (Participant 1 and 5, 3 March 2016). Another participant had difficulty understanding what processed meat is, which is mentioned in the message, as well as which meat is healthier and which one is bad. Thus he would need to do some extra research after seeing this poster in order to answer his questions. Furthermore, some

participants found the pictures in the poster to be quite positive and attractive, while others stated the opposite. This suggest to pay careful attention in the selection of images.

Poster 2: Source

On the contrary to poster 1, poster 2 attracted attention to the source used in the poster as one of the participants mentioned WHO which is viewed as “is kind of a stamp, that this is legit or this statement is correct, in a way it has some power or some influence” (Participant 4, 3 March 2016). Another participant added he believes that the WHO evidence is well tested (Participant 3, 3 March 2016).

Poster 2: Destination

Similarly to poster 1, the destination or the intended behavior of viewing poster 2 was also pointed out by the participants in the discussion. Participants emphasized that processed meat should be avoided based on the pictures (Participant 7, 3 March 2016) Furthermore, for one of the participants this reminded of the tobacco warning advertisement. The participant further explained that by seeing this poster prior to going to the restaurant, he would definitely reconsider the amount of meat that he would order (Participant 5, 3 March 2016).

Poster 3: Message

Participants expressed their attitudes and no suggestions toward the message in poster 3, which portrayed a pig in a slaughter house followed by Paul McCartney’s quote. Participant attitudes towards poster 3 were “the image is pretty brutal” while the others added that “it sends a strong message” (Participant 1 and 8, 3 March 2016). Furthermore, another participant mentioned that the poster is appealing to emotions such as “disgust” and “regret” rather than providing information (Participant 6 and 1, 3 March 2016). Relating to personal background, one participant pointed out that the poster is “very provocative” which is mainly based on his background as he is used to seeing and killing animals for food and he said this message “goes against my values” (Participant 4, 3 March 2016).

Poster 3: Source

In contrast to previous posters, participants immensely discussed Paul McCartney’s quote as the main source in the message. One participant mentioned that using Paul McCartney’s name in this poster is “quite disturbing” as he is associated with his music career (Participant 5, 3 March 2016). On the other hand, another participant found the quote convincing

(Participant 3, 3 March 2016). It was also suggested to add a fact and numbers as evidence to the picture in order to make the message stronger, as a quote from a famous person is just an opinion of one person (Participant 1, 3, and 5, 3 March 2016).

Poster 3: Destination

As for the intended behavior in relation to poster 3, participants reflected that this poster would make them think, but not stop them from consuming meat (Participant 1, 3 March 2016). Some participant associated the outcome of the poster to raise awareness to the ethical considerations in relation to animals. Another participant mentioned that neither fact nor emotion based message would change the behavior (Participant 6, 3 March 2016). Finally, another participant suggested, that a small nudge after seeing this message should be created, emphasizing the need for alternatives to meat products in the shops that would be easily accessible (Participant 5, 3 March 2016).

Poster 3: Receiver

Only one of the participants elaborated on the receiver for poster 3, emphasizing that it would have an impact for people “who really wants to be kind of vegetarian or eat less meat and maybe that could push them in that direction” (Participant 4, 3 March 2016). This statement would suggest that, the more provocative approach appealing to emotions would only work for people who have already considered to reduce their meat intake. However, this approach would not work for people who consume meat regularly.

Poster 4: Message

Participant attitudes and suggestions towards poster 4, which had an image of a strong arm holding a broccoli started by questioning vegetables as the best source for protein especially for an active person “that won't make you a bigger man if that is what you want” (Participant 6 and 2, 3 March 2016). These comments were emphasizing participant distrust in the message. Furthermore, participants discussed the importance of protein, which was not even mentioned in the message, but which could be associated to the phrase “faster recovery” used in the message. Another comment was made on the text in the message, saying that the two parts of the text in the message are not connected (Participant 1, 3 March 2016). When asked if this poster appealed to them personally, almost all of them agreed that it doesn't. Furthermore, in relation to the humorous slogan “Pump some iron”, it did not reach the intended effect, as one participant said about the broccoli “it's not that heavy either” (Participant 5, 3 March 2016). As

for visual aspects, it was mentioned that it looked like an average poster in relation to others (Participant 4 and 6, 3 March 2016). Especially, the shape of the arm was disliked by quite a few participants that is why they suggested to use a bigger one (Participant 2, 5 and 6, 3 March 2016).

Poster 4: Receiver/Destination/Source

Some of the focus group participants immediately defined the target group for poster 4 “people that exercise” or as another participant suggested “the bodybuilders” (Participant 6 and 1, 3 March 2016). In relation to behavior change, one participant said that seeing this poster “would push me a little bit into including broccoli into my diet” thus confirming the intended behavior of choosing broccoli as meat alternative for iron (Participant 3, 3 March 2016). Furthermore, he stated that the information received from the poster would help him to make better choices when grocery shopping (Participant 3, 3 March 2016). Only one of the participants suggested in using “the most buffed guy ever” referring to a very muscular man, as the main source of the message, so the participant could relate the result of eating broccoli to the looks of the person in the poster (Participant 5, 3 March 2016).

Poster 5: Message

When exposed to poster 5, with an image of two calves, the first response in relation to the message was a “cute picture” (Participant 7, 3 March 2016). However, another participant rejected the picture by saying that “It doesn't support the message” by showing an image of what not to eat thus emphasizing the missing connection between the message and the picture (Participant 3 and 2, 3 March 2016).

Poster 5: Source/Destination

In relation to the source used in poster 5, one participant argued that “the fact is not a strong fact” as WHO “only found evidence” so it could be easily ignored, as it is “not a clear fact” in participant's opinion (Participant 5, 3 March 2016). Only one participant reflected on the confusing outcome of seeing the poster “It says choose more vegetables, but then it shows animals” (Participant 1, 3 March 2016).

Poster 6: Message

After seeing poster 6, that had an image of a famous Danish actor and his quote on animal products, a few participants did not agree with the quote in the poster and others pointed out

that there was too much text (Participant 2, 7, 5, and 4, 3 March 2016). Furthermore, text was described as being weak and reflecting personal judgment (Participant 6, 3 March 2016). Visual aspects of the poster were favored and were further described as being manly: “It’s a strong, straight standing up man, looking forward, and he looks, his facial expression is very like western, classical, manly” (Participant 6, 3 March 2016).

Poster 6: Source

An important part of the discussion on poster 6 was in relation the choice of using Ulrich Thomsen, a Danish actor, as the source for the message as participants agreed that it is personal opinion which they could not relate to (Participant 1 and 5, 3 March 2016). This could be based on the fact that the person in the poster was not recognized by all of the participants thus suggesting to have someone “that is recognized by everybody” such as actors Leonardo DiCaprio, Brad Pitt or Ronaldo the soccer player (Participant 2, 7 and 6, 3 March 2016). Another opinion expressed by the participant was that person in the poster states a strong challenge but on the other hand does not offer any solutions: “We need solutions - we don’t need to think” (Participant 5, 3 March 2016). The discussion on manliness followed, by saying that “these either or statements it’s very manly and daring” (Participant 6, Participant, 3 March 2016). On the contrary, one participant suggested to “put the opposite sex” (Participant 5, 3 March 2016). This idea developed even further by adding details on using famous women who “would have to be in bikinis” as “sex sells” (Participant 5 and 6, 3 March 2016).

Poster 6: Receiver

One of the participants elaborate on the choice of the message in relation to men being the target group by saying “very good for a campaign for men, especially maybe older men they can associate the image with themselves.” (Participant 6, 3 March 2016) On the opposite, one participant stated that “poster only targets a very limited amount of people” as it is a very “extremist statement” targeting people who have considered reducing their intake of animal products (Participant 4, 3 March 2016).

Concluding thoughts on the posters

At the end of the focus group discussion, participants were asked which poster they found to be the best and the most effective in delivering it’s message. Poster 1 was favored by majority of participants, as it had the right visual appeal and provided a solid fact. Participants did not identify Poster 2 as their preference, based on the poor image choice. As for poster 3,

participants mentioned that it would be a good choice to deliver the message, if suggested text changes would be implemented. Poster 4 and 5 was found to be the least effective due to the poor image and text combination. Furthermore, participants favored poster 6 idea, if the image would be changed to portray an opposite sex.

5.4 Poster draft 2

This chapter will present the second draft posters designed for this study. The amount of six posters was reduced to three posters, based on those the focus group favored, as described in the previous chapter. The posters that were further re-designed were Poster 1 with the vegetables, poster 3 with the pig slaughter and poster 6 which was with a role model. However the person figuring on poster 6 was exchanged with a female role model. In the following, each poster will be described accordingly to what changes have been applied.

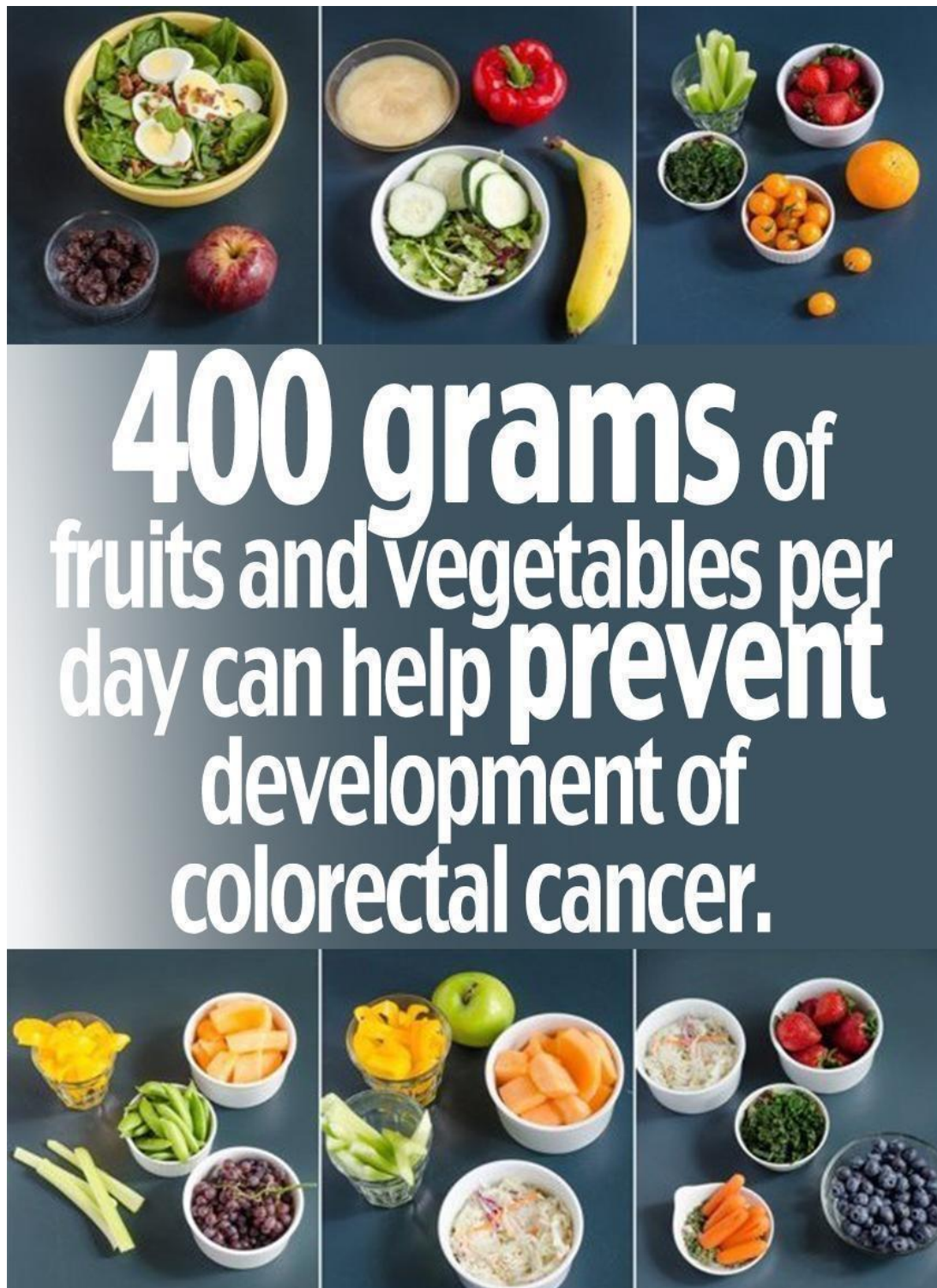
Poster 1

Poster 1 from the first draft was favored by the focus group and therefore it was kept, however modified according to some of the suggestions from the focus group participants. It was pointed out in the first draft poster, that it was difficult to understand the amount of 400 grams of vegetables (Participant 1, 3 March 2016) and it was suggested to “stress the amount of the vegetables (Participant 6, 3 March 2016). Therefore, when designing the second draft of this poster, emphasis were put on illustrating portion sizes with 400 grams of fruits and vegetables. Six different images were applied in the poster, three in the top and three in the bottom, each demonstrating what a 400 gram serving size of fruit and vegetables could look like. The text from the original poster remained in the second draft, as the focus participants stated that it had a clear and precise message (Participant 5 and 3, 3 March 2016).

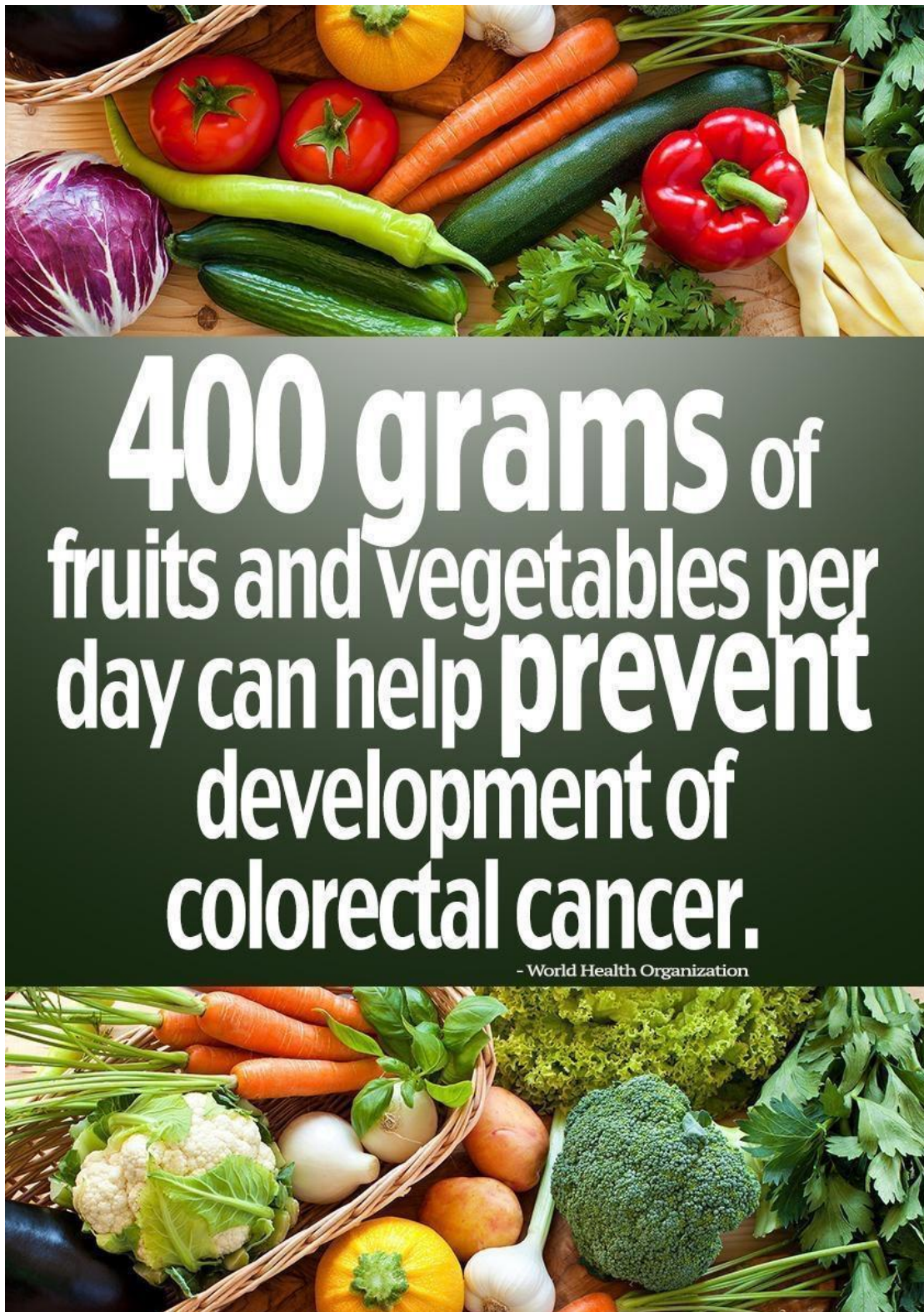
As introduced in the method section, two graphical designers were consulted prior to testing the first draft posters in the focus group. Also prior to sending the second draft posters to the experts, the same two graphical designers met for a consultation in order to review the design aspects of the newly created posters. The design aspects would include recommendations on color adjustments, alignments, spacing, and types of fonts and overall composition of the elements in each poster, while comparing them to the first draft posters.

In relation to poster one, it was decided to change the visuals back to the pictures used in poster draft 1, as the new layout did not possess the same characteristics which the focus group participants favored. Only change added in the new version was the WHO reference which was moved closer to the main text. See new design of poster 1 in the following. In the following both

posters are presented as posters 1, discarded version and poster 1, which was the final second draft design.



Poster 1: Discarded version



Poster 1: Second draft of positively framed message with credible source

Poster 3

The picture of the pig in the slaughterhouse remained in the poster, as it was favored by the focus group and therefore the use of scare and fear tactics remained. As mentioned in the previous chapter, Paul McCartney's quote was not well received, thus a suggestion from the focus group (Participant 5, 3 March 2016) was to include some facts about the amount of pigs killed each year and facts in general that could not be argued against. Therefore facts on how many pigs were killed annually (Animaethics.org, 2008) compared to the cases of colorectal cancer (1.4 million) and deaths (694.000, rounded up to 700.000) hereof was added instead (CDC, 2016). This was placed as the two main headlines, and beneath it a text with a reference to the World Health Organization having red and processed meat as a cause for developing colorectal cancer.

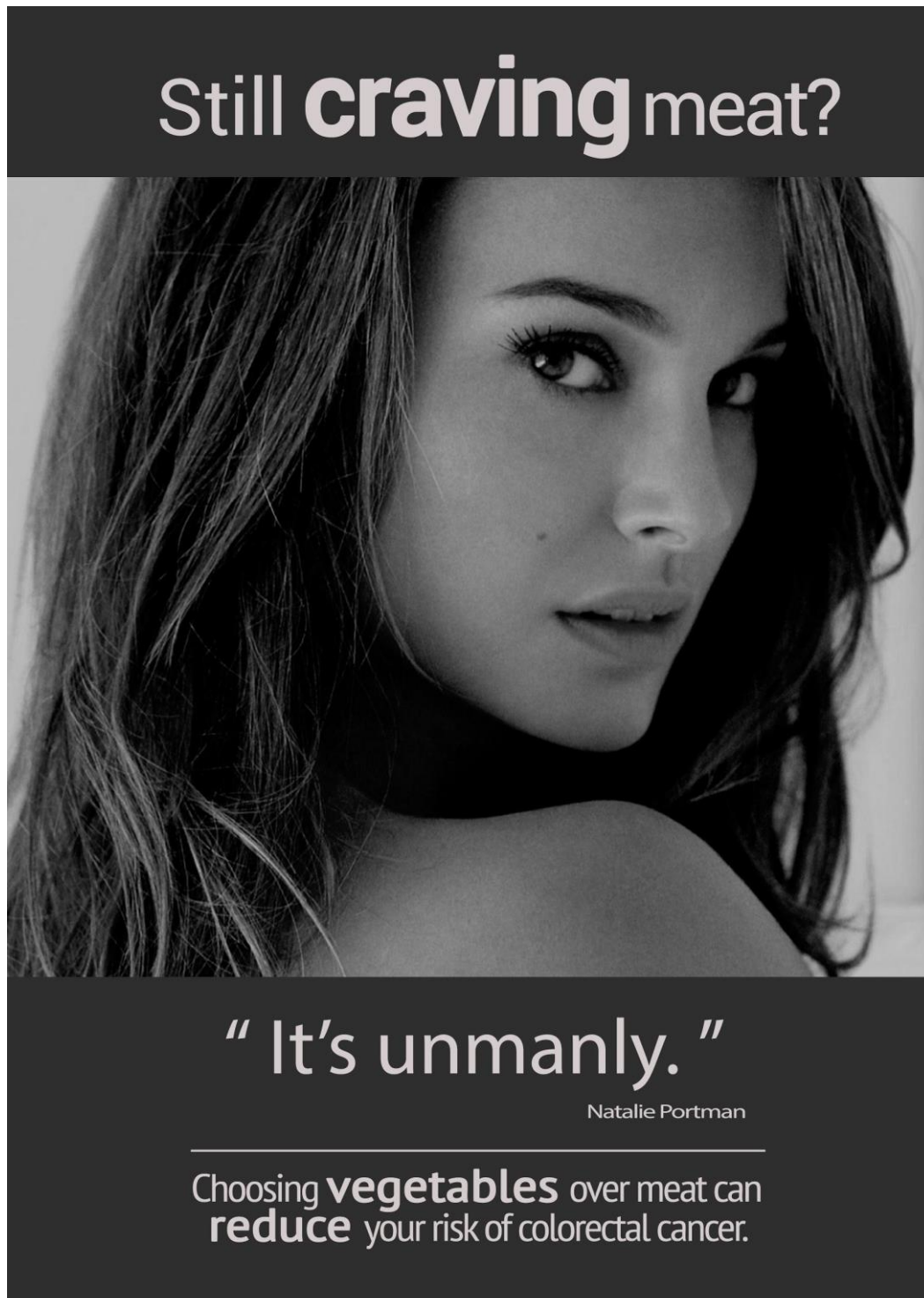


Poster 3: Second draft of scare and fear tactics with credible source

Poster 6

The original design of this poster showed an image of Danish actor, Ulrich Thomsen, along with a statement about him deciding to not eat meat any longer. When presented to the poster, five of the focus group participants did not recognise him. Furthermore, the poster was not favored by the focus group, however many suggestions were given in order to re-create a new poster. Therefore, it was decided to use some of these suggestions when re-designing and tailoring the poster to the target group. Two focus group participant suggested to use the opposite sex (Participant 6 and 5, 3 March 2016) as a role model and for example state “I find men not eating meat more attractive” (Participant 5, 3 March 2016) To have a female stating that eating meat is not attractive, was also suggested in the extreme consumer questionnaire.

During the design process, it was decided to keep a celebrity role model in the poster based on the findings from the extreme consumer questionnaire and the focus group, however it was not possible to find a female that could be quoted for “men not eating meat are more attractive” who additionally was considered to possess a certain amount of sex appeal, as this was also suggested in the focus group: “Sex sells” (Participant 5, 3 March 2016). It was possible to find a quote from actress, Natalie Portman, where she stated in an article she wrote for The Huffington Post: “I say that Foer’s ethical charge against animal eating is brave because not only is it unpopular, it has also been characterized as unmanly, inconsiderate, and juvenile” (Portman, 2011). In order to make a statement related to what was suggested by the focus group participant, the part “it’s unmanly” was quoted. A picture of Natalie Portman was therefore used in the poster. The headline asked: “Still craving meat?” and Natalie Portman’s quote was placed beneath her picture. The image of Natalie Portman was made black and white and the rest of the layout was kept in dark grey tones while written text were kept in light grey tones, accordingly to the theory described by Aspara and Van Den Berg (2013) in the theory section as well as the input from the focus group. The image was also chosen based on being tasteful and yet attractive, opposed to the images found in the background search for inspirational posters where celebrity women were fully exposed in campaigns advocating for a greener lifestyle (see appendix C for the inspirational poster findings).



Poster 6: Second draft of storytelling with a role model

5.5 Professional feedback

This chapter will present each expert (see table 19), who was either interviewed or provided written feedback for this study, giving a brief overview of their background and current occupation. Experts were asked to provide feedback on poster draft 2, as well as their insight on planning health communication campaigns in general. Subsequently, the results from the interviews and expert opinions were analysed in relation to themes derived from the coding process.

Table 19: Presentation of experts

Name	Title	Organisation	Educational background	Field of expertise	Data type
Susanne Tøttenborg	Senior consultant	Danish Cancer Society, Copenhagen	Master's degree in journalism and public administration	Has worked with health issues here since 2004. Prior to working for the cancer society, she had a long career in the international food trade.	Expert interview - appendix O
Tenna Doktor Olsen Tvedebrink	Assistant professor, design expert	Aalborg University, Aalborg and Copenhagen	PhD, Architecture and Design	Teaching within the department of architecture, design and media technology. Lecturing design courses at the Integrated Food Studies education. Has been working with design for 16 years and has extensive experience with visual presentations.	Expert interview - appendix P
Marissa Price	College Advocacy Coordinator	PETA - People for the Ethical Treatment of Animals, Los Angeles	Bachelor's degree in International Affairs and Anthropology	Doing outreach on health issues related to animal consumption, such as cancer, diabetes, heart disease, obesity, high cholesterol and high blood pressure. Furthermore cooperating with college dining halls, in order to make them decrease the use of unhealthy and fattening animal products and increase plant based options.	Expert opinion - appendix Q
Rikke Neess	Campaign manager	Danish Whole grain Partnership	Cand. Merc. graduate From CBS in Design and Communication Management	Managing campaigns. Previously worked as a Category Manager at COOP Denmark A/S	Expert opinion - appendix R
Line Damsgaard	Chief of nutrition	Danish Agriculture and Food Council (DAFC)	Bachelor degree in nutrition and an Master in public health	Works mostly with projects targeting children and campaigns about fruit and vegetables	Expert opinion - appendix S

5.5.1 Themes from expert interview coding process

The second part of the results section from the expert interviews provides themes that were derived from the coding process. As the expert interviews and opinions consisted of poster discussion and also discussion on planning health communication campaigns, these two areas guided the coding process. Similarly to the coding results of the focus group, the expert opinions on posters resulted in the same themes according to McGuire's (1989) communication/persuasion model which are source, message, channel, receiver and destination (see figure 6 on p.82). In contrast to focus group themes, an additional theme of planning health campaigns was added due to the specifications of the interview guides. This theme has been also categorized according to 5 elements from McGuire's (1989) model as well as planning process as an additional category. The overview of themes on planning health campaigns can be seen in the figure 7.

5.5.2 Analysis of expert interviews

This section provides an analysis of the themes derived from the coding process of the two expert interviews and three expert opinions. It is divided into feedback on the posters and feedback on steps of developing a health campaign, from the perspective of the company or organisations they are representing.

Poster 1: Message

The experts reflected on poster 1, which was a poster with vegetables and a recommendation of WHO to consume more fruits and vegetables in order to prevent diseases such as colorectal cancer. From a designer's point of view, Tenna Tvedebrink, an assistant professor at Aalborg University, stated that this poster was "very strong" and "very simple" (7 April 2016). Marissa Price a representative from PETA also shared her reflections on poster 1 by pointing out that "the fruits and vegetables in this ad are beautiful and eye catching" (6 April, 2016). Rikke Neess who is campaign manager at the Danish Whole Grain Partnership also provided her written feedback on poster 1 by saying that "It is very informative and very standard health communication" also "It is very colorful and attracts attention" (14 April 2016). Furthermore, the expert thought that "the poster will have a positive effect on people concerned about health and illnesses" (Danish Whole grain Partnership, 14 April 2016). However, the recommendation to consume specific amount of vegetables (400g) confused the design expert, as well as PETA representative, as it was not clear if the amount of vegetables in the pictures had to be associated the WHO recommendation thus pointing out "the image is not telling me the same as

the words” (Aalborg University, 7 April 2016). In order to improve the poster, the design expert suggested to use a different image that would help to reduce the amount of vegetables visual in order for a person to see clearly what needs to be consumed every day. Furthermore, one expert elaborated that there might be a need to explain what colorectal cancer is, as regular people might not know (PETA, 6 April, 2016). A different attitude was expressed by Susanne Tøttenborg a representative from Danish Cancer society, as she would not choose poster 1 due to the fact that there is another well established measure based on the Danish recommendations which is “6 a day” and “it would be maybe a bad idea to change the message on the amount of fruits and vegetables” which was also pointed out by an expert Danish Whole grain Partnership opinion (31 March 2016).

Poster 1: Receiver

In relation to the target group’s possible reaction to poster 1, design expert raised a question that “being a man, I mean, you would give up! It’s too much” referring to the amount of food in the image (Aalborg University, 7 April 2016). An interesting point was made by another expert, as she said the target group might not connect the message with the reduction of meat in poster 1 as “this does not automatically happen” because when healthy food is shown as in poster 1 “people think they could just eat more of it without reducing something else” (Danish Cancer Society, 31 March 2016). From the written feedback on poster 1, Line Damsgaard from Danish Agricultural and Food Council assumed that “that the target group here was meant to be women” (27 April 2016). Expert’s reason for thinking this, was is based on “the neatly looking pictures of fresh and shiny vegetables, but also because of the informative text written in the middle of the poster, which men, in general, would pay no attention to, but it might have some sort of impact on some women” (DAFC, 27 April 2016).

Poster 3: Message

Selected experts were also asked to reflect and provide feedback on poster 3, which had an image of a pig in a slaughter followed by facts on pigs and colorectal cancer, referring to the relationship between processed and red meat and the development of colorectal cancer. Experts pointed out that the poster is “very dramatic”, “very simple” thus catches the eye (Aalborg University, 7 April 2016, Danish Whole grain Partnership, 14 April 2016). On the other hand, PETA representative shared opinion on poster 3 by saying “this poster is super graphic and therefore will stick in people’s minds, as well as elicit a strong emotional response” (6 April, 2016). Furthermore, another expert pointed out that the poster is also “violent because of all the

blood there” (Aalborg University, 7 April 2016). However, the design expert also mentions that is also “makes you curious to what the text is saying” as she saw the picture first and then read the text (Aalborg University, 7 April 2016). After reading the text, design expert reflected, that even though the message made her think that too many pigs get killed and so many people die from cancer, the WHO fact on red and processed meat being the cause confused her, as she did not associate pig with being red meat (Aalborg University, 7 April 2016). In relation to visual aspects, the same expert commented that “the image is [...] saying something else than the text is” as it seems from the picture that the story is about the process of killing a pig, and a pig deserving a better life (Aalborg University, 7 April 2016). However, from her own experience of observing slaughterhouses, expert pointed out that maybe the image used is “too provoking” (Aalborg University, 7 April 2016). Furthermore, when asked about the amount of text used in the poster, expert commented that “there’s a lot of text there” and it looked similar to tobacco warning on the cigarettes. The design expert suggested to emphasize the text where the receiver of the message is encouraged to reduce their meat intake (Aalborg University, 7 April 2016).

Poster 3: Source

Representative from DAFC provided feedback on using scientific sources such as in poster 3 by stating that “According to the WHO there is limited evidence from epidemiological studies showing positive associations between eating red meat and developing colorectal cancer, which means that a positive association has been observed between exposure to the agent (= red meat) and cancer, but that other explanations for these observations, such as chance, bias or confounding, could not be ruled out” (DAFC, 27 April 2016). This point suggests to carefully study and revise the used sources for poster 3. Furthermore, the same expert emphasized that to recommend a reduction in meat intake as it is presented in poster 3 “is not recommended and not a valid statement according to any scientifically validated study of my knowledge” (DAFC, 27 April 2016).

Poster 3: Receiver

When discussing poster 3, design expert also reflected on the reactions from the receivers of this poster who could be ordinary Danes that are also not aware of the fact that pig is classified as red meat (Aalborg University, 7 April 2016). Thus a strong picture and strong words relating pig meat with cancer development could result in negative attitudes towards the poster and not reach the intended outcome of the message. After seeing poster 3, expert from Danish Cancer

Society suspected that “it’s possible that the target group would find this scary” (31 March 2016). On the other hand expert also added that “killing pigs is what we do for a job in Denmark” (Danish Cancer Society, 31 March 2016). Another expert also mentioned that the group of people that this message would work for would be “vegetarians who can relate to the message confirming their choice”, however not for men who consume meat daily (Danish Whole grain Partnership, 14 April 2016).

Poster 3: Destination

Design expert, was a bit confused on the outcome or the purpose of the message in poster 3. She questioned if the poster was suggesting “to reduce my meat intake and lower my risk” or it is “telling not to ever eat pig” as it seems that the image of pig is telling that “you are committing a crime if you are eating” pork (Aalborg University, 7 April 2016). Furthermore, the image “makes you feel real guilty” (Aalborg University, 7 April 2016). Therefore, it should be further discussed if the image is right for the poster that aims at informing people about lowering their consumption of meat.

Poster 6: Message

Experts were also asked to reflect and provide their feedback on poster 6, which had a picture of Natalie Portman, who is followed by text which states that craving meat is unmanly. PETA representative, shared her impression of poster 6 by writing that “this poster is great! It’s eye-catching, provocative and sexy” (6 April, 2016). Another expert, also pointed out that the person in the image is right for the poster (Aalborg University, 7 April 2016). However, the same expert also stated that “the text that is wrong” especially pointing out to the word “unmanly” and suggesting to take it out (Aalborg University, 7 April 2016). Furthermore the design expert elaborated, saying that “it has to be her story, in the same way where she thinks it’s unmanly, then maybe we need a little bit more” suggesting that we include her reason for saying that meat is unmanly (Aalborg University, 7 April 2016). In contrast to design expert, representative from PETA had an impression that the wording “still craving meat” in poster 6 “normalizes NOT eating meat” making a person feel bad if they still consume it (6 April, 2016). Expert from Danish Cancer Society emphasized that poster 6 “would be a good one” in relation choosing a poster that would reflect the needs of the target group (31 March 2016). Another expert expressed opinion on poster 6 by writing that “I like the grey colors, graphics and the graphic composition of the poster” (Danish Whole grain Partnership, 14 April 2016). However, the same expert was not fond of presenting a message in a provocative way (Danish Whole grain

Partnership, 14 April 2016). As for the message in poster 6, DAFC representative commented that “the message is delivered in a way that is kind of scolding the meat eaters and lovers (particularly men) by stating that “it’s unmanly” (27 April 2016). Expert recommended to “to make it fun, cool and manly to eat fruit and vegetables instead of making it uncool and unmanly to eat meat” (DAFC, 27 April 2016).

Poster 6: Source

Expert from Danish Cancer Society compared the use of a female source in poster 6 to the Danish whole grain campaign, as they have also used female “a bit sexy looking so for their campaigns directed to young men” (31 March 2016). In expert’s opinion, this choice of female source of the message “it’s quite fun” (Danish Cancer Society, 31 March 2016). In relation to using famous person in poster 6, expert from the Danish Whole Grain Partnership said that “using a famous person can attract attention and identification” (14 April 2016).

Poster 6: Receiver

When discussing poster 6 with the design expert, expert tried to relate to the target group – men. Representative from Aalborg University pointed out that it seems that the aim is to make the men like the picture of the woman in the poster. However, expert pointed out that by questioning the manliness of a man, the poster pushes men to think that they are not real men if they like the picture (Aalborg University, 7 April 2016). The overall suggestion from the design expert was not to question the manliness of a man (Aalborg University, 7 April 2016). Representative from Danish Whole Grain Partnership also commented on this issue stating that “many men will find the message not appealing” (14 April 2016). Expert from DAFC, suggested to stay away from criticizing “the one thing the target group know and love = meat” (27 April 2016). Furthermore, expert elaborated saying that “The intimidation strategy is not suitable, when the objective is to target men and their eating habits” (DAFC, 27 April 2016). For suggestion the same expert recommended “using humor as a way of approaching this target group, especially when it comes to topics, such as health, nutrition and fruit and vegetable intake” (DAFC, 27 April 2016). Furthermore, reflecting on the target group DAFC representative emphasized that “this target group has a way of believing that they are invincible and indestructible, which is why they in general pay no attention to threatening words, as the risk of disease” (27 April 2016).



Figure 7: Coding themes from expert interviews in relation to planning

Process

Susanne Tøttenborg from Danish Cancer Society, was one of the few experts that elaborated on the process of planning health campaigns. She mentioned that at the beginning, “we would make some research from literature reviews, statistics, what is their intake what do they do, how are they different, how are they similar to other groups and all this kind of background” (31 March 2016). Anthropological studies on target group would follow in order to find out more about the target group besides looking into statistics and references (Danish Cancer Society, 31 March 2016). Furthermore, expert mentioned that a focus groups would also be used in order to find out what the target group might like “we would have to find out more about the target group” and decide specifically what is the target group (Danish Cancer Society, 31 March 2016). Expert added that then, “we would work with either communication or advertising company, where we would then make the first draft, then we would have focus groups [...] comment on it, and we would make some changes and we would have them look at it again and then we would run”

(Danish Cancer Society, 31 March 2016). As for the end of the campaign process the expert, mentioned that there is a special team for evaluating the campaign, who try to investigate “over time if people, they change attitude or behavior, but you cannot connect it a specific campaign normally” (Danish Cancer Society, 31 March 2016).

In relation to the current idea of making a campaign for reducing meat intake and reducing cancer risk, representative from Danish Cancer society noted, that they are currently at a very initial stage where they gather people from their own organization as well as evidence (31 March 2016). Furthermore, expert stated that if the organization would decide to make this campaign on meat reduction, “we would also involve other NGOs, we would involve supermarket chains, because telling people is not enough” (Danish Cancer Society, 31 March 2016). The same expert further elaborated, that accessibility and availability “is very important so that in the supermarket you would find real alternatives to meat” (Danish Cancer Society, 31 March 2016). However, if supermarkets are not on board, Danish Cancer Society representative stated that they would not continue the campaign but they would still “inform about the connection about the high intake of meat and processed meat and the risk of cancer” but this would not be a campaign (31 March 2016).

Rikke Neess Campaign Manager at the Danish Whole Grain Partnership also shared her experience in planning health campaigns. Expert said that she uses “experience and brand management / communication theories / skills” when starting a new campaign (Danish Whole grain Partnership, 14 April 2016). According to the expert, campaign budget is the first step, which is then followed by defining the targeting group “who do we want to approach and how? What works for this target group? How do they collect information? On which platforms are they?” (Danish Whole grain Partnership, 14 April 2016). After that “we set concrete objectives for the campaign” (Danish Whole grain Partnership, 14 April 2016). Further, the steps identifying the message follow, by understanding what is wanted as an outcome from the target group and also generating themes, graphic ideas and the text (Danish Whole grain Partnership, 14 April 2016). The expert also added that “Sometimes we work with advertising agencies – and sometimes we don’t - depends on the budgets and our insights in the target groups” (Danish Whole grain Partnership, 14 April 2016). Representative from DAFC was also asked to reflect on the process of planning health campaigns. The expert explained that “We do not use specific models or theories when developing health communication and campaigns, as the approach,

target group and message of the communication differs from project to project and therefore also the process” (DAFC, 27 April 2016).

Source

When asked to reflect on the sources used when planning health campaigns, one expert pointed out that they use The International Agency for Research on Cancer (IARC) Gallup, European Code against cancer and also sources from DTU Fødevareinstituttet (Danish Cancer Society, 31 March 2016). Expert from DAFC also reflected on using sources by saying “We always base our communication on official recommendations and surveys from reliable sources” such as Danish National Survey of Dietary Habits and Physical Activity (DANSDA) (27 April 2016).

Message

When asked to reflect on the process of framing messages, Danish Cancer Society representative said that it mainly depends on investigations on the target group where researchers would find out which tactics work for the selected target group. In relation to creating a message, expert explained that “We are not afraid of using scary things, but we also like to make positive things if that's what works” (31 March 2016). However, experts from Danish Cancer Society and DAFC had the same opinion that, the choice of the message is always based on what the research shows for the selected target group. One expert gave an example of making an alcohol campaign where “tailoring the message” to the target group was the key to the campaign, as the research showed that the target group hate when somebody tells them what to do (Danish Cancer Society, 31 March 2016). Rikke Neess, explained that the Danish Whole Grain Partnership has a defined communication strategy with a specific message in relation to their organisation.

Receiver

As for the target group that Danish Cancer Society will focus on in their upcoming campaign, men will be the main target “because women don't eat that much meat” (31 March 2016). Later in the interview the expert added, that additional research would have to be conducted in order to specify the target group (Danish Cancer Society, 31 March 2016). In addition to the reduction of meat in Denmark, expert added “I heard, several say that Danes have the same, more or less, the same thinking about meat as the Americans have of their right to bare weapon” emphasizing this attachment with meat (Danish Cancer Society, 31 March 2016). Danish

Cancer Society representative gave an example of a specific target group used in another campaign, where the target audience was young men 18-25, who were carpenters. The findings from the anthropologist, concluded that “that sex and women and have luck with women is really top of mind of this target group” (Danish Cancer Society, 31 March 2016). As for segmenting the targeting group expert from DAFC mentioned that this is based on “national surveys, which are conducted consistently to keep track of the population’s dietary habits and general health” (27 April 2016).

Channel

When discussing possible channels used for health campaigns Danish Cancer Society representative repeated that the target group would have an influence on that (31 March 2016). The expert gave examples of channels used in other campaigns “cykel (bike) Denmark, is very much on social media, so are the alcohol campaign towards young people” (Danish Cancer Society, 31 March 2016). Furthermore, the expert added that there are also social media experts involved in the process of planning health campaigns as “social media are taking over” the regular channels for health campaigns (Danish Cancer Society, 31 March 2016). In relation to other possible channels used in health campaigns, Danish Cancer Society representative mentioned the whole grain campaign that still uses posters and “go cards” (postcards) in public areas. As for placement of these posters the same expert mentioned “military facilities, education, universities, colleges” (Danish Cancer Society, 31 March 2016). On the other hand, TV commercials are not that much used based on expert’s experience as they are expensive (Danish Cancer Society, 31 March 2016). In relation to channels used for health campaigns, Rikke Neess from Danish Whole Grain Partnership, mentioned using social media, “posters in a fitness center, or postcards at cafés, bars, cinemas, music bars” and “ads in a newspaper or magazine” (14 April 2016). Representative from DAFC commented on the channels used for health campaigns by saying that “The social media channels, such as Facebook are frequently used to spread out the word of a new campaign and depending on the target group other media, such as the internet (web pages), posters, flyers and the like are also used” (27 April 2016).

Destination

Senior consultant at Danish Cancer Society was asked to reflect on expected outcomes when planning a campaign. Expert emphasized that the most important goal is “raising awareness” as she does not think that “anyone expect a campaign to change behaviors” (Danish Cancer Society, 31 March 2016). The expert explained this by pointing out that only a few might change

the behavior due to the campaign as the others need environment changes in order to change their behavior (Danish Cancer Society, 31 March 2016). Furthermore the expert reflected on unhealthy foods, as we have a “natural craving [...] for sugar, salt and fat” which makes it hard to resist when it so widely available nowadays which is why behavior changes will not happen “unless we change the environment” (Danish Cancer Society, 31 March 2016). Danish Cancer Society representative mentioned a whole grain partnership campaign, which had great success mainly “not been because the consumers are asking for whole grain products, but because they are there, and this wholegrain logo was a huge incentive for the industry to produce very good product with this label” (31 March 2016). In terms of destination of the campaign, expert concluded that “if we can change the environment, we can change people” because “just raising awareness will not be enough to make the behavior change” (Danish Cancer Society, 31 March 2016).

Representative from Danish Cancer Society, also shared the current campaign plans which will aim at “reducing cancer risk according to the European code against cancer” (31 March 2016). The goal of this health campaign will be set “for a decrease of the meat or meat product intake, meat or processed meat in Denmark in 2025” and “to increase availability and the incentive to change and the possibility to change” (Danish Cancer Society, 31 March 2016). In this specific example, the expert explained that they would promote non meat products together with supermarkets which would “have a huge impact, because that's the availability” (Danish Cancer Society, 31 March 2016). In the overall perspective expert mentioned that “we believe in availability or either increasing what we want people to do more of, and decreasing what we want people to do less of” (Danish Cancer Society, 31 March 2016). In terms of the destination and outcomes of the campaigns, another expert pointed out that their campaigns also aim at increasing awareness of the Danish Whole grain partnership logo (Danish Whole grain Partnership, 14 April 2016). Expert from DAFC stated that the outcome “depends on the results reported in the large scale surveys such as DANSDA and the concerns and needs expressed by our members from the agriculture and food sector” (27 April 2016).

5.6 Poster draft 3

After analysing expert interviews and written expert opinions, it was decided to eliminate one poster and continue pretesting only two posters. Even though Poster 1 with the vegetables was favored by the focus group, it was eliminated after expert opinions due to fact that a similar and well established campaign, known as “6 a day” is already introduced in the Danish society

(Danish Cancer Society, 31 March 2016, Danish Whole grain Partnership, 14 April 2016).

Furthermore, even though the focus group participants found the picture appealing, the design expert suggested to change it in order to better represent the amount of vegetables that need to be consumed (Aalborg University, 7 April 2016). Finally, an expert from DAFC emphasized that poster 1 would be meant to target women, as men would not pay attention to the fresh and shiny vegetables as well as the informative text. Thus the remaining posters were poster 3 with the pig slaughter, and poster 6 was the one with the storytelling and a role model.

Poster 3

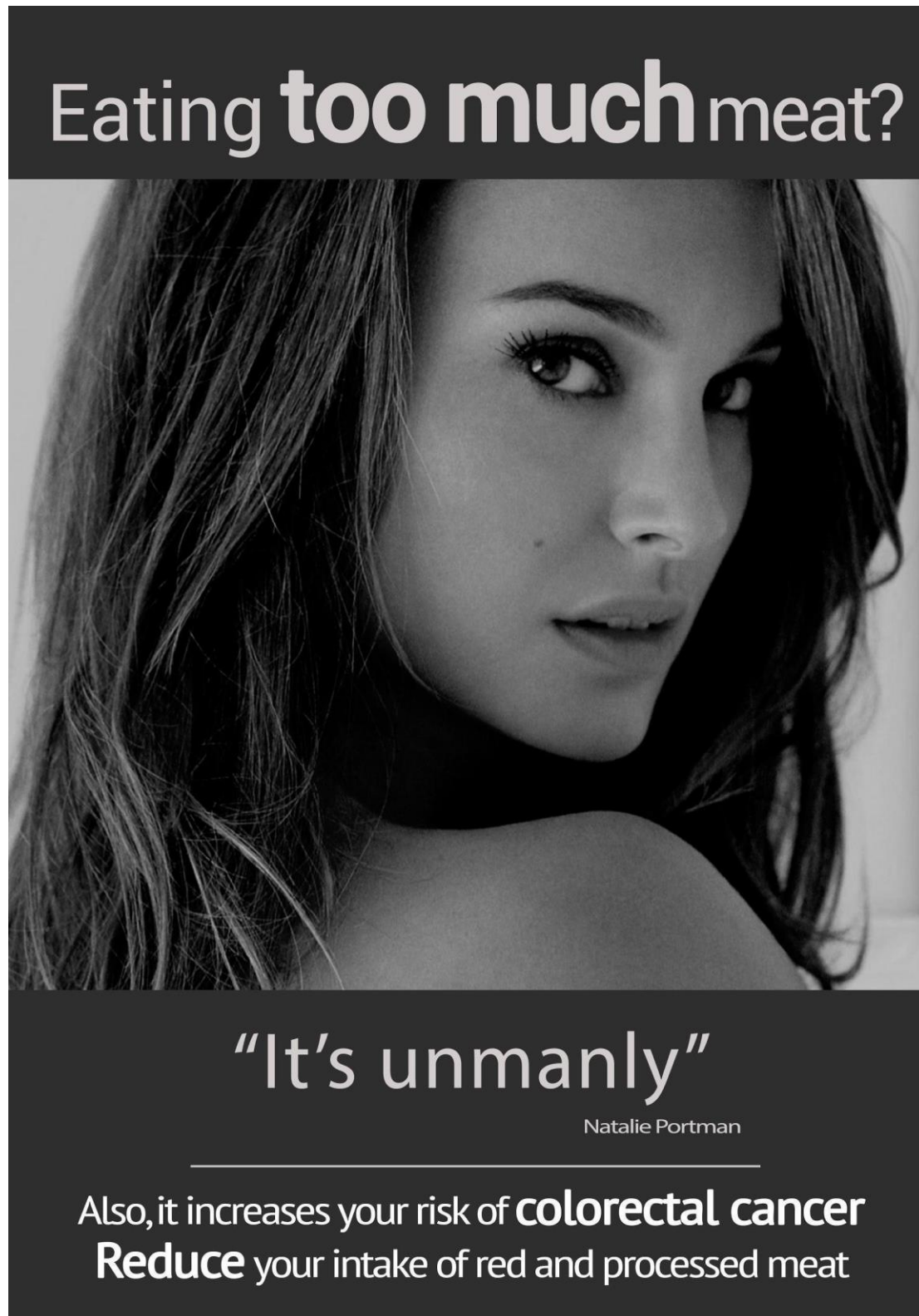
As it was recommended by design expert from Aalborg University to reduce the amount of text by emphasising that the receiver is encouraged to reduce their meat intake. The image remained the same as it was pointed out by the experts, that it was dramatic, eye catching and yet simple (Aalborg University, 7 April 2016). The text was then adjusted into shorter sentences: The first headline was replaced with a short statement. This statement was developed based on the findings from the extreme consumer questionnaire, where they majority pointed out that they had reduced their meat intake according to ethical considerations. The second headline remained exactly the same as the one from the second draft, where the facts on the annual global cases of colorectal cancer and deaths were presented. The text in the third line was reduced and also made simpler. The sources for the headlines were the same as in draft 2, however, they were not specified due to the visual composition.



Poster 3: Third draft of scare and fear tactics with credible source

Poster 6

There were only minor changes that were applied in poster 6 which had a famous person, Natalie Portman in it. Four out of five experts favoured poster 6, by pointing out that it was eye-catching, provocative, sexy and had a good graphic composition (PETA, 6 April, 2016, Danish Cancer Society, 31 March 2016, Danish Whole grain Partnership, 14 April 2016, Aalborg University, 7 April 2016). Furthermore, the design expert pointed out that the person for the poster is right and it is just the text that has to be adjusted (Aalborg University, 7 April 2016). Thus, the decision was made to keep the same image of Natalie Portman, and adjust the text. The main headline was changed from "Still craving meat?" to "Eating too much meat?" in order to emphasize the high consumption of meat by men. Furthermore, the bottom text was slightly modified using the same source as in draft 2. (See also appendix T for process overview of all poster designs).



Poster 6: Third draft of storytelling with a role model

5.7 Pretesting health communication campaign material

In order to pretest the health communication campaign material, the two remaining posters were used in an awareness questionnaire. The questions were inspired by the same Slow Food (2013) survey which was also used in the extreme consumer questionnaire. The outcomes are illustrated in this section.

Average age for questionnaire participants was 25 years of age, where the majority of the participants were currently undergraduates at a university. As for weekly meat consumption the majority consumed 6-10 meals per week, which is more frequently than the focus group participants consumed. Furthermore, there was a bigger amount of participants compared to the focus group that consumed 11-15 meals a week. Contrary to the focus group participants, there were some who did not consume meat at all in the awareness questionnaire (See table 20).

Table 20: Subject characteristics from awareness questionnaire

Group size	N		75
Age in years	Mean (SD)		25.7 (4.8)
Education	% (N)	High School diploma	50% (4)
		University Undergraduate degree	37% (3)
		Postgraduate degree or above	13% (1)
Weekly consumption of meat	% (N)	none	3% (2)
		1-5 meals	32% (24)
		6-10 meals	36% (27)
		11-15 meals	18% (15)
		More than 15	8% (6)
		Rarely	3% (2)

After answering demographics questions, the participants were first exposed to poster 3 using scare tactics, where almost half of the participants (47%) agreed that this poster raised their awareness on the relationship between red and processed meat and colorectal cancer. However, when asked on the effectiveness of scare and fear tactics that were used in the poster, the biggest category of the participants (35%) disagreed, indicating that even though participants might have become more aware of the issue, scare and fear tactics are not considered to be effective. Opposite to the reactions on poster 3 with the pig slaughter, poster 6 with a role model was not identified as the one raising awareness to the relationship of meat

and cancer, as the majority disagreed (44%) and strongly disagreed (16%). Furthermore, the effectiveness of using a role model in the poster was also not acknowledged by the participants, as more participants disagreed than agreed (See table 21).

Table 21: Results from awareness questionnaire

	Poster 3 Awareness	Poster 6 Awareness	Poster 3 effectiveness of scare and fear tactics	Poster 6 effectiveness of role model
Strongly agree	7%	1%	9%	5%
Agree	47%	22%	24%	26%
Neither disagree or agree	17%	17%	24%	20%
Disagree	21%	44%	35%	36%
Strongly disagree	8%	16%	8%	13%

Concluding thoughts on pretesting the message material

After analysing the results from the poster awareness questionnaire, it was evident that poster 3 with the pig slaughter raised better awareness than poster 6, with a role model and celebrity. Even though the poster with the pig slaughter resulted in higher approval of raising awareness, the used tactics were not considered as being effective. These results may be further explained by the observational data, which was conducted during the poster awareness questionnaire (see appendix M for observational log), as some of the participants did not understand if the effectiveness of the scare and fear tactics were only referred to this poster or in general.

6. Discussion

Based on the literature review of meat and cancer, which included a total of 28 studies, conclusive evidence supported a positive association, as 20 out of 28 studies found evidence on the relationship between colorectal cancer and the consumption of high amounts of red meat (100-120 grams/day) and processed meat (25-50 grams/day). The relevance of the identified relationship between meat and cancer risk was also acknowledged by the Danish Cancer Society, as they were at the initial stage of developing a campaign for men in Denmark in order to raise awareness for decreasing meat intake and, in turn, reducing cancer risk. The importance of the target group research, which was emphasized in the literature review, also came up as one of the main discussion points in the expert interviews and opinions. Experts agreed that an in-depth analysis of the target group would strengthen the entire process of developing health communication campaign material, as the choice of channel, message and even destination of the campaign is based on the target group's preferences. This emphasis on the target group could also explain why the experts suggested using tailoring methods that are based on the target group research. In the current study, specific differences in opinions in relation to the need for developing a campaign for raising awareness of the relationship between red and processed meat and cancer risk, has been identified based on the expert interviews from Danish Cancer Society and DAFC. The following sections will further elaborate these highlighted points of the current study.

6.1 Components of health communication material

The process of designing posters was done carefully at every stage according to selected theories for each communication component. Information used when designing posters consisted of systematic literature reviews and extreme consumer questionnaire as well as feedback from the target group and experts on the developed posters. Five communication elements which were source, message, channel, receiver and destination inspired by McGuire (1989) were the core elements used in designing the poster campaign. The importance of each of them is elaborated further in this section.

6.1.1 Source

In order for the health communication campaign material to be effective, the sources used have to be credible and based on scientific knowledge (Hesse et al., 2015, Schönfeldt and Gibson, 2010). Based on the literature, a good source in health campaigns is the one that helps

individuals to understand, apply and trust the information (Schönfeldt and Gibson, 2010). In the majority of the posters, sources such as the WHO, were used as perceived communicators communicating the relationship between meat and cancer. Even though the literature search did not specify which sources to use in health communication campaigns, representatives from Danish Cancer Society as well as DAFC also pointed out the WHO when discussing the relationship between meat and cancer. The WHO was used as a source for both positively and negatively framed posters in first drafts of the posters presented in the focus group discussion. However, only the negatively framed poster raised participants' awareness of using the WHO as a source. Furthermore, findings from the focus group discussion on another poster with the baby calves (poster 5, draft 1) suggested that the trustworthiness of the WHO source could be perceived differently, based on how the sentences are formulated. This insight from the focus group confirms the given suggestions of using the WHO as a source by DAFC representative that urged to carefully evaluate the selected quotes that are used in the posters. Finally, while observing participants in the final data collection which was an awareness questionnaire, some of the participants emphasized the need to see the WHO as a credible source behind the text in order to believe the message.

Literature findings emphasized not only source credibility, but also the use of narratives such as storytelling to help the target group better understand the relevant subject (Edgar and Volkman, 2012). Storytelling that is based on consistency and truthfulness has a higher effect on people's beliefs and behaviors (Edgar and Volkman, 2012). The decision to use storytelling by role models and celebrities was based on the suggestions of the extreme consumer questionnaire as well as the background search of other health campaigns. In this study, the use of celebrities' quotes such as Paul McCartney in the first draft of pig slaughter poster (poster 3) as well as the quote and full size image of Ulrich Thomsen (poster 6) did not receive positive feedback from the focus group participants as the posters were identified as being weak and reflecting only personal judgments. The explanation of why celebrity quotes were not well perceived by the focus group could be explained by an article stating that celebrities are not experts, and they do use naive language that is not evidence based (Chapman, 2012). However, it is also pointed out that celebrities speak personally and bring compelling authenticity to the public health problems (Chapman, 2012). The use of celebrities in health campaigns have also been criticized due to the risk that the celebrity becomes the story and not the campaign (Rayner, 2012). Furthermore, the idea of celebrities being newsworthy (Chapman, 2012) could also have a negative effect on the campaign; an example of this is found in the Australian cricketer urging people to stop

smoking while not quitting himself, thus leading the campaign to failure (Chapman and Leask, 2001). As pointed out by one of the focus group participant, the personal statement has to be followed with an adequate and simple solution for the problem, otherwise, the target group as men will not pay attention. The change in the celebrity when developing storytelling poster draft 2 (poster 6) was guided primarily by the focus group suggestions of using an opposite sex in order to get men's attention. The choice of using female celebrity in a campaign for men was also acknowledged by a representative from Danish Cancer Society, as according to the expert, female image catches attention of men. In addition to using a celebrity in health campaigns, the findings from the focus group indicate, that in order to get the attention of the target group, a celebrity that is known by the target group has to be used.

6.1.2 Message

The message component, which goes after channel, has been the one most widely discussed by the literature, focus group participants and the experts. This could be due to the variety of sub components that fall under a message such as image, text, style of delivery and types of appeals. The overall goal of a good message is to inform the target group about the health concern and provide knowledge (Mattson and Basu, 2010). However according to the experts from the Danish Cancer Society and DAFC the process of developing a good message is based primarily on investigating the target group, or as also referred to, tailoring the message to the target group. The literature supports this argument by pointing out that tailoring eliminates irrelevant information and thus focuses on what is relevant for the target group. Furthermore, Danish Cancer Society's made the decision to start investigating the target group at the very beginning of the health campaign instead of just focusing on their expert knowledge. This could be based on the fact that messages that are based on health expert knowledge only were found to be less persuasive, due to the fact that it provided less relevant information to the targeted individual (Quintiliani, 2006). In practice, tailoring is done by developing messages that are based on individual or group characteristics, demographics and also knowledge on individuals or groups preferences in terms of behavior priorities (Campbell and Quintiliani, 2006, and Quintiliani, 2006). In the current study, tailoring was applied to poster draft 2 and 3, which were developed after conducting the focus group. Tailoring of the messages was based on the findings from the focus group that indicated target groups age, educational background, as well as their preferred behavior priorities or preferred visual appeals or textual information. In specifics, by tailoring messages to the target group of the current study, a female celebrity was used in poster 6, the amount of text was reduced in all posters and factual and evidence based

information was integrated. However, due to the fact that the poster with the female celebrity (poster 6, draft 3) did not appeal to the target group in the final data collection of awareness questionnaire, points out that a more thorough tailoring process needs to be carried out in order to reach the desired results.

The findings of this study provide specific examples where tailoring methods could have been improved, especially that the target group lacked fundamental knowledge on the discussed health issue. Both participants on the focus group as well as the awareness questionnaire identified lack of knowledge on meat classifications, especially what is considered processed and red meat, which was the focus of this study. Furthermore, the focus group participants pointed out, not only the lack of knowledge of meat classification, but also their distrust in the message, when vegetables are presented as a substitute for meat especially in poster 4 (draft 1) which portrayed an image of an arm holding a broccoli. This points out, that if the posters would be developed further, it would be important to develop them in order to establish fundamental knowledge in relation to what is considered processed and red meat.

Some of the theories that were incorporated in the poster design provided the intended results. Poster 1 with vegetables (draft 1), developed with positive frame (Kahneman and Tversky 1979) evoked positive attitude of being “very powerful”, “very precise”, “appetizing” and “healthy” by almost all of the participants and was thus favored. However, the negatively framed poster with pictures of different types of meat followed by a WHO fact (poster 2, draft 1), had the opposite effect by making participants compare it to the tobacco warning campaigns that would make them reject it. Favoring a positively framed message in poster with the vegetables (poster 1 draft 1) confirms the findings of the literature stating that the positive frame works better for prevention behaviors, such as colorectal cancer in the current study (Rothman et al., 1993).

In the final data collection stage where target group’s awareness to the posters was tested in a questionnaire, majority of the participants agreed that the poster with pig slaughter (poster 2, draft 3) raised their awareness in relation to the previously identified relationship between meat and cancer. This outcome could be based on the graphic and emotionally powerful image choice which in design expert opinion makes one curious to read the text, together with the use of scare and fear tactics used in creating effective messages (Edgar and Volkman, 2012). However, the explanation why not all participants favored the poster with pig slaughter can be found in the literature stating that some participants exposed to negative appeals such as fear

tend to reject the intended messages (Downer, 1996) or as pointed out in the focus group were “very provocative” and contradicting one's values. On the other hand, Danish cancer society suggested that the image with the pig slaughter is quite acceptable, as it represents the routine in the Danish farms.

As the visual aspect is also part of the message, gender specific colors, such as grey and darker shades (Aspara and Van Den Berg, 2013) were used in poster portraying a well-known Danish actor, Ulrich Thomsen (Poster 6, draft 1). During the focus group discussion of this poster, manliness in relation to the design aspects of the poster were pointed out for the first time by the target group, even though a few other posters also used the same color schemes. Therefore, the manly color scheme (Aspara and Van Den Berg, 2013) was later kept when developing further drafts of the same poster (poster 6) in order to strengthen the masculinity aspect when discussing meat (Sobal, 2005).

There were also some aspects of the message in the poster that did not have the intended outcome. One of the best examples is a poster which had the muscular arm holding broccoli and a humorous slogan “Pump some iron” (poster 4, draft 1). Even though this poster was based on the theory of positive appeals, specifically humor (Downer, 1996), none of the participants found it funny. On the contrary, this poster received a lot of constructive criticism from the focus group participants, which could be explained by literature stating that the use of humor in a communication campaign requires expert knowledge (Downer, 1996).

6.1.3 Channel

The channel factors, through which the persuasive message is transmitted in this current study, focused on visual presentation, more specifically posters, as print materials that have greater visual elements were found to be more effective (Noar, Benac and Harris, 2007). This channel has been chosen based on the immense literature findings confirming that visual presentation of health communication materials affect attention, recall and understanding of the information provided (McWhirter and Hoffman-Goetz, 2014). Experts provided additional feedback in relation to using different channels in health campaigns, by pointing out that social media is taking the leading role in today's health campaigns made by Danish Cancer Society, DAFC and Danish Whole Grain Partnership. Physical posters on the other hand, were also mentioned by experts among other types of channels used especially emphasizing posters done by Danish Whole Grain Partnership and also the other well established health campaign “6 a day”.

However, the experts also agreed that the choice of channels is based on the target group preferences, as well as the type of message that needs to be communicated. Therefore, a more specific channel choice for the visual presentation of health communication material would have to be identified further in the process based on the target group findings.

However, literature also suggested the use of innovative approaches when choosing the channel for health campaign (Chou et al., 2013). Even though the current study only developed posters, examples from successful campaigns using innovative approaches could be considered. One of the suggestions is based on Cancer Research UK campaign on the danger of sunbed use, where a physical booth was created to help users of sunbeds see the damage on their body immediately (Craig, 2014). Another innovative use of new media was shown by a campaign raising awareness of hepatitis where twitter was used to call on global audiences (Craig, 2014). Both of these alternative uses of channels in communication relate to the theory where the need to engage users in an interactive process especially through media is emphasized (Clar et al., 2014).

6.1.4 Receiver

As suggested by the literature findings the target audience has to be carefully identified as it will influence the development of the effective health communication campaign (Downer, 1996). Therefore, the receiver or the target group for this study has been carefully identified and later on redefined at several stages throughout the study. Literature review and background studies identified Danish men as the target group when communicating the relationship between cancer and meat, based on the high consumption of meat (DTU, 2016) and the masculinity factor in meat (Buerkle, 2009, Sobal, 2005). According to literature gender appropriate foods, referring to men consuming meat are more evident in men who are not married (Sobal, 2005) thus together with the statistical information (Statistics Denmark, 2015) narrowing down the age for the target group aiming for Danish men under 34 years old.

However, based on the reflections of the focus group and the experts, some of the posters lacked tailoring. The target group could not relate to poster 6 with storytelling by Danish actor (poster 6, draft 1) and a poster with a pig slaughter and Paul McCartney's quote (poster 3, draft 1) which were identified as targeting people who are already in the process of reducing meat. These reflections can be related to the health belief model (Fishbein and Yzer, 2003), which in this case could be based upon participant's beliefs about the negative consequences of

reducing meat intake, thus withdrawing from associations of this action. The lack of tailoring in posters could also be explained by not considering target group's personality characteristics which help to predict attitudinal reactions to various appeals (Dutta and Vanacker, 2000). Therefore, more knowledge gathered on the target group would help not to rely solely on demographic characteristics when tailoring health communication campaign material (Downer, 1996).

6.1.5 Destination

Destination or also known as the outcome at which the communication is aimed, is the last category of discussion according to McGuire's model (1989). According to the literature review, behavior and behavior change is frequently discussed when developing health communication campaigns. Behavior theories can benefit the development of health communication campaigns, by helping to consider positive and negative consequences of performing the behavior (Health Belief Model) or discuss what are the perceived costs and benefits of suggested behavior as well as person's ability to perform the behavior (Social Cognitive Theory) or to consider how does the person views the ability to perform the behavior (Theory of Reasoned Action) (Fishbein and Yzer, 2003).

On the contrary, expert knowledge emphasized raising awareness as the most realistic goal that could be achieved, as it is not expected for campaign material such as posters to change behavior (Danish Cancer Society, 31 March 2016). A good example of implementing realistic goals can be seen in the Danish Traffic campaign, where the goal is to encourage drivers to reduce a tiny bit of speed which can be perceived as realistic by drivers (Rådet for Sikker Trafik, n.d.) Furthermore, it was emphasised by the representative from Danish Cancer Society, that "just raising awareness will not be enough to make the behavior change", as it is essential to increase availability and accessibility of the alternative products, in case of the meat reduction campaign, in order to reach the intended goal (Danish Cancer Society, 31 March 2016). As an example of a successful campaign that integrated availability and accessibility, Danish Cancer Society representative mentioned the whole grain campaign. Due to the increased availability of the products with the whole grain logo, this campaign had a great success as consumers were consuming more of the whole grain products. A different opinion on the destination was expressed by the representative from DAFC, where the outcome of the campaign is based on the needs of the agriculture and food sector members, implying that different stakeholders have a say in what the aim of the health communication will be (DAFC, 27 April 2016).

As for raising awareness with posters in the focus group, only some posters had the informative content for raising awareness on the relationship between meat and cancer risk for men, which was the intended outcome of the campaign. However, when testing the final draft posters in the final questionnaire, almost half of the participants (47.37%) agreed that the poster with pig slaughter (poster 3, draft 3) raised their immediate awareness on the relationship between red and processed meat and colorectal cancer. Based on all the findings in relation to the destination of the campaign, a conclusion can be made, that even though awareness on the issue should be the primary goal of the campaign, the knowledge from the behavior theories provide an important insight that can help to develop an effective campaign.

It is not only important to focus on the design part when developing a health communication campaign, understanding the importance of various stakeholders and organisations, in relation to their own interest can be highly relevant, as this can have an effect on the entire outcome of a health campaign.

6.2 Planning health campaigns

Investigating the target group was essential to the process of designing the health communication material. Conducting a focus group discussion provided valuable knowledge, and based on this outcome, the second draft posters were re-designed using inputs from the focus group participants. Gaining an even broader insight of the target group not only related to how they feel about the posters that were presented to them, but also knowing how their personal feelings and attitudes towards the themes used in the posters may have the ability to strengthen the study further. It was furthermore pointed out by Susanne Tøttenborg that tailoring the message specifically towards the target group would be ideal, “because what they hate is somebody telling them what to do” (Danish Cancer Society, 31 March 2016).

As explained in the results section, several of the identified health communication theories for planning were not used, even though they met the inclusion criteria during the systematic literature review. While some theories proved to be very similar to each other, minor details in the framework determined their use.

The 10 step model (Roper, 1993) was consulted for guidance in order to plan the entire process of developing health communication for this study. Additionally, some of the key points from Mattson and Basu's (2010) theory on social marketing were kept in mind, for example, the importance of focus on the message being a complex and dynamic cyclical process of the design, revising and correcting turned out to be an essential part of the process of developing the health communication posters. However, multiple cycles of re-writing and editing the messages may also cause distortion in relation to how it is interpreted, when comparing to its original source. In this particular case, having experts reviewing the material during the design process can help eliminate these types of mistakes in the material.

As a concluding thought on the 10-step model, it can be seen as an advantage if there is no prior experience in developing health communication, which was the case for the student researchers of this study. The model was helpful in planning the entire process, planning the sequence of each step, in order to avoid failure and not miss important steps, that the student researchers otherwise may not have been aware of. According to the experts interviewed, no specific models or theories were used when developing health communication campaign, as they would use their own experience from previous campaigns, or internal experience from the organisation (Danish Cancer Society, 31 March 2016, Danish Whole grain Partnership, 14 April 2016, DAFC, 27 April 2016). As DAFC representative specifically pointed out, "target group and message of the communication differs from project to project and therefore also the process. There is no "one size fits all"" (DAFC, 27 April 2016).

The experts furthermore pointed out additional resources that would be essential for carrying out a health communication campaign. According to Danish Whole grain Partnership, the budget is the first thing she would look at prior to starting the development of a campaign. Expert from Danish Cancer Society also pointed out that the campaign would receive a budget accordingly to the focus, "if it has little focus - we have little money, so it will decide what we will be able to do" (31 March 2016). This was not a concern for the student researchers, as there was only expenses in relation to conducting the focus group, aside from that the current study was a no-budget project, however it was acknowledged that it would be of high importance when developing a campaign in a real-life setting.

The representative from Danish Cancer Society explained that having a whole team of people with different skills is a necessity when developing campaigns. She is developing the strategies,

while anthropologists would carefully investigate and get familiar with the target group prior to developing the messages for the campaign. After designing the campaign, a new team would be taking over, having a campaign manager leading the course from that point on. Ultimately, for evaluation, another team would be taking care of this part, using tools to measure if people have seen the campaign, who has seen it and if it changed any attitudes or behaviours (Danish Cancer Society, 31 March 2016). Several steps from the 10-step model (promotional planning, implementation, evaluation and feedback) were not fully covered, as the campaign material are not actually implemented, however it was acknowledged that the steps are important for a successful outcome. The interview guide for the experts were based on the 10-step model, in order to gain insight to how implementation and evaluation would be carried out in the various organisations.

A concluding thought based on the learning outcome from this study suggests that after having experience with developing health communication, this can be applied for future campaigns, as none of the experts emphasized using any models or theories in their processes. The use of a theory-based approach may be useful in planning, implementing and evaluating health communication, however, it may also involve problematic concerns, as pointed out by Corcoran (2007). The main concern is in relation to the humans involved, as theory objectify them, measure, analyse, adjust or direct them, which oppose the perspective of seeing the person as a holistic whole. Theory should perhaps, in a broader concept alleviate the mechanistic, narrow focus (Corcoran, 2007). For the student researchers of this study, having a theoretical framework would be preferable, however adjusting an existing model based on previous learning outcomes may be the most optimal choice for future purposes.

6.3 Strengths and limitations

A significant strength of this study was the huge battery of different methods used throughout each step of the process. Each method contributed with either evidence or knowledge, which was applied or used for the next step in the process in order to answer the research question, which will be elaborated in the following.

The two systematic literature reviews provided an evidence based background for the content of the messages applied in the posters, while the other literature review provided a wide range of theories and models to choose from when designing health communication. Conducting the extreme consumer questionnaire provided valuable information about the actual target group,

as they were once meat eaters who had now decided to reduce their meat intake or completely eliminate it from their diets. The suggestions from the extreme consumers were applied in the first draft of posters, and turned out to also correlate to several of suggestions from the focus group.

Due to the time constraints of the focus group discussion, the discussion was semi-structured based on participants' opinions on each poster and suggestions for further development. In the analysis of the focus group findings, McGuire's model emerged, even though it was not intended based on the focus group guide.

The focus group participants were asked to fill out a demographic questionnaire prior to being exposed to the posters. The focus group consisted of eight participants, and were all students, therefore the collected data may not be representative for men between the ages of 18-34, in the Danish population. Unfortunately, the student researchers of the study were not in a position to recruit and select the participants, as only eight men in total signed up for focus group participation. This may conclude that only having a dinner as an incentive for attracting focus group participants would not be sufficient in order to get a larger amount of participants to sign up. The ideal situation would be to select participants with different backgrounds in order to have a more representative group.

Using expert interviews and expert opinions provided important information, especially in relation to avoiding failure in the final outcome, such as providing suggestions on how to strengthen the messages in the posters and ensure correct use of sources. Many specific details were pointed out and used for the next step in the process, such as inputs for re-designing the posters as well as elimination of the least effective poster. However, the established timeframe for conducting the expert opinions were taking much longer than expected, as Line Damsgaard and Rikke Neess did not reply before the date of conducting the awareness questionnaire, where the two final posters were tested among the target group. Both expert opinions were considered valuable for this study and therefore they were analysed along with the other expert interviews and opinions, aside from their suggestions could not be applied in the posters. This was not ideal for the process of the final developments of the posters, as the final poster designs may had turned out differently, having the feedback from the two experts in time.

Conducting the awareness questionnaires, were the two final posters were evaluated by the target group, Danish men between 18-34 years, would furthermore evaluate the developed health communication material. The data conducted from the awareness questionnaire, would then give an indication of which theories would be most effective to raise awareness among the target group and also answer the stated research question for this study.

As mentioned in the method section, on the role of the researcher, a hermeneutical and phenomenological approach was used during the collection of qualitative data, in order to get a deeper insight and knowledge of the interviewees. This required the student researchers to have an open mind and be objective in how the collected data was interpreted and used. However difficulties related to designing health communication targeting young men, while being women may have caused bias, in the form of preconceptions and in general gender differences. Additionally, the expert interviewees were entirely women as well, and also here the same risk of bias applies, as for the student researchers. The fact that all experts were women were not intended, they were solely chosen based on their work relevance for the study, their background and skills.

Another limitation of the study was encountered while collecting expert input, as experts reflected their own opinion and not the target group's opinion on the posters. This fact was especially important for a representative from Danish Cancer Society as the expert pointed out lack of knowledge on the specific target group while evaluating the three posters. Having a deeper understanding of the target group is considered highly important when developing health communication and campaigns, which was pointed out by experts from Danish Cancer Society, DAFC, and Danish Whole grain Partnership. Expert knowledge meets the recommendations of the literature, where it is emphasized to develop and evaluate the campaign based on what the target group wants and likes (Downer, 1996, Mattson and Basu, 2010). Therefore, the fact that experts did not have proper and sufficient data on the specified target group could be viewed as compromising element in the outcome of the project.

7. Conclusion

This study provided a deeper understanding on how to design health communication that would raise awareness regarding the relationship between men's consumption of meat and cancer risks by integrating a variety of methods. The use of mixed methods was beneficial for this study, as every step provided significant knowledge that helped to shape and sharpen the entire study.

Background information such as literature search, extreme consumer questionnaire and background poster search helped to create a foundation for the entire study. Literature search was essential for gathering theories and models that were later on used when planning the health communication campaign and designing the campaign material. The entire process of designing health communication campaign material was based on carefully selected theories and models, which were found to be similar to the strategies used by the experts, even though they claimed to not using any specific theories or models.

The main theories used when developing posters were prospect theory with positively and negative message frames, extended parallel process model with the focus of fear and scare tactics, emotional appeals, positive appeals such as humor, rhetoric appeals, credibility of the sources and Fisher's narrative theory. Collecting evidence on the relationship between meat and cancer which was found in another literature search, proved to be essential when creating trustworthy messages for the posters. Furthermore, expert knowledge supported literature findings, that knowing the target group is an essential part of a successful health communication campaign, therefore the focus group helped to gain better knowledge on the target group. The conducted focus group was a part of the planning phase, where the designed posters were tested and later on revised based on the input from target group. Expert interviews also shared their knowledge and provided a broader insight on developing health communication campaigns based on their work experienced. This approach helped to re-design health communication posters based on the focus groups and expert knowledge.

One of the main findings of the study suggested that health communication campaign material with a scare and fear tactics together with a valid and credible source was found to be the most efficient in raising target group's awareness on the relationship between meat and cancer,

opposed to the use of storytelling. Furthermore, the data from the focus group and especially expert opinions argue, that raising awareness on a particular issue is the main goal of health communication campaigns opposed to behavior change, which is especially evident in the literature search findings. The overall findings of both literature, focus group and expert knowledge stress out the importance of message and receiver, which are two of the five components of McGuire's (1989) communication model.

Even though this study could be viewed as a small glimpse in the vast amounts of other health communication campaigns, it provides an overview where a combination of evidence, theory and practise is used when designing an awareness based health communication campaign.

8. Future perspectives

The scope of this study was limited to exploring the process of designing a health communication campaign in order to raise awareness among young men and encouraging them to reduce their intake of red and processed meat, while it was pointed out by an expert that in order to change behaviours within a population, poster campaigns solely would not be sufficient. If the campaign material of this study were to be implemented on a larger scale and change behaviour in relation to consumption of red and processed meat, it would require collaboration between various organisations and especially supermarkets, which could help improve accessibility and availability of alternative non-meat products. Reflections on the choice of partnerships opens up for a whole new stage of investigation, as for example attitudes towards different supermarkets and supermarket chains may alter according to the target group, and ultimately it would require adequate amounts of data in order to conclude which partnerships could benefit a health communication campaign.

Other aspects such as the presence of conflicts of interest needs to be acknowledged when designing a health campaign as this can have a strong influence on whether the health campaign will be successful or even be carried out. After conducting the expert interviews it became clear that designing a health campaign focusing on raising awareness on the relationship between red and processed meat consumption and colorectal cancer, a conflict of interest could arise. According to the representative from the Danish Cancer Society, there is a need to design a health campaign targeting men and their meat consumption, as they are setting a goal for decreasing the intake of meat by 2025. However, according to Line Damsgaard, chief of nutrition in Danish Agriculture and Food Council, the need for aiming at a reduction of men's meat consumption is non-existent as she points out that a reduction of meat intake is neither recommended nor backed up by scientific evidence. Due to these different perspectives on designing a health campaign in relation to meat consumption and colorectal cancer, this conflict may be explained by the organisations they represent and their different interests. Line Damsgaard represents the Danish Agriculture and Food Council (DAFC) which is a merger of five organisations, among these are the Danish Bacon and Meat Council and Danish Pig Production. In general DAFC handle tasks and issues in the interest of the Danish farmers and food companies (Landbrug and Fødevarer, nd). Meanwhile, Susanne Tøttenborg

represents the Danish Cancer Society which has an overall aim to prevent the development of cancer in Denmark (Kræftens Bekæmpelse, 2013).

An observational log was carried out during the awareness questionnaire, in order to note important observations. Findings indicate that more simple awareness campaigns with basic knowledge on what is considered red meat, and how processed meat is categorised, would be necessary, either prior to or simultaneously with a campaign on red and processed meat and colorectal cancer. Furthermore, the observational log indicated a general lack of fundamental knowledge regarding colorectal cancer among the participants from the focus group and the awareness questionnaire. The same necessity of informing about colorectal cancer would be beneficial prior to connecting the two elements, red and processed meat with colorectal cancer.

While the WHO points out that currently the risks associated with meat consumption are considered small in a global context, as the consumption of meat in the low- and middle income countries are only increasing now (WHO, 2015d), Danish men are already among the top consumers of meat. According to WCRF (2014b) the incidence of colorectal cancer in more developed countries are almost three times higher compared to less developed countries. This could indicate that Danish men are further in the process of reaching potential public health risks and stressing the importance of both raising awareness of the consequences hereof and initiate behaviour changing strategies.

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10. Appendices

Appendix A: Search criteria for literature search process A

ProQuest (Nov. 24th - 28th, 2015)

Search no.	WOW Changes	Database	Search words	Results
1	Databases: All databases searched	ProQuest	(Men OR Male* OR Masculin*) AND all("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND (Diet* OR "dietary pattern" OR Protein*) AND all(Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	10,983*
2	Limited by: Date: After 2005	ProQuest	(Men OR Male* OR Masculin*) AND all("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND (Diet* OR "dietary pattern" OR Protein*) AND all(Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	5,931*
3	Limited by: Date: After 2005 Narrowed by: Source type: Dissertations & Theses; Scholarly Journals; Reports	ProQuest	(Men OR Male* OR Masculin*) AND all("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND (Diet* OR "dietary pattern" OR Protein*) AND all(Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	5,445*
4	Limited by: Full text Date: After 2005	ProQuest	(Men OR Male* OR Masculin*) AND all("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND (Diet* OR "dietary pattern" OR Protein*) AND (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	377°
5	Limited by: Full text Date: After 2005	ProQuest	(Men OR Male* OR Masculin*) AND all("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND (Diet* OR "dietary pattern" OR Protein*) AND all(Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	81°
6	Limited by: Full text Date: After 2005 Narrowed by: Source type: Scholarly Journals; Dissertations & Theses	ProQuest	(Men OR Male* OR Masculin*) AND all("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND (Diet* OR "dietary pattern" OR Protein*) AND all(Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	59°

Scopus (Dec. 2nd, 2015)

Search no.	WOW Changes	Database	Search words	Results
1		Scopus	(ALL(Men OR Male* OR Masculin*) AND ALL(Carcinogen* OR "Colorectal cancer" OR "Colon cancer") AND ALL(Diet* OR "dietary pattern" OR Protein*) AND ALL("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption"))	5940
2	AND PUBYEAR > 2004	Scopus	(ALL (men OR male* OR masculin*) AND TITLE-ABS-KEY (carcinogen* OR "Colorectal cancer" OR "Colon cancer") AND ALL (diet* OR "dietary pattern" OR protein*) AND TITLE-ABS-KEY ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR beef OR "meat consumption"))	579
3	AND PUBYEAR > 2004 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch"))	Scopus	(ALL (men OR male* OR masculin*) AND TITLE-ABS-KEY (carcinogen* OR "Colorectal cancer" OR "Colon cancer") AND ALL (diet* OR "dietary pattern" OR protein*) AND TITLE-ABS-KEY ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR beef OR "meat consumption"))	567
4	AND PUBYEAR > 2004 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch")) AND (LIMIT-TO (LANGUAGE , "English"))	Scopus	(ALL (men OR male* OR masculin*) AND TITLE-ABS-KEY (carcinogen* OR "Colorectal cancer" OR "Colon cancer") AND ALL (diet* OR "dietary pattern" OR protein*) AND TITLE-ABS-KEY ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR beef OR "meat consumption"))	540
5	AND PUBYEAR > 2004 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SUBJAREA , "AGRI") OR LIMIT-TO (SUBJAREA , "NURS") OR LIMIT-TO (SUBJAREA , "ENVI") OR LIMIT-TO (SUBJAREA , "HEAL"))	Scopus	(ALL (men OR male* OR masculin*) AND TITLE-ABS-KEY (carcinogen* OR "Colorectal cancer" OR "Colon cancer") AND ALL (diet* OR "dietary pattern" OR protein*) AND TITLE-ABS-KEY ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR beef OR "meat consumption"))	157

6	AND PUBYEAR > 2004 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SUBJAREA , "AGRI") OR LIMIT-TO (SUBJAREA , "NURS") OR LIMIT-TO (SUBJAREA , "ENVI") OR LIMIT-TO (SUBJAREA , "HEAL")) AND (LIMIT-TO (EXACTSRCTITLE , "Nutrition and Cancer") OR LIMIT-TO (EXACTSRCTITLE , "American Journal of Clinical Nutrition") OR LIMIT-TO (EXACTSRCTITLE , "Journal of Nutrition") OR LIMIT-TO (EXACTSRCTITLE , "Journal of Agricultural and Food Chemistry") OR LIMIT-TO (EXACTSRCTITLE , "Food Chemistry") OR LIMIT-TO (EXACTSRCTITLE , "Molecular Nutrition and Food Research"))	Scopus	(ALL (men OR male* OR masculin*) AND TITLE-ABS-KEY (carcinogen* OR "Colorectal cancer" OR "Colon cancer") AND ALL (diet* OR "dietary pattern" OR protein*) AND TITLE-ABS-KEY ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR beef OR "meat consumption"))	57
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Web of Science (Dec. 3rd, 2015)

Search no.	WOW Changes	Database	Search words	Results
1	Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2005-2015	Web of science	TOPIC: (Men OR Male* OR Masculin*) AND TOPIC: ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND TOPIC: (Diet* OR "dietary pattern" OR Protein*) AND TOPIC: (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	158
2	Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2005-2015	Web of science	TOPIC: (Men OR Male* OR Masculin*) AND TOPIC: ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND TOPIC: (Diet* OR "dietary pattern" OR Protein*) AND TOPIC: (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	158

3	Refined by: [excluding] WEB OF SCIENCE CATEGORIES: (UROLOGY NEPHROLOGY OR BIOTECHNOLOGY APPLIED MICROBIOLOGY OR PHYSIOLOGY OR SURGERY OR OBSTETRICS GYNECOLOGY OR GASTROENTEROLOGY HEPATOLOGY OR PATHOLOGY OR GERIATRICS GERONTOLOGY OR MEDICINE GENERAL INTERNAL OR MEDICINE RESEARCH EXPERIMENTAL OR CHEMISTRY ORGANIC OR TOXICOLOGY OR IMMUNOLOGY OR CELL BIOLOGY OR ENDOCRINOLOGY METABOLISM OR CARDIAC CARDIOVASCULAR SYSTEMS OR GENETICS HEREDITY OR BIOCHEMICAL RESEARCH METHODS) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2005-2015	Web of science	TOPIC: (Men OR Male* OR Masculin*) AND TOPIC: ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND TOPIC: (Diet* OR "dietary pattern" OR Protein*) AND TOPIC: (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	122
4	Refined by: [excluding] WEB OF SCIENCE CATEGORIES: (UROLOGY NEPHROLOGY OR BIOTECHNOLOGY APPLIED MICROBIOLOGY OR PHYSIOLOGY OR SURGERY OR OBSTETRICS GYNECOLOGY OR GASTROENTEROLOGY HEPATOLOGY OR PATHOLOGY OR GERIATRICS GERONTOLOGY OR MEDICINE GENERAL INTERNAL OR MEDICINE RESEARCH EXPERIMENTAL OR CHEMISTRY ORGANIC OR TOXICOLOGY OR IMMUNOLOGY OR CELL BIOLOGY OR ENDOCRINOLOGY METABOLISM OR CARDIAC CARDIOVASCULAR SYSTEMS OR GENETICS HEREDITY OR BIOCHEMICAL RESEARCH METHODS) AND [excluding] DOCUMENT TYPES: (PROCEEDINGS PAPER OR LETTER) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2005-2015	Web of science	TOPIC: (Men OR Male* OR Masculin*) AND TOPIC: ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND TOPIC: (Diet* OR "dietary pattern" OR Protein*) AND TOPIC: (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	119
5	Refined by: [excluding] WEB OF SCIENCE CATEGORIES: (UROLOGY NEPHROLOGY OR BIOTECHNOLOGY APPLIED MICROBIOLOGY OR PHYSIOLOGY OR SURGERY OR OBSTETRICS GYNECOLOGY OR GASTROENTEROLOGY HEPATOLOGY OR PATHOLOGY OR GERIATRICS GERONTOLOGY OR MEDICINE GENERAL INTERNAL OR MEDICINE RESEARCH EXPERIMENTAL OR CHEMISTRY ORGANIC OR TOXICOLOGY OR IMMUNOLOGY OR CELL BIOLOGY OR ENDOCRINOLOGY METABOLISM OR CARDIAC CARDIOVASCULAR SYSTEMS OR GENETICS HEREDITY OR BIOCHEMICAL RESEARCH METHODS) AND [excluding] DOCUMENT TYPES: (PROCEEDINGS PAPER OR LETTER) AND LANGUAGES: (ENGLISH) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2005-2015	Web of science	TOPIC: (Men OR Male* OR Masculin*) AND TOPIC: ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND TOPIC: (Diet* OR "dietary pattern" OR Protein*) AND TOPIC: (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	118
6	Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2005-2015	Web of science	TOPIC: (Men OR Male* OR Masculin*) AND TITLE: ("Red meat" OR "saturated fat" OR "processed meat" OR "meat intake" OR Beef OR "meat consumption") AND TOPIC: (Diet* OR "dietary pattern" OR Protein*) AND TITLE: (Carcinogen* OR "Colorectal cancer" OR "Colon cancer")	14

Appendix B: Search criteria for literature search process B**ProQuest**

Search no.	WOW Changes	Database	Search words	Results
1	Limited by: stype.exact("Conference Papers & Proceedings" OR "Scholarly Journals" OR "Reports" OR "Books" OR "Dissertations & Theses" OR "Encyclopedias & Reference Works" OR "Government & Official Publications") AND ("English")	ProQuest	("Public health marketing" OR "Risk communication" OR "Health communication") AND ("Framed message*" OR campaign OR Prevention OR "Behavior change") AND (Health OR "Nutrition guidance" OR "Public health" OR "global health") AND design*	15144*
2	Limited by: stype.exact("Conference Papers & Proceedings" OR "Scholarly Journals" OR "Reports" OR "Books" OR "Dissertations & Theses" OR "Encyclopedias & Reference Works" OR "Government & Official Publications") AND la.exact("English")	ProQuest	all("Public health marketing" OR "Risk communication" OR "Health communication") AND all("Framed message*" OR campaign OR Prevention OR "Behavior change") AND (Health OR "Nutrition guidance" OR "Public health" OR "global health") AND design*	301

SCOPUS

Search no.	WOW Changes	Database	Search words	Results
1	initial search	scopus	(ALL ("Public health marketing" OR "Risk communication" OR "Health communication" n) AND ALL ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND ALL (health OR "Nutrition guidance" OR "Public health" OR "global health") AND ALL (design*))	7,231
2	limit to: the title, abstract and keywords	scopus	(TITLE-ABS-KEY ("Public health marketing" OR "Risk communication" OR "Health communication" n) AND TITLE-ABS-KEY ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND ALL (health OR "Nutrition guidance" OR "Public health" OR "global health") AND ALL (design*))	512
3	Limited by: article review, article in press, book, book chapter	scopus	(TITLE-ABS-KEY ("Public health marketing" OR "Risk communication" OR "Health communication" n) AND TITLE-ABS-KEY ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND ALL (health OR "Nutrition guidance" OR "Public health" OR "global health") AND ALL (design*))	490

4	limit to: english	scopus	(TITLE-ABS-KEY ("Public health marketing" OR "Risk communication" OR "Health communication") AND TITLE-ABS-KEY ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND TITLE-ABS-KEY (health OR "Nutrition guidance" OR "Public health" OR "global health") AND TITLE-ABS-KEY (design*))	476
5	exclude:nursing, business, management and accounting, Biochemistry, Genetics and Molecular Biology Immunology and Microbiology, Pharmacology, Toxicology and Pharmaceutics, Chemical Engineering Neuroscience Decision Sciences,Mathematics Veterinary, undefined	scopus	(TITLE-ABS-KEY ("Public health marketing" OR "Risk communication" OR "Health communication") AND TITLE-ABS-KEY ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND TITLE-ABS-KEY (health OR "Nutrition guidance" OR "Public health" OR "global health") AND TITLE-ABS-KEY (design*))	362
5	excluding: some source titles	scopus	(TITLE-ABS-KEY ("Public health marketing" OR "Risk communication" OR "Health communication") AND TITLE-ABS-KEY ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND TITLE-ABS-KEY (health OR "Nutrition guidance" OR "Public health" OR "global health") AND TITLE-ABS-KEY (design*))	309

EBSCO

Search no.	WOW Changes	Database	Search words	Results
1	initial search	Ebsco Host	"Public health marketing" OR "Risk communication" OR "Health communication") AND ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND (health OR "Nutrition guidance" OR "Public health" OR "global health") AND (design*))	613
2	full text	Ebsco Host	"Public health marketing" OR "Risk communication" OR "Health communication") AND ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND (health OR "Nutrition guidance" OR "Public health" OR "global health") AND (design*))	126
3	Limited by source types: academic journals, journals, reports	Ebsco Host	"Public health marketing" OR "Risk communication" OR "Health communication") AND ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND (health OR "Nutrition guidance" OR "Public health" OR "global health") AND (design*))	117

4	Limited by subject:Thesaurus Term: health behavior, attitude (psychology), interviewing, research, health promotion, prevention, communication in medicine, health risk communication, qualitative research, analysis of variance, decision making, focus groups, questionnaires, randomized controlled trials, self- efficacy, public health, risk perception, cancer prevention, communication, descriptive statistics, health education, marketing, risk assessment, attitudes toward health, college students, data analysis, health risk assessment, internet, mass media, sampling (statistics), social marketing, appeal to fear, awareness advertising, cancer-risk factors, cognition, emotions, epidemiology, intention.	Ebsco Host	"Public health marketing" OR "Risk communication" OR "Health communication") AND ("Framed message*" OR campaign* OR prevention OR "Behavior change") AND (health OR "Nutrition guidance" OR "Public health" OR "global health") AND (design*))	49
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Appendix C: Overview of existing health campaigns



Appendix D: Extreme consumer questionnaire

1) What is your gender?

- ☐ Male
- ☐ Female

2) Age _____

3) Highest level of education reached:

- ☐ Primary education
- ☐ Secondary education
- ☐ High school diploma
- ☐ University undergraduate degree
- ☐ Postgraduate degree or above

4) Select your type of diet

- ☐ Vegan (plant-based)
- ☐ Vegetarian
- ☐ Pescetarian
- ☐ Semi-vegetarian (reduced meat consumption)
- ☐ Other

5) For how long have you followed this diet?

6) What specifically encouraged you to change your dietary habits?

7) What do you think could help encourage others to consider reducing their meat intake?

8) Other suggestions for strategies targeting men's meat consumption and how to reduce it?

Appendix E: Focus group poster advertisement

A call for male focus group participants!

Are you a man and hungry for a delicious dinner?
We will give you a **free dinner** in return for your opinion on our health communication materials and it will take **1 hour** of your time.



Location: Foodscape Lab at Aalborg University Copenhagen, Frederikskaj 10A
on March 3rd at 16:30

In order for us to prepare enough portions of delicious food, please use the QR code to sign up or mail:
vcekat14@student.aau.dk

Can't wait to hear you out!



Appendix F: Focus group questionnaire

1) Age _____

2) Highest level of education reached:

- ☐ Primary education
- ☐ Secondary education
- ☐ High school diploma
- ☐ University undergraduate degree
- ☐ Postgraduate degree or above

3) Occupation _____

4) What types of meat do you eat most often?

- ☐ Beef and veal
- ☐ Lamb and Goat
- ☐ Pork
- ☐ Poultry

5) Weekly consumption of meat products

- ☐ I don't eat any
- ☐ 1-5 meals
- ☐ 6-10 meals
- ☐ 11-15 meals
- ☐ more than 15
- ☐ Rarely

Appendix G: Focus group protocol

16.00 Prepare nametags

Check computer setup and display of posters

16.30 Welcome to participants (thank you for coming etc)

Explain shortly about project

Distribute nametags

Distribute questionnaires - fill out frontpage

Explain what we want them to do (initiate discussion)

16.40 Can-opener: “raise hands” questions

16.45 Start intervention - display posters

Debate and discuss as we go through posters

16.55 Fill out back page of the questionnaire

17.00 Serve dinner

17.30 Finish dinner

Appendix H: Consent form for focus group participants



Consent Form for focus group

Purpose:

Master students of Integrated Food Studies at Aalborg University Copenhagen are conducting a study on health communication. You are invited to participate. The purpose of the study is to examine how the messages in the posters are perceived by men.

Procedures:

If you participate in this study, you will be in a group of approximately 8–10 people. There will be two facilitators who will ask questions and facilitate the discussion. If you volunteer to participate in this focus group, you will be asked questions about your opinion on the different posters presented and also your current dietary habits.

Confidentiality:

All data collected from the focus group will be kept anonymous. No individual participant will be identified or linked to the results. All information obtained in this study will be kept strictly confidential.

Consent:

By signing this consent form, you are confirming that you fully understand the above information and agree to participate in this focus group.

Participant's signature: _____

Printed name: _____

Date: _____

Appendix I: Expert interview guide



EXPERT INTERVIEW

APRIL 2016

Introductory questions:

- What is your professional background and previous experience in the health communication field?
- What is your motivation for working in this field?
- What is your concept of health?

Questions about our posters:

- What is your opinion about this poster?
- What do you think is the message implied in this poster?
- Could you reflect on the design aspects of this poster? Recommendations for changes?

Questions about designing, planning and implementing communication campaign from you professional experience?

- Do you use specific models or theories when developing your health communication and could you elaborate on the process and specific steps?
- What sources are used in your health communication campaigns?
- How do you develop messages for the campaigns? How do you frame it?
- How do you segment your target group?
- What channels are used for these kind of campaigns?
- What is the expected outcome of the campaign? How is this determined?

INTEGRATED FOOD STUDIES

Sandra Vilhelmsen & Vaiva Cekatauskaite

Appendix J: Consent form for experts



Consent Form for EXPERT INTERVIEWS

Purpose:

Master students of Integrated Food Studies at Aalborg University Copenhagen are conducting a study on health communication. You are invited to participate. The purpose of the study is to examine how the messages in the posters are perceived by men.

Procedures:

When participating in the expert interviews you will be asked questions reflecting on the poster material send to you, prior to the interview along with an interview guide.

Confidentiality:

All data collected from the interview can be kept anonymous if you wish so, and you will be referred to as a representative from your organization. Please check of a box:

- ☐ Anonymous
- ☐ Not anonymous

Consent:

By signing this consent form, you are confirming that you fully understand the above information and agree to participate in this interview.

Participant's signature: _____

Printed name: _____

Date: _____

Appendix K: Interview guide for designer, Aalborg University, Tenna Tvedebrink



EXPERT INTERVIEW

APRIL 2016

Tenna Doktor Olsen Tvedebrink

Introductory questions:

- What is your professional background and previous experience in the health communication field?

Questions about our posters:

- What is your opinion about this poster?
- What do you think is the message implied in this poster?
- Could you reflect on the design aspects of this poster? Recommendations for changes?

Questions about poster design:

- How do we further strengthen the design of each poster - make it look more professional?
- Would you know any other theories in relation to masculinity (besides from use of colours) maybe in relation to fonts, placement?
- Is it necessary to add school logo? If yes, placement?
- References - add on the poster? If several references in one poster?

INTEGRATED FOOD STUDIES

Sandra Vilhelmsen and Vaiva Cekatauskaite

Appendix L: Awareness questionnaire

1) Age _____

2) Highest level of education reached:

- ☐ Primary education
- ☐ Secondary education
- ☐ High school diploma
- ☐ University undergraduate degree
- ☐ Postgraduate degree or above

3) Weekly consumption of meat products

- ☐ I don't eat any
- ☐ 1-5 meals
- ☐ 6-10 meals
- ☐ 11-15 meals
- ☐ more than 15
- ☐ Rarely

4) To what extent do you agree that this poster (Poster 3) raised your awareness on the relationship between red and processed meat and colorectal cancer?

Strongly disagree Disagree Neither disagree or agree Agree Strongly agree

5) To what extent do I agree of the effectiveness of scare and fear tactics

Strongly disagree Disagree Neither disagree or agree Agree Strongly agree

6) To what extent do you agree that this poster (Poster 6) raised your awareness on the relationship between red and processed meat and colorectal cancer?

Strongly disagree Disagree Neither disagree or agree Agree Strongly agree

7) To what extent do I agree of the effectiveness of a role model?

Strongly disagree Disagree Neither disagree or agree Agree Strongly agree

Appendix M: Observational log

- Many did not know what is categorised as red meat and referred to not knowing that a pig was considered red meat.
- About the campaigns in general, one said “It’s too much! Like with Cowspiracy and all these movies right now.”
- Some did not know what colorectal cancer was, specifically. A few others commented: “You get cancer from everything nowadays”
- They wanted to know if the information was right, and not something we just made up! A few wanted to know the original sources for numbers and facts.
- When seeing the Natalie poster: “Now we are talking!” referring to that the lady got his attention.
- When they saw the Natalie picture the majority started smiling, opposed to the pig poster where they were looking at it seriously.
- Some raised the question, when asked about the effectiveness of using either scare and fear tactics or a role model, if it was in general or for this particular poster.

Appendix N: Transcription of focus group

FOCUS GROUP MARCH 3rd 2016

Duration: 40 min

Poster 1:

Moderator: So the first one.. is the same as you saw, so basically we want your opinion, what does it tell you, this specific poster. Yeah? Anyone can start... anything that comes to your mind, when you're looking at this poster.

Sandra: What is the message you're receiving?

Participant 1: Eat vegetables, it's healthy! (everybody laughing and agreeing)

Participant 2: It's a pretty good poster, because it's very powerful, it makes you look at it, and read the.. sign it gives.

Participant 3: I find it very self explanatory. There is not much to interpret here. It says it right away... that's how I see it... Very precise also, and with the amount.

Participant 4: So if you want to avoid getting sick, then, haha, carry out! This is it's message...

Participant 1: Maybe if the letters, or the font is bigger, the message would be more associated with some authority.

Participant 5: The only thing I would argue this for, 400 grams, I mean, yeah it's durable, to me, as a health professional, I think, why don't you just put up, if you eat 4 types of vegetables a day, because, how much is 400 grams, that's the only thing, but I mean... it's a pretty clear message, and it's not really that hard to interpret, otherwise.

Participant 1: Yeah, because people usually don't weigh their vegetables.

Participant 6: I have a little bit different opinion, it's a little bit much to read, and I get the vegetable, and if you sit down, you read it, but if I saw it on the street, honestly, I probably wouldn't bother. So, I guess, from all the words, maybe typography you need to choose and stress the amount or the vegetables, I think that is the idea, because people associate quicker... but then, for me it is just the colors and the images that really does most of the work.

Moderator: So what do you think are the elements in the poster that appeals to you?

Participant 8: It looks healthy, just seeing the poster

Moderator: Is it the colour...? (Everybody: yeah... it's beautiful and..)

Participant 5: It looks appetizing, I'd say.. I mean, I could have a knife and just, chop chop..ha

Moderator: Is there anything you dislike? That you would like to change? or recommend to change in the poster?

Participant 4: There's a lot of elements there, it's, it's a bit, eh, maybe it's not messy, but it's very condensed, so...

Participant 6: I would simplify...

Participant 5: If we should talk about that, then again, this cancer thing... okay, it can help prevent, but how much does it help prevent? and what is this type of cancer? I mean, can I live without this intestine? Can I get it removed or, I mean, would I die if I get this out, what are my chances to survive? But I mean, the message eating more vegetables will keep you healthy, it's quite straight forward, but again, if you go down in details, this type of cancer, but what about other types of cancer? I mean... that's just me...

Poster 2:

Moderator: Anyone else wants to add? Anything? So we are moving to the next one, the next one is a different kind... what does this one tell you, or?

Participant 7: Processed meat should be avoided, it's not good, the pictures also say it..

Participant 1: But after seeing the previous green and colorful slide, this one looks a bit scary, because it's dark and all the pictures are, doesn't look..

Moderator: Mhm, but does it get your attention? Like, does it make you think?

Participant 1: yes! yes it does, but now I don't if it because I've seen the previous one... or, if it because of the poster itself...

Participant 2: Maybe you should pick more inappropriate pictures, because some of them look tasty!

Everybody: Haha!

Moderator: We tried!

Everybody: Haha!

Moderator: So it looks tasty, all the.. food

Participant 3: I think the food here are not meant to be so inviting, they're not on the disgusting side of the balance, but eh, but they don't look like really inviting food pictures to me...

Participant 5: To me, this reminds me of the tobacco warning thing, I mean, it's like, okay, you can die of this shit, and it's like every cigarette hurts you, it's the same here, every fifty gram is gonna increase and you're gonna die probably.. and then again, there's this 18%, how much is that? Can I still survive this cancer? But it's not that appealing, I mean, this would make me reconsider my amount of... If I was, you know exposed to that prior going to a restaurant ordering a 100 gram beef or a 300 gram steak, I think I would prefer the small one. Maybe that just me, because, again there is bacon, and... bacon is a good thing and...

Everybody: Hahaha...

Participant 5: But I'm just saying, it kind of make me consider my choice..yeah..

Moderator: Are there any elements that appeal to you? That gets your attention?

Participant 4: Well, I'm thinking of the World Health Organization, and that is kinda of a stamp, that this is legit or this statement is correct, in a way it has some power or some influence.

Moderator: Is this the same for other, this organization is a stamp?

Everybody: Yes...

Participant 3: I think the evidence they have are definitely well tested... Another thing for me that is not so clear, from the text, is about processed meat, uh, I don't really know what is processed meat... which one is not processed, and which one is extremely processed. If I see this I would need to do some extra research, if I would like to implement this in my diet... Figure out which one is the more healthy meat and which one is a really bad one.

Moderator: Mhm... and other things that you would change in the poster? That would get your attention or you would avoid some of the pictures or add more pictures? Any design elements?

Participant 5: To me, there's rather, you know, diverse messages.. The previous one is increasing the amount of fruits and vegetables, this one is: Don't eat meat. It depends on the message you would like to, you know, get across the table, if I had to make a campaign where you can actually die of eating meat, then might be good as well, because you know you kind of say you can die of eating meat, or get cancer at least, but to me, this is more a prevention campaign, were the other message was increasing a certain amount of intake and stuff... to me they are rather different... Here it makes you go away!

Moderator: Does it make you go away, just looking at it? Does it make you think twice?

Participant 4: can I just add something... There's two images of pictures that just disturbed me a little bit: the one in the right bottom corner, is very light and it makes me see it in a positive way, I think the other images are a bit nasty, but that is kind of, yeah! pork chop or whatever that is, yeah, that could be good! And then the image in the upper middle, I really don't know what it is...?

Moderator: It's burned meat...

Participant 4: Yeeeah, it could be something else in my eyes... I can't figure out what it really is...

Poster 3:

Moderator: Okay... so the third poster, what are your opinions on this one?

Participant 1: The image is pretty brutal

(Others agree)

Participant 5: Oh really?!

Everyone: Haha!

Miakiel: It sends a strong message...

Participant 6: It's interesting how you switch from facts to quotes... and to more emotional message... and from being preventative, or something.. so I'm not sure what you're trying to..

Moderator: Well, kind of look at every poster separately, like, so you don't connect them

Participant 1: I think this draws more on emotion, appealing to emotions rather than educating people..

Moderator: What kind of emotions?

Participant 1: Disgust... or, or, regret or something like that... But if I saw this picture with an actual fact, it would give the message more, because now, I see it as a quote of one man, so maybe other people don't..

Moderator: So if we connect it with a WHO fact or...

Participant 1: Yeah!

Participant 5: I actually also think that this Paul McCartney thing is quite disturbing, because, I was like, ok let it be, let it be, I'm thinking of the Beatles instead of the actual poster message, because if you have had that quote and not the guy's name, I think it would be easier for me to actually take the message in... Because I have strong associations with the Paul McCartney, so I think of something else.

Participant 3: Because I like Paul McCartney, if he says so, I believe it

Everyone: Hahahahaha...

Participant 5: That was also my... He's a clever man!

Moderator: Other things you dislike in the poster, or you would change?

Participant 7: It's pretty strong...

Participant 2: Yeah, that's a good point...

Participant 4: To me it's very provocative... because, my background, it's a very natural thing, and I'm also very used to like, getting my hands dirty or messy when I've been... shooting an animal because I'm a hunter or something like that, to me it's very provocative... it goes against my values or...

Participant 5: I also think it's kinda provocative, because, I mean, I know it's happening in the slaughterhouses, but I mean, it's the same thing with the tobacco, cigarettes packs, when you see pictures of you know, old people nearly dying or infected lungs or, you know, people without hands or whatever, it's SO disgusting and so gross and I don't need to see it, I mean, I'm not a smoker, but I'm still disgusted of the pictures on the packages, and it's the same thing here, even though I might not buy the pack of pork or whatever this would be on, I would still be like, I don't need to see this, I still know it's there, and I would also still question if this work. If I wanted pork chops, I think I'll would have bought them anyway... I don't know, I'm not really that much into it...

Moderator: Any other opinions on this one, does it make you think extra because of the emotional... things behind it..?

Participant 2: If you want to eat meat, you're going to eat meat. You know that these things happen, but, yeah...

Participant 1: Maybe it makes me think, but not in the way as I should stop eating meat, more that we should make the slaughterhouse more like, not brutal... 'cause there is a way to...

Moderator: Mh..

Participant 5: How do you kill without..

Everyone: hahaha

Participant 5: You're still killing it...

Participant 1: There are ways, you can kill it in a way where it suffers and in a way where it doesn't suffer

Participant 4: Yeah...

Participant 3: Yeah, but still you're killing it....

Participant 1: Yeah, but...

Participant 2: ...one is more humane...

Moderator: Any final opinions on this poster? No?

Participant 4: I definitely think it works for people that in the grey zone, someone who really wants to be kind of vegetarian or eat less meat and maybe that could push them in that direction, but some people who wants to eat meat, they see it, and that's it!

Moderator: Mhm...

Note taker: Is there something you would change then?

Participant 4: eeeh...

Participant 5: I kinda need some facts, I mean, because I kinda get the point, what Paul McCartney is saying, but to me, I have been not eating meat for a while, and you know, I looked into all this, how it actually worked in slaughterhouses and also all the places and I kinda needed some more numbers on like, X million pigs are getting slaughtered every year and that amount of pigs might also suffered during their whole life, something like that, if you're really going to provoke then you kinda have to do it all the way I think, because this is like, okay, I will just come up with bad excuses like, yeah, but thats only that pig, that specific pig and I buy mainly organic and sometimes I don't and they will be kind of okaaay... wouldn't they, I mean, so, to me, the more fact, if you're really crossing the line, you should really cross it all the way and just, you know out it right in my face saying we kill 15 million pigs in Denmark, a tiny percent of it is organic but the rest had more or less a miserable life.. so if you wanna bring up a bad message, you should just go..

Note taker: So, some more brutal facts with some brutal pictures?

Participant 5: I get the point but! I still need the fact kind of thing as we saw in the first poster!

Participant 3: Actually, I think as a poster, I think it's great the way it is, or at least quite good, but I also see his point that I'm missing some evidence here, perhaps try to conceal both ideas of maintaining the poster in the kind of simplicity that it represents now and still being able to provide some extra information, or some reference that it turns out that you are interested in and you want to know more about it, but I wouldn't really bring extra information, because I think it's a good poster already.

Participant 5: Yeah, I get your point, I actually kind of agree with that as well, because the thing is, when I didn't eat that much meat, and now I'm doing it, I'm still kind of, you know making up excuses for why it's okay, I mean, maybe there's not sooooo much suffering here, or... so if it's hard to argue against them, I mean, you can't argue and if it's a fact, then there's nothing I can say to it... but this, when there's not these facts.

Note taker: So that would actually make you want to change your mind, like you said, (points to Participant 2) "if you wanna eat meat, you'll eat meat" so, what if we come up with Participant 5's idea where we have something that you maybe can't argue against

Participant 2: Yeah, maybe that could have an influence...

Participant 6: it depends.. it's hard to say, because sometimes people just bend their mentality to get into the norm, uhm, and I think there's a long term effect, and there's a short term effect, and emotional tends to be a more short term effect where you get the message across and then you feel bad, and then you kinda just ease into mode of feeling bad, where maybe fact based would take longer for you to refute but not necessarily would change your behaviour but I think the fact based message takes, if it's a good fact, it takes a little bit more time to refute it, than emotional..

Participant 5: I think that is a good point, and I also think that trying to create such message, you also really need a small nudge afterwards, because it's not enough for me, I mean, I had this dilemma, constantly when I'm out buying or not buying meat, then it's like, then what, I need to, if I look at this pork chop and think, no that's wrong, then what? Then where's my alternative? I mean, I don't have the time to go in 12 different shops to buy something else, so if I'm not buying that then I need to know an easy, or as easy alternative, really close to this message, otherwise I'll just feel bad and buy it anyway. I mean, that's what I'm doing!

Poster 4:

Moderator: Ideas behind this

Participant 6: I think it's a little bit tricky. For me the idea is that you can, I think this is mainly people that exercise or actively do motion

Participant 1: the body builders

Participant 6: Yeah, and they need something to substitute the meat. But from what I understand, the market of protein powder is really strong for substitutes in that sense. So I think, it's hard sometimes for vegetables, purely vegetables compete with that, because the technology seems to be so advanced that it kinda leaves even the vegetables behind in like how many protein can you concentrated protein or other source of energy you can get. So I think, this, a bit tricky for me.

Moderator: any other ideas

Participant 2: Also, the broccoli can't really, you can't compare like meat for I mean an exercising person you can't compare meat with vegetables. Cauz they have not enough proteins in it. So you can eat all the broccoli you want but that won't make you a bigger man if that is what you want.

Participant 1: Maybe for me those two messages seems kind of not connected. Because the first one is about eating habits and recovery and nutrition. And the other one is about health and cancer and the risk of cancer. Also the first one is about broccoli in particular and the second one is vegetables in general.

Moderator: Mhm, they are not connected. Does it appeal to you, personally?

Participant 6: No. Not at all.

Participant 5: I think I don't really like you know fresh broccoli and it's not that heavy either. But it's kinda fun, I can't relate to.

Participant 3: Ok. Actually, it would push me a little bit into including broccoli into my diet.

Moderator: Ok.

Participant 3: Yeah, just knowing that this particular vegetable seems rather healthy when it comes to the choice of in front of the many vegetables and picking one, then why not go for the broccoli I just saw a poster saying that it has this many advantages. So, why not.

Moderator: If it kind of helps you, like focus on one vegetable, instead of all the vegetables.

Participant 3: Yeah, as far as I know, broccoli is a pretty good one (laughs).

Participant 2: Yeah, but in this poster you see some advantages in the broccoli, but you don't know what you are missing. Maybe in some other vegetables there are more advantages than in the broccoli. Because this one, its like concentrates on only one. So.

Moderator: Are there elements of this poster that appeal to you?

Participant 4: The poster itself looks like, kind of a B poster. It is not that (laughs), it looks, how can I put it. The other ones looked more professional. This one just looks like. I could have made it perhaps.

Moderator: What exactly in it?

Participant 6: Arm is really, like, you can see, you might, I guess you could do it with a paint (laughs). I don't know, no offense, but it's just. I am drawing on the lines you have. And it seems that the previous where a little bit more professional than this.

Participant 2: I cannot help it, but I don't like the shape of the biceps (laughs).

(everybody laughs)

Participant 5: I was actually also thinking the same.

Participant 6: Yeah.

Participant 5: Is it a guy who wants the big muscles but he doesn't really have it.

(everybody laughs).

Participant 5: well he is not that far, I better rather have a beef.

Participant 3: for me it delivers the message that broccoli is healthy. But I really see, that it's not the same quality as the posters we have seen before.

Participant 5: And maybe that's a good point that it is not the same quality. And I mean if it was like the most buffed guy ever, then ok, I gonna look like that if I eat broccoli, then ok, I will do it, but now, its just like mediocre, I think take something else.

Moderator: So maybe if you would see the entire person like you know pumped up, would that help?

Participant 6: maybe bigger hand

Participant 5: yeah, If it would be bigger, that would do it. (laughs). Maybe it's just me.

Participant 6: I agree.

Participant 2: biceps is not big enough. (laughs)

Poster 5:

Moderator: Ok. The 5th one.

Participant 5: Awwwww

Moderator: So what does it tell you, what do you think when you see the poster first?

Participant 1: It says choose more vegetables, but then it shows animals.

Participant 7: Yeah, cute picture of two small cows.

Participant 3: I think the picture here is a mistake. It doesn't support the message.

Participant 5: mhm.

Participant 3: Because it is about eating more vegetables and then, why not show vegetables actually, nice fresh selection of vegetables, similar to poster no. 1. I think that reinforces the message more, while the ? showing what not to eat.

Participant 2: Maybe it sounds, something crossed, or some other wording, that this is not what you are supposed to be eating than yeah. Because this is the first thing that catches your eye. Not the text.

Participant 5: I also kinda miss this connection between the little message and the picture. Because I mean, if I should rephrase it, I would say: You wanna save this cow- eat broccoli. I mean then I would get the point. Now it's just like, yeah less meat then what, the cows will be happy or? I mean, I kinda need the connection. I mean the cows they are cute, but.

Participant 3: Yeah, if there was a sentence like "Would you have these cows killed for your eating sandwich" something like that would trigger your emotions again.

Note taker: But the picture alone, would not trigger that?

Participant 3: I should feel bad by getting murdered, but the way it is phrased at the moment - I don't see what the cows have to do it here.

Participant 7: Oh maybe there are like small cows, so you can say something like "This meat of small calves, is it called small calves, it is produced and it's processed and not good for health and all.

Participant 6: or maybe you could play with words and you can see the calves are being cuddly or something or lovely. And you could ask "Do you cuddle with your meat"

(everybody laughs)

Participant 5: Yeah

Participant 6: Draw on that, or maybe on the picture, as opposed to having just vegetables, maybe you could have a very cruel picture of just meat to get a negative aspect of it. But I think, you need to change the text or the picture.

Participant 5: I think the fact is not a strong fact. Because the health organisation found evidence showing. So you can say, ok they only found evidence. It is not that strong, so you can ignore the fact. Cause its not a clear fact.

Moderator: Ah, ok.

Note taker: So positive association is not a strong.

Moderator: any more opinions about the lovely ?

Participant 4: If it had been like a Danish context, a lot of small bull calves get killed because there is no economic sense in growing them, or in feeding them up. So maybe they could have a dead baby calf in the picture and that would, in a repulsive way could create a bigger effect.

Note taker: So something similar to the pig.

Participant 5: Or maybe just put a picture of this colorectal cancer because that's the message, right? If you eat meat - you get this cancer type. But now we have three different messages. We have - choose more vegetables and less meat. Doesn't tell why before down in the bottom. And then we have these small calves, or big calves, or whatever, but again its like, I should choose less for not getting the cancer or because vegetables are healthy or because I get cancer.

Participant 3: Or if I want to save the calves.

Participant 5: Because it's four different arguments.

Moderator: Ok, so make it more clear. And the last poster.

Poster 6:

Participant 2: I don't really agree with this one.

Participant 7: Yeah, too much text.

Poster 5:

Participant 3: But I could add something on the previous one.

Moderator: Oh yeah, sure.

Participant 3: The picture I think it's pretty good, if the message was to appeal to the emotion and let's save those animals.

Participant 7: If the text was a bit different.

Moderator: Ok, so change the text.

Participant 3: If the message here is save the animals, don't eat them, I think then it's a great picture for poster. But as I can see that's not really the message. There is a disconnection I think.

Participant 5: I think it could be good if you can divide that you know, put two pictures like these cute baby calves, and then you know a dead one. Just next to it. And then say "How do you treat your meat" or whatever you wanna cuddle or

Note taker: kill it.

Participant 5: Both pictures - that could be disturbing.

Note taker: Yes.

Poster 6:

Moderator: ok. So the last one.

Participant 2: I don't really agree with this one, because it says, you know the meat is filled with some chemicals and bla bla bla, but also the vegetables, its the same there, different chemicals, but it's still, they are buffed up to look better, to produce more, so I don't really agree with this one.

Participant 1: For me it's the same as with Paul McCartney, that it's a personal opinion. That he said and it's his choice and the I as a first letter is like only underlines this fact. Its him.

Note taker: So in general a role model would not really appeal to anybody?

Participant 5: I kinda agree with him. This time. When I saw it, when I first saw the picture, he looked familiar, I couldn't remember from where, then I read it, you know the text. But of course I also kind of agreeing with his arguments his argumentation. I don't disagree with any of his points. So, I kinda said ok, he is right, and then I saw, oh ok, he is also famous. But, I think the fact that I recognize his face kinda made me pay more attention to what he was saying. And

then again, if I was also, when at the same time I am also agreeing and it's hard to say something against. I kinda like it. But again, I still have the dilemma. I mean, yeah, then what to do?

Note taker: does everybody recognize him?

Participant 1: No

Participant 2: No

Participant 7: No.

Participant 6: No.

Participant 3: I don't know who he is.

Participant 6: I think in general, the picture I think is good. I am gonna draw on this thing a little bit deeper [REDACTED] I know that the message is for men, and I think the image for me is very good for a campaign for men, especially maybe older men they can associate the image with themselves. It's a strong, straight standing up man, looking forward, and he looks, his facial expression is very like western, classical, manly. So I think the image itself is very good, and the colors and the panel. It draws on manliness. I have a problem with the quote. I think using words like "they put bad things" it's weak, it's his own judgement. If you draw on associating with him, it becomes stronger. But "bad things" it's not very, not universal. But if you make posters with Brad Pitt and a series of famous guys looking like this, I think that would be an appealing campaign for men, because at some level you associate yourself as a man to like a Bond, James Bond figure. And if James Bond says eat more eggs and less meat you might do it sometimes.

(everybody laughs).

Participant 5: I kind of agree on this one as well, because to me maybe this message is too long, because I mean, if it this was Ronaldo, standing in his boxer shorts and saying "Buy this and you will look great". I mean, if it was him saying, "Be a man, don't do this". If it was just one phrase like "Be a man, don't eat meat". I know it would be a lot of perception and confusion, but if my role model said and then I was like if he says don't maybe I should not. Because this one is more or less, I agree with him but this is more like a discussion, doing right or doing wrong, or it's about manliness, then just say "You are a man if you do this" or "don't do that".

Participant 6: I think these either or statements it's very manly and daring.

Participant 5: Yeah, it's so black or white for us, nothing to discuss.

Participant 4: But it is quite funny with the James Bond, because, when I saw the image or the poster, I thought that was Daniel Craig.

(other affirming with laughter).

Participant 4: I also thought about James Bond, when I saw him. But I definitely don't agree with the statement. So, that's something else. I don't believe, for example in Denmark, that the way we produce food we put bad stuff in it. Definitely not in a lot of cases where we are talking about meat. When we are talking about other food products - Yes. But when we are talking about meat, for me, it doesn't contain anything bad. We know about the way it's produced, but not in the product itself.

Participant 5: I also think that, that's where the problem with this 'I' statement. Because he is kinda like, ok so you don't, ok. But then there is all these, you know more or less statements. So instead if you just have said "Don't do this" or "do that" then it would be much more easy to relate. Then you are partly agreeing with the first one, but then the second line, maybe I am disagreeing, and the third - I don't even see his point.

Moderator: What could be another famous figure that would appeal to you?

Participant 2: Maybe it would be better. It is something that is recognized by everybody.

Participant 7: Maybe like Leonardo Di Caprio. He is pretty much doing things for climate change. So a lot of people put thought into it, to do something for climate change. So.

Participant 5: And I would also say that, if you put the opposite sex into the commercial and say "I would only you know, I find men not eating meat more attractive" then I, (laughs), I don't

know, there is a reason why there are so many women selling cars. It's not like they know anything about cars.

Participant 6: It would have to be in bikinis.

(everybody laughs)

Participant 5: Yeah. If you do a poster and say, you know Carmen Electra or Angelina Jolie saying "I would definitely "do you" if you don't eat eggs" then I think the egg production would go down. I don't know, I think sex sells.

Moderator: So do you think than women appeal better than having like a...

Participant 2: Yeah, it actually crossed my mind before.

Participant 7: Well it depends on the thing, the thing they are promoting.

Moderator: Any final thoughts?

Participant 4: I also think it's kinda extremist statement, because a lot of people who are agreeing or don't like pork or beef the way it's produced or climate change or whatever, they perhaps still would eat fish or poultry, milk, eggs, because they would consider that as acceptable and not like putting our climate into danger. In a way, he would push them over the edge, or maybe he would put distance to them. So maybe that poster only targets a very limited amount of people in a way.

Participant 5: And I also think that he states a really (strong) challenge but he doesn't come up with any solutions. So it's like ok, and then what? then what to do? We need solutions - we don't need to think.

(everybody laughs)

Moderator: So just to wrap up, these are all the six posters that we made and wanted your opinion on. So if you would think of the first poster that would come to your mind being the most effective, and carrying the message, so which one would it be?

Participant 2: the first one.

Moderator: the vegetables?

Participant 1: for me as well.

Participant 3: the brutal one.

Participant 7: The one with the baby calves, but just the text a bit different.

Participant 4: the pig in the slaughter house.

Participant 7: Yeah, that would too.

Participant 5: I am still confused about, what the message is, is it eating more vegetables or less meat.

Participant 6: I had also this discussion, I think there is a lot of arguments of what you are trying to do. But maybe you could do yourselves a favor and pick few. Then you yourself would not be as confused. I know there is a thought where you think if you bring so many things, you cannot refuse the argument. But many things confuse people as well. Sometimes it's better to be focused and maybe drop some animal cruelty or something else and pick something else and be more focused. Because now it seems that you are all over the place. For me it seems to be a little bit easy to refute everything and pick out elements of every argument. But if you present strong cases for specific and then yeah.

Participant 3: I would pick the second posters, as the most effective.

Participant 6: I choose vegetables.

Moderator: What about the one that you dislike the most? Or the one that would not appeal

Participant 7: The broccoli

Participant 5: I would choose the 50 gram as well, I think it's a really clear message as well. Because it's really small amount and high increase in the risk. I think that was the best poster assuming the the message would be eating less meat.

Moderator: What about the disliking, not the best poster?

Participant 3: I think probably, poster number 4, with broccoli.

(others agreeing). So unrealistic (everyone laughs).

Appendix O: Transcription of expert interview: Susanne Tøttenborg, Cancer Society

Date and duration: March 31st 2016 - 1h 11min

Susanne: And what you are doing in your thesis that is to make campaign for men and meat

Sandra: Risk communication, cancer risk communication. Yeah, because we have to integrate all these three pillars in the thesis as well, and also design is a big part of it. So we have chosen to design posters, as a product of our health communication. So, it's really good for us to get some feedback, from someone who actually works in the field, and not only our teachers.

Susanne: Yeah, yeah.

Vaiva: And do you work with something similar at the moment?

Susanne: We are actually. We have set goals for 2025 for reducing cancer risk according to the European code against cancer. So we would be setting goal for a decrease of the meat or meat product intake, meat or processed meat in Denmark in 2025, because it is really high. Men eat an average 1.2 kg of meat every week and it's without counting fish and poultry which is from red meat and processed meat. So that is actually very much. I mean compared to the recommendations of 500g. So we are setting a goal, I don't know exactly what it's going to be, but of course we have to make an action plan and strategy on how to reach that goal. And that's what I am doing at the moment. How we are going to do it? We don't know. We are at the very early phase of it. We haven't even got a budget yet. So at the moment it's for me very much an internal process within the Danish Cancer Society are we going to focus at this, and what level and so. So we have the first internal strategy end of April, where we gather together people from the house, from research, documentation and quality, from communication, from fund raising - from all kind of places. I mean to show what is the evidence, how could we work with it. So making a workshop to find out what will be the next step. So we are at a very early stage.

Sandra: It's basically what we have been doing, spending 5 months on how do we actually do this. Investigating all the literature out there.

Susanne: So, how we are going to do it, I don't know. Because that also depends, on what focus it gets within our organization. Because if it has little focus - we have little money, so it will decide what we will be able to do. Yeah.

Sandra: Yes.

Susanne: And it is also, men is our target group, because women don't eat that much meat.

Sandra: We have formed a consent form for you, just saying that we will use this for our thesis. And also whether you want to remain anonymous or if we can use your name when we refer to, that we interviewed someone from the Cancer Society. So it is up to you.

Sandra: Just a formality. So first, we have, we emailed you our questions, so first sort of introduction question, on what is your professional background and what is your previous experience in working in health communication field?

Susanne: I have a Master's degree in journalism and public administration, which I got at a pretty old age - 45 years. Before that I had a long career in the international food trade and I have been working with health issues within the Danish Cancer Society since 2004.

Sandra: And what was your motivation for choosing this specific work field?

Susanne: It makes a lot of sense. I mean. Prevention is the only way, I mean if anyone has suffered from cancer or been close to people having a cancer will know that it's a terrible disease. And 4 in 10 cancer incidences could be avoided if we avoid some of the most important risk factors. So I mean, that's a way because, treatment has become very expensive. We have strained budget for hospital and so it makes a lot of sense to prevent people from getting this really terrible disease that hits 1 out of 4. Oh, 1 in 3 persons will develop cancer at

some time at their life and we could actually avoid 40% of this, and I mean we should do everything to avoid that.

Sandra: Could you explain to us, what is your concept of health?

Susanne: Well, I pretty much have two concepts. I have this very narrow one that is not being ill and having a healthy lifestyle. But during my years, I also know that, having a healthy lifestyle and to be healthy very much also demands empowerment and a good mental state of mind. Otherwise, health is not very important. I mean, we can see that if we talk about blue collar person's, health initiatives in their work places doesn't work. We have to, and that's what we are doing right now, we have to work very much with the condition of the work and the environment and the work culture among these people, before we can start talking health. Because, it is about empowerment strategies, so I would take the very broad aspect of health that you also have.

Sandra: And we would also like to show you some of the posters that we have been working with. So this is our second draft. We start with this one first. So we started with designing 6 posters and then we had a focus group, our target group which is men, between 18-30 years.

Susanne: So you are mainly looking at younger men.

Sandra: Yeah. So we had a focus group where we presented our 6 posters at that time and we asked them some questions and we had a discussion where we discussed what worked what didn't work and what appealed to them and what did not appeal to them. So we could learn from the specific target group what we were not able to read about, but actually hands on learning.

Susanne: That would also be what we normally would do. We would make anthropology, we would have some anthropologists look at the group. Because I can figure out from statistics and all kind of things, all kind of sources I could find references, I could find figures. But to know really about the target group, we would have anthropologists to study them, before we start even think of how we would put the message, what tone of voice.

Sandra: And we also tested, how many responses, 60 respondents from men, who have already reduced their meat intake, or become vegetarians, or vegan. What we learn from that group and from a focus group and with the different theories put into the posters we designed it based on all what we have learned. Then we modified the posters again and reduced it to three after the focus group. So this is what we have now before we further modify it. We will talk to you, a designer as well. So it's great for us to have expert opinion before we modify it further. So these, we still have actually several different theories behind each poster along from what we learned from the focus group and some had to change quite a lot from what we started with. So there is a huge difference from what we started to where we are actually know.

Susanne: But that's a good thing.

Sandra: So we did not expect this actually from the beginning. The first one here is a positively framed message. This is the only one that had not changed that much from the first design to this design. Because this was one of the favorite ones which we actually did not expect because this looks like a regular health poster with a simple message. But that did actually appeal to them. So we would like to know what you think about this poster.

Susanne: Well I would also think, it wouldn't be my choice of two reasons, but I might prove wrong. First of all in Denmark, we have another measure in fruits and vegetables, that you might know, the 6 a day. And I think it would be maybe a bad idea to change the message on the amount of fruits and vegetables. Because the 6 a day measure is actually well established. So, and also the official recommendations in Denmark say 600g. So that would be a thing on the amount of fruits and vegetables. And I also think it's a very good message, but I would be unsure whether the target group would make a connection to make a reduction in meat if this is. Of course I agree it is very good to eat fruits and vegetables, but would the target group think of reducing meat when seeing this. Because this does not automatically happen. Unfortunately we see that when we have healthy foods, people think they could just eat more of it without

reducing something else. So, the message is ok, but weather it's a good message for reducing meat and processed meat - I would be a bit unsure. So yeah.

Sandra: and then we have the second poster here. This is a completely different theory we are testing here and based on what we learned on the focus group we have added some more facts, a little bit scary facts if you can call it that along with a scary picture. Because they put emphasis on that message and picture should go hand in hand. So if it's a scary picture it should also be a fact that you cannot ignore. Something that you would think, ok this is serious.

Susanne: Well, I am a bit reluctant to judge whether it's a good idea, because, in the posters, because we would make exactly the same routine. Because I don't know much about most of our target groups so I would be reluctant to guess what is good and what is not. Because we would need to have these anthropologist's studies before and we would also have focus groups and things. So in most cases, I am really not able to guess what the focus group might like, because, no, what the target group might like, because I am not the target group, I really don't know what's going on in people's heads. I am really a bit reluctant to be a judge of this, because the target group is the one to ask. So I think it's a fine job that you have done. I can only, because, when I see this, it's possible that the target group would find this scary but I mean, killing pigs is what we do for a job in Denmark, it's a huge production, that's what, either you produce this or that, I mean, it's just a production. I mean it's not dogs that you are killing. I mean we produce pigs to kill them. I mean, maybe you like it, maybe you don't I have no idea.

Sandra: We learned that many of the vegan's and vegetarians and people who have reduced their meat intake was actually of ethical reasons, so we thought that making a poster that might appeal to these ethical reasons for reducing, that could also be a way to make them actually change the eating habits.

Susanne: But we won't go for people getting vegans or vegetarians, we would be going for a reduction. If the people are vegan or vegetarians, we actually don't care from a cancer point of view. So I know that going vegetarian or vegan often has to do with ethical issues that you either find a production form or I don't know what that you find it disguising. Whether ethical concern would reduce the consumption, I really don't know, maybe that you would see to it that you buy bio or free range or that you would be a bit more concerned about how is the production method of the meat that you actually do it and to buy something that is a bit more expensive but that you are sure. I honestly don't know, but I would guess that would, because we are getting more and more flexitarians in Denmark that you probably heard of. People just reduce, and they are more conscious about what kind of foods, and the production method of the meat they eat.

Vaiva: But what about the scare tactics, like maybe have you seen if they work, you know saying that killing, using the words, killing and dying, would that usually work in the campaigns that you do or you go for like a more positive calm.

Susanne: That would really depend very much on what we found out about the target group. We are not afraid of using scary things, but we also like to make positive things if that's what works. I mean we go for what research show would work for a specific group. So I think we use both types of tone of voice so to speak. So I am really guessing, I would say that's what we do for a living in Denmark that's killing pigs (laughs). I mean, so I think, it would not be the killing it would more be the way of production that would raise ethical issues with me personally. That's why I do actually buy free range or bio meat or the same with eggs. I'm more myself concerned with animal welfare, but I don't know will that goes with the target group, we will have to find out when studying the group more carefully. That would more be the production method, inclusively of course of the killing process, more than the simple fact of killing animals, because that's what we do.

Sandra: Would you have some recommendations for changing this one?

Susanne: Is it Danish figures, no it's worldwide. No, I think it would be difficult to make any recommendations without knowing the target group. So I would be reluctant to do that.

Because, taking your own perspective for another target group, it is just the worst thing you can do. This is the stupidest thing you can do because I mean, I really about most of the target groups that we work with I just said, I have no clue how they think, and what they would like and not like. Just heard one of our anthropologist tell yesterday about some young men, who either are in their vocational school. You know in Denmark, when you are going to be a carpenter or have other, you are shifting between vocational school and a real workplace. She was telling about them, and their alcohol habits. And what they like to do in their spare time. I mean it was very interesting knowledge, because I don't know about this target group, and it was very interesting so. They have been making this study about this group to make an alcohol campaign to them, otherwise, unless you really know your target group.

Sandra: so specifically tailoring your messages.

Susanne: tailoring the message to them. Because what they hate is somebody telling them what to do. So you should put another message to them. So I am a bit reluctant to judge, because I am not the target group.

Vaiva: Ok, so just a final one. Just the overall opinion.

Sandra: This switched from having a male role model to actually having a female role model based on what we learned from our target group. So yeah.

Susanne: I know that the Danish whole grain campaign have used females. I don't know whether they were celebrities or what. But anyway, a bit sexy looking so for their campaigns directed to young men. So I think it's quite fun (laughs). What did the target group say?

Sandra: They actually said that, we had this actor called Ulrich Thomsen first having a quote with him and a very masculine picture, because we used darker colors to also appeal to masculinity. But they would actually prefer that it was a woman telling them to reduce the meat opposed to a man telling them to reduce the meat. And that was also something we learned from our first investigation, asking men who already had reduced meat, when we asked them specifically how could we make other men reduce meat they said, having a woman, and preferably an attractive woman to advocate this message that would probably have the best effect. That's why we changed it to having a female opposed to a man because we thought first how would it really appeal. But now we have to listen to what we learned from our focus group.

Susanne: actually, this was one of the key issues or key messages from this talk that I heard yesterday of the anthropologist, women, these guys, guys were 18-25 I think, that I don't know what's in English, but it's "score damer".

Sandra: (laughs) have luck with the ladies.

Susanne: that is really what's on their mind all the time. They were asked if you were going to do something together what should you like to do - and I mean they were carpenters and things, so they could work with their hands. So they wanted to do something where they should create a bar together, but a bar that would attract women. So I guess, that sex and women and have luck with women is really top of mind of this target group according to what I heard yesterday. So that might be. And I guess that this is also why the Danish whole grain partnership has used female pictures to attract the message to young men.

Sandra: they probably learned the same way as we did from their investigations.

Susanne: So what I heard yesterday, I would guess that this would be a good one.

Sandra: so no further recommendations for changes or.

Susanne: No.

Sandra: then we have a few questions about your regular process of designing and planning and implementing these sorts of communication campaigns. So if you could tell us some from your professional experience.

Susanne: What we would normally do what we are probably going to do in this case, normally we would make some research from literature reviews, statistics, what is their intake what do they do, how are they different, how are they similar to other groups and all this kind of background stuff of course. And then we would make an anthropology study to see, in this case

about the meat, how do they think about meat, because I heard, several say that Danes have the same, more or less, the same thinking about meat as the Americans have of their right to bare weapon (laughs). Don't take our meat. I mean, and when we had the Autumn of 2015, you probably would remember if you were in Denmark that, who was it, WHO I think it was, who came with a warning, of processed meat, it was somehow that you would take away the bacon, they talked very much that it was dangerous with the bacon, and the discussion of it that it is more or less dangerous as cigarettes. I mean, it was as if you were taking something really vital away from Danes just because of this bacon.

Sandra: their masculinity.

Susanne: Yeah (laughs). I mean, so we would have to find out more about the target group, we would have to decide also again, from figures, who is it from these men. Because I don't have so detailed figures to know exactly who eats most meat and so, what kind of person's are they. So we would have these anthropology studies, that would also of course be very targeted, a specific target group. And then we would work with either communication or advertising company, where we would then make the first draft, then we would have focus groups, or somehow you know to have the target group comment on it, and we would make some changes and we would have them look at it again and then we would run. So it would be very similar process as you have done.

Sandra: we would also like to know, do you use any specific models or theories when you develop the health campaign. Is there some steps, like specific steps that you follow from a model for example?

Susanne: Yeah, but whether it's a specific theory, I don't know (laughs). Maybe it is. We do have normally these steps that.

Sandra: some models maybe you develop yourself or is it some models that already exist?

Susanne: I think, it's probably models that exist and it has become a routine how we do it. But I would also say that I seldomly make campaigns, unless they are supporting environmental changes, that would be other people within Danish cancer society because, we have people who only make campaigns, but I work in a different, or my field of work is in a different way. I only make campaigns if it's because we also make environmental changes. If we are going to make this meat thing we would also involve other NGOs, we would involve supermarket chains. Because telling people is not enough. You have to give real, accessibility is very, availability, is very important so that in the supermarket you would find real alternatives to meat. And I would also probably in this case try to involve organizations not just within health, because health might be an issue to some people, but for other it might be more climate friendly thing, so if I could at the same time talk with these climate people that they would convey at the same time the message that it's very, that it's much more sustainable to eat fruit and vegetables, I would probably also involve the people that work for increasing the consumption of fish, those who work for increasing the consumption of fruits and vegetables. So that we coordinate our information and our initiatives. And probably also involve our fundraising or I would involve our fundraising departments because when we put our logo, our Cancer society logo on products, you could for example say if you buy this product you donate 1kr to the Danish cancer society. I would probably suggest to them to do that so that there would be a donation on fruits and vegetables and veggie products because you would find more and more protein replacements I mean both in form of ready meals, nuggets and tofu and I don't know all the kind of stuff but also pulses and lentils. So I would never just make campaign telling people to reduce meat. I would see to it to work with other organizations before or at the same time did various things to support, to increase availability and the incentive to to change and the possibility to change. Because otherwise, I do not really believe in just campaigns. I was actually the national coordinator of 6 a day campaign, which was not only a campaign, it was a partnership where we really changed the availability of fruits and vegetables and that was what worked. Because telling people what to do, it won't change a lot because, I mean. We have actually got very

much from, gone away from just making campaigns to work with availability and of course campaigns and information and so because otherwise, but trying to change people's habits without changing availability I mean it would be the same as smoking - to reduce availability both for cigarettes and the opportunity to smoke is very important for reducing the rate of smoking. So, I mean, campaigns, I mainly use to support the environmental changes to put it on the top of mind of people so that the campaign and the availability would and the incentives to change would go hand in hand.

Sandra: So they remember this message when they see there is a change in a supermarket for example.

Susanne: Yeah, and also, we can have supermarkets do something, because there is a campaign. That would be, so you could do this, we are running a campaign or it could be part of a larger strategy of the company, of the supermarkets.

Sandra: So what if you have this, if you make a meat reduction campaign and the supermarkets are not on board.

Susanne: I don't think we would, I would probably choose not to do it then. So a possible meat or reducing meat campaign, I believe I would only go for it if we have the rest on board. We would probably make some kind of an information thing, we would enhance our information efforts, but a campaign without having the rest on board, to be honest, I think it's waste of money.

Sandra: So then you would simply not do it.

Susanne: It's not for me to decide entirely, but it would be my recommendation not to do it, because I wouldn't believe that would change a lot. But some kind of, we have of course to inform about the connection about the high intake of meat and processed meat and the risk of cancer. Of course we would have to inform of it, under any circumstances. But making campaigns as such, no, I don't think I would do that without having the rest on board, all this collaboration, because that's what works. But of course somehow, I mean, it's also, you also have to have a campaign to get the others on board, on the other hand, if you don't have the others on board, you don't have a very powerful campaign, so, of course, it's also what comes first and so.

Sandra: We would also like to know, the sources that you are using, where do you have them from? For example, we have chosen to use WHO source here, so we have put that under here as this is a recommendation from WHO in relation to prevention of colorectal cancer. So where do you take your facts, or information from when you put it in the poster or in a campaign?

Susanne: All kind of sources. I know when it is about smoking for instance, among young people we have these "miljøundersøgelser". About the meat, that would be the international, our recommendation for the meat would be the International Research Cancer, IARC, I am not very good with these things, as I'm normally developing strategies. I am not a very scientific person, I am normally developing, finding the funding and so. Where do you have, for instance, we have the recommendation of Fødevarestyrelsen and IARC, and then we have all kind of figures from Gallup, it can be, and also the European code against cancer, so we have, it's all kind of official, and then we have our own research of course, in house. But this one, and then we also have for DTU Fødevareinstituttet, about eating habits of the Danes.

Sandra: Also we would like to know.

Susanne: And in the case of 6 a day, it was actually, it was Danish literature review, made out of, that is why we chose the 600 g because.

Sandra: We would also like to know when you develop the messages, for the campaigns, we talked a little bit about it before how you for example could frame it positively or negatively, or how would you develop the message itself.

Susanne: the tone of voice you mean?

Vaiva: Yeah, or to choose, if to say positive things or negative things.

Susanne: Again, I would say, that would be very thorough investigations into the target group what would be, because some has to be scared, don't scare meat, so that would depend very much about the outcome of the study of the target group I would say.

Vaiva: And how do you usually pick the target group, is it someone that initiates the project, and says that we wanna target this specific group, or how do you usually set the range of the years, or the gender?

Susanne: Yeah, in the case of the meat, I have been looking at the figures from Danskerne måltidsvaner and it's obvious it's men who eats the most. I don't have so far the figures or the intake for specific age groups, so we would of course have a lot at that when I have them, because they are not in the official paper, I would have to ask DTU Fødevareinstituttet to run a specific thing, to find out what about the age groups, and then we would, from that we would say, should it be men 25-45 or whatever would be the range that eats the most meat. Or it could be more all age group, but a specific, for instance the blue collar workers, if that would take social economic status. I mean that would depend very much on when we get more detailed figures on the consumption. But it will be men (laughs)

Sandra: that's for sure. Also, about the channels, we talked a little bit before with the supermarkets, but what channels specifically are used for your campaigns besides from using the supermarkets.

Susanne: Well, we don't see supermarkets as a campaign channel, we see them as part of the environmental changes. But of course, it is, that's how you convey the message. I think that also depends very much on the target group. Our cykel Denmark, is very much on social media, so are the alcohol campaign towards young people. I mean they are on the social medias. To what extend they use facebook or instagram or twitter or I don't know, I have no idea. I mean I would normally, when this strategy has been decided, we have found all this kind of things, I am out of it because I am not a campaigner. So we would, so when things are agreed, everything is described, somebody else will take over. So I am in the initial phases of developing, finding the funding, the right parties, I mean the right people to work with and making all the agreements and so, and then it would be taken over by a project manager, who would probably have some social media experts and I mean, knowing about these kind of things and anthropologist, so this is not my work.

Sandra: so someone later in the process, will design which channels specifically to use.

Susanne: When we have decided what will be the target group and so, there would be someone to look at the campaign part of it, and say Ok, it has been decided we should take men 25-to I don't know what, and this person who know about campaigning and how to make more specific studies into the group would then, see what anthropologist would we have, what social media expert would we use out, because we have social media experts in house, I mean, it would be somebody being used to making campaigns who would take over that. This is not at all my field, of course I would supervise what is going on so to have the grand picture of it. But I would not really be into that, because this is not my competencies at all.

Vaiva: But like from the general point of view, would you think social media is taking over the old -fashioned tv commercials or posters?

Susanne: I know that for the whole grain campaign, they still make these posters, go cards at cafes, they would still have some posters in shops. In the wholegrain campaign we have, week 22-23 we have a huge retail campaign mainly focused on supermarkets, and of course they would have posters, they would have things. Normally in autumn, we would have a campaign, targeting young ones and of course, there would be posters, that would also be these go cards and it would be on social media. But that would also be posters at the military facilities, education, universities, colleges, I don't know where young people come. Then we have the national wholegrain day in, when is that, I don't know, but you would also see posters in canteens, you would see. But there is more than the posters of course, they have. So posters are still there, TV commercial we don't use very much, it's really expensive. Again, it depends

on the target group, young people don't watch that much television. Whereas, I know that our campaign, the huge campaign 7 symptoms of cancer that has been twice, I know they use television because they are targeted at a group that still watch television. So I think, I mean that's quite a science to find out how, where your target group is, and what media. So I really have no idea, but it's chosen very carefully because otherwise you lose your money if you are in the wrong place. I know that posters are still there, and also small brochures, I mean, flyers. But of course, social media are taking over.

Sandra: What is usually an expected outcome of a campaign, that you have designed?

Susanne: If you look at a campaign in itself, isolated, I would say, that's raising awareness. But I don't think that anyone expects a campaign to change behaviors. But unless you have campaigns, you won't, it could be difficult to raise awareness of a certain problem and to have people on board. So, but, change of behavior - no.

Vaiva: because it's too hard, or it is impossible?

Susanne: Because people just, there are a few that might do it, but campaigning, I mean, we get so much information and it's hard, unless you change the environment, it's really really hard to change behavior. A few do, but actually, living healthily is actually quite a hard job. I mean if you have one started smoking, it's so addictive, it's really hard to stop unless you change not enough to say it's dangerous and expensive, and so, you have to change the environment, because it's really really hard to stop smoking. Same about unhealthy foods. We have a natural craving for sweet, salt, for sugar, salt and fat. I mean, because, a million years ago it was important whenever we could have fat, sugar and salt, we should take it. Because it was only available in very small quantities, so you could eat it when it was there. But I mean, it's there all the time now. But our brains have not really changed because it's only maybe the last 50 years that we have had this immense availability of sweet, fat and salt, sugar, salt and fat. But our brains are as old as humanity so our brains are not constructed to live in this food environment. The same goes for physical activity. We are born lazy because we should save our effort to what was necessary. I mean, hundred years ago, people wouldn't do spinning and everything, I mean they were working physically hard, so it didn't make sense at all. And we should save our efforts until we have to fly from an enemy or a lion or something, we shouldn't just run around like that. I mean we are not created for doing that. But the environment today demands, because we have sedentary work, and we eat too much that we actually should do it, but it's not natural. So it's hard job to be healthy. So unless we change the environment. Telling people what to do, it works with a few people, but the rest of us - not. And even those that have a healthy lifestyle, as soon as they get stressed, having illness in the family, being divorced being very busy and so, the healthy lifestyle would be one of the first things that you stop doing, because it's just too much. I mean, you have something on top of mind, so, actually having healthy lifestyle is hard work. So that's why campaigns won't work in itself, but you have to change the environment.

Sandra: So, like you said before, when you get the supermarkets on board and you for example, the meat, you would make some campaigns to raise awareness, so you really don't expect larger behavior change even though you get supermarkets

Susanne: Oh yes, because the availability in the supermarkets, and that maybe meat will be less, and fruits and vegetables, these protein replaces and things, that will make a huge difference. We could see, when we have the six a day campaign, and we changed the space management in supermarkets, it made a whole lot of difference. We could see when we, we also had a school fruit program, where we gave children fruit every day, I mean they eat it if they get it. We had another product with the work place fruit scheme, it was a huge success because, if the fruit is there, people eat it. We changed the food in five canteens, even with blue collar men and were they put in more fruits and used more vegetable in their cooking, the consumption increased enormously. People eat what's there. So that's why we believe in availability or either increasing what we want people to do more of, and decreasing what we

want people to do less of. So of course, that we promote other things than the meat will of course, that shops would be promoting other things than the meat, instead of meat, of course have a huge impact, because that's the availability.

Vaiva: Actually, this is the same as our focus group, one of the participants said, I need to see, being there and looking at the meat, I need to see what else is there, like a solution, if I see the message, I need to connect it and see the other option.

Sandra: it has to be easy. Don't go to another store to get alternative.

Susanne: We can also see it from the whole grain partnership, you know it? Yeah, that, I am sure it's not the little stamp, you know the little man, orange man. Actually, when we made the whole grain partnership which is the big mills, the three big bread factories in Denmark and the retail trade. When we made it back in 2008, they wanted this little logo. We were quite much against it, because we said, oh not another logo and people don't care and so, but this logo. But then we had to say, ok, you will get it because otherwise we wouldn't have it. I am sure, the reason for the huge huge, we have almost doubled the consumption, the intake of wholegrain since 2008, which is unheard of, it's an increase unheard of. It has not been because the consumers are asking for whole grain products, but because they are there, and this wholegrain logo was a huge incentive for the industry to produce very good product with this label, so they have changed their entire product development, they have changed the whole concept of bread since 2008 and it's because of the logo, not because the consumers demanded it, because it's there. And the whole grain bread is really really good. Of course, some do specifically watch for it, it's more a supply thing then it's a demand thing. And when we started we had, let's say 150 products that had wholegrain logo, who could have it, now there are more than 600 out there. Whether you look for it or not, even you are conscious about wholegrain or not, I am sure you will have whole grain products in your shopping baskets, because it's there! All over! I mean you would get it, even though you are aware of it. So, the supply thing is so important in this case. And the good thing, we haven't increased the category because Danes need not eat more on the contrary. We have had this cannibalization that the wholegrain bread has taken over the white bread. And that's a very good thing that the wholegrain rice has taken over the rice, and the whole grain pasta the pasta, that you don't see an increase of the categories, which is really good. Because otherwise we would just add to obesity. So, that is, people eat what's there, and when you ask people, what should make you eat more wholegrain, they say well if there is more in it in what I normally eat because people they don't want to, they are not able to change things all the time because science is changing all the time, and it's a big effort to start eating something new. But this whole grain stuff, this immense increase that we have almost doubled as that, it's because it's so easy. It doesn't demand anything of you. You just take, pick up, because it's the products that have changed - not you. I mean, we just make bread today in Denmark as we used 40 years ago. We have taken for the last, or maybe 100 years, we have been making the bread finer and whiter and more and more processed, so now we are going back to the old thing, there is no fokus pokus. But this is really how it is, that if we can change the environment, we can change people. I don't believe in the other way around, nothing proves that it's like this. And it's the same about smoking, it's all the limitations and possibilities of smoking. Of course also the information, but it's mainly the limitations and the possibility of smoking that has had big effect.

Vaiva: it has to go hand in hand.

Susanne: Yeah.

Vaiva: so it's like a small part of it (showing the poster).

Susanne: Yeah, it's a small, but it's important because you have to raise awareness. But just raising awareness will not be enough to make the behavior change. That's the conclusion.

Sandra: So, how do you evaluate the communication campaign in order to establish whether it was successful or not?

Susanne: Well, they have tools to do that. No idea. We have people to do that. We know how many sees it, who sees it, I really have no idea.

Sandra: so it's a different team who investigate that after?

Susanne: No, it would probably would be the campaign people who also know how to evaluate the campaign there are methods to do that. But we do evaluate. I know that we mainly look at, have people seen it, so whether it has changed attitude or behavior, I don't think we, we can see that in other. Of course we can see over time if people, they change attitude or behavior, but you cannot connect it a specific campaign normally. That's only - have you seen it, have you not, where did you see it all kind of things. They have all kind of tools to measure that.

Sandra: Ok, so how do you handle the internal feedback within the organization? Because they would get some results, and they would come back to you or how do you.

Susanne: That often be in such a circle, that we add when we make the campaigns and we make, and the other initiatives, because I said, campaigns seldomly do just for making campaigns we would connect it to something, it's supporting something else. So we would of course have a look at things and see how, did they see the campaign and you know all this measuring and we would also measure on behavior and so. And then we would of course change our way of doing things if it proves to be good or proves to be bad, according. Yeah we would continue. The results of what we be doing will of course color what we are going to do in the future.

Appendix P: Expert interview: Tenna Tvedebrink, Designer, Aalborg University

Date and duration: April 7th 2016 34 mins

Sandra: So first we would like to ask you if you could tell us something about your professional background and previous experience in designing, and also if you have designed within the health communication field

Tenna: I'm educated in design and I have worked a lot with design, but not aimed at health communication, I haven't done anything like this (point to posters) like campaigns like these, at all, but... in my education as a designer, and my other work with design, we are always asked to present our ideas visually, so... of course, throughout the years you gain this.. I think I have been working with this for 16 years now, I mean, you get some ideas about the messages you can actually put in print with use of pictures and words, and I'm not working professionally with public health campaigns, so..

Sandra: So we would like to ask you, if we go through each poster, and tell us what you think in relation to the design aspects?

Tenna: Should I just say what comes to mind?

Sandra: Yeah

Tenna: The first one, poster number one there, I think it's very strong, it's very simple and in the picture, you have the text and especially I note these 400 grams, that's probably what you want me to notice, the amount I need to eat, but then the reason why I pointed to this one, was because I could get a little bit confused, is this actually the amount I need? This, the picture, is it showing 400 grams of food... Do I have to eat all that, because, then I could imagine that I actually, you know, give up! Pheew! That's a lot of fruits and vegetables I have to eat every day! I don't know if that's the exact amount, I suspect that this is the amount? (point to other poster)

Sandra: Yeah

Tenna: The question is, without you doing like that, because it becomes a little static when you put it into bowls and glasses, so, but could you have the same sense of a lot of fruits and vegetables, but maybe reducing the amount so you naturally get the idea of how much 400 grams are. Because then, it is not so... I could imagine, being a man, I mean, you would give up! It's too much, a woman could maybe overcome eating it, but it doesn't leave room for a lot of other things during the day, does it?

Sandra: Mhm

Tenna: I would be full... (Laughs) And that a natural thing that goes on in your mind when you see this, that I would have to eat all that. So consider if it would be stronger if you reduce the amount of... That was the immediate thought that I had, when I just saw it on my computer. That it was communicating, not in words, but in pictures, that I have to eat REALLY a lot of fruit and vegetables, and I'm not sure if that's what the words are telling me. So there was a, somehow a, what is that called in English, the image is not telling me the same as the words were.

Sandra: So if you have some recommendations for changes in that poster, what would that be?

Tenna: It would be to reduce the amount of fruits and vegetables so that the number of fruits and vegetables I see in this pictures in the background is actually, approximately 400 grams. So intuitively when I look at it, the poster and read that I need to eat 400 grams of fruits or vegetables, or fruits and vegetables everyday, then the amount I see behind that text is actually what I WOULD have to eat, so if it's a banana and a bell pepper and, eh and apple, I mean, basically what I think you're trying to tell here (points to other poster) haha, that I have to eat this everyday. Or this amount everyday to have 400 grams, but not communicating it in that way, or arranged like that, so... It would maybe be... that much (points) then I would not be so

overwhelmed by how much 400 grams are, because it's eh, intuitively telling me, you can easily eat an apple and.. So somehow it would be more EATABLE.. haha, for especially guys.

Sandra: Yeah

Tenna: So that would be my advice

Sandra: Okay

Tenna: Poster number two, I mean, it's very... eh, very dramatic, so somehow it really catches the eye. Again it's very simple and I like this simplicity in all three of them. It's also a very strong one, it's a little... scary is maybe not the right word, but I mean, there is a lot of blood there and it's hanging, and it's violent because of all the blood there, it's splashed up against the wall. And it makes you curious to what the text is saying.. here I read the text first and then I see the picture (points to poster 1) but here I definitely see the picture first and then I become interested in the picture and then I begin reading ok, "every year, this many pigs are killed.." ah okay, so it's something about.. and I start thinking well we don't want to kill pigs, it's too much killing somehow. And then every year so many are having cancer and half of them die, and then, this one triggered me a little bit, because "according to bla bla bla.." RED meat and processed meat are the main cause... SOMEhow, when you write red meat, I don't see a pig. Is it just me, is red meat not normally cows, cattle?

Sandra: It's all mammalian animals, like sheep, pigs, cow...

Tenna: Yeah.. I can not explain why, but... it was really confusing me, because red meat for me was a completely different animal for me than a pig, I can't.. maybe it is just my background...

Vaiva: I think it was the same for me before I read the classification of red meat, the WHO...

Sandra: Yeah, exactly

Tenna: And I think you need to think about that, that this is probably how the ordinary dane would react, because they have the same knowledge... They don't know the classification, so think about that, that you have a strong word here and a picture that is maybe, saying something else to people, even though, technically it's the same, but it's not the same that is going on the mind.. So that was the comment I had about that, and then also, as I thought about it during the day, eh, somehow, I think that the message of the poster, the image is a little... Its saying something else than the text is, because when I see the image, I think of the process of killing the pig, and maybe the story should be, we shouldn't do that, and the pig should have a better life or that this process of how we slaughter pigs is really bad today, you know, I see these, its very much related to this, right (point to the board with inspirational posters) and also, you know with the furs and people throwing blood, and I cannot help wonder, I mean, when you take pigs and bring them to the slaughter house and turn them into meat, its a very clean process. I don't think actually there is that much blood. So the question is, if it's too provoking somehow? I'm not... It's really tricking me somehow... I don't know why.

Vaiva: What about the amount of text?

Tenna: There's a lot of text there, and, eh, but its a little bit like when you have the cigarettes, do you have that, yeah! No you don't have that, but you have another one, but you know when you have the packages with cigarettes that have "this would kill you" and you have these, it's a little bit like that this one. That it has a lot of text and the point of the text is down here, reduce your meat intake and lower your risk, right.. that's really what you want to tell me. The question is, if that pig is also telling me to reduce my meat intake and lower my risk, I think the pig is telling not to ever eat pig (laughs) eeh... because then I'm really committing a crime. Yeah, I think it's actually telling me "you are committing a crime if you are eating me" "Just look at what you are doing to me"... And this is maybe not as bad (points to text) Its not saying I'm criminal or eating anything bad, it's not talking about ethics here. It's more talking about actually lowering the amount, not stop eating it, lowering the amount, so my health will be... you can think about that. Here you are saying "stop don't do it" (points to picture) not even once! And here you are simply saying reduce. I think that is the best comment I can give on that one.

Sandra: So recommendations for changes would be.. some more consistency between visual and text?

Tenna: Yeah... yeah, and consider if you are, I mean, with the cigarettes it is "Stop, don't ever do it, ever, it kills you!" Right, so they can be so dramatic, but here where the aim or the goal is to reduce but not you know, ban them from meat, you could consider if it is the right picture or if it should be something else. But it is very, I mean, you catch the attention, you definitely do, because you see that one (points to poster 1) before you see that one (point to poster 1). You are much more curious to that one than this one, right, so that's another impact. Textwise, there is a lot of text, but this one also makes you feel real guilty, right, that we kill... we commit murder (laughs)... yeah... And this one, "Still craving meat" I have to be a guy now, so of course it is a very nice picture, and "still craving meat" of course you have enough here to give you the sense of what you mean, but it's "unmanly" I didn't get that. Maybe it's just me?

Sandra: We started with having this image of him (points to poster with Ulrich Thomsen) and it was tested on our focus group and what we learned from them was that it would have a better effect if it was a female advocating this message, about reducing meat and in order for them to... would want to reduce it, it would have to be said that it is not manly to eat too much meat, and we got those results from both our focus group and initial research survey. so that's why we took the turn from having a masculine looking guy to.. having this change.

Tenna: Again, I'm a girl, not a man, so it is just my immediate thoughts, you will have to bear with me! Just, I was thinking that if I was my husband and he saw this picture, and he would like that picture, that's what you want them to, you want them to like it, and then you write that he is not a man if he likes the picture? That is what was going on in my head. Can you follow that? That when I read this... It says basically, you are not a real guy, right?

Sandra: -if you are still craving a lot of meat...

Tenna: So if you like this picture you're not a real guy!

Sandra: But it's more...

Tenna: I know it's related to the meat, its kind of... can you follow me...?

Vaiva: Interesting... we never thought of that... I guess we have trouble to find the right person and also the right quote

Tenna: I think the person is right, I just think it's the text that is wrong, because I don't think you wanna be... This is right and this is right (points to headline and picture) it's just this part here (point to "it's unmanly") I think it's doing the wrong thing for me here. That, I mean, when I like her, I'm not the right one. So what is the right one? And I don't think you want to have that discussion, because what you want to tell is that... so what would happen if you simply just took this one out? (Point to "its unmanly text").

Vaiva: And still keep her name? Or not keep the name at all?

Tenna: What do you want to say with her name? Is it something she is saying?

Sandra: Yeah

Tenna: She is saying that it is unmanly to eat meat? (Long pause). I think it was strong when it was Ulrich Thomsen who said this is my story, I don't eat meat and you have the reason why he don't eat meat. I think if it has to be her story, in the same way where she thinks its unmanly, then maybe we need a little bit more.. is she also saying this? (Points to fact in bottom of poster)

Sandra: No

Tenna: So her reason for saying it's unmanly to eat meat, do we know that?

Sandra and Vaiva: Not in the poster

Tenna: No because, that's kind of... you know, eh, that is what does the trick here, that eh... he has a... his opinion, he chooses not to eat meat because he doesn't think it's right what they do with the animals, right. And if we imagine we left that out and also the part about the globe, so he just said that he no longer eat fish, eggs, meat or dairy products. If you just kept that right. "I no longer eat fish, eggs, meat or dairy products" - Ulrich Thomsen. It's kind of a little bit like she is saying, it's unmanly to eat meat, but its just a statement, and you don't see... ah ok, but she

is crazy! Imagine the guy living in western Jutland working on cars, he would say, ok yeah but look at him! I don't care! So he can think that, I don't care! Here you provide the clues, why is he thinking that, and then we understand, right, we get empathy and sympathy with him so he is not crazy anymore because, oh yeah, he's right actually. So maybe either we need a little bit more, so we understand why she thinks its unmanly or maybe you should really consider if its the right word? Because, I... there's something about, and I guess you also had that intention, the whole sex and the female as a sexobject and wheter that is actually... eh, ethically right to treat women as sexobjects, I think there has just been a story about that in the news here in Denmark some weeks ago about this... Yeah, it was the story with the new year's eve, and how males had actually treated women really badly during new year's eve, or was it in Hamburg or Berlin, and how a lot of women began telling stories to the news and the press how males actually just thought of women in general as something could just be treated like that, and that campaign or poster is dropping right into this discussion. A statement like that, that it is unmanly, to treat women like that is something you could say in this discussion. That males also says, it's unmanly ot treat women like sexobjects. But, ehm.... then we would maybe need a cue more, or clue to give us that... idea, this is also the intention of this story.

Sandra and Vaiva: Mhm

Tenna: So we understand that, hey it's not alright to think of her as a sexobject, you need to think of her in a different way, the question is if you want to give that message.

Vaiva: It's something different from our message

Tenna: Yeah... mmmh, because if you remove this one and it's just about still craving meat, and choosing vegetables over meat, and can reduce your risk of... eh cancer, if you have that instead in big here, its a little bit like this... you know, or yeah this one over here is doing the same, right.... then its more straightforward. There you are not questioning whether they are this sort of guy or this sort of guy... I don't know how your focus group have reacted or will react... (laughs)

Sandra: It was actually what they were requesting, that it was a female indicating that it was unmanly, specifically, and they would listen, depending on how she would be looking

Vaiva: - attractive

Sandra: Yeah, the attractiveness

Tenna: and being naked, more or less...

Sandra: Yeah, that would be something they would look at...and then read

Tenna: Yeah, there's a big bias in me being a girl... (all laughs)

Sandra: Yeah, the same for us... I mean, up until here, we also stayed away from these types of approaches (points to posters with half naked women from PETA on the board with inspirational posters) until we learned that maybe that is actually what this target group wants

Tenna: Yeah because, I mean, first of all... I'm a female, and second of all, I'm also an academic and then I'm a designer, and I'm also into words and what they mean, and so... But maybe the ordinary one looking at it doesn't think about it in that way exactly... I'm also thinking what they're doing here... she chopped up as a... (points to posters with half naked/naked women from PETA on the board with inspirational posters) animal there... but that is also too... eat vegetables, right?

Sandra: Yeah "eat your veggies"

Tenna: I don't get that one either, I must say... I don't understand.

Vaiva: They keep doing it...

Sandra: There's so many of them out there...

Tenna: And the same, I don't get it.. "Go vegetarian"...hm...(long pause, looks at posters)

Sandra: So if we look at the design aspects, is there any recommendations or anything you want to add?

Tenna: I would say, keep the very simple layout you have, that's really strong and you are really good at also emphasizing the right words and some very intriguing pictures you have, the

challenge is to have the pictures to say the same as the text. So that it is kind of a coherent message we get, and, and there's a little bit incoherence in all three of them, for me... the first one, there's incoherence what 400 grams visually is, how much that is. The incoherence in poster number two was, was the crime, the murder of the pig, versus the message that you want me to reduce my meat intake, not stop it completely. And the last one, there's incoherence in... actually liking the picture, or also as a female I think it's a very beautiful picture, but somehow the message "its unmanly" is a little negative, it kind of points a finger at me saying "you're ... there's something wrong with me, change!" You CANNOT like this, but.. and that's where it becomes confusing for me or... yeah, it gets confusing because, whoa! Am I not supposed to like her? So that's the incoherence I have, the first one, I have the answer for, it's pretty straightforward, reduce the amount of vegetables, right. Poster number two and three is a little bit more tricky, because it can either be a change in text, so it fits the image, or it can be a change of image. I think in poster number two, maybe you should consider changing the image. I don't know if that's possible in your process right now, but that could be what you need to do there, so we don't get the kill / crime scene, but saying something about amount instead...

Sandra: Yeah

Tenna: I know that's what you are doing down there... (points to previous poster with processed meats)

Sandra: yeah, but some actually found it attractive... and

Tenna: "ahh, it looks nice"! So it's something in between...

Sandra: Yeah

Tenna: Yeah... yeah, I'm not sure he's right (Paul McCartney quote on pig poster from earlier draft) maybe in the old days, but today a slaughterhouse is very, I mean, of course there's blood in a slaughterhouse, but I think it's a very controlled process. Because they can not afford to have blood everywhere, imagine what a process that would be to clean it and bacteria and hygiene, so as far as I remember from visiting a slaughterhouse, you actually shooting the pig in the forehead and then making sure that the blood is going off the body right away into a very specific place so you collect it, so it's not... so it's actually very clean when they continue, throughout the... and it's always, I mean, people are walking around with water hoses to clean all the time, so... yeah. So it's also a little bit... the question is if it would actually, you know a guy from part of the country where they are used to working with animals, you know a farmer or something, they would be assaulted by it, they would feel attacked! And this one, (points to poster three) I would think it would be the text you need to worry about (laughs)

Vaiva: So if you would have to eliminate one, what would that be? Any one specific?

Tenna: I would eliminate the last one, number three... I think... hmmm, hmmm... yeah, yeah, yeah, I stick with eliminating number three, it's because you have seen a lot with females, there's a lot with naked women. And then again, I'm a girl (laughs). These two are more... more, done from a design point of view, more clear, but then again this is also some you have seen a lot of times (points to poster 1) but it's something you can put up in a supermarket and somewhere where kids are out, I think that one, with a kid would be a little... (point to poster 2, pig poster) arrrh... but if you went to a workplace or a place with a lot of young guys, I mean, they wouldn't look at that one (poster 1) they would look at these two (poster 2 and 3). Do you have a context where you want to..?

Vaiva: Well it's just a target group we have, so it's young men from 18 to 30 and with an educational background, so...

Tenna: So it should basically be something that you can use on busses and train stations, because then the argument would be, that these two are very close and the approach is kinda the same, concept of how you address people, and these two are more different, so if you chose to do a campaign, where you have those two posters you have the ability to actually say, okay, now we are in a context where we need to be a little bit more soft and not be so straightforward, so we choose this one (poster 1) and here we can be more provoking, then we

take this one (poster 2) if you only have these two (poster 2 and 3) you limit yourself in the possibilities of where you can actually put up the posters, so that would be the argument for choosing one over the other... and if you put these two, I mean of course, this one could be made, its softer than this one, but, then its also becoming, I mean, then you are not having enough power in the total campaign if it was just poster 1 and 3. So there's an interesting aspect in actually provoking people with number 2. So I don't have the answer, do that and do that, I don't have that, I hope that it is okay...! (all laughs).

Sandra: And lastly, would you know of any other theories in relation to masculinity, besides from what we already said about the colours, but maybe more in relation to the fonts, placements or other design aspects to consider when having this target group?

Tenna: I think...in general, eh, there's also this with guys being a little bit more into fun, and gimmicks... you know, there's this with the guys who like to play with toys and... boys and toys! They are also more into video games and sports and cartoons, and the fonts and letters used in both sports and cartoons and videogames are often a little bit more you know... thats probably also why they have that (points to board with inspirational posters) right, its more cartoon like, where women are more like aesthetics, they are more, eh, visually there... so you could consider if there needs to be a different font, if it could be more playful, I would point to that one over there

Sandra: The first one?

Tenna: Yeah, because somehow playful font were with these two, then you need to do something! I think Wulff Morgenthaler.. but I think also that men are more humorous. You could also play more on humor also... because women are more... (whispers)... (laughs) so sometimes you can actually also trigger men with this humor and... yeah... it could maybe also be something, so instead of having the drama kill perspective you actually on purpose... try thinking Wulff Morgenthaler! Maybe that's not a bad idea, my husband loves Wulff Morgenthaler, especially the ones he is drawing, do you know him?

Sandra: Yeah!

Tenna: -and I hate him! because he has these, you know, with blood and splatter all over, and my husband is like "this one is really cool"! And I'm like, no that's disgusting!

Sandra: Yeah, I know it, but I don't read it.. (laughs)

Tenna: No! (laughs) but maybe you should try and look at it! and see what he is doing, because, I mean, my husband is also really fond of these Kill Bill movies, and you know the sequence with blood everywhere, I don't want all that blood, I just want the story! right, but he is into the BLOOD! So that's what he is into, and MAYBE you could use that for something? This Quentin tarantino universe, think Wulff Morgenthaler and Quentin Tarantino! And Quentin Tarantino is really about the fonts when we are talking about cartoons

Sandra: yeah, he always uses this 70's universe

Tenna: Yes! Yes! and he is not afraid to you know mix reality with cartoons, so he has images drawn together with real people... I would go there! With that one, that could be the clue actually! To actually use this image and still have this kind of text, but make it Quentin Tarantino

Sandra: - go all the way, Tarantino style

Appendix Q: Expert opinion: Marissa Price, PETA

Date: April 6th 2016

- What is your professional background and previous experience in the health communication field? I focus on specifically vegan health, and my main experience is doing outreach on this with people – letting them know how much protein you can get from plant-based sources, how animal products cause all of the top killing diseases: cancer, diabetes, heart disease, obesity, high cholesterol and high blood pressure. I also work with college dining halls to get them to increase their vegan options and often, decrease their use of unhealthy and fattening animal products.
- What is your motivation for working in this field? In a broad sense, I hope to better the world. The most all-encompassing and easy way I see to do that is to have more and more people adopt a vegan diet and lifestyle. It is ethical for animals, good for the environment and crucial for human health.
- What is your concept of health? Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Questions about our posters:

- What is your opinion about this poster?
Poster 1: the fruits and vegetables in this ad are beautiful and eye catching. I don't think "400 grams" is very helpful to the average person, though, who won't know how much that is. I think "servings" would be easier to understand. Also, I don't think the average person knows what colorectal cancer is (unless the US is alone in that) I would say colon cancer instead, or just "cancer".
Poster 2: this poster is super graphic and therefore will stick in people's minds, as well as elicit a strong emotional response.
Poster 3: This poster is great! It's eye-catching, provocative and sexy. Also, the wording of "still eating meat?" normalizes NOT eating meat and making it weird or behind if you're still eating it.
- What do you think is the message implied in this poster?
- Could you reflect on the design aspects of this poster? Recommendations for changes?

Questions about designing, planning and implementing communication campaign from you professional experience?

- Do you use specific models or theories when developing your health communication and could you elaborate on the process and specific steps?
- What sources are used in your health communication campaigns?
- How do you develop messages for the campaigns? How do you frame it?
- How do you segment your target group?
- What channels are used for these kind of campaigns?
- What is the expected outcome of the campaign? How is this determined?

^ these don't really apply to my work because I don't do health communication. PETA is an animal rights organization, and while we sometimes talk to people about how much healthier it is to be vegan, we focus more on the ethics of animal rights.

Appendix R: Expert opinion: Rikke Neess, Danish Whole Grain Partnership

Date: April 14th 2016

What is your professional background and previous experience in the health communication field? Education: Cand. Merc. From CBS in Design & Communication Management. I have experience from earlier positions as Nordic Sales Manager for the brand Origins at Estée Lauder Cosmetics and as Category Manager at Coop Danmark A/S. I have no previous experience with health communication.

What is your motivation for working in this field? I always wanted to work for a “better cause” and the position as campaign manager was a good option to do so. I think it is very giving to go to work every day with the purpose to have the Danes eat more whole grains to increase public health.

What is your concept of health? I think healthy living should be an easy choice. Not a difficult choice. Also a tasty choice when it comes to healthy food. The taste is very important. Regarding the Whole Grain Partnership, we are focusing on making whole grain products available everywhere you go. In canteens, at the grocery store, in the supermarket, at the craft bakery, at the gas station, in schools and so on. Availability is very important.

Questions about our posters: Poster 1

What is your opinion about this poster? I like the grey colors, graphics and the graphic composition of the poster. Using a famous person can attract attention and identification. I don't think the poster will have the desired effect. Because it is very provocative to say, a man is not “manly”. I think many men will find the message not appealing. I am not a big fan of presenting your message in a provocative way like this. I don't like when you separate people in “the right group” and “the wrong group” – it is stigmatizing and I don't think it is motivating.

What do you think is the message implied in this poster? You are manly if you eat vegetables. You reduce risk of colorectal cancer.

Could you reflect on the design aspects of this poster? Recommendations for changes? See above.

Poster 2 with vegetables

What is your opinion about this poster?

It is very informative and very standard health communication. The pictures gives flash backs to the 6 a day fruit and vegetables campaign. I like that it gives you a concrete recommendation - 400 grams. I think the poster will have a positive effect on people concerned about health and illnesses. However, I am not convinced that it will have an effect on people not eating healthy.

What do you think is the message implied in this poster?

Eat vegetables to reduce risk of colorectal cancer. To show examples of fruits and vegetables.

Could you reflect on the design aspects of this poster? Recommendations for changes? It is very colorful and attracts attention.

Poster 3

What is your opinion about this poster?

I think it is very dramatic. In this context, I am not fond of the “scaring-approach” – I think this approach can work in other areas. I think it is “too much”. It might work positively for vegetarians who can relate to the message. Confirming their choice. But I am not sure it will work on men who eat meat every day.

What do you think is the message implied in this poster?

The cold consequences of eating meat – for pigs and human beings. Reduce your meat intake.

Could you reflect on the design aspects of this poster? Recommendations for changes? I don't like it.

Do you use specific models or theories when developing your health communication and could you elaborate on the process and specific steps?

I use my experience and brand management / communication theories/skills when I approach a new campaign. First, I look at the budget for the campaign. Then the target group – who do we want to approach and how? – what works for this target group? – how do they collect information?, on which platforms are they? and so on. We set concrete objectives for the campaign. Then the message – what is it, that we want the target group to do? And how? Then we look at a theme /graphic ideas. Formulation of the headline and the text. Sometimes we work with advertising agencies – and sometimes we don't - depends on the budgets and our insights in the target groups. We always develop a campaign toolbox for the whole grain partners with all the campaign materials. Posters, text, inspiration, recipes, ideas to promote the campaign and so on. Also the partners receive a social media guide with inspiration and pictures to promote the campaign on social medias. Sometimes we buy ads – maybe posters in a fitness center, or postcards at cafés, bars, cinemas, music bars and so on. Or ads in a newspaper or magazine. Depending on the message, we also collaborate with organizations outside the partnership. Helping us to distribute the messages.

What sources are used in your health communication campaigns? I don't understand the question.

How do you develop messages for the campaigns? How do you frame it?

We have a defined communication strategy with the important messages we want to communicate. To puncture whole grain myth is one of them. It is a process within the team to develop the specific message for a campaign that suits the target group.

An example in November 2015 we had a campaign for young people – and we used slang words and had two rappers to do a rap video about whole grains. It got 170.000 views on facebook. 63% of the viewers was young men and the rest mainly young women. Sometimes we use a textwriter from an advertising agency.

How do you segment your target group? Our target group is The Danish Population and especially the 25% of the population who eat the very least whole grains.

What channels are used for these kind of campaigns? See above

What is the expected outcome of the campaign? How is this determined?

We expect our communication campaigns to increase awareness to the whole grain logo and whole grains to have people eat more whole grains. We can measure our performance on different indicators. Awareness to the logo, the sale of whole grain stamped products, the intake (but The Danish Food Institute only measure this every 4.-5. Year). It can also be a viral target of x views of a video. It is very important to document the effect of the efforts.

Appendix S: Expert opinion: Line Damsgaard, Danish Agricultural and Food Council

Date: April 27th, 2016

- What is your professional background and previous experience in the health communication field?

I am chief of nutrition in Danish Agriculture & Food Council (DAFC). I have been working at DAFC for the last 10 years. Mostly I have been working with projects targeting children and campaigns about fruit and vegetables. I have a bachelor degree in nutrition and an Master in public health.

- What is your motivation for working in this field?

They are many. But mostly I think it is motivating to work with a field, that is so important to so many – we all have to eat and how we eat can (or will) affect how you feel. It is a complex area where things are not constant. We keep getting new knowledge, revising what we thought we knew.

- What is your concept of health?

Health is for me multicomponent. There are many factors that affect health. Health is absence of disease. But it is also for me well-being and quality of life.

Questions about our posters:

- What is your opinion about this poster?

First of all, it is important that the facts written on the posters are scientifically valid and allowed according to the guidelines regarding health and nutrition claims. Said in other words, my suggestion would be to check the facts very thoroughly and make sure that you are true to the source that you are using and getting your information from.

According to WHO there is limited evidence from epidemiological studies showing positive associations between eating red meat and developing colorectal cancer, which means that a positive association has been observed between exposure to the agent (= red meat) and cancer, but that other explanations for these observations, such as chance, bias or confounding, could not be ruled out (see <http://www.who.int/features/qa/cancer-red-meat/en/>). Therefore, my suggestion is to be careful with statements such as “According to WHO, red meat and processed meat are the main cause” to developing colorectal cancer and death caused by the disease.

Regarding poster number 2, you write “Reduce your meat intake and lower your risk” and recommend a reduction in meat intake in general, which is not recommended and not a valid statement according to any scientific validated study of my knowledge. You have to keep in mind and check very carefully, what is established within the research area of meat, meat consumption and the risk of cancer and what has not yet been established and thereby has no or limited evidence of a positive association between exposure to the agent (in your case meat) and cancer.

When all this about evidence is said I also have to say, that I am confused about why you at all are talking about meat, when your purpose with the posters is to get young men to eat more fruit and vegetables (more on this later).

- What do you think is the message implied in this poster?

The main message (as I have understood in your mail) is to promote a higher intake of fruit and vegetables. In your mail you say that the main target is young men. In the posters you mix your message about higher intake of fruit and vegetables with a reduction in the intake of red and processed meat. If the message of your communication is to encourage young men to eat more fruit and vegetables, then I would recommend that the focus should lie within this framework instead of criticizing the one thing the target group know and love = meat. As the posters is now, the message is delivered in a way that is kind of scolding the meat eaters and lovers (particularly men) by stating that “it’s unmanly.”.

I recommend you to make it fun, cool and manly to eat fruit and vegetables instead of making it uncool and unmanly to eat meat.

A little more about your target group: It is unclear just by looking at the posters, especially poster number 1 with the pictures of the vegetables. If I was not told beforehand, I would assume that the target group here was meant to be women. Mostly because of the neatly looking pictures of fresh and shiny vegetables, but also because of the informative text written in the middle of the poster, which men, in general, would pay no attention to, but it might have some sort of impact on some women.

I hope you get the idea and find the change of mindset relevant for you.

- Could you reflect on the design aspects of this poster? Recommendations for changes?

The “intimidation strategy” is not suitable, when the objective is to target men and their eating habits. A suggestion, and a strategy, which have proven suitable in targeting the male population, is the strategy of using humor as a way of approaching this target group, especially when it comes to topics, such as health, nutrition and fruit and vegetable intake. This target group has a way of believing that they are invincible and indestructible, which is why they in general pay no attention to threatening words, as the risk of disease and evidently death caused by unhealthy eating habits. Another suggestion is to reach the male target group through their children and approach their role as the “protector” and “role model” of the family. They might not care about their own health in the moment, but their children’s health and wellbeing is essential to them as a father.

Questions about designing, planning and implementing communication campaign from you professional experience?

- Do you use specific models or theories when developing your health communication and could you elaborate on the process and specific steps?

We do not use specific models or theories when developing health communication and campaigns, as the approach, target group and message of the communication differs from project to project and therefore also the process. There is no “one size fits all”.

- What sources are used in your health communication campaigns?

We always base our communication on official recommendations and surveys from reliable sources. In collaboration with research institutions we also sometimes make our own surveys and publications. But it differs from project to project. As an example a frequently used source could be the Danish National Survey of Dietary Habits and Physical Activity (DANSDA), in which the dietary habits of the Danish population are investigated and reported. The knowledge from a large survey like DANSDA can then form the basis for initiatives with the purpose of promoting healthy dietary habits and preventing diet related diseases.

- How do you develop messages for the campaigns? How do you frame it?

The messages within the campaigns are developed on the basis of the given target group. How the message is delivered and framed illustratively is very much guided by the target group in question.

- How do you segment your target group?

Again, on the basis of the national surveys, which are conducted consistently to keep track of the population's dietary habits and general health. These national surveys usually distribute the results based on gender and age.

- What channels are used for these kind of campaigns?

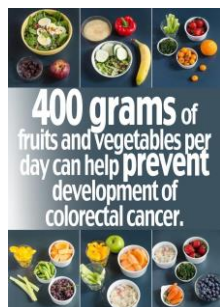
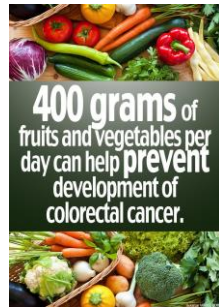
The social media channels, such as Facebook are frequently used to spread out the word of a new campaign and depending on the target group other media, such as the internet (web pages), posters, flyers and the like are also used.

- What is the expected outcome of the campaign? How is this determined?

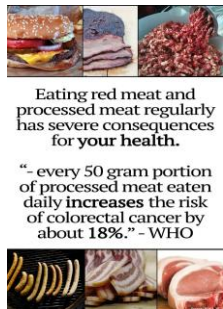
That depends on the results reported in the large scale surveys such as DANSDA and the concerns and needs expressed by our members from the agriculture and food sector.

Appendix T: Process overview of all poster designs

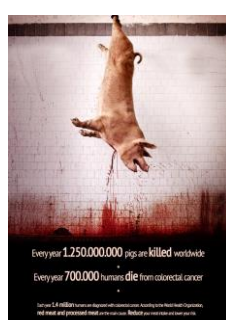
Poster 1



Poster 2



Poster 3



Poster 4



Poster 5



Poster 6

