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STORY BRIDGING *A narrative approach to health promotion for Dutch truck drivers*

ANNIEK BOEIJINGA

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**ANNIEK BOEIJINGA**

**Colophon**

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A narrative approach to health promotion for Dutch truck drivers

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health promotion  
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# STORY *BRIDGING*

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*A narrative approach to  
health promotion  
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Doctoral thesis

to obtain the degree of doctor  
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# General introduction



## 1.1 Introduction

Reducing socioeconomic health disparities is a major objective of the Dutch Ministry of Health, Welfare and Sport (VWS). In the Netherlands, groups with lower socioeconomic status<sup>1</sup> (SES) generally live 6 to 7 years shorter and in poorer health conditions than high SES groups (CBS, 2012; 2016). Low SES is associated with unhealthy lifestyle behaviors (Pampel, Krueger, & Denney, 2010; Denney, Krueger & Pampel, 2014; RIVM, 2008), poor health outcomes (Adler et al., 1994; Chen & Miller, 2013; RIVM, 2008), and low health literacy (Nutbeam, 2008; Twickler et al., 2009), health literacy being “the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health” (World Health Organization, 1998, p. 10).

The traditional approach to health promotion comprises of persuasive brochures that provide arguments intended to motivate people toward healthier lifestyle behaviors by, for example, pointing out the desirable outcomes of the advocated behavior, or the risks of the current, undesired behavior. The argumentative nature of these brochures requires considerable cognitive skills to process their content adequately (Schellens & De Jong, 2004). Also, this approach is based on the assumption that a change in motivation, or intention, will lead to a subsequent change in behavior. However, research on the relation between intention and health behaviors has found that people are only 53% of the time successful in acting upon their health intentions (Sheeran, 2002). In other words, there is a ‘gap’ between intention and actual behavior (Sheeran, 2002; Webb & Sheeran, 2006).

Recently, narrative formats are emerging as promising alternatives for health promotion. Research has shown that narratives can serve as effective health interventions, yielding more positive beliefs, attitudes, and intentions towards healthy behaviors as well as leading to actual healthier behavior (see for reviews, De Graaf, Sanders, & Hoeken, 2016; Shen, Sheer, & Li, 2015). As narrative is a universal form of communication, humans are ‘hardwired’ to produce and process the information presented in narratives (Mar, 2004), even prior to education or training (Berman, 1988; Paris & Paris, 2003). This makes narratives relatively accessible for a large audience, including target audiences with lower SES and health literacy skills (Kreuter et al., 2007). Furthermore, narratives hold promise for overcoming the intention-behavior gap. Narrative characters can function as role models and show how to convert intentions into actual actions (Green 2006; Slater, 2002).

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<sup>1</sup> Several ways of defining/measuring SES have been proposed, but most include education, income, occupation, or a composite of these dimensions.

This thesis introduces the concept 'storybridging' and examines the promise of narrative interventions for bridging the intention-behavior gap as well as health inequities between high and low SES groups. In doing so, it focuses on a specific low SES group: Dutch truck drivers. In what follows, a narrative approach to health promotion is specified and then applied to the case of this target group.

## 1.2 Bridging the intention-behavior gap

Models that describe health behavior change can be distinguished in continuum models and stage models. Continuum models like the *Health Belief Model* (Rosenstock, 1974), the Theory of Reasoned Action (Ajzen & Fishbein, 1980), and the *Theory of Planned Behavior* (Ajzen, 1991) describe change as a linear, continuous process; they use the sum of variables (e.g., social norms, attitude, personal vulnerability, perceived self efficacy) to predict how likely people will engage in a particular behavior. Their single prediction equation implies that behavioral changes occur in a linear fashion and is based on the assumption that one's behavior is the outcome of a conscious intention. Thus, continuum models do not account for the intention-behavior gap and hold "that a 'one-size-fits-all' intervention approach is suitable for all individuals engaging in unhealthy behaviors" (Schwarzer, 2008, p. 3).

Stage models such as the *Trans Theoretical Model of Behavior Change* (TTM; Prochaska & DiClemente, 1983; Prochaska et al., 2008), on the other hand, distinguish different stages of behavior change and suppose that each of these stages require different interventions. While its notion of stages (i.e., precontemplation, contemplation, preparation, action, maintenance, termination) is regarded meaningful and of pragmatic value (Lippke, Nigg, & Maddock, 2007; Noar, Benac, & Harris, 2007; Wright, Velicer, & Prochaska, 2009), the TTM has been criticized for both its arbitrary stage boundaries (Littell & Girvin, 2002; Sutton, 2000; 2005) and its lower applicability for complex health behaviors, such as physical activity (Adams & White, 2005; Brug et al., 2005).

To overcome these limitations, Schwarzer (2008) has suggested a new model: the *Health Action Process Approach* (HAPA), which distinguishes between (a) a pre-intentional, motivational phase that determines behavioral intention, and (b) a post-intentional, volitional phase that determines actual health behavior. Individuals in the motivational phase are labeled *non-intenders* (individuals who are not yet motivated to adapt their behavior). Individuals in the volitional phase can be subdivided into *intenders* (individuals who are already motivated to perform the desired behavior, but have not yet done so) and *actors* (individuals who are acting in line with the desired behavior). As stated by the HAPA, non-intenders

and intenders both are not performing the desired behavior, but for different reasons, requiring different intervention approaches.

The HAPA thus acknowledges the intention-behavior gap and regards two types of planning as essential for bridging this gap: *action planning* and *coping planning*. Action planning includes the formation of an ‘if-then’ plan, specifying the when, where, and how of the intended behavior. This type of planning has been proven effective in translating intentions into actual action (Gollwitzer & Sheeran, 2006). Coping planning builds on action planning and involves the anticipation of potential barriers as well as the generation of successful strategies for coping with these barriers. This type of planning refers to the imagining of scenarios on what factors would hinder the performance of the intended behavior. It has been found to further enhance health behavior change (Luszczynska, Tryburcy & Schwarzer, 2007).

From a review of seven studies, empirical evidence for the HAPA has been provided (Schwarzer, 2008). Particularly, it was shown that interventions focusing on the volitional phase –thus encouraging both action and coping planning– can be effective in bridging the intention-behavior gap. The HAPA is specifically promising for interventions focusing on healthy eating and/or exercising behaviors (e.g., Lippke, Ziegelmann, & Schwarzer, 2005; Renner & Schwarzer, 2005), as many people are already aware of the risks associated with overeating or under-exercising, and thus are motivated to adapt their behavior. Rather than a conventional focus on the motivational phase (communicating the already known), a focus on the volitional phase (providing information on how to translate intentions into actions) may offer an effective strategy.

### 1.3 A narrative approach

Narrative interventions –that is, presenting one or several personal stories by which desired health behavior is encouraged and/or undesired health behavior is discouraged– have been proven effective in health contexts and are suitable for both the motivational and volitional phase. According to the HAPA, non-intenders would “benefit from confrontation with outcome expectancies and some level of risk communication” (Schwarzer, 2008, p. 13). Outcome expectancies refer to the audience’s perceptions of the expected behavioral consequences. Observing a narrative character’s behavior being rewarded can positively motivate and reinforce that behavior (Bandura, 2004; Moyer-Gusé, 2008). In addition, narratives can portray the negative consequences of risky behaviors (Moyer-Gusé, 2008) and, consequently, increase the audience’s risk perceptions (So & Nabi, 2013; Prati, Pietrantonio, & Zani, 2012; Dillard et al., 2010; De Wit, Das, & Vet, 2008).

Intenders, in contrast, are already motivated to adapt their behavior but fail to convert their intention into action possibly because of difficulties in getting started or perceived obstacles along the way (Schwarzer, 2008). They would thus benefit from a focus on action and coping planning. A narrative is “a perceived sequence of non-randomly connected events, typically involving, as the experiencing antagonist, humans or quasi-humans, or other sentient beings, from whose experience we humans can ‘learn’” (Toolan, 2001, p. 8). Narratives are specifically suitable for supporting the audience’s planning strategies as they typically depict a ‘hero’s journey’ (Campbell, 2008); the journey of a narrative character who has to overcome obstacles in pursuit of a goal. In other words, narrative characters are optimally suited to depict how to put an intention into practice, what obstacles to expect, and how to successfully navigate them. Seeing similar others successfully perform the behavior may not only enhance the audience’s action and coping planning, but also their perceived self-efficacy (Falzon et al., 2015; Kreuter et al., 2007).

A special advantage of a narrative over more traditional approaches to health promotion is that it is a relatively subtle form of persuasion. More overt persuasive attempts, such as argumentative brochures, can evoke resistance and fail or even backfire, which occurs when the audience perceives the message as a freedom threat and engages in counterarguing the message claims (Kim, Levine, & Allen, 2014; Slater & Rouner, 2002). Narratives can help overcoming resistance; while being transported in the storyline, the audience focuses on the narrative events rather than generating counterarguments (Dal Cin, Zanna, & Fong, 2002; Moyer-Gusé, 2008). In addition, narratives can provide parasocial relationships (Horton & Wohl, 1956), which refer to a sense of friendship and involvement with a narrative character. Like real life relationships, parasocial relationships can offer social support and have benefits to both mental and physical health (Kreuter et al., 2007).

The universality of narrative makes this format accessible to a broad audience, specifically for low SES groups. Also, its representation of temporal sequences and characters offers the opportunity to convey the morals and values that underlie human behavior, which makes this format particularly useful for health interventions that relate goals, actions, and consequences. Researchers have proposed that narrative contains “a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed” (Kreuter et al., 2007). However, this definition offers little guidance when constructing narrative interventions. The result is a wide diversity of health narratives (e.g., in length, content and form) with varying success (De Graaf et al., 2016). This raises critical questions on what makes a ‘good’ health narrative. For narrative health interventions to be effective, they may need to be perceived as authentic by, and tailored to the characteristics of the audience.



## 1.4 Case: Truck drivers

This thesis focuses on one specific low SES, high-risk group: Dutch truck drivers.

“What it is like to be a truck driver? Working at impossible hours, unsightly hours, stressful, making hardly any money, just bad for your health, just a bad job.”  
(Boeijinga, Hoeken, & Sanders, 2016)

As illustrated by the excerpt above, the trucking occupation presents many challenges and places truck drivers at a high risk for health problems (Apostolopoulos et al., 2013; Van der Beek, 2012). The Netherlands counts approximately 90,000 professional truck drivers, the majority of whom is overweight (44%) or (severely) obese (22%, compared to 14% of the overall workforce), leading to relatively high rates of absenteeism (4.2%) (STL, 2016). In general, Dutch truck drivers are living an unhealthy lifestyle: only 19% meets the standards for physical activity, and only a small minority gets its daily recommended intake of fruits (15%) and/or vegetables (8%) (STL, 2016). Despite various health promotion efforts, these figures have remained unfavorable and unchanged.

The workplace offers an important arena for health promotion; it is established as one of the priority settings for health promotion in the 21<sup>st</sup> century as the workplace “directly influences the physical, mental, economic and social well-being of workers and in turn the health of their families, communities and society” (World Health Organization, 2010, p. 1). Given the detrimental nature of the trucking occupation (i.e., irregular, non-standard working hours and prolonged periods of sitting), it is crucial to take the work environment into account. Also, the challenging obstacles inherent to the job (i.e., limited opportunities for physical activity and limited access to healthy food choices) indicate that a focus on action and coping planning might be particularly promising for health promotion targeting truck drivers.

In sum, health promotion efforts generally focus on the motivational phase, trying to persuade their target audience by means of argumentative brochures. This traditional approach requires considerable cognitive skills, which audiences with lower SES and health literacy may have insufficiently mastered, and does not account for the intention-behavior gap; that is, intentions can be thwarted by obstacles, such as the barriers present in the work environment. Bridging this gap involves action and coping planning and thus a focus on the volitional phase. The power of narrative lies in its capacity to facilitate information processing and its ability to influence risk perceptions (motivational phase) as well as provide input for planning strategies (volitional phase). By its nature, narrative holds promise for bridging health inequities between high and low SES groups and, specifically, for developing more effective workplace health interventions targeting Dutch truck drivers.

## 1.5 Overview of this thesis

To examine the promise of narrative as ‘bridge builder’ and its potential as an alternative, effective approach to health promotion for Dutch truck drivers, five research questions are defined and addressed in the following chapters:

Chapter 2 examines Dutch truck drivers’ perceptions and needs regarding healthy lifestyle behaviors: How do they think and talk about health and lifestyle themes? Do they already have the knowledge and motivation to behave healthier? What obstacles do they experience with respect to healthy lifestyle changes? What strategies have they developed to overcome these obstacles, and how do they cope with setbacks? This chapter reports on a qualitative study consisting of 20 in-depth interviews with Dutch truck drivers. The trucker drivers’ personal stories are also used to identify authentic characters and realistic storylines for the narrative intervention to be developed.

Chapter 3 addresses the question whether current health interventions targeting Dutch truck drivers are sufficiently tailored to the perceptions and needs (Chapter 2) as well as the health literacy skills of this particular target group. In this chapter a corpus study is presented in which 21 health promotion materials are analyzed to provide more insight in their lack of success in influencing the truck drivers’ health behavior. Based on the findings, recommendations are offered for developing more tailored/effective health interventions targeting this low SES, high-risk occupational group.

Chapter 4 and 5 build on the previous chapters and examine the persuasive potential of health narratives as an alternative approach to health promotion targeting Dutch truck drivers. Chapter 4 reports on an experimental study in which four different health narratives, varying in content (risk perception-focused vs. planning strategies-focused) and delivery mode (written vs. audio), are tested among 120 Dutch truck drivers. Chapter 5 expands on Chapter 4 by presenting a three-wave study ( $n = 108$ ), which includes tailoring to truck drivers’ particular stage of behavior change (non-intenders vs. intenders) and measuring self-reported behavioral changes. This study is followed up by a more detailed study ( $n = 95$ ), providing further insight into what makes health narratives ‘good’ and effective bridge builders.

Chapter 6 discusses the ‘how to’ of developing health narrative interventions. The lack of a generally shared definition of narrative is reflected in the wide variety of narratives used in health intervention studies. While the persuasive effects of the narratives are extensively investigated, relatively little attention is paid to their actual construction. This chapter describes the developing process of the health narratives used within the experimental

studies of this research (Chapter 4 and Chapter 5). In doing so, it further elaborates the concept 'storybridging' and offers guidelines for the co-creative construction of authentic and effective health narratives, specifically health narratives that can function as bridge builders for the intention-behavior gap.

Chapter 7 summarizes the main findings and interprets them from the perspective of the transport sector as a whole, applying a more ecological approach. In addition, the chapter discusses implications and provides recommendations for both research and practice.

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2



# Health promotion in the trucking setting: Understanding Dutch truck drivers' road to healthy lifestyle changes

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## 2.1 Introduction

In the Netherlands, an estimated 90,000 individuals (7% women) are employed as either short haul or long haul truck drivers (Federatie Nederlandse Vakbeweging, 2013; Transport en Logistiek Nederland, 2014). In general, these transport workers have a relatively lower level of education and lower socioeconomic status (SES), presumably corresponding with lower health literacy (European Foundation for Improvement of the Living and Working Conditions, 2008; Van der Beek, 2012; Twickler, Hoogstraaten, Reuwer, Singles, & Essink-Bot, 2009) which is defined as “the cognitive and social skills which determine the motivation and the ability of individuals to gain access to, understand and use information in ways which promote and maintain good health” (World Health Organization, 1998, p. 10). Like other low-SES groups, Dutch truck drivers are typically living a less healthy lifestyle, eating less vegetables and fruits, and exercising less than high-SES groups (Rijksinstituut voor Volksgezondheid en Milieu, 2008; Gezond Transport 2013a). As a group, Dutch truck drivers have a relatively poor health and run a higher risk of serious health problems such as obesity, diabetes, high blood pressure and cholesterol levels (Rijksinstituut voor Volksgezondheid en Milieu, 2008).

Apart from a generally less healthy life style typically associated with a lower SES, truck drivers' working conditions pose additional threats to their health. The Netherlands, being part of the European Union, complies with the Regulation (EC) 561/2006 on EU drivers' hours, which stipulates that the total accumulated daily driving time may not exceed 9 hours, and that the total accumulated daily duty time may not exceed 13 hours. These constraints are, of course, intended to protect truck drivers, but cause many unplanned breaks at inconvenient moments and unwanted delays for Dutch truck drivers due to the dense and unpredictable course of traffic in The Netherlands, resulting in relatively irregular and nonstandard working hours (Van Bogerijen, & Nederlands Instituut voor Sport en Bewegen, 2010).

Results from the European Working Conditions Survey have shown many unfavorable scores for EU truck drivers in general: Prolonged periods of driving/sitting, whole-body vibration, tiring or painful positions, long working hours (on average more than 48 hours a week), and nonstandard working hours (night and evening work, weekend work and more than 10 hours work per day) bring about an increased risk of overweight, lower back pain, chronic fatigue, cardiovascular and respiratory diseases, and work related stress (European Agency for Safety and Health at Work, 2006). To manage working constraints, truck drivers have developed a variety of strategies. Snyder (2010) describes how truck drivers develop an understanding of their body rhythms –sleep, attention, motivation, and adrenaline– and learn to manipulate these rhythms in order to link clock time to freight

time. Fournier, Montreuil and Brun (2007) found that experienced truck drivers engage in managing psycho-physical transformations (such as hunger, fear, sleepiness, boredom, irritation, etc.) and dynamic work planning to deal with working constraints. Truck drivers' strategies for dealing with fatigue involve pulling over when tired, drinking caffeine beverages, sleeping regular hours, and a good night's sleep before departure (Arnold et al., 1997). That is, the trucking occupation requires a professional knowledge of one's body's capacity for attention, alertness, and fatigue and thus a "professionalization" of truck drivers' bodies (Snyder, 2010).

In addition to working conditions, the working environment places truck drivers also at high risk for poor health outcomes (Apostolopoulos, Sönmez, Shattell, Gonzales, & Fehrenbacher, 2013). Apostolopoulos et al. (2011; 2012) show for US truck drivers how the truckers' work setting (i.e., trucking terminals, warehouses, truck stops, highway rest areas, and truck cabs) negatively affects their eating patterns because of a lack of healthy food options as well as limits their physical and recreational activity behaviors because of the absence of exercising devices at work settings. As a result, truck drivers have few opportunities to eat healthy meals and to take exercise breaks when on the road (Apostolopoulos et al., 2012; European Agency for Safety and Health at Work, 2006). The work settings of Dutch truck drivers appear to be quite similar to those of US truck drivers: 37% of the Dutch truck drivers reported irregular eating patterns and another 26% reported eating at unfixed times, but at regular intervals. More than half (56%) indicated that it is not possible to do exercises or workouts during work time and/or at work settings (Gezond Transport, 2013b).

Given the truck drivers' characteristics (i.e., lower SES and lower health literacy) as well as the nature of their work and working environment, they can be considered a high risk, underserved occupational group. Initiatives that empower them to lead a more healthy life are needed, not only from the perspective of the individual truck driver's health but also from an economical one. The Netherlands face a serious truck driver shortage in the near future (Transport en Logistiek Nederland, 2013). Given that fewer young adults aspire to become a truck driver, it is therefore important that the current truck drivers stay healthy and keep working to an older age. Both the individual well-being and the economic factor have led to various health promotion activities targeting Dutch truck drivers, such as the large scale Dutch campaign "*Fit op de Rit*" (Fit for the road; campaign period 2006-2007), the launch of the "*EHBO-toolbox*" (First aid toolbox for relaxation; campaign period 2010-2011), and the distribution of leaflets on diet, exercise, posture, fatigue, stress, and health and safety (from 2010 onwards). These initiatives have not been very successful: At present, 19% of the Dutch truck drivers are obese (BMI > 30 kg/m<sup>2</sup>) compared to 10% of the overall workforce, and another 49% of the Dutch truck drivers are overweight (BMI

range 25–30 kg/m<sup>2</sup>) (Gezond Transport, 2013b). These are alarming figures, considering that truck drivers with higher BMI-scores are significantly more and longer absent from work than truck drivers with lower BMI-scores (Gezond Transport, 2013b). Moreover, it raises the question whether the current intervention strategies targeting truck drivers are sufficiently tailored to the perceptions and needs of this particular target group.

Whereas previous studies have extensively examined truck drivers' level of access to healthcare service (e.g., Apostolopoulos et al., 2013; Staško & Neale, 2007; Solomon, Doucette, Garland, & McGinn, 2004), truck drivers' health outcomes (e.g., Marqueze, Ulhôa, & Moreno, 2012; Sharwood et al., 2012; Dahl et al., 2009; De Croon, Van der Beek, Blonk, & Frings-Dresen, 2000), truck driver fatigue (e.g. Baas, Charton, & Bastin, 2000; Arnold et al., 1997; Mitler, Miller, Lipsitz, Walsh, & Wylie, 1997), and road safety (e.g., Jensen & Dahl, 2009; Häkkinen & Summala, 2001; Summala & Mikkola, 1994), little is known about truck drivers' personal perceptions of health and lifestyle themes. Charting truck drivers' perspectives on health is crucial for the development of (more) effective health intervention approaches. Therefore, we conducted a qualitative study among Dutch truck drivers, with the aim to obtain a better understanding of (a) Dutch truck drivers' perceptions and verbalizations of health and lifestyle themes, including truck drivers' experience with and appreciation of previous health initiatives targeting them, and (b) the challenges and barriers experienced by Dutch truck drivers on their road to healthy lifestyle changes, including successful coping strategies to overcome these barriers.

## 2.2 Methods

To answer our research questions, we conducted 20 semi-structured face-to-face interviews as well as seven cases of participant observation.

### ***Participants and procedure***

Once ethical approval was obtained from the Ethics Assessment Committee, we invited truck drivers to participate in our study. Recruitment took place along three routes: (a) via ArboNed (one of the largest Dutch occupational health and safety organizations), (b) via transport companies, and (c) via the researchers' own social network. The different routes of recruiting resulted in a heterogeneous sample of truck drivers. The majority of the interviewees were male (19 out of 20), had a partner (15), and were short haul drivers (13). This distribution of short versus long haul drivers is similar to the distribution in the population (Lingsma, Hengstz, & Snoek-Koot, 2011). The sample also covered a wide range of age (20-70) and years of trucking experience (1-50 years) (see Appendix 1 for an overview of the participants' demographics).

At the start of the interview, we informed each participant in terms of procedure. We explained that questions would be asked about working and living as a truck driver, stressing that there were no wrong answers, and assuring anonymity and the right to stop at any time without explanation. As the concept 'health' may evoke rather negative associations among low-SES target groups (Heutink, Van Diemen, Elzenga, & Kooiker, 2010; Kooiker, 2011), we avoided this and related expressions at the beginning of the interviews. We used semi-structured questions, ranging from general inquiries about experiences and events associated with being a truck driver (e.g. work hours, working conditions, and social and physical aspects of the job), to more specific questions about, for example, satisfaction with one's own physical condition, current eating and exercise behavior, and previous attempts to improve one's condition. Since truck drivers might vary in the way and degrees of interest in health depending on their different roles –e.g., as a truck driver, father, husband, and so forth– we included themes such as spending of leisure time, and home/family situation as interview topics in order to ensure that both the work environment and the personal environment were addressed. Towards the end of each interview, the participants' particular needs with respect to health and healthy living, as well as their appreciation of previous health promotion activities were addressed. At the end of the interview, we debriefed each participant about the nature and purpose of the research. All interviews were audio recorded and transcribed.

Interviews were conducted until the point of saturation was achieved, that is, the point where we were sufficiently convinced that properties and dimensions of the targeted concepts and conceptual relationships were fully described in their complexity and variation (cf. Sandelowski, 2008). In our study, saturation was achieved after 20 interviews. At this point, additional interviews only confirmed our obtained insights rather than change or add to them.

In addition to the interviews, we conducted seven cases of participant observation. One of the researchers rode along with three Dutch short haul truckers (the average observation period was 12 (+/- 2) hours), and visited two road restaurants, one transport company, and, finally, an annual national truckers festival. All observations were recorded in the form of field notes. The participant observations not only allowed for a more thorough understanding of Dutch truck drivers' experiences and their job requirements, but also of the truck drivers' social network, that is, colleague truck drivers, clients, planners, and/or family members. The observations provided background and context and, as such, were useful in the interpretation of the interview data.

### **Data analysis**

The data were analyzed employing the coding principles of the grounded theory approach (Corbin & Strauss, 2008). In this approach, data analysis is divided into three phases: open coding, axial coding, and selective coding (Walker & Myrick, 2006). In the open coding phase, we examined the data word by word and line by line to identify important naming categories. This resulted in six main coding categories reflecting the focus of the research: health perception, perceived barriers, coping strategies, appreciation of previous health initiatives, work setting, and private setting. In the axial coding phase, we related and compared the naming categories to one another to reveal patterns and overarching concepts, which lifted the coding to a more abstract level. Finally, in the phase of selective coding, we identified core categories which were then systematically related to the other (sub)categories, resulting in our insights and figures. By actively searching for similar and deviant cases, the detected patterns and relationships were checked against the data. Although described as a linear process, the coding and theorizing was in fact an iterative, dynamic process in which coding phases are interwoven, moving back and forth between the three phases.

By using a grounded theory approach we were able to develop –via a combination of inductive and deductive reasoning– insights and figures that, together, provide a thorough understanding of Dutch truck drivers' road to healthy lifestyle changes and a detailed description of the barriers perceived by Dutch truck drivers' in their attempt to adopt healthier eating and/or exercise patterns, including successful strategies to overcome these barriers. To warrant validity and reliability, we organized a meeting where we shared our preliminary findings with both applied researchers in the field of health communication and experts within the Dutch sector of transport and logistics. During this meeting, the conceptualizations and insights were confirmed and nuanced, resulting in the integrated findings presented in the next section.

## **2.3 Results**

The findings presented in this section are illustrated by figures and interview quotes, which, for this occasion, were translated from Dutch to English. Caution was taken to preserve the individual truck drivers' modes of expression, which resulted for some quotes in characteristic language.

### ***Truck drivers' view on the determinants of well-being***

All interviewees agreed on the importance of one's health for their well-being. Its importance was considered obvious, sometimes even too obvious to discuss.

Itee no. 1: Listen, it's really simple. If you're not healthy, you got no life. Weird question, health is simply the most important thing there is.

However, health was not considered the only determinant of well-being. Many pointed out that enjoying life is important as well, given that "you only live once". Some truck drivers referred to the types of behavior that make life for them more enjoyable, such as smoking and drinking alcohol, as a "bad habit" or a "sin". They explicitly acknowledged that these activities were at odds with good health. After claiming "health is simply the most important thing there is", the very same truck driver explained later on in the interview:

Itee no. 1: Yeah, you must have a, everyone must have something that isn't good [a bad habit]. If we all have to live by what's right, well. That's what I told them in the hospital as well. I said: "If I have to live by what's right, then I'll get two sprouts, three green beans, two leafs of lettuce, and a glass of water." And that's supposed to be healthy. Well, that's not for me. In the evening, I sometimes get myself some spare ribs. And then those spare ribs will go into the oven over there. And then I'll take a jar of garlic sauce together with some beers and then I sit and wolf it down, heaven. Completely at ease. Oh well, and then I'll reach the age of 70 instead of 75.

These fragments exemplify how healthy life is contrasted with enjoying life: Healthy eating behavior is framed as desirable but difficult and unattractive ("... two leafs of lettuce and a glass of water"), whereas unhealthy habits are framed as sinful but seductive and appealing.

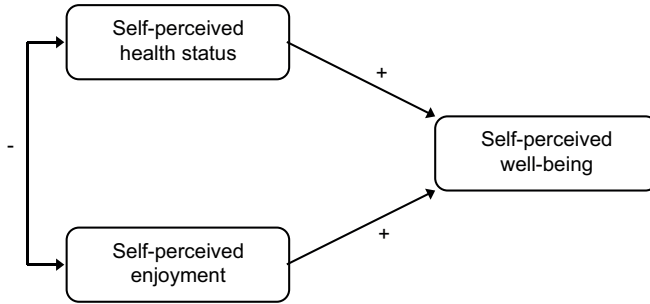
Individual differences with respect to how to balance a healthy life and an enjoyable one were remarkable. For some interviewees, the importance of health outweighed the importance of enjoyment, whereas for others both were equally important. Note that a number of interviewees explicitly valued a joyful life more than a healthy life, as the following excerpt exemplifies:

Itee no.17: No, I don't pay a lot of attention to health. I'm like: I live today and what tomorrow brings, well, yeah, it [tomorrow] might just be the end. Well, you hear it everywhere these days. Cancer here, cancer there, cancer so and so. So I try, so to say, to really enjoy this week.

It appears that truck drivers perceived their well-being as determined by health status and enjoyment. Therefore, their well-being is supported by two factors that they perceive as being at odds with each other which, unavoidably, creates tension (see Figure 1).



Figure 1. Dutch truck drivers' conceptualization of their well-being



### ***Truck drivers' perception of their health status***

Truck drivers were asked about their perception of their current health status. Overweight was one of the problems commonly noted by the interviewees. "Over the years, the kilos creep on", as stated by a truck driver. Some of the elder interviewees had gained several tens of kilos over the years on the job. Overweight is related to, amongst others, cardiovascular diseases. Participants narrated about heart attacks, involving either themselves or one of their colleagues. Other health problems were mainly related to back, neck, knee and shoulder pains, again caused by overweight and/or worn vertebrae or physical workload.

Aside from physical health conditions, mental health issues also proved important to the participants' well-being. Nearly all interviewees reported (chronic) fatigue as a result of their challenging and stressful work setting. Stress was the result of time pressure (over-optimistic planning) and frustrating factors beyond the truck driver's control, such as waiting times at clients, traffic jams, and the erratic behavior of other road users. As exemplified in the excerpt below, the truck driving profession demands high levels of alertness:

ltee no. 9: Look, I think that truck drivers, when they say that truck driving is an easy job, then I don't agree. Mentally it's a quite demanding job, because you have to constantly watch. You need to, constantly need to anticipate the behavior of other road users: what will they do next? Because, like last week, one truck driver almost got a ticket, he was telling me. He had, according to the policeman, he'd misjudged the situation. There was one [other road user] who cut him off, who braked to take the road exit. So, as a truck driver, you need to see all of that coming. . . . Well, I think that's all a bit over exaggerated, but, yeah, it's all mentally, well, you have to constantly look in your mirrors. Much more than in a regular car. You [as a truck driver] drive a vehicle that's longer, heavier, you name it.

It is noteworthy that older participants mainly brought up physical health issues, whereas younger ones mainly emphasized the mental health aspects related to the job.

When talking about their health status, interviewees consistently compared their own health to that of other truck drivers who, in their perception, were in a worse condition. This process of comparing oneself to others who are supposedly doing worse, can be conceived as a case of *downward social comparison* (cf. Mackie & Moore, 2009). Below is an example of a response to the question of whether the interviewee is satisfied with his physical condition.

ltee no. 1: What more could I want? I'm 56, I still work every day. I do have knee pains. Oh well, there are people who are doing much worse.

Downward social comparison enables truck drivers to evaluate their current health status as relatively good as a result of which they do not feel the need to change their lifestyle. Only when health problems can no longer be ignored, changing to a more healthy lifestyle is considered.

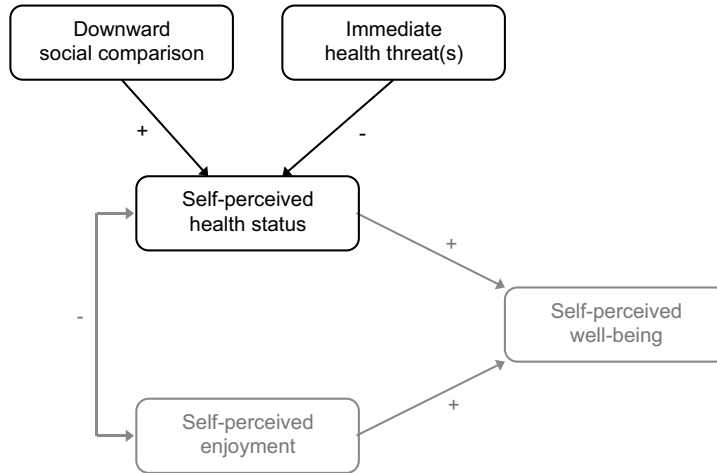
ltee no. 8: With some, with most the message won't stick. If they don't suffer from anything, it's that simple. If you smoke like a chimney and you do not suffer from anything, then you just keep on smoking. And there are many of those. Many people only start or quit something or change something if they suffer from something. That's just how it works.

Several of the elder participants labeled the age of 50 as a turning point; around that age, symptoms, such as physical pains, reduced fitness, illness, and ailments, could no longer be ignored or downplayed.

ltee no. 8: Most find it all, well, they find it not so important. Until they, well. I also know a mate of mine, who always had much more than me, never enough, never enough. And, well, he had to take blood thinners. 44 years old, he has to take blood thinners for the rest of his life. Well and that's, that's all... Also smoking regularly, drinking coffee. And some of us can take that, they'll turn 80 doing so, but most of us can't. That's just... For most of us reality will catch up. And most of us don't realize that. Well, if they're about 50 years old, then they start to realize.

The truck drivers' perception of their current health status is thus a delicate balance between feared and experienced health problems and the extent to which these symptoms and threats can be ignored and downplayed by means of downward social comparison (see Figure 2).

Figure 2. Factors affecting Dutch truck drivers' self-perceived health status



**Truck drivers' road to healthy lifestyle changes**

The majority of the interviewed truck drivers indicated that they would like to eat healthier and/or to exercise more. Especially interviewees aged 50 years or more, referred to signs of physical deterioration as the incentive to (finally) put their intentions to live more healthy into action. Given their challenging working environment and the nature of their work, we were interested in how the truck drivers went about in trying to live a more healthy life. Participants were asked about any previous attempts to improve their lifestyle and whether they had experienced any barriers or setbacks.

The interviewees reported considering themselves responsible for their own health. This view was reflected in their answers to inquiries about adopting a healthy lifestyle: e.g., "it's a matter of will power", "it is a matter of choice", "it's your own choice", "you can make it as unhealthy as you want", and "your health is in your own hands". This perception of control seemed specifically to apply to eating behavior; it was mentioned considerably less often in combination with patterns of physical exercise.

Although the participants generally stated that eating healthier depends on discipline and willpower, they also referred to the challenges and limitations they experience as caused by their work setting (e.g., nonstandard working hours).

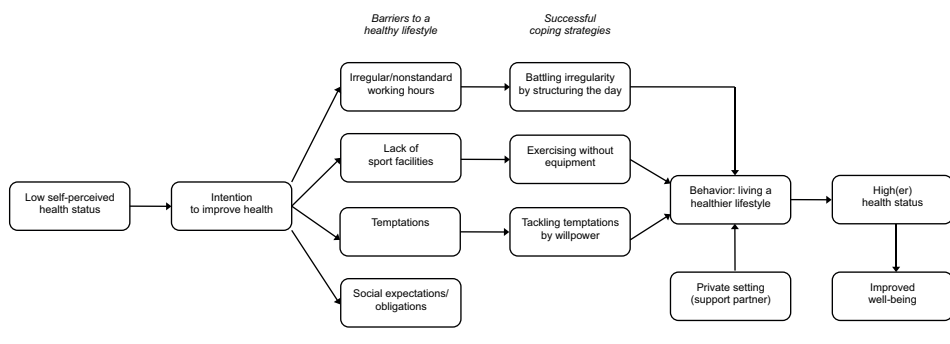
Itte no. 19: So and yeah, it wasn't a real attempt to lose weight, well I did eat less and stuff like that, right. I mean, eating less, eating less unhealthy food, I mean.  
 Iter: And is that doable?

ltee no. 19: Yeah, it's in your own hands. It's doable, but if you don't have time to buy some fresh stuff at the normal [supermarket] hours and no time to do any cooking at home, then you can fill in the story and finish it yourself.

With respect to physical exercise, participants mainly referred to external factors determining their behavioral choices. Lack of time and (sport) facilities were attributed to the nature of their work and their working environment.

In conclusion, for the truck drivers in our study the road to a healthier lifestyle is one with various barriers and obstacles that, by means of successful strategies, need to be overcome before they are able to act on their intention to eat more healthy and/or exercise more (see Figure 3). In the next section, the perceived barriers are discussed.

**Figure 3. Dutch truck drivers' road to healthier eating and/or exercise behaviors**



**Perceived barriers and strategies to overcome these barriers**

Table 1 provides an overview of the barriers perceived by Dutch truck drivers. It is striking that a large number can be attributed to a lack of regular working hours, especially for long haul truck drivers. According to the interviewees, their irregular and nonstandard working hours result in a lack of (a) routine, (b) time, (c) energy, and (d) motivation to develop and persist in healthy dietary and/or exercise patterns.

The tight schedules, irregular hours, and challenging deadlines that characterize the transport sector, restrict the opportunities during working hours to adhere to fixed lunch breaks or exercise breaks. Because of the long working hours, most truck drivers end their workday rather late –causing a reported lack of time for grocery shopping, cooking, exercising or going to the gym.

**Table 1. Barriers Dutch truck drivers face in adopting healthier eating and/or exercise behaviors**

Type of behaviors	Perceived barriers within the work environment	Perceived barriers within the personal environment
Eating + exercise	<b>Irregular/nonstandard working hours</b> Lack of routine Lack of time Lack of energy Lack of motivation	<b>Social expectations/obligations</b> Expectations and/or obligations within the private setting (e.g. spending time with family)
Eating	<b>Temptations</b> Temptations along the road Temptations within the truck (food supplies)	<b>Temptations</b> Temptation in/around house Moments of 'joy' or 'sin' (e.g. during celebrations and festivities)
Exercise	<b>Lack of facilities</b> Lack of exercising facilities (gyms) Lack of refreshing facilities (showers)	<b>Lack of facilities</b> Lack of exercising facilities with extended opening hours

Itte no. 19: What else, yeah, doing sports, right now I don't have time for that. When I come home, I'm just exhausted and then you've to make some food, take care of your cat and then quickly do some household chores and then it's already time to go to bed. So, yeah, where do I find the time?

As becomes clear from the excerpt above, the working hours also drain the truck drivers' level of energy. Nearly all of the interviewees indicated that they were "exhausted" or "out of energy" by the end of the day or week; they had no energy left to prepare a fresh, healthy meal, and/or to exercise. Some indicated that when they finally got home, they would rather watch television and spend some time with their family.

Regarding the barriers to a healthy lifestyle, participants reported various strategies they employed to cope with them. See Table 2 for an overview of the strategies presented. We will discuss first the strategies in eating behavior, then those in exercising behavior.

*Healthy eating strategies*

An important strategy that a majority of participants mentioned is using willpower to ignore attractive but unhealthy eating options they are confronted with in their environment.

Itte no. 11: But I'm not gonna eat sweets, because it's just so easy to grab sweets every time. Just don't bring it [candy] with you in your truck and offer resistance to the fatty snacks, meatballs and such. . . . I just don't look at it [sweets and meatballs]. When it comes to this, I'm just really strict on myself. It's a matter of discipline. . . . It's your own choice; you don't have to eat those hussars salads and fatty meatballs along the road.

**Table 2. Successful strategies used by Dutch truck drivers to cope with perceived barriers in adopting healthier eating and/or exercise behaviors**

Type of behaviors	Successful strategies within the work environment	Successful strategies within the personal environment
Eating + exercise	<b>Battling irregularity</b> Structuring the workday: - Eat and/or exercise at fixed times and moments (as much as possible)	<b>Dealing with social obligations</b> -
Eating	<b>Tackling temptations</b> Using self-control and willpower: - Avoid tempting situations (e.g. fast food restaurants) - Do not bring any candy or snacks - Replace snacks with fruit - Eat small / regular portions Preventing hunger and cravings: - Do not skip any meals - Eat at fixed times and regular intervals - Bring your own (healthy) food and meals	<b>Tackling temptations</b> Using self-control and willpower: - Eat small / regular portions Compensating for moments of 'joy' / 'sin': - Engage in (more) healthy behaviors after an act or day of joy/sin
Exercise	<b>Exercising without equipment</b> Keeping yourself moving: - Bike to work - Bring a folding bike into your truck - Go for a walk/bike ride during waiting times or resting moments - Park your truck further away from the truck stop, so you have to walk further	<b>Exercising without equipment</b> Keeping yourself moving: - Take the stairs instead of the elevator - Take a walk (with the dog) - Do activities with family/friends (e.g. playing soccer)

As an alternative, nearly all the interviewees explained they bring their own lunchbox to work, stating that this is not only cheaper, but also healthier; "you decide when and what you eat". They find that this makes it easier to maintain a regular eating pattern, which, in turn, decreases the urge to snack. In addition, interviewees typically mentioned practical tips such as "do not skip breakfast" and "replace snacks with fruit".

In some participants' narratives, the importance of their partner for their eating behavior became apparent. In most cases, the interviewees' female partners are in charge of the household, buy the groceries, prepare the driver's lunch box, and determine the type and portions of the meals. In such cases, the partners have a strong influence on the truck drivers' dietary patterns.

ltee no. 2: When my girlfriend is there [at the truck driver's place], she cooks. . . . My girlfriend is a vegan. Well, I'm not. I just eat meat moderately. When she is with me, then I don't eat meat at all. And during the week, it's really not that bad, my meat consumption that is.

Thus, a partner may function as an additional or even controlling factor on healthy eating habits.

### *Healthy exercising strategies*

Most participants reported barriers connected to their working conditions that prevent them from healthy exercise behavior. In addition to the lack of exercising and refreshing facilities, several participants brought up the responsibility for their truck and the load when being on the road.

Itee no. 1: Ok, I'll tell you. Let's say I'll go from here to . . . that will take me one hour. I grab my bike, go for a nice ride. Summer day, 30 degrees Celsius. All sweaty and stinky back into my truck. You see what I mean? It just doesn't work. You're not here for a workout, you're just here to work. And sometimes you'll go take a look, because you also have to keep your eye on who, how or what. You have to keep an eye. Control your equipment.

Iter: So, the whole story about exercising more, you say: "That's, yeah, that's impossible"?

Itee no. 1: It's a utopia. Of course there are truck drivers who exercise. Of course there are, but there are also people who jump off the roof.

This participant mentioned how a small minority does in fact exercise, but indicated that he himself experiences the negative consequences of the long working hours, during which he lives where he works but is not able to exercise, for in this working environment, a "homely" activity such as sports with its consequences (transpiration, having to wash yourself) is difficult to integrate. A few participants reported successfully integrating some physical activity and exercise in their working week by, for example, going to work by bike, making less use of their car (walking or biking instead), taking the stairs instead of the elevator, doing activities with family or friends, or working out in the gym. In a few cases, activities during work time were mentioned as well; for instance, going for a short walk while waiting or resting. One of the truck drivers on the long haul told that he always brings a folding bike so he can go cycling after work, on the condition that his truck is parked safely. Exercise patterns can also be influenced by the partner, but not always in a positive direction as becomes apparent in the next excerpt:

Itee no. 4: And then you haven't been home all week and then you say: "Bye, I'm going for a bike ride Saturday afternoon". And then she says: "You've been gone all week and now you're leaving again." Right? That just didn't work.

This quote suggests that a major barrier to health is, again, the work-home interface (see the previous excerpt), but from a different perspective: The long working hours combined with the need to protect relationship time, leave little opportunity to exercise.

In conclusion, participants experienced different barriers to healthy eating compared to healthy exercise behaviors. Healthy eating is perceived as being under one's control, but unattractive and difficult to implement because of temptations –which can be resisted by willpower. In case of exercising, participants perceived less control. The majority of the interviewees associated healthy exercising with performing sports (in the gym) or sporting behavior (biking, running). As a result, they identified sport facilities and equipment –i.e. external factors– as a precondition for their exercise behaviors. The truck drivers further reported difficulties in integrating exercise into their life, both at work and at home. The long working hours leave little time to exercise when being at home, especially if the partner wants to spend time together.

Next to the working environment, the truck drivers' personal environments can both facilitate or inhibit the implementation of a healthy lifestyle. Note that the interviewed truck drivers did not mention any concrete strategies on how to cope with the social expectations and obligations they felt from their private setting (see Figure 3 and Table 2), which may suggest that they located these factors outside of their span of control.

### ***Truck drivers' thoughts on previous health communication initiatives***

A number of the interviewed truck drivers expressed their views on the representation of truckers in previous health promotion activities and in Dutch media in general; like other low-SES groups (Lingsma et al., 2011), the truck drivers in our study had difficulty distinguishing (objective) health campaigns from advertisements and television programs. Overall, they evaluated these expressions negatively, mostly because the truck drivers were generally portrayed in a stereotypical way, as is illustrated in the following excerpt:

ltee no. 20: Most are just normal people, with normal families. Look, there are always some of those typical truckers. A couple of years ago, a commercial was broadcasted on TV. I don't remember for what it was, but some truck drivers were shown and they were indeed just like those typical truckers. I watched it and I was really disgusted. How disgusting, we are presented like this to the whole country [the Netherlands]. That's not us, those are exceptions, but that's how we are presented to the general public, as 'the Dutch truck driver'.



The truck drivers wanted to explicitly distance themselves from these images of heavily overweight, “meatball-eating” men: When asked about the advantages of living a healthier life, the truck drivers' answers mostly involved improvements in general condition, endurance, and, specifically, appearance; namely, not looking like a typical truck driver.

Itee no. 6: That's a stereotypical truck driver, yeah. I don't wanna pat myself on the back, but I've heard that I don't look like a truck driver. Because, when I met L. [his girlfriend], she didn't believe it either.

Not only the way in which truck drivers are portrayed, but also the proposed solutions and strategies are perceived as unrealistic and inaccurate.

Itee no. 12: Some time ago I heard a . . . thing on the Belgian radio. Some Belgian Minister, who was also targeting truck drivers, I believe. It was about truck drivers' health.  
Itee: Ok, you're looking quite doubtful.

Itee no.12: Truck drivers are sitting too much. Well, hello. Think of something new. Now they're going to hand out apples at a parking area. Truck drivers are sitting too much. I haven't encountered many cars that you can stand in.

This excerpt shows that even when truck drivers feel personally addressed by a health promotion message, they may feel that the message is not adequately framed, because it is not realistic about possibilities to live a healthy lifestyle in their circumstances; sitting less would be very difficult in an essentially sedentary work environment.

In short, communication efforts targeting truck drivers appeared to backfire as the images used are considered caricatures and the solutions proposed as fake. That is, the presented quotes illustrate that previous/current health communications targeting Dutch truck drivers are perceived as not sufficiently tailored to their perceptions and needs (Boeijinga, Hoeken, & Sanders, 2017).

## 2.4 Discussion

The aim of our study was to obtain a better understanding of Dutch truck drivers' perceptions of health and lifestyle themes as well as the challenges and barriers experienced by Dutch truck drivers in their attempts to adopt a healthier lifestyle. In general, the truck drivers regard health as very important, but also regard behaviors improving one's health as being at odds with living a pleasant life. In order not to worry about their own health, they compare their health status to that of colleagues they consider to be worse

off. Changing one's lifestyle is usually the result of health problems that can no longer be ignored. Implementing lifestyle changes is experienced as difficult because of the long and irregular working hours that prohibit the development of healthy dietary and exercising routines, as well as the lack of exercising and refreshing facilities when being on the road.

Apart from the working environment, truck drivers' personal environment can also be decisive to the implementation of healthy lifestyle changes. The truck drivers' partner, if there is one, plays an important role in controlling healthy dietary habits, because the partner usually is in charge of what and how much food there is for dinner and breakfast, and often prepares the drivers' lunch box. This potentially beneficial influence does not extend to stimulating healthy exercising habits, because the wish (or demand) to spend time with one's partner and family may prohibit drivers from exercising during leisure time.

Our findings are congruent with the Health Action Process Approach (HAPA) developed by Schwarzer (2008). This model depicts the various phases a person goes through when changing his health behavior as well as the various factors that determine whether he or she will enter the next phase or not. Three groups are distinguished when it comes to healthy behavior: actors (who already perform the desired behavior), intenders (who want to perform the desired behavior but have not done so yet), and non-intenders (who have no intention to perform the behavior). Given the truck drivers' health problems described in the introduction, it appears that the vast majority are not actors. This raises the question as to whether Dutch truck drivers are intenders or non-intenders?

Non-intenders are considered to be in the motivational phase (Schwarzer, 2008). That is, they need to be motivated to change their intention. According to the HAPA model, there are three factors that determine this intention: risk perception, outcome expectancies, and action self-efficacy. The results of the interviews suggest that these factors are also at play for Dutch truck drivers. Risk perception refers to one's belief that one is at risk for a certain disease. Only when people consider themselves at risk, they will contemplate behavioral alternatives to their current lifestyle (Schwarzer, 2008). Truck drivers appear to manage their risk perception through downward social comparison up to the point where physical complaints can no longer be ignored. In addition, outcome expectancies play a role: What consequences will a change in lifestyle have? Here, the truck drivers seem to think that a more healthy lifestyle will lead to a less enjoyable life. Finally, the intention to live a more healthy life depends on the belief that one will be able to perform the recommended behavior (action self-efficacy). Truck drivers are not very confident about their chances to put their intention into action because of the long and irregular working hours, lack of facilities, and temptations when they are on the road, as well as the social expectations and obligations from their private setting.

Still, many truck drivers indicate that they would like to live a more healthy life and even repeatedly have tried to do so. This qualifies them as intenders in the HAPA model (Schwarzer, 2008). The fact that they did not succeed in adapting their lifestyle is explained in the HAPA model by problems in action or coping planning. The former refers to the problem of failing to get started. People are stuck in their old routines, keep putting off a change of behavior. The repeated references to “will power” in the interviews suggest that it takes effort to concretely plan and perform the intended actions. Coping planning refers to the activity of mentally preparing oneself for dealing with obstacles that can be encountered while aiming to perform the intended behavior. For instance, how to deal with a lack of exercise devices or healthy choices at trucking settings or how to decline an offer for a beer by friends and colleagues? The better one is prepared for overcoming such barriers, the more likely it is that one can perform the intended behavior. It must be taken into account that the barriers faced by long haul drivers differ from those experienced by short haul drivers. Long haul drivers, for example, are away from home for stretches of several days, drive international routes, and are more likely to work irregular working hours than short haul drivers. The latter work within the national borders and come home at night, thus having more opportunities to make their individual eating and exercising choices. As a result of these differences in work and personal constraints, successful strategies to obtain a better health may differ for these target groups.

Given our findings we recommend that health interventions targeted at Dutch truck drivers should aim to (a) make sure that they do not underestimate the health risks they run, (b) provide a realistic yet attractive image of the outcomes of a more healthy lifestyle, (c) focus on action planning (specifying “when”, “where”, and “how” to perform the recommended behavior) and coping planning (imagining what obstacles there might be and how to deal with them). In the case of exercising behavior, reframing ‘exercise’ may be another promising strategy. Truck drivers in our study, currently frame exercise as sporting behavior. Frames provide interpretive contexts that guide the interpretation and sense making of particular (health) issues and as such construct what people experience as (un) true and (im)possible (Goffman, 1974). Reframing exercise as ‘moving’ / ‘being physically active’ offers an alternative frame that verbalizes more ecologically plausible aspects for truck drivers to act upon (Sallis, Owen, & Fisher, 2008), and may lead to an enforcement of truck drivers’ sense of control and self-efficacy.

Although our study was performed at the individual level, we recommend to expand the focus to an ecological level. From our results it became clear that truck drivers ascribe much of their inability to make healthy lifestyle choices to structural constraints of the work environment –especially the irregular and nonstandard working hours and the lack of exercise and refreshing facilities. These findings are in line with previous research on

the environmental barriers to healthy eating and active living in the trucking industry (Apostolopoulos et al., 2011; Apostolopoulos et al., 2012). The few studies of health promotion programs targeted at truck drivers primarily focused on changes at the individual level and this is a concern, as environmental and work organization factors are important determinants of both chronic disease outcomes and health-related behaviors in truck drivers (Ng, Yousuf, Bigelow, & Van Eerd, 2015).

Thus, making healthy lifestyle choices is not solely a responsibility of individual truck drivers; the trucking industry and governments are involved as well. For health promotion strategies for truck drivers to be effective, they should incorporate a comprehensive multi-stakeholder strategy; this implies that trucking companies, insurance companies, occupational health services, the national institute of transport and logistics as well as governmental regulatory bodies should work together to collectively create a (more) healthy transportation work environment and to make commercial trucking more flexible and less exhausting, thereby facilitating more healthy lifestyle choices (Van der Beek, 2012). Such a holistic approach would not only be beneficial from the perspective of individual truck driver's health, but also from an economical perspective; a healthier work environment would potentially make a trucking job more attractive –an important feature given the predicted truck driver shortage.

## 2.5 Conclusions

By providing a deeper understanding of Dutch truck drivers' perceptions of health and lifestyle themes, and the challenges and barriers faced by Dutch truck drivers on the road to a healthier lifestyle, including successful strategies to overcome these barriers, the present study presents recommendations for the development of more effective health promotion interventions for this particular target group. Our findings and figures suggest three specific areas of focus to be considered in developing intervention strategies to empower truck drivers to lead a more healthy life: truck drivers' (a) risk perceptions, (b) outcome expectancies, and (c) action and coping planning strategies. Based on our findings, we advocate both realistic life style recommendations at the individual level and an ecological approach to health promotion interventions at the level of truck driving working conditions, since changing individual behaviors is easier when facilitated by changes in the work environment as a whole. Future research should be conducted to further verify our findings, in particular truck drivers' particular mindset, and to test the effectiveness of promising multi-stakeholder approaches.

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# Appendix 1.

## Demographics of the interviewees (*n* = 20)

Characteristics	Truck drivers' <i>n</i> (%)
<b>Gender</b>	
Men	19 (95)
Women	1 (5)
<b>Age</b>	
20 – 30	4 (20)
30 – 40	2 (10)
40 – 50	7 (35)
50 – 60	5 (25)
60 – 70	2 (10)
<b>Relationship status</b>	
Partner	15 (75)
No partner	5 (25)
<b>Type of trucking</b>	
Long haul	7 (35)
Short haul	13 (65)
<b>Years on the truck</b>	
0 – 10	8 (40)
10 – 20	5 (25)
20 – 30	4 (20)
30 – 40	2 (10)
40 – 50	1 (5)

3



# An analysis of health promotion materials for Dutch truck drivers: Off target and too complex?

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## 3.1 Introduction

Over the last decade, various interventions have been developed to improve Dutch truck drivers' healthy lifestyle behaviors. These initiatives are motivated by both health and economic concerns. First, the Dutch trucking industry acknowledges that it is partly responsible for truck drivers' health, as the occupation places truck drivers at high risk for poor health outcomes (Apostolopoulos, Sönmez, Shattell, Gonzales, & Fehrenbacher, 2013). The detrimental working conditions (e.g., time pressure, nonstandard working hours, prolonged periods of driving/sitting) are associated with overweight, musculoskeletal symptoms, diabetes, cardiovascular diseases, chronic fatigue, and work-related stress (Van der Beek, 2012; Van der Hulst, 2003; Härmä, 2006). In addition, the working environment provides limited opportunities to exercise and to choose healthy food options (Apostolopoulos et al., 2011; Apostolopoulos et al., 2012; Gezond Transport, 2013). The economic motive follows from the scenario that the Netherlands, with its 90,000 truck drivers, faces a serious truck driver shortage in the near future. Consequently, sustainable employability is a vital issue for the Dutch trucking sector.

Despite various health promotion initiatives – such as the large-scale campaigns *Beroepsvervoer Natuurlijk Alcohol Vrij* (Professional Driving: Naturally Alcohol-Free, campaign period: 2004), *Fit op de Rit* (Fit for the Road, 2006-2007), the launch of the “EHBO-toolbox” (First aid toolbox for relaxation; 2010-2011), and the distribution of leaflets on diet, exercise, posture, fatigue, stress, and health and safety (from 2010 onwards) – health and lifestyle risks have remained. At present, 25.9% of the Dutch truck drivers are obese, compared to 10% of the overall workforce, while another 46.7% is overweight. These are alarming figures, since truck drivers with a higher BMI are significantly more often (23%) and longer (> 9 days) absent from work than truck drivers with lower BMI scores (14%) (Gezond Transport, 2013). Research has further revealed that the vast majority of Dutch truck drivers reports not exercising enough (53%) or not exercising at all (14.2%), and being not (40.2%), or to a limited extent (40.4%) involved in sports activities. In addition, 60.2% of the Dutch truck drivers report a non- or infrequent intake of fruits and/or vegetables (Gezond Transport, 2013). These unfavorable figures suggest that the current initiatives have not been effective in improving the lifestyle of Dutch truck drivers.

An important factor in enhancing the effectiveness of health communication interventions is *tailoring*. Health messages that are adapted to the unique characteristics of a person or a target group result in greater health behavior change than non-tailored health messages (Lustria et al., 2013), especially those focusing on preventive behaviors such as physical activity and dietary change (Noar, Benac, & Harris, 2007). The unfavorable figures for health behaviors raise the question of whether the existing health messages are suffi-

ciently tailored to the characteristics of this target group. In this paper, we investigate what changes Dutch interventions aim to achieve and what content they present to achieve these changes. We compare these communication strategies to theoretical insights into the determinants of health behavior (Schwarzer, 2008) and into the skills people may need to effectively process these messages (Schellens & De Jong, 2004).

### ***HAPA: Three mindsets on the road to behavior change***

Tailoring has been found to be more effective when guided by theoretical considerations, especially when the intervention is tailored to the stage of behavior change an individual is in (Noar et al., 2007). An influential model for the stages of behavior change is the Health Action Process Approach (HAPA) (Schwarzer, 2008). This model distinguishes three groups that differ with respect to their stage of change: “actors” (who already perform the desired behavior); “intenders” (who want to adopt the behavior but have not yet done so); and “non-intenders” (who have no intention of adopting the behavior).

The health figures for Dutch truck drivers suggest that there are few actors among this occupational group. Previous research (Boeijinga, Hoeken, & Sanders, 2016) has indicated that, overall, Dutch truck drivers regard health as very important and manage to warrant a sense of good health by comparing their own health to that of people who are doing worse. As a result, personal health risks are downplayed (until symptoms can no longer be ignored). In addition, Dutch truck drivers were found to have negative associations with healthy living as they regard healthy eating and exercise behaviors as being at odds with a pleasurable life. Because of this low perceived health risk and expected negative outcomes, some truck drivers lack the motivation to adapt their lifestyle behaviors, qualifying them as non-intenders. The study indicated that there were also truck drivers who were motivated to live a healthier life; these intenders, however, indicated that they were unable to convert their intention into action due to the obstacles encountered within the work and personal environments. Factors specified included irregular working hours, lack of (exercise) facilities on the road, and demands from their family and social group that prohibit them from adopting healthy eating habits and exercising.

The group of truck drivers who currently do not show the desired behavior may thus consist of two different sub-groups that should be addressed differently. Non-intenders are considered to be in the *motivation phase*; as they are not yet motivated to adopt the promoted behavior, they may benefit from communication focusing on risk perception (to make sure they do not underestimate the health risks they run), realistic outcome expectancies (to provide a realistic yet attractive image of the outcomes of a more healthy lifestyle), and action self-efficacy (to strengthen the belief in their ability to initiate a more healthy lifestyle). Intenders, on the other hand, are considered to be in the *volitional phase*;

they already intend to perform the desired behavior, but fail to translate this intention into action because they do not get started and/or their efforts are thwarted by unforeseen barriers or temptations along the road. Hence, they would benefit from health messages that focus on action planning (to specify the intended action and help them to get started), coping planning (to facilitate the anticipation of potential obstacles and ways to deal with these obstacles), and maintenance self-efficacy (to strengthen the belief in their ability to deal with the encountered obstacles) (Schwarzer, 2008; Boeijsinga et al., 2016). To assess to what extent the current materials cater to the needs of which target group, the first research question is: Which HAPA determinants are targeted in the current health promotion materials for Dutch truck drivers? (RQ1).

### ***Health literacy skills***

In addition to tailoring the content of health intervention to the target group's profile, attention should also be paid to the form. The target group's level of health literacy is highly relevant in this respect (Noar et al., 2007; Bernhardt & Cameron, 2003). Health literacy involves "the cognitive and social skills which determine the motivation and the ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (World Health Organization, 1998, p. 10). These skills comprise functional, interactive, and critical skills (Nutbeam, 2000; 2008; 2009). Functional skills involve the ability to apply the literacy (read/write) and numeracy skills needed to understand health information, whereas interactive skills involve the capacities to independently "obtain, perceive, recognize, comprehend, analyze, choose and value health information" (Mårtensson & Hensing, 2012). Critical skills reflect the capacity to critically analyze health information and use it to exert greater control over life events and situations at both the individual and community level (Nutbeam, 2000; Mårtensson & Hensing, 2012; Christmann, 2016).

For health communications to be effective, they should be tailored to the health literacy skills of the target group (Nutbeam, 2008; Twickler, Hoogstraaten, Reuwer, Singels, & Essink-Bot, 2009). In general, Dutch truck drivers have a relatively lower level of education and lower socioeconomic status (SES) (Van der Beek, 2012; European Foundation for the Improvement of Living and Working Conditions, 2008), presumably corresponding with lower health literacy and poor health literacy skills (Nutbeam, 2008; Twickler et al., 2009). This raises the question as to what extent the content provided in the health interventions poses too high demands on the target group's literacy skills. For instance, these materials may contain arguments to convince the target group that they run health risks due to their profession. How are these arguments presented and what skills are required to fully grasp their impact? A similar question could arise if these interventions contain instructions on how to perform the healthier behavior. What skills are required

to understand these instructions and to act upon them? Therefore, the second research question is: What health literacy skills are required to process the content provided in the health interventions? (RQ2).

Answering these research questions may increase our understanding of the low level of effectiveness of existing health promotion initiatives targeting Dutch truck drivers and thereby provide insights for the development of more effective health interventions for this high-risk, underserved target group. In line with our objectives, the analysis consisted of two steps. The first step involved an analysis of the content, to examine on which HAPA determinants the materials focus. In the next step, we analyzed how this content is presented to the audience, and which demands this presentation poses on the audience's health literacy skills.

## 3.2 Step 1: Analysis of HAPA focus

Once institutional review board approval was obtained, a total of 21 health promotion materials for Dutch truck drivers were analyzed. We collected our data using the following criteria: all the available materials: (a) targeted Dutch truck drivers; (b) promoted health-related behaviors; and (c) had been used within the last 15 years (2000-2015). The obtained materials varied from large- to small-scale communications (including leaflets, brochures and campaign posters), ranging from 1 to 32 pages in length. Fifteen out of the 21 brochures encouraged desirable behavior (e.g., healthy body postures, eating patterns, exercise behaviors, and stress relaxation), the remaining six discouraged undesirable behavior (e.g., smoking and alcohol consumption). All health promotion materials contained images or photographs and were presented in print form. Our data collection did not yield any audio, audiovisual, or digital materials; print is still the most commonly used medium for workplace health promotion in the Dutch trucking industry. All the materials were produced by, or in collaboration with, organizations within the Dutch trucking industry – including occupational health services and the national institute for transport and logistics.

### ***Data analysis***

The focus areas of the health promotion materials were classified in terms of the theoretical constructs for health behavior change as defined by the HAPA (Schwarzer, 2008). In line with HAPA, we distinguished between determinants of the intention that are relevant for non-intenders and determinants of converting intention into action that are relevant for intenders. For the non-intenders, we distinguished attempts to increase the target group's perception of risk, and/or references to its membership of a high (or higher) risk group –

including references to high probability, statistics, and percentages (*risk perception*); attempts to influence the target group's outcome expectancies by focusing on the positive outcomes of the advocated behavior (*outcome expectancies*); and attempts to increase the reader's beliefs in being able to initiate the advocated behavior, and/or attempts to help the reader to initiate the new behavior by advocating the behavior's feasibility or practicability by, for example, offering guidance or by giving general examples and tips on initiating the new behavior (*action self-efficacy*) as part of the motivation phase.

For the intenders, who are in the volition phase, we distinguished a focus on the specifics about how to implement the new, promoted behavior, the "when", "where" and "how" of the intended action (*action planning*); a focus on concrete scenarios of the advocated behavior – including the anticipation of barriers that may arise while engaging in and/or adhering to the advocated behavior and the generation of strategies for coping with these barriers (*coping planning*); and attempts to increase the audience's beliefs in being able to deal with barriers that arise while engaging in and adhering to the new, advocated behavior (*maintenance self-efficacy*).

All passages in the materials containing either explicit or implicit references to HAPA determinants were included. Images were included in the analyses if implicit (or non-verbal) references to HAPA determinants could be extracted from them. Passages referring to target groups other than truck drivers (e.g. forklift drivers, planners, or employers) were excluded from the analyses. For each intervention, we identified which HAPA determinants were focused upon. Given the differences in length of the health promotion materials, we decided to code *if* the HAPA determinants were used within one intervention, disregarding the frequency. The classifications were developed after extensive consultation between two raters, who first analyzed the materials independently.

## Results

An overview of the focus of health promotion materials for Dutch truck drivers is given in Table 1. In the sections to follow, we will use translated examples to illustrate how the various HAPA determinants were targeted in the materials.

**Table 1. The HAPA determinants focused upon in health promotion materials for Dutch truck drivers**

HAPA determinant	Number of materials in which the HAPA determinant is focused upon <i>n</i> (%)
<b>Motivation phase</b>	
Action self-efficacy	18 (85.7)
Outcome expectancies	16 (76.2)
Risk perception	12 (54.5)
<b>Volition phase</b>	
Action planning	9 (42.9)

### *Action self-efficacy*

To strengthen the target audience's belief that it will be able to initiate the new, advocated behavior –that is, the target audience's action self-efficacy– the vast majority of materials included a 'tips & tricks' section. The presented tips range from general (e.g., get into a good driving position, or eat regularly three times a day) to more specific (e.g., spread only one slice of bread and put another slice on top of that). Besides tips & tricks, a number of materials offered the reader a workshop (e.g., 'Quit Smoking' and 'Healthy Eating'), a lifestyle program (e.g., the 'Alcohol Control' program), coaching (e.g., by a relaxation coach, a personal trainer or mentor), or other forms of help and guidance in adopting lifestyle changes. Another intervention tried to encourage the readers' action self-efficacy by explicitly downgrading the level of effort it would take to engage in the advocated behavior:

Half an hour of exercise a day, five days a week, will take you a long way in the right direction. Well, and what is half an hour? Ten minutes of walking here, five minutes of biking there. It does not have to cost *that* much time and trouble. Because the gym is really not the only place to work on your fitness... (*Relaxation First Aid* – Gezond Transport & NISB)

### *Outcome expectancies*

The reader's evaluation of the expected outcomes of a behavior can be positive or negative. To motivate their target group to act in line with the promoted behavior, the health materials commonly aimed to influence the truck drivers' outcome expectancies by stressing the advantages of the advocated behavior. In a brochure on healthy eating, for instance, these advantages were listed under the heading "Benefits of healthier food and drink" and included amongst others "you'll feel fitter", "you'll reduce the risk of cardiovascular diseases and diabetes", and "you'll look better" (*Healthy eating* – ArboNed).

The reported advantages generally related to truck drivers' health and/or work performance (e.g., being more alert and working more concentrated when reducing your alcohol intake). Only one intervention overtly communicated advantages connected to truck drivers' personal/family lives, by implying that a healthier lifestyle also affects one's children and (future) grandchildren: "you are not just doing it for yourself" (*Also enjoying work?* – STL).

### *Risk perception*

About half of the materials included passages on risk perception. Instead of focusing on the positive consequences of the desired behavior (i.e., outcome expectancies), a number of materials focused upon the negative consequences of the current, undesirable behavior (e.g., if you don't lose weight, you'll run the risk of developing illnesses and of no longer fitting behind the wheel...). Another form of increasing the reader's perceived chance of a health problem or risk is by addressing the characteristics of being a truck driver:



What is it that a truck driver does all day? Right, sitting. But, that is *exactly* what the body is not made for. Your back, shoulders and/or upper legs will start protesting, sooner or later. (*Also a well-adjusted driver seat?* – STL)

In addition to references to the nature of their work, some materials included statistics to communicate truck drivers' increased threat to health risks: "In 10 to 20 percent of the traffic accidents in our country that involve trucks, fatigue plays a role (*Dozing away? Not while you're on the way!* – BGZ)". Another, more implicit way in which some materials included levels of risk communication is the use of test sections. In one intervention, for example, the reader was asked to measure his or her Body Mass Index (BMI) and waist circumference – followed by a table indicating the person's personal risk level, for example: "ok (pot belly, but be aware – the danger zone is in sight" (*Such a healthy appetite as well?* – STL).

### *Action planning*

As previously stated, the tips in the tips & tricks sections ranged from the general to the more specific. Differing from general tips to help the reader initiate the new behavior (action self-efficacy), action planning involves passages and/or tips on the new behavior's specifics. Nine of the 21 selected materials included tips with specifics on the when, where and/or how of the intended action. The following exercise tips provide a good example:

- Little time to exercise during the workweek? Take a bold step and venture out with friends or family during the weekend. There are some great walking and cycling routes on the Internet.
- Make good use of your resting times on the road! Go for a 10-minute walk on the parking lot after your coffee or meal, for example. If you do this three times a day, you'll be getting enough exercise. And take a look at the 10 exercises in this booklet. (*Relaxation First Aid* – Gezond Transport & NISB)

Passages particularly referring to the "how" were those involving instructions on how to perform the desired behavior, often accompanied by images.

Summarizing then, the selected health promotion materials show a predominant focus on HAPA determinants pertaining to the motivation phase; action self-efficacy, outcome expectancies, and risk perception. Only nine of the 21 materials focused on the volition phase by including information on action planning. Although some of the materials acknowledged the challenges that truck drivers face in obtaining and maintaining a healthier lifestyle, none of the materials referred to potential barriers that may arise and coping strategies to overcome these barriers (coping planning), or to the beliefs about one's ability to deal with these barriers (maintenance self-efficacy).

## 3.3 Step 2: Argumentation analysis

In line with the aim of motivating their target group (see findings step 1), the materials consistently used argumentation in order to persuade the reader to engage in (e.g., healthy diet) or refrain from (e.g., drink-driving) certain behaviors. There is good reason for such an approach: Persuasion achieved by a careful evaluation of arguments –that is, through central processing– is believed to result in strong and stable attitudes that are relatively good predictors of subsequent behavior (Petty & Cacioppo, 1986; Petty, Haugtvedt, & Smith, 1995; Glasman & Albarracín, 2006). In their analysis of 20 public information brochures, Schellens and De Jong (2004) show that arguments in persuasive brochures are often presented, or disguised, as factual information. As a result, the audience has to reconstruct what information can serve as an argument. In order to assess the quality of the argument, the audience has to identify what type of argument it is. Different types of argumentation (for example, argumentation from analogy and argumentation from authority) are based on different relations between the argument and the claim and, thus, need to be tested against different evaluation criteria (Schellens & De Jong, 2004; Van Eemeren, Grootendorst, & Snoeck Henkemans, 2002).

In short, the central processing of regular health promotion materials may pose considerable demands on their audience's cognitive capacities and requires skills at the level of (at least) functional and interactive health literacy as the audience must be willing and able to analyze and evaluate different types of argumentation on the basis of what is presented as an informative text. The lack of impact of the current interventions aimed at Dutch truck drivers may be the result of a similarly 'cloaked' presentation of their argumentative content being beyond the target group's health literacy skills. Therefore, the second step involved an analysis of the materials' argumentative content, examining the presentation of the arguments to infer what level of health literacy skills is required for evaluating the arguments.

### ***Data analysis***

The argumentation analysis was guided by the pragma-dialectical approach (Van Eemeren & Grootendorst, 1992; Garssen, 1997; 2001), due to its systematic guidelines for analyzing and evaluating argumentation (Schellens & De Jong, 2004). Pragma-dialectics distinguishes three types of argumentation: symptomatic argumentation, comparison argumentation, and causal argumentation. These types of argumentation differ from one another in how they relate the argument to the standpoint. In argumentation based on a symptomatic relation, "a standpoint is defended by citing in the argument a certain sign, symptom, or distinguishing mark of what is claimed in the standpoint" (Van Eemeren et al., 2002). For a careful evaluation of symptomatic argumentation, the most important critical questions

to ask are: "Is the characteristic indeed typical of the property?"; and "Is the characteristic not also typical of something else?" (Hitchcock & Wagemans, 2011). Subtypes of symptomatic argumentation are *argumentation from example*, *argumentation from authority*, and *argumentation based on the meaning of a term*.

In argumentation based on a relation of analogy or comparison, "a standpoint is defended by showing that something referred to in the standpoint is similar to something that is cited in the argumentation, and that on the grounds of this resemblance the standpoint should be accepted" (Van Eemeren et al., 2002). When evaluating comparison argumentation, the most important critical questions are: "Are the things that are being compared actually comparable?"; "Are there enough relevant similarities between the things that are being compared?"; and "Are there any relevant differences between the things that are being compared?" (Hitchcock & Wagemans, 2011). In addition to *argumentation from analogy*, pragma-dialectics distinguishes *argumentation of figurative comparison* and *argumentation based on the principle of justice* as subtypes of comparison argumentation.

In argumentation based on a causal relation, "a standpoint is defended by making a causal connection between the argument and the standpoint, such that the standpoint, given the argument, ought to be accepted on grounds of this connection" (Van Eemeren et al., 2002). The most important evaluation questions associated with comparison argumentation are: "Does the established cause, in fact, lead to the mentioned result?"; "Are there any factors that must be present together with the proposed cause to create the mentioned result?"; and "Could the proposed result be caused by something else as well?" (Hitchcock & Wagemans, 2011). In addition to *argumentation from cause to effect* and *argumentation from effect to cause*, *pragmatic argumentation* is categorized as a special subtype of causal argumentation.

All passages in the materials containing explicit, implicit or non-verbal (i.e. photos or images) argumentation for the position in question were included. For each intervention, we identified whether argumentation was used and, if so, how the (different types of) arguments were presented, and how this affects the evaluation process. As in step 1, the classifications were developed after extensive consultation between two raters.

## **Results**

In this section, we will illustrate how the argumentation in the health promotion materials targeting Dutch truck drivers was presented and what implications this has for the evaluation of these materials. As different evaluation questions apply to different argument types, we discuss the results on the basis of the different types of argumentation. In line with Schellens and De Jong (2004), pragmatic argumentation, argumentation from cause

to effect, argumentation from example, and argumentation from authority were the argument types most frequently used in the materials.

### *Pragmatic argumentation*

In pragmatic argumentation, a behavior is promoted or discouraged on the basis of its desirable (pro) or undesirable (con) consequence – resulting in the following argument scheme (Van Poppel, 2012):

Action X should (not) be performed

*Because:* Action X leads to Y

*And:* Y is (un)desirable

In the following excerpts from one of the interventions on healthy eating, both the positive and negative variants of pragmatic argumentation are used respectively:

[...] If you learn better ways to resist unhealthy food temptations, you will definitely feel healthier and fitter.

And:

If you (continue to) eat unhealthily, you will notice that immediately in your fitness and weight. [...]

*(Healthy eating – ArboNed)*

In these examples, as in all instances of pragmatic arguments in these materials, parts of the argument were left implicit. For instance, the conclusion that one should resist, or learn to resist, unhealthy food temptations is not stated. Similarly, the desirability or undesirability of “feeling healthier and fitter” and “immediately noticing it in your fitness and weight” are not expressed. Even though the required inferences may seem straightforward, one has to keep in mind that they not only have to be inferred but also evaluated. For the arguments to hit home, the target audience has to consider the predicted consequence not only as desirable or undesirable, but also as the effect of the proposed cause. In a number of materials, as in the second example, the predicted consequence was presented in such a vague and implicit manner (“immediately noticing it in your fitness and weight”) that it imposes difficulties for readers assessing its desirability or undesirability, and its probability.

### *Argumentation from cause to effect*

In its typical form, argumentation from cause to effect suggests that one thing leads to another; in other words, it suggests that there is a causal relation between a cause and the effect that is mentioned in the standpoint (Van Eemeren et al., 2002):

Y is true of X

*Because:* Z is true of X

*And:* Z leads to Y

Argumentation from cause to effect is often used to support statements about the probability of a consequence, as in the following excerpt in which truck drivers' typical working conditions are causally linked to (future) back problems:

Heavy lifting. Shoving roll cages. Prolonged periods of sitting. Unloading the truck. Whether working on the truck, in a warehouse or at the office, your back is suffering. Especially if you made it a habit to use your back incorrectly. Because if you persist with these habits long enough, your back will start protesting at some point. And your back will find no problem in maintaining its protest for a long time.

*(Such a healthy back as well? – STL)*

As excerpts like these refer to the characteristics of being a truck driver, one could argue that these particular instances are forms of symptomatic argumentation. The ambiguity lies in the fact that both causal argumentation and symptomatic argumentation are expressed in the form "Y is true of X, because Z is true of X" and that the linking premise ("Z leads to Y", or "Z is symptomatic of Y") is typically left unexpressed (Hitchcock & Wagemans, 2011) – leaving the reconstruction and attribution of the linking premise to the reader. As the attribution of the (ambiguous) linking premise is a prerequisite for answering the associated critical questions (e.g., Does the proposed cause (Z) indeed lead to the mentioned result (Y)?), this results in ambiguity about how the argument should be evaluated.

Considering that from the fact that truck drivers are working in challenging conditions, the deduction is made that this will lead to undesirable health consequences, we decided to consistently interpret such accounts as forms of causal argumentation.

#### *Argumentation from example*

In argumentation from example, a number of separate cases, or examples, are presented as indicative of something in general (Van Eemeren et al., 2002):

Y is true of X

*Because:* Z is true of X

*And:* Z is exemplary of Y

In the materials, argumentation from example was used to support statements about the feasibility of the promoted behavior (e.g., by giving examples (or tips) on how to initiate

the behavior) or for supporting statements about the desirability or undesirability of a consequence, for example:

Whether you are a chain smoker or a social smoker, for your health it is very important that you quit smoking. [...]

*What are the benefits of quitting smoking?*

- Your fitness improves
- Your sense of smell and taste improves
- You are less likely to get sick or get a cold

[...] (*Quit smoking* – ArboNed)

The desirability of smoking cessation is supported by exemplary benefits of the consequences of smoking cessation. Note that, again, in this case, as in all cases of argumentation from example, the linking premise is left implicit and must be reconstructed by the reader in order to test the argumentation against critical questions as: Are the presented examples (Z) indeed exemplary for the matter in question (Y)? and Are there enough separate cases, or examples, (Z) mentioned?

#### *Argumentation from authority*

In argumentation from authority, the agreement of a supposed authority with a statement is presented as a guarantee for the statement's acceptability (Pilgram, 2011; 2012):

Statement X is acceptable

*Because:* Authority Y says X

*And:* The expertise of Y guarantees the acceptability of X

The use of argumentation from authority throughout the selected health promotion materials can be divided into two categories: In about half of the materials a reference was made to the sender's authority, for example:

#### *About ArboNed*

ArboNed is a leading and professional occupational health service, which focuses on improving the sustainable employability of employees, resulting in a reduction of absenteeism within companies and institutions. Daily, we provide services to 80,000 employers and more than 1 million employees. Among our customers are SME entrepreneurs, multinational corporations, institutions, and governments.

(*More relaxation* – ArboNed)

In these cases, it is not clear to which particular statement the authority relates; the authority argumentation seems to be used in support of the whole material rather than in support of a specific statement. Subsequently, it is not clear to which statements the critical questions relate, which makes it very hard for the reader to assess whether the mentioned authority (Y) is indeed an expert with regard to the statement (X), and whether the expertise of the authority (Y) is sufficient to guarantee the acceptability of the statement (X). Note also that one could argue that the sender, while referring to its own authority and capacity, is arguing *by* authority rather than *from* authority (Pilgram, 2011; 2012).

In other materials, testimonials from truck drivers were used to support statements relating to the desirability and/or feasibility of the behavior:

'A break away with the family: that's what we do every summer. And later, hopefully with the grandchildren as well. Therefore, I do my best to stay as fit as possible. Since the eldest, I've started to eat more healthily for example. And to exercise more.'  
(*Also enjoying work?* – STL)

In line with Schellens and De Jong (2004), we interpreted such instances as argumentation from authority as "the testimonial provider's membership of the target group and the reader's possibility of identification with him or her give the testimonial provider the authority of someone who speaks from experience". In addition to verbal accounts, nonverbal accounts of testimonials were frequently used: In photographs of truck drivers engaging in and enjoying the promoted behavior (e.g., a trucker who is walking with the dog, or a trucker who is playing soccer with his kids) the portrayed truck driver is – as an authority of experience – showing both the feasibility and desirability of the promoted behavior. Thus, the argumentation is expressed in the form "Statement X is acceptable, because authority Y shows (instead of says) X". The nonverbal accounts of authority argumentation are highly implicit and, consequently, place high demands on the reader's cognitive skills in terms of the evaluation and processing of these arguments.

Summarizing then, a common aspect of the arguments employed in the health materials targeting Dutch truck drivers was that the linking premise was left implicit. The linking premise is, however, a crucial factor in evaluating the arguments as it indicates which argument scheme links the explicit premise to the standpoint. In other words, the audience has to infer what warrant connects the evidence to the claim. In addition, the link to the claim about the behavior (e.g., ... and therefore you should eat more healthily), is also often not expressed. As a result of the implicit presentation of the arguments, a careful evaluation of the arguments requires the audience to reconstruct the argumentation links in order to be able to answer the associated critical questions.

## 3.4 Discussion

The aim of this analysis was to assess which health behavior determinants are targeted in current health interventions for Dutch truck drivers (RQ1) and which demands the argumentative content of these interventions pose on the cognitive capacities of the target group (RQ2). The analysis of the targeted determinants revealed a predominant focus on determinants pertaining to the motivation phase of HAPA. The three determinants of the intention – action self-efficacy, outcome expectancies, and risk perception – were the three most frequently addressed issues. In fewer than half of the interventions, attention was paid to action planning; the other factors that may help people convert intentions into actions, coping planning and maintenance efficacy were not addressed in any of the interventions.

These results suggest that the developers of these materials consider Dutch truck drivers as non-intenders. In their opinion, the target audience needs to be motivated to adopt a more healthy lifestyle. This assumption was confirmed during a meeting where we shared our preliminary findings with both applied researchers in the field of health communication and experts within the Dutch sector of transport and logistics; the vast majority of the participants believed lack of motivation to be the main cause for Dutch truck drivers' unfavorable and unchanging lifestyle behaviors. Previous research (Boeijinga et al., 2016), however, suggests that there are Dutch truck drivers who have the intention to adapt their lifestyle and would benefit from a focus on planning strategies, i.e. action planning (specifying "when", "where", and "how") and coping planning (imagining what obstacles might exist and how to deal with them). In view of the challenges and obstacles inherent to their work context, planning strategies can facilitate truck drivers in translating their good intentions into actions. The investigated health interventions thus appear to be inadequately tailored to the particular mindset of what might be a considerable part of the target group.

With respect to the way in which the arguments were presented, the results in this study replicate those of Schellens and De Jong (2004): Despite their persuasive intent, the health promotion materials have a rather informative look as a result of parts of the argumentation being left implicit. One of the underlying reasons for such an informative cloak may be to prevent evoking reactance. The interventions suggest changes in behaviors, thereby threatening the person's liberty of action and self-determination (Kim, Levine, & Allen, 2014). Such a perceived threat of one's autonomy can evoke reactance towards the persuasive message, which may lead to a failure to obtain the intended effect or even a boomerang effect (Donohew, Lorch, & Palmgreen, 1998). An informative 'look' may disguise the persuasive intent and, thereby, potentially reduces reactance. However, such an approach poses high demands on the reader's cognitive resources. For if the reader



wants to evaluate the argumentation against the critical questions relevant to the particular type of argument, which is demanding in itself, he or she has to identify the lines of argumentation by explicating the unexpressed linking premises and conclusions in order to be able to do so. These demands on the cognitive skills of the audience may be too high for target groups with lower health literacy, such as truck drivers.

Thus, current health promotion materials for Dutch truck drivers do not cater to the needs of intenders content-wise (focusing on the wrong determinants), nor to the needs of non-intenders form-wise (too difficult to process).

### ***Limitations***

While the findings presented here are indicative, this study is not without its limitations. As previously indicated, the corpus consisted of print materials only. The data collection did not yield any digital, audio or audiovisual materials. In terms of presentation, we paid no attention to the visual formatting. That is, we did not take into consideration the visual effects on the materials' intelligibility and comprehensibility. A second limitation is the lack of statistics on truck drivers' reading levels and actual readership of these interventions. All of the health promotion materials were systematically distributed among trucking employees (small-scale) or Dutch truck drivers (large-scale). Yet, a systematic distribution does not necessarily imply a systematic consumption of the materials; if materials are not sufficiently stimulating to attract and keep the attention of the target group, the message will not have any impact at all (Noar et al., 2007; Donohew et al., 1998). This lack of attention may offer an additional explanation for the materials' low impact. We therefore suggest future research to also incorporate health promotion materials' perceived attractiveness. More insight in the reading grade levels of Dutch truck drivers may enable matching the health materials' language and legibility to the drivers' reading abilities. For the sake of reliability and validity, we further recommend more quantitative approaches to test the effectiveness of health promotion materials for Dutch truck drivers.

## **3.5 Conclusion**

In spite of numerous health promotion activities, many Dutch truck drivers persist in maintaining a relatively unhealthy lifestyle. This lack of impact may be caused by the fact that the current interventions are insufficiently tailored to the stage of behavior change that at least part of this target group finds itself in, as well as to its cognitive capacities. First, the interventions are geared to the needs of non-intenders, whereas there are indications that there are a considerable number of intenders among the target group. Second, the arguments provided in the interventions are presented in a way that requires

considerable effort and skills to identify and evaluate them. These findings indicate that health promotion for truck drivers would benefit from: (a) an additional focus on action planning and coping planning; and (b) the use of approaches, or formats, that require lower health literacy skills. Future (quantitative) research should be conducted to further verify our findings, including their generalizability for truck drivers from other countries, and to test the promise of more tailored approaches to health promotion for truck drivers.

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4

# Risk versus planning health narratives targeting Dutch truck drivers: Obtaining impact via different routes?

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## 4.1 Introduction

Various scholars have argued that narrative health interventions hold great promise for influencing people's health behavior (e.g., Green, 2006; Kreuter et al., 2007; Moyer-Gusé, 2008). Recent meta-analyses of studies on narrative interventions reveal that these interventions are indeed capable of influencing people's beliefs, attitudes, intentions, and behavior (Braddock & Dillard, 2016; Shen, Sheer, & Li, 2015). However, a systematic literature review shows that not every narrative health intervention is successful and that large variations exist in the plot, length, and medium of the narrative interventions (De Graaf, Sanders, & Hoeken, 2016). To understand when and how narrative health interventions can be effective in influencing people's health behavior, insights are needed into the processes that are responsible for this impact and how they are evoked and guided by features of the narrative as well as by the medium through which the narrative is presented.

This article presents a study in which narrative content and narrative medium were manipulated to assess the extent to which these factors influence people's intention to adopt a more active lifestyle and whether this effect is obtained via different routes. The intervention's target group consisted of Dutch truck drivers. The next section explains why truck drivers constitute a particularly interesting target group for studying narrative health interventions. We also discuss the extent to which differences in narrative content and medium can influence the intervention's impact, which leads to the study's hypotheses.

### ***Dutch truck drivers: A high-risk, underprivileged occupational group***

Despite large-scale health promotion efforts to change Dutch truck drivers' lifestyle behaviors, statistics on their levels of overweight and absenteeism compare unfavorably to other occupational groups (Gezond Transport, 2013; STL, 2016). At present, 21% of Dutch truck drivers are obese (body mass index [BMI]  $\geq 25$  kg/m<sup>2</sup>), compared with 13% of the overall workforce, and another 44% are overweight (BMI  $\geq 30$  kg/m<sup>2</sup>; STL, 2016). Truck drivers with higher BMI are significantly more frequently and longer absent from work than truck drivers with lower BMI (Gezond Transport, 2013; Jans, Van den Heuvel, Swenne, Hildebrandt, & Bongers, 2007). Research also has revealed that Dutch truck drivers generally engage in unhealthy lifestyles: 19% are inactive (versus 12% of the overall workforce), and another 62% are semiactive; only 8% eat the daily-recommended intake of vegetables (versus 14%), and 15% eat the daily-recommended intake of fruits (versus 16%; STL, 2016).

In part, these unfavorable figures may be explained by the obduracy of the detrimental trucking work environment (Apostolopoulos, Sönmez, Shattell, Gonzales, & Fehrenbacher, 2013; Van der Beek, 2012). However, they also question the effectiveness of previous and ongoing health promotion materials. Current interventions typically are persuasive

brochures that aim to motivate truck drivers to adopt healthier lifestyle behaviors by, for example, pointing out the desirable outcomes of the advocated behavior or the risks of the current, undesired behavior (Boeijinga, Hoeken, & Sanders, 2017). The argumentative nature of these brochures requires considerable cognitive skills to process their content thoroughly: For the argumentation to be effective, the reader must be able to identify what information serves as an argument; infer hidden premises; recognize what type of argument has been used to identify the relevant criteria for assessing the argument's quality; and, finally, apply these criteria to evaluate his or her own situation (Schellens & De Jong, 2004).

The cognitive demands posed by this type of health intervention may require higher health literacy skills than the target group possesses. In general, truck drivers have a relatively low level of education and low socioeconomic status, which generally corresponds with a lower health literacy level (Twickler et al., 2009; Van der Beek, 2012). Health literacy is defined as "the cognitive and social skills which determine the motivation and the ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (World Health Organization, 1998, p. 10). In general, truck drivers are at risk due to their harsh working conditions, while the health interventions that aim to empower them to deal with these conditions may be too demanding in relation to their needs and capacities.

### ***Health promotion for truck drivers: The promise of narrative***

Several scholars have suggested that narratives may be an effective genre in health communication (e.g., Green, 2006; Kreuter et al., 2007). Because narratives are essentially built around the experiences of specific people and depict a natural (experiential) event order (Labov & Waletzky, 1967), they represent a basic and universal form of communication. Humans are hardwired to process and comprehend such identifiable and chronological information as represented in narratives without prior education or training (Graesser, Olde, & Klettke, 2002; Mar, 2004). As such, narratives are accessible and attractive for a broad audience, including those with lower levels of education and lower health literacy skills (Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013). Therefore, it may be presumed that narrative health interventions will be more attractive and comprehensible to Dutch truck drivers than the current argumentative interventions.

Meta-analyses have shown that narratives can indeed be effective in influencing people's beliefs, attitudes, intentions, and behavior (Braddock & Dillard, 2016; Shen et al., 2015). Several models have been developed to explain this persuasive impact of narratives (e.g., Green & Brock, 2002; Moyer-Gusé, 2008; Slater & Rouner, 2002). These models focus mainly on the processes responsible for the impact of narratives. All share the assumption

that, for a narrative to influence its audience, the audience should be involved in the story. The more involved the audience is, the more likely the impact will occur and the larger this impact is predicted to be. Narrative involvement can take the form of being an invisible witness to the story events (often referred to as *narrative presence* or *transportation*) or taking a specific character's perspective and adopting this character's goal (often referred to as *identification*; see Tal-Or & Cohen, 2010). The affective disposition theory (Raney, 2006; Zillmann & Cantor, 1976) asserts that the audience may experience positive emotions if the protagonist is successful in achieving his or her goal, but may feel sad when he or she fails. The more involved the audience becomes with the narrative, the less likely it is to be resistant to the narrative's persuasive subtext.

Ample empirical evidence supports these processes as mechanisms for narrative persuasion. In a meta-analysis, Van Laer, De Ruyter, Visconti, and Wetzels (2014) provide evidence for the importance of transportation. Several studies have found that identification with a character is important for stories to influence people's opinions and attitudes (e.g., De Graaf, Hoeken, Sanders, & Beentjes, 2012; Hoeken & Fikkers, 2014; Igartua & Vega Casanova, 2016). Emotions proved to be good predictors of the audience's attitudes (Busselle & Bilandzic, 2009; De Graaf, Hoeken, Sanders, & Beentjes, 2009; Hoeken & Sinkeldam, 2014). Finally, several studies have shown that whether the story is presented as true or as fictitious does not make a significant difference for an attitude effect to occur (Appel & Maleckar, 2012; Green & Brock, 2000).

Narrative health interventions may constitute a promising tool to influence the health behavior of truck drivers. To make good on that promise, the narrative should be situated in a context that truck drivers perceive as realistic and authentic, because this will increase their level of involvement (Green, 2004). In addition, the narrative's protagonist should be someone the drivers can relate to and identify with. The emotions evoked by the narrative appear to play an important role as well. These emotions typically follow from the main character's vicissitudes and thus relate to the narrative's plot. The next section describes what the narrative should be about to positively influence the truck drivers' intentions regarding their lifestyle.

### ***Health narratives for truck drivers: The question of plot***

In-depth interviews (Boeijsinga, Hoeken, & Sanders, 2016) revealed that Dutch truck drivers regard health as very important but also that they perceive a sense of relative good health by comparing their own condition to that of others who are in worse health (e.g., colleague truck drivers who had suffered from heart attack or knee malfunction). Such *downward social comparison* enables truck drivers to underestimate their own health risks, and thus to suppress the perceived need to change their lifestyle. Hence, a focus

on *risk perception* appears to be promising. Narrative forms of risk communication have been found to be (more) effective in raising people's risk perception. Dillard, Fagerlin, Dal Cin, Zikmund-Fisher, and Ubel (2010), for example, discovered that a narrative message, compared with an educational message, increased perceived risk for colorectal cancer and screening intention. Similar findings have been described for risk perceptions about the intention to perform prevention behavior regarding hepatitis B (De Wit, Das, & Vet, 2008), influenza (Prati, Pietrantonio, & Zani, 2012), and sexually transmitted diseases (So & Nabi, 2013). A meta-analysis (De Hoog, Stroebe, & De Wit, 2007) has revealed that the subsequent feelings of vulnerability and potential loss arouse fear and other negative emotions, which in turn can operate as motivators.

Interviews with Dutch truck drivers also revealed that many would like to adopt a healthier lifestyle and have indeed, sometimes repeatedly, tried to do so. However, most attempts were thwarted by barriers within their work environment (e.g., irregular working hours and lack of exercise facilities) and personal environment (e.g., social expectations or obligations). These drivers thus have a gap between their intentions and actual behaviors. The Health Action Process Approach (HAPA; Schwarzer, 2008) accounts for such an intention-behavior gap by distinguishing between a preintentional motivation phase (leading to a behavioral intention) and a postintentional volitional phase (leading to actual health behavior). According to the HAPA, truck drivers in the volitional phase could benefit from interventions focusing on *planning strategies*. These would include specifying the when, where, and how of the intended action (*action planning*) as well as anticipating potential barriers and preparations for successful strategies to overcome them (*coping planning*). Because narrative plots typically involve characters overcoming obstacles in a quest for reaching their goal, the protagonist can function as a role model, showing the target audience what obstacles may arise and how to successfully navigate them, thereby evoking positive feelings and emotions (Raney, 2006; Zillmann & Cantor, 1976).

In summary, narrative health interventions have been shown to influence people's beliefs, attitudes, intentions, and behavior. In addition, several mechanisms that are responsible for this impact have been identified. Still, not every narrative intervention is effective, and the effectiveness may depend on, for instance, the content of the narrative. This study examines the impact of two narrative interventions on Dutch truck drivers' intention to exercise more. In the interviews, truck drivers noted a lack of willpower as the main obstacle to eating healthier, whereas they regarded working conditions and family pressure as obstacles for exercising more (Boeijsinga et al., 2016). The study's findings thus offered more options for developing a narrative about dealing with obstacles preventing them from exercising more than from eating healthier.

The two developed narratives differed in their content: One focused on the negative consequences of an inactive lifestyle, and the other focused on effective ways to deal with obstacles when trying to put into action the intention to exercise more. Both stories could influence participants' intention to exercise more in a similar way, but the hypotheses are that they will do so along different routes.

*H1: A risk perception-focused health narrative will increase Dutch truck drivers' level of perceived health risks and evoke negative emotions, leading to more positive intentions toward exercise.*

*H2: A planning strategies-focused health narrative will increase Dutch truck drivers' level of action and coping planning strategies and evoke stronger positive emotions, leading to more positive intentions toward exercise.*

### **The question of medium**

Narratives can be delivered via different modalities – for instance, print, audio, or audiovisual (Hinyard & Kreuter, 2007). Although some studies demonstrate that message modality can affect message processing (e.g., Andreoli & Worchel, 1978; Booth-Butterfield & Gutowski, 1993) and possibly also message effectiveness (see Hinyard & Kreuter, 2007), little research has investigated the differential impact of narrative modality. In their study on breast cancer screening communication for Italian-speaking young women, Occa and Suggs (2016) compared didactic and narrative messages in a video or infographic format. They found that, for the narrative message, the video format had a more positive effect on attitudes and intentions. However, similar studies (Luna Nevarez, 2013; Stitt & Nabi, 2005; Winterbottom, Bekker, Conner, & Mooney, 2012) failed to find these differences in effect of modality. In three studies, Braverman (2008) compared the effect of radio versus printed message presentations of narrative versus argumentative persuasive messages. The results revealed that the print modality was more effective for argumentative messages, whereas the audio version was more effective for narrative messages (see also Brosius & Bathelt, 1994).

These studies have been carried out mainly among highly educated target groups. For Dutch truck drivers, both written and audio formats appear to have great potential, because a survey revealed that nine of 10 truck drivers are habitual readers of trucking magazines and that all consistently listen to the radio during work (“Lezen, Luisteren, Kijken,” 2013). For people with lower levels of education and health literacy, a spoken message may be easier to process than a written one (Mayer, 2003; Mayer & Moreno, 2003; Wilson & Wolf, 2009). Because spoken messages are generally more vivid than written ones, the audio format may also be more engaging than the written one (Brosius &

Bathelt, 1994). In sum, the level of narrative involvement may be higher with audio stories than with written stories. Therefore, our third hypothesis is as follows:

*H3: Audio narratives lead to a stronger feeling of narrative involvement than written narratives, regardless of the narrative's content.*

If this hypothesis is confirmed, then the impact as predicted in H1 and H2 for the audio narratives should be stronger than that for the written narratives.

## 4.2 Method

### **Materials**

The personal accounts of Dutch truck drivers collected in a previous study (Boeijinga et al., 2016) were used as a starting point for constructing two realistic narrative health interventions. Key quotes and comments were extracted from the drivers' personal stories to develop a risk perception-focused narrative and a planning strategies-focused narrative.

The main character was the same in both narratives, and was introduced as follows: "René Louwisse, 41 years of age. Father of Tim (14) and husband of Anja (38). As a truck driver he hits the road in the early morning." The narrative focusing on risk perception describes how René suddenly experiences a pain in his chest while unloading his truck. At first he does not think much of it and ignores the pain because he is already behind schedule. During a visit to his doctor the next day, he is immediately referred to the hospital for further assessment. It turns out that an artery near his heart is clogged and requires urgent surgery; the subsequent operation is successful. The perceived risk in this narrative was realistic in that it was based on an authentic storyline obtained from interviews in a previous study (Boeijinga et al., 2016); cases of heart and cardiovascular diseases were frequently mentioned in truck drivers' personal stories.

The narrative focusing on planning strategies depicted a trucker who reflects on his road to a healthier lifestyle: Seeing his son's embarrassment about his (René's) poor physical shape, René decides to change his lifestyle – which turns out to be easier said than done. The first bike ride to work is not much of a success; he arrives at his truck sweaty and red-faced. The rain is not helping his training schedule either, and the couch is tempting after a long day on the truck. Nevertheless, René finds ways to navigate past these challenges and establishes healthier behaviors. Again, the planning strategies in this narrative were realistic in that they were based on authentic strategies obtained in interviews with the target group (Boeijinga et al., 2016).

Thus, in the risk narrative, the main character was shown carrying out the unhealthy behavior that was discouraged (i.e., an inactive lifestyle), whereas in the planning narrative, he was shown to circumvent obstacles in striving for healthier behavior (i.e., healthy exercise behaviors). Both versions were directly linked with exercise, but in different ways: In the risk narrative, René functions as a negative role model experiencing negative consequences of a lack of exercise, whereas in the planning narrative, he functions as a positive role model of how to put the intention to exercise into action. Motivated by the target group's input, the planning narrative focused on action and coping planning strategies; target group members indicated that they experience barriers within their work and personal environment, thwarting their attempts to improve their lifestyles. The planning narrative therefore specifically described René's transition from unhealthy to healthy behavior. According to Bandura (2001), such an approach may be especially beneficial.

In accordance with previous effect findings on narrative persuasion (De Graaf et al., 2016; Nan, Dahlstrom, Richards, & Rangarajan, 2015), both narratives were written from the first-person perspective and were comparable in length and structure. The narratives were checked for evidence-based descriptions by health scientists and were pretested with target audience members for their perceived legibility, authenticity, and attractiveness. Based on the feedback received, minor text changes were made. The final versions of the narratives consisted of about 840 words (the risk perception-focused narrative was 852 words; the planning strategies-focused narrative was 825 words). The readability was also similar for both narratives (the Gunning Fog Index for the risk perception-focused narrative was 7.49; for the planning strategies-focused narrative, it was 7.13). Audio versions of the narratives were created, selecting a male voice that Dutch truck drivers identified as most representative out of three pretested options. The recorded narratives were shorter than five minutes (the risk perception-focused narrative was 4:50 minutes; the planning strategies-focused narrative was 4:37 minutes).

### ***Participants, design, and procedure***

The study was conducted with real truck drivers in their own working circumstances. Once ethical approval was obtained, drivers were approached and invited to participate in the study. The recruitment took place at trucking companies and truck stops. The sample consisted of 120 Dutch truck drivers (98.3% male, 1.7% female). Slightly more short-haul (54.2%) than long-haul truck drivers took part in the study. On average, the participants had 21 years of trucking work experience. Most of the drivers were married or living with a partner (71.7%) and had children (68.3%). Their ages varied between 19 and 67 years, with an average age of 43.

The effects of each narrative were tested using a 2 (risk perception-focused vs. planning strategies-focused)  $\times$  2 (written vs. audio) between-subjects design. The participants were randomly assigned to one of the four conditions: (1) written risk perception-focused narrative ( $n = 31$ ), (2) auditory risk perception-focused narrative ( $n = 29$ ), (3) written planning strategies-focused narrative ( $n = 32$ ), or (4) auditory planning strategies-focused narrative ( $n = 28$ ).

Participants were asked to individually complete the questionnaire after either reading or listening to one of the story versions. For the audio version, headphones were used. It was explained that there were no wrong answers; anonymity was assured, as was the right to stop at any time without explanation. The experiment took about 20 to 30 minutes to complete. At the end of the questionnaire, each participant was debriefed about the nature and purpose of the research and was compensated for his or her participation with a voucher worth €7.50.

### **Questionnaire**

5-point Likert scales were used ranging from 1 (*strongly agree*) to 5 (*strongly disagree*), because this scale length and order proved the most intuitive to the participants in a pretest<sup>1</sup>. The introduction to this article discussed several mechanisms of narrative persuasion; the questionnaire measured the most important variables related to these mechanisms using 5-point scales for all variables.

#### *Measures: Narrative*

The experience of *narrative involvement* was measured with 17 items of a (Dutch) questionnaire developed by De Graaf et al. (2012) that had been used extensively in previous studies. Involvement was measured on three dimensions. *Attentional focus* was the extent to which the participants' attention was focused on the narrative, measured by four items (e.g., "During reading/listening, I was fully concentrated on the story," "I did not notice things happening around me";  $\alpha = .74$ ). *Narrative presence* was the extent to which participants felt present at the narrative events, measured by seven items (e.g., "I was in the world described in the story," "I felt like being present at the story events";  $\alpha = .81$ ). *Identification* was the extent to which participants take on the role of a character in the narrative, measured by six items (e.g., "I imagined what it would be like to be in René's position," "I had the feeling that I went through what René was experiencing";  $\alpha = .85$ ).

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<sup>1</sup> During data analysis, the scale was recoded for all variables so that a higher score indicates a more positive response.



For a narrative to have an impact on real-world beliefs, it needs to be perceived as realistic (e.g., Busselle, Ryabovolova, & Wilson, 2004). The extent to which the truck drivers perceived the main character as “one of them” was measured through *perceived similarity*, employing a scale of four items developed by McCroskey, Richmond, and Daly (1975; e.g., “René thinks like me,” “René and I are alike”;  $\alpha = .89$ ). In addition, the narratives’ *perceived realism* was measured using four 5-point scale items adopted from Canter, Grieve, Nicola, and Benneworth (2003; e.g., “I found this story unbelievable or believable, illogical or logical, not truthful or truthful”;  $\alpha = .84$ ). Similarly, the narratives’ *perceived intelligibility* was measured using two items (e.g., “I found this story not understandable or understandable”;  $\alpha = .95$ ).

Researchers also acknowledge the importance of emotions for narrative impact (e.g., Green & Brock, 2000; McQueen, Kreuter, Kalesan, & Alcaraz, 2011; Murphy et al., 2013; Murphy, Frank, Moran, & Patnoe-Woodley, 2011). Hence, the *emotional responses* to the narrative were measured by six 5-point scale items adopted from Murphy et al. (2013), covering the six basic emotions, categorized into one positive emotion –happiness (i.e., “The story about René made me feel happy”)– and five negative emotions: anger, sadness, disgust, surprise, and fear ( $\alpha = .84$ ).

To measure the extent to which participants feel reactance toward the narrative intervention (*perceived freedom threat*), eight items were included – four measuring *cognitive responses* following Dillard and Shen (2005; e.g., “The story tried to manipulate me,” “The story threatened my freedom to choose”;  $\alpha = .75$ ) and four measuring *affective responses*, as validated in previous studies: irritated, angry, annoyed, and aggravated (Dillard & Peck, 2000; Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996; e.g., “The story about René made me feel irritated”;  $\alpha = .92$ ).

Finally, the *enjoyment of reading/listening* to the narrative was measured by a five-item scale developed by Hartmann and Vorderer (2010; e.g., “I found the story about René: a waste of time, interesting, boring”;  $\alpha = .78$ ).

#### *Measures: Exercise behavior*

To assess the participants’ attitudes and behaviors with respect to exercise, the constructs of Schwarzer’s (2008) HAPA were adapted to the audience and research context. The participants’ *intention* toward exercising (more) was measured by four items adopted from Renner and Schwarzer (2003; e.g., “I intend to live a healthier life in the coming weeks and months,” “I intend to exercise [more] in the coming weeks and months”;  $\alpha = .86$ ). *Risk perception* was measured by four items (e.g., “Compared to an average person of my sex and age, my chances of getting a cardiovascular disease are: much above average or

much below average";  $\alpha = .82$ ). *Outcome expectancies* –the expected positive outcomes of exercising– were measured using 10 items (e.g., "If I exercise more often, I will simply feel better afterward," "Other people will appreciate my willpower"). After removing one item, the reliability of the scale was good ( $\alpha = .90$ ). The participants' *action self-efficacy* –their beliefs about their ability to exercise– was measured by seven items (e.g., "I am sure I can start exercising [more], even if the planning for this is very laborious," "even if I have to push myself";  $\alpha = .85$ ). *Planning strategies* were measured using nine items. In line with the HAPA (Schwarzer, 2008), a distinction was made between *action planning*, measured by five items (e.g., "I already have concrete plans when, where, how to exercise [more]";  $\alpha = .94$ ), and *coping planning*, measured by four items (e.g., "I already have concrete plans for what to do if I miss an exercise session," "for how to deal with relapses";  $\alpha = .86$ ).

*Self-ratings of health* were measured by three items of the HAPA questionnaire (e.g., "On the whole, I am satisfied with my physical condition";  $\alpha = .80$ ). Finally, participants' level of *involvement with exercise* was measured by four items of the issue involvement scale developed by Wegman (1994; e.g., "How important is your physical condition to you? Not at all or very much";  $\alpha = .75$ ).

## 4.3 Results

First, a two-way multivariate analysis of variance (MANOVA; narrative content, narrative medium) was conducted to assess whether there were any differences between the conditions with respect to self-perceived health, involvement with exercising, and age. No differences were found ( $p > .27$ ).

Next, a similar two-way MANOVA was conducted to assess whether narrative content (risk perception, planning strategies) and narrative medium (written, auditory) influenced the narrative experience (see Table 1). H1 and H2 predicted an effect of narrative content for negative and positive emotions. There was indeed a significant main effect of narrative content, Wilks's  $\lambda = .684$ ,  $F(11, 106) = 4.46$ ,  $p < .001$ ,  $\eta^2 = .316$ . Subsequent univariate analyses, employing the Holm-Bonferroni method to control for the family-wise error rate, revealed significant effects for the reported emotions: Participants who had read or listened to the planning strategies-focused narrative reported more positive emotions ( $M = 3.12$ ,  $SD = 0.69$ ) than those who had been exposed to the risk perception-focused narrative ( $M = 2.45$ ,  $SD = 0.77$ ),  $F(1, 116) = 24.71$ ,  $p < .001$ ,  $\eta^2 = .176$ . The opposite pattern was obtained for negative emotions: They were higher among participants who had read or listened to the risk perception-focused narrative ( $M = 2.49$ ,  $SD = 0.56$ ) than among those who were exposed to the planning strategies-focused narrative ( $M = 2.24$ ,  $SD = 0.66$ ),

$F(1, 116) = 4.71, p = .032, \eta^2 = .039$ . For the other dependent variables, a main effect of narrative content was not obtained ( $p > .10$ ). Hypothesis 3 predicted a main effect of narrative medium on narrative involvement. However, there was no main effect of narrative medium, Wilks's  $\lambda = .876, F(11, 106) = 1.365, p = .20$ , nor did narrative medium interact with narrative content, Wilks's  $\lambda = .862, F(11, 106) = 1.545, p = .124$ .

**Table 1. Means (and SDs) for the dependent variables on narrative experience as a function of the narrative content and narrative medium (after recoding, 1 = negative, 5 = positive)**

	Risk perception		Planning strategies	
	Written	Auditory	Written	Auditory
Positive emotion	2.55 (0.81)	2.34 (0.72)	3.22 (0.66)	3.00 (0.72)
Negative emotions	2.59 (0.61)	2.38 (0.50)	2.26 (0.62)	2.22 (0.72)
Attentional focus	3.63 (0.50)	3.53 (0.63)	3.42 (0.67)	3.54 (0.44)
Narrative presence	3.46 (0.45)	3.30 (0.57)	3.49 (0.47)	3.36 (0.58)
Identification	3.33 (0.61)	3.09 (0.60)	3.23 (0.63)	3.31 (0.66)
Perceived similarity	3.20 (0.93)	3.01 (0.83)	2.98 (0.83)	3.09 (0.82)
Perceived realism	4.41 (0.56)	4.23 (0.63)	4.19 (0.72)	4.21 (0.77)
Perceived intelligibility	4.35 (0.85)	4.66 (0.61)	4.17 (1.11)	4.30 (0.86)
Cognitive reactance	2.90 (0.64)	2.24 (0.71)	2.69 (0.70)	2.84 (0.74)
Affective reactance	2.31 (0.73)	1.94 (0.81)	1.96 (0.70)	2.01 (0.88)
Enjoyment of reading/listening	3.41 (0.49)	3.41 (0.41)	3.49 (0.57)	3.41 (0.69)

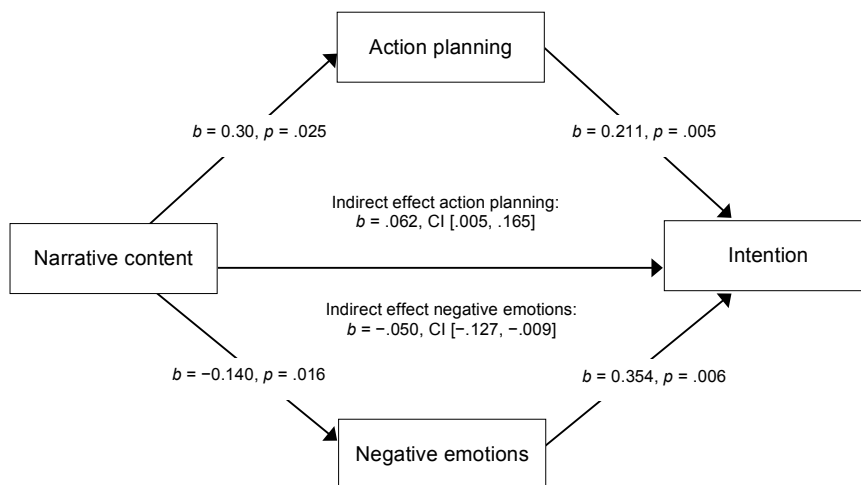
To further test the hypotheses, the HAPA variables were analyzed using a two-way MANOVA (see Table 2). There was no main effect of narrative medium, Wilks's  $\lambda = .931, F(6, 111) = 1.38, p = .23$ , nor an interaction between narrative medium and narrative content, Wilks's  $\lambda = .959, F(6, 111) = 0.80, p = .57$ . The main effect of narrative content was significant, Wilks's  $\lambda = .880, F(6, 111) = 2.52, p = .025, \eta^2 = .120$ . Subsequent univariate analyses were conducted. H1 and H2 predicted that the risk narrative would lead to a higher risk perception, whereas the planning narrative would lead to higher action and coping planning scores. Only the prediction for action planning was confirmed: The action planning scores were higher after reading or listening to the planning narrative compared to the risk narrative ( $M = 3.34, SD = 0.77$  versus  $M = 2.90, SD = 0.95$ ),  $F(1, 116) = 8.23, p = .005, \eta^2 = .066$ ; no effects were found for risk perception,  $F(1, 116) < 1$ , and coping planning,  $F(1, 116) = 1.68, p = .29$ . There was an unpredicted effect that reading or listening to the planning narrative yielded more positive outcome expectancies ( $M = 3.67, SD = 0.59$  versus  $M = 3.34, SD = 0.71$ ),  $F(1, 116) = 7.90, p = .006, \eta^2 = .064$ . The effect that the planning narrative yielded higher intention scores was not significant ( $M = 3.06, SD = 0.62$  versus  $M = 2.74, SD = 0.86$ ),  $F(1, 116) = 5.53, p = .020, \eta^2 = .046$ , given that as a result of applying the Holm-Bonferroni correction to correct for multiple comparisons, the alpha against it was tested was .0167.

**Table 2. Means (and SDs) for the dependent HAPA variables on exercise behavior as a function of the narrative content and narrative medium (after recoding, 1 = negative, 5 = positive)**

	Risk perception		Planning strategies	
	Written	Auditory	Written	Auditory
Intention	2.90 (0.79)	2.57 (0.91)	3.08 (0.60)	3.04 (0.66)
Risk perception	2.87 (0.59)	2.98 (0.51)	2.77 (0.88)	3.06 (0.54)
Action planning	3.07 (0.75)	2.72 (1.10)	3.28 (0.71)	3.42 (0.84)
Coping planning	3.41 (0.66)	3.22 (0.94)	3.57 (0.46)	3.39 (0.72)
Outcome expectancies	3.33 (0.70)	3.34 (0.74)	3.59 (0.70)	3.76 (0.42)
Action self-efficacy	3.37 (0.63)	3.15 (0.78)	3.39 (0.65)	3.38 (0.52)

This study asks whether narrative health interventions can influence people’s intention to exercise more through different processes. To this end, a multiple mediator analysis employing Hayes’s (2013) PROCESS macro (model 4; 10,000 bootstraps, 95% confidence interval) was conducted with narrative content (0 = risk perception, 1 = planning) as the independent variable; intention as the dependent variable; and action planning, coping planning, outcome expectancies, self-efficacy, risk perception, positive emotion, and negative emotions as potential mediators while controlling for all other variables. Figure 1 illustrates the results of the analysis. Only action planning and negative emotions served as mediators of the effect of narrative content on intention. The negative emotions evoked by the risk perception narrative yielded a more positive intention, whereas the same held for the higher level of action planning evoked by the planning narrative.

**Figure 1. Mediation analysis of the effect of narrative content on intention**



## 4.4 Discussion

This study developed and tested a narrative health intervention for Dutch truck drivers. Narrative content (risk perception-focused vs. planning strategies-focused) and narrative medium (written vs. auditory) were manipulated to assess the extent to which these factors influence the drivers' intention to adopt a more active lifestyle and, if so, whether this effect is obtained via different routes.

First, whether the narrative was presented in written or in auditory form made no difference – neither for the processing of the narrative nor for the exercise-related determinants. We had hypothesized that the auditory form would be easier to process than the written version because of the participants' supposedly lower health literacy level. Possibly, only truck drivers whose literacy level allowed them to feel confident that they would be able to fill out a questionnaire took part in the study, whereas those who did not feel confident refrained from participating. Still, the educational level of the participants in this study was considerably lower than that of the typical undergraduate student sample: More than 60% of the participants had completed no more than primary school, prevocational school, or middle school, implying that they ended their school career around age 16. As few as three participants had acquired an applied university degree, whereas none had completed an academic program. Yet the audio version and the written version were equally effective. These findings are in line with Braddock and Dillard (2016), who did not find any main effects of medium in their meta-analysis. The explanation for this finding may be that, in the case of an engaging narrative, the medium of delivery is not important.

Second, whereas the two narrative interventions did not yield a difference in drivers' intentions to exercise more, they did influence the determinants of this intention in different ways. Not confirmed was the prediction that the narrative about the truck driver suffering from a heart disease would result in higher risk perceptions compared to the narrative about the truck driver who put into action his intention to exercise more. This may be the result of the strategy employed by truck drivers to perceive their own health as good by comparing themselves with those who are worse off, such as the truck driver in the story (Boeijinga et al., 2016). However, it did not prevent them from experiencing more negative emotions compared to the planning narrative. The planning narrative led to higher scores on action planning, but not on coping planning. However, action and coping planning are closely related; the anticipation of possible barriers and the generation of coping strategies demand the specification of the when, where, and how. In other words, coping planning builds on the specifics of the intended behavior, and thereby implies action planning (Schwarzer, 2008). The planning narrative also yielded stronger positive emotions and more positive outcome expectancies. The latter effect may have been caused by the main

character expressing satisfaction with the results of his new lifestyle (e.g., “being happy with the lifestyle changes,” “feeling stronger and fitter”).

The mediation analysis revealed an interesting picture. Controlling for a large number of variables that have been identified as potential mechanisms of, or preconditions for, narrative persuasion, the results show that the similar intention scores for the two narrative interventions are the results of different processes. The risk perception-focused narrative led to a more positive intention through evoking more negative emotions, whereas the planning strategies-focused narrative did so by strengthening truck drivers' action planning. From a theoretical point of view, this is an important finding. It shows that for a full understanding of how narrative persuasion works, the content of the narrative has to be taken into account. It is the content that evokes particular emotions and influences particular behavioral determinants. Relating the plot of a narrative to the mechanisms underlying narrative impact will be an important next step in unraveling when and how narrative health interventions work.

From a practical point of view, the results are relevant as well. While the impact of the narratives is the same regardless of their content, their impact could be increased if the narrative intervention is tailored to the stage of change truck drivers find themselves in. According to the HAPA model (Schwarzer, 2008), people who do not perform the advocated behavior may fail to do so for different reasons. Some people are not convinced that the advocated behavior is indeed more desirable than their current behavior; these so-called *non-intenders* are thus in need of motivation to change their lifestyle. The second group already has the intention to adopt the advocated lifestyle but fails to put this intention into action; these *intenders* need help in overcoming the intention-behavior gap. In the study with Dutch truck drivers, non-intenders and intenders were presumably both present but undistinguished (Boeijinga et al., 2016). If the non-intenders and the intenders could be identified, then the risk perception story could be presented to the former group, while the planning narrative could be presented to the latter group, presumably leading to stronger effects for both groups.

There are several limitations to this study. First, participation was voluntary and the ultimate sample constitutes a convenience sample. Still, the sample of real truck drivers in this study is a welcome change from frequently encountered undergraduate student samples. Second, effects of the health narrative interventions were measured immediately after exposure. Although it is possible that the results will become stronger (Appel & Richter, 2007), it is not known whether this would be the case for these effects.

## 4.5 Conclusion

Narrative provides a promising, alternative approach to health promotion targeting truck drivers. Whereas the narrative's medium (written or auditory) did not appear to play a role, the narrative's content did make a difference. Both risk-oriented and planning-oriented narratives yielded positive intentions in a group of Dutch truck drivers, but via different routes. The impact of these different narratives could be even stronger when tailored to the target audience's particular stage of behavior change if the planning strategies-focused narrative could be communicated to intenders only, and the risk perception-focused narrative could be communicated to non-intenders only. Such a tailoring approach holds the promise of successful narrative health interventions for this highly strained and under-privileged target group.

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5

# Dutch truckers and exercise: Testing the effectiveness of tailored health narratives

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## 5.1 Introduction

The trucking occupation is associated with low socioeconomic status (SES) and poor health outcomes (Apostolopoulos, Sönmez, Shattell, Gonzales, & Fehrenbacher, 2013; Van der Beek, 2012). This is also reflected in the context of The Netherlands, where as much as two-thirds of the truck drivers show both overweight and obesity –which is the highest rate among Dutch occupational groups (STL, 2016)– while absenteeism rates are also relatively high for Dutch truck drivers (4.2%) (Jans, Van den Heuvel, Swenne, Hildebrandt, & Bongers, 2007; STL, 2016). Like other low-SES groups, Dutch truck drivers generally engage in unhealthy lifestyles, including high levels of sedentary behavior, low levels of physical activity, and low intakes of vegetables and fruits (STL, 2016). Recognizing the importance of health promotion from the perspective of the worksite context, the Dutch transportation sector has carried out various health promotion and intervention activities in the last decade (Boeijinga, Hoeken, & Sanders, 2017a). Nevertheless, the unfavorable figures and behaviors have not improved.

### ***The importance of tailoring***

An analysis of health communication interventions for Dutch truck drivers revealed insufficient *tailoring* to the unique characteristics of the target group (Boeijinga et al., 2017a), which may explain the interventions' low level of effectiveness. Tailoring is critical for the success of health interventions (Lustria et al., 2013), especially tailoring to the individual's particular stage of behavior change (Noar, Benac, & Harris, 2007). An influential model for describing the process of health behavior change is the *Health Action Process Approach* (HAPA) (Schwarzer, 2008), which distinguishes between 'actors' (who already perform the desired behavior), 'intenders' (who want to perform the behavior but have not yet done so), and 'non-intenders' (who have no intention to perform the behavior).

Current health interventions targeted at Dutch truck drivers are based on the assumption that they are non-intenders (Boeijinga et al., 2017a): the interventions primarily try to persuade truck drivers to adopt a healthier lifestyle, and do so mainly by pointing out the desirable outcomes of this healthy lifestyle as well as the risks associated with their current lifestyle. A qualitative study into this target group (Boeijinga, Hoeken, & Sanders, 2016) indicated that, indeed, there are non-intenders among Dutch truck drivers. This subgroup typically engaged in downward social comparison (i.e., comparing their own health to others they consider to be worse off), accounting for their positive self-evaluation of health and lower risk perception and their subsequent low motivation to make lifestyle changes. However, a larger subgroup indicated that they did wish for, and had indeed already tried to engage in a healthier life, which rather qualifies them –in terms of HAPA– as intenders. Their attempts, however, were typically thwarted by barriers

both within their work environment (e.g., irregular working hours and a lack of exercise facilities) and in their personal environment (e.g., social expectations and obligations). This subgroup would thus benefit from a focus on the implementation of intention into action rather than a focus on motivation, as they are already beyond the motivational mindset (Schwarzer, 2008). In other words, current health interventions may be insufficiently tailored to the particular stage of change of these intending Dutch truck drivers (Boeijinga et al., 2017a).

Another important characteristic to tailor on is the target group's level of health literacy (Nutbeam, 2008; Twickler et al., 2009), that is, "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (World Health Organization, 1998, p. 10). In line with their aim to motivate, existing health interventions for Dutch truck drivers make consistently use of rhetorical argumentation. However, they rarely present their argumentation explicitly, and thus require the target audience to reconstruct and identify the argument to allow for a critical evaluation of its strength and applicability (Boeijinga et al., 2017a; Schellens & De Jong, 2004). The processing of such argumentative messages requires cognitive capacities that may be too demanding for target groups with lower SES and health literacy (Twickler et al., 2009; Van der Beek, 2012). Thus, the health interventions' rhetorical approach might be insufficiently tailored to Dutch truck drivers' health literacy skills as well.

### ***The promise of narrative***

The deployment of *narrative* approaches in health communication could hold a promise to deal with both of these challenges. First, narrative allows for tailoring to the needs of both non-intenders and intenders. In response to their downward social comparison, non-intending truck drivers would benefit from communication that yields a higher risk perception (Schwarzer, 2008). Narratives can portray the negative consequences of risky behaviors (Moyer-Gusé, 2008), and have been effective in increasing target audiences' risk perceptions in this way (De Wit, Das, & Vet, 2008; Dillard, Fagerlin, Dal Cin, Zikmund-Fisher, & Ubel, 2010; Prati, Pietrantonio, & Zani, 2012; So & Nabi, 2013).

Intending truck drivers, on the other hand, experience difficulties in converting their intentions into action and would benefit from communication on concrete planning strategies (Schwarzer, 2008). These planning strategies involve specifying the 'when', 'where', and 'how' of the intended behavior (action planning) as well as anticipating potential barriers and preparing successful strategies to overcome these barriers (coping planning). Narratives, typically structured around characters struggling with barriers in order to reach their goal, offer the possibility of main characters that function as role models, showing the



target audience what barriers may arise and how to successfully navigate these obstacles (Kreuter et al., 2007; Slater, 2002). As such, narratives are suitable for supporting the target audience's planning strategies.

Second, the narrative format is better tailored to the target group's health literacy level. As narratives are essentially built around experiences of specific persons and depict a natural (experiential) event order (Labov & Waletzky, 1967), they represent a basic and universal form of communication. Humans are 'hardwired' to process and comprehend such identifiable and chronological information presented in narratives, without any need for prior education or training (Graesser, Olde, & Klettke, 2002; Mar, 2004). As such, narratives are generally appealing and accessible for a large audience, specifically target audiences with low SES and low health literacy skills (Kreuter et al., 2007; Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013).

Rhetorical approaches to health promotion require central processing of argumentative messages for attitude change (Petty & Cacioppo, 1986; Schellens & De Jong, 2004), whereas narrative approaches can persuade through a different process (Green, 2006; Green & Brock, 2002; Moyer-Gusé, 2008; Slater & Rouner, 2002), as they have the unique ability to transport audiences into a narrative world (Busselle & Bilandzic, 2009; Green & Brock, 2000; Slater, 2002). While being immersed in the storyline, the audience is focused on the narrative events and in a less critical state of mind, which reduces reactance and increases message acceptance, opening the door for persuasive effects that transfer into the real world (Dal Cin, Zanna, & Fong, 2002; Green & Brock, 2002; Moyer-Gusé, 2008). The involvement with the protagonist – often referred to as *identification* – has been recognized as an important mechanism for narrative persuasion (De Graaf, Hoeken, Sanders, & Beentjes, 2012; Hoeken & Sinkeldam, 2014; Moyer-Gusé, Chung & Jain, 2011). While taking on the protagonist's goals and plans, the audience "experiences emotions when these plans go well or badly" (Oatley, 1999, p. 445).

### ***The present study***

Previous research has demonstrated the effectiveness of narratives in health contexts (De Graaf, Sanders, & Hoeken, 2016; Shen, Sheer, & Li, 2015). An experimental study exploring the potential of a narrative approach to health promotion for Dutch truck drivers (Boeijinga, Hoeken, & Sanders, 2017b) showed an increase in health intentions for both risk oriented and planning oriented health narratives: the risk perception-focused narrative yielded stronger negative emotions which subsequently influenced the intention to exercise more, whereas the planning strategies-focused narrative proved effective in stimulating concrete action strategies which also yielded a more positive exercise intention. These persuasive effects, obtained without any tailoring of the message to the specific

target group's stage of change, signify that the impact of narrative could be even stronger if tailored to the truck drivers' particular mindset.

The present study builds on this research and examines whether health narratives tailored to truck drivers' stage of change indeed yield stronger persuasive effects, compared to a control condition. To this end, a three-wave experiment will be conducted, including a pre-measurement to assess truck drivers' individual stage of change, an immediate post-measurement to assess the tailored health narrative's impact on exercise intentions, and a delayed post-measurement to assess the narrative's impact on self-reported exercise behaviors. In summary, the hypotheses of this study are:

*H1: A risk perception-focused health narrative will increase non-intending Dutch truck drivers' perceived health risks and evoke negative emotions, leading to more positive exercise intentions and behaviors compared to a control narrative.*

*H2: A planning strategies-focused health narrative will increase intending Dutch truck drivers' level of planning strategies leading to more positive exercises intentions and behaviors compared to a control narrative.*

## 5.2 Method

### **Materials**

The health narratives developed in the previous study (Boeijinga et al., 2017b) were used as intervention materials. The main focus of these narratives was on healthy exercise behaviors. Even more than healthy eating habits, healthy exercise is of utmost importance in the trucking setting: while truck drivers do experience some room in making healthy food choices (Boeijinga et al., 2016), the trucking environment offers very limited exercise facilities and opportunities (Apostolopoulos et al., 2012). Dutch truck drivers reported relatively low control over their exercise behaviors (Boeijinga et al., 2016) and with just one out of five truck drivers reporting regular exercise (STL, 2016), exercising seems to offer a window of opportunity for improvement of lifestyle choices.

The risk perception-focused health narrative tailored to non-intending Dutch truck drivers was based on a true story and depicts a trucker (René) who is faced with sudden onset of chest pain while at work. It turns out that an artery near his heart is clogged and requires urgent surgery; the subsequent operation is successful. The planning strategies-focused health narrative tailored to intending Dutch truck drivers describes René's road and obstacles towards a healthier lifestyle. Despite the barriers, the trucker finds a way to navigate

past them and to reach his goal. In addition, a control narrative was developed based on a previously published story from a national magazine for Dutch truck drivers, based on interviews among Dutch truck drivers. The narrative portrays a typical day at work, including loading/unloading activities, traffic jams, and time delay. Since this narrative served as the control condition, no references were made to health or lifestyle themes.

All three narratives were narrated from the first-person perspective and presented in written mode. The narratives consisted of approximately 835 words (health narrative non-intenders: 839 words, health narrative intenders: 828 words, control narrative: 839 words). The readability differed somewhat between the tailored health narratives (Gunning Fog Indices: non-intenders: 7.48, intenders: 6.99) and the control narrative (9.89). However, a pretest gave no reasons for adaptation.

### ***Participants, design and procedure***

The study was conducted in cooperation with one of the largest trucking companies in the Netherlands employing more than 600 truck drivers, mainly on the short haul. Once ethical and institutional review board approval was obtained, truck drivers ( $n = 602$ ) were recruited via email invitation. All data were collected via online questionnaires, which were administered during three waves that were separated two to four weeks from each other. Reminders were sent to non-respondents after 1 week and again after 2 weeks. In accordance with ethical standards, all participants were informed about the nature and procedure of the study. It was explained that there were no wrong answers and anonymity was assured. Each questionnaire took about 20 minutes to complete. Participants who completed the questionnaires on all three occasions were compensated for their participation with a voucher worth of €20,00.

In the first wave, 235 truck drivers completed the questionnaire. Based on their responses, participants were divided into different categories. Truck drivers already acting in line with the recommended standards for physical activity (30 minutes a day, five days a week) were labelled 'actors' ( $n = 29$ ). Truck drivers not adhering to the recommended standards for physical activity, were divided into 'non-intenders' ( $n = 29$ ) and 'intenders' ( $n = 104$ ) based on their intention to exercise more in the near future. A category 'intending actors' ( $n = 73$ ) was added for truck drivers who were already acting in line with the recommended standards for physical activity but intended to exercise more.

At the second wave, the truck drivers received the health narrative tailored to their particular stage of change (risk perception focused vs. planning strategies focused). Since the group of non-intenders turned out relatively small, it did not allow for a control group: all non-intenders received the risk perception-focused narrative. For the intenders, half of the

group received the tailored health narrative ( $n = 52$ ), the other half the control narrative ( $n = 52$ ). For ethical reasons<sup>1</sup>, the actors and intending actors could not be excluded from the study. Half of them received the planning strategies-focused narrative, half of them the control narrative. Of the 235 participants approached, 212 read one of the narratives and filled out the questionnaire.

Finally, at the third wave, the remaining participants ( $n = 212$ ) received the final questionnaire. Our final sample of participants who took part in all three waves consisted of 188 participants, of whom 22 non-intenders, 86 intenders, 24 actors, and 56 intending actors. In the data analysis, the actors and intending actors were excluded, resulting in a sample consisting of 108 participants (100% male). The majority of this group was living with a partner and children (53.7%) or with a partner (34.3%). Education levels ranged from incomplete secondary education (15.7%) to lower general secondary education (VMBO, 65.7%) and secondary vocational education (MBO, 13.0%).

### **Measures**

The participants responded to items about exercise at each wave. In addition, measures of narrative experience were included at the immediate post-measurement (T1). Five-point Likert scales were used, ranging from 1 = strongly agree to 5 = strongly disagree, as this scale direction (from positive to negative) proved to be more intuitive for the target group in previous research (Boeijinga et al., 2017b). During data analysis, the scale was recoded for all variables so that a higher score indicates a more positive response.

#### *Exercise*

To assess the participants' intentions toward exercise and exercising behaviors, a combination was used of the SQUASH (i.e., Short QUEStionnaire to ASsess Health enhancing physical activity; Wendel-Vos & Schuit, 2004) and the HAPA questionnaire (i.e., Health Action Process Approach questionnaire; Renner & Schwarzer, 2003). To compare the level of physical activity within and between subjects, participants' *Current exercise behaviors* were assessed at the first and last wave by four SQUASH-items that included different types (e.g., work, household and leisure activities) as well as frequency and duration of self-reported physical activity (e.g., days per week and time per day).

In addition, HAPA constructs were measured at the first and second wave. The *Intention* towards (more) exercise was measured by four items (e.g., "I intend to exercise (more) within the coming weeks and months"; T0:  $\alpha = .82$ , T1:  $\alpha = .83$ ). The *Risk perception* was measured by four items (e.g., "Compared to an average person of my sex and age, my chances of

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<sup>1</sup> Following the guidelines of Radboud University's Ethics Assessment Committee for the Humanities.

getting a cardiovascular disease are: much above average–much below average”; T0:  $\alpha = .80$ , T1:  $\alpha = .86$ ). The *Outcome expectancies*, indicating the expected positive outcomes of exercising, were measured using ten items (e.g., “If I exercise more often, I will simply feel better afterwards”; after recoding one negatively formulated item T0:  $\alpha = .84$ , T1:  $\alpha = .84$ ). The participants’ *Action self-efficacy*, that is, participants’ beliefs about their ability to exercise, was measured by seven items (e.g., “I am sure I can start exercising (more), even if the planning for this is very laborious”; T0:  $\alpha = .77$ , T1:  $\alpha = .83$ ). The *Planning strategies* were measured using nine items. A distinction was made between *Action planning*, measured by five items (e.g., “I already have concrete plans when to exercise (more)”; T0:  $\alpha = .93$ , T1:  $\alpha = .92$ ), and *Coping planning*, measured by four items (e.g., “I already have concrete plans what to do if I miss an exercise session”; T0:  $\alpha = .90$ , T1:  $\alpha = .90$ ). Finally, the participants’ level of *Involvement* with exercise was measured at the first wave by three items of the issue involvement scale developed by Wegman (1994) (e.g., “How important is your physical condition to you?: not at all–very much”;  $\alpha = .81$ ).

### *Narrative*

Replicating the previous study (Boeijinga et al., 2017b), important concepts related to narrative persuasion were included at the second wave, immediately after exposure to one of the three narrative conditions. The experience of *Transportation*, the extent to which participants are focused on the narrative events, was measured by five items of the TS-SF (Transportation Scale-Short Form; Appel, Gnambs, Richter, & Green, 2015) (e.g., “I could picture myself in the scene of the events described in the narrative”;  $\alpha = .76$ ). Apart from transportation into the narrative itself, narratives also facilitate involvement with narrative characters (Moyer-Gusé, 2008). *Identification*, the extent to which participants take the role of a narrative character, was measured by four items of the questionnaire developed by De Graaf, Hoeken, Sanders, and Beentjes (2012, Experiment 2) (e.g., “During reading, I felt for René” (the main character);  $\alpha = .90$ ).

For a narrative to have an impact on real-world beliefs, it needs to be perceived as realistic (e.g., Busselle, Ryabovolova, & Wilson, 2004). Therefore, the narratives’ *Perceived realism* was measured using three items adopted from Canter, Grieve, Nicola, and Benneworth (2003) (e.g., “I found this story unbelievable–believable, not truthful–truthful”;  $\alpha = .89$ ). Researchers further acknowledge the importance of emotions for narrative impact (e.g., Green & Brock, 2000; McQueen, Kreuter, Kalesan, & Alcaraz, 2011; Murphy, Frank, Moran, & Patnoe-Woodley, 2011; Murphy et al., 2013). Hence, the *Emotional responses* to the narrative were measured by six items adopted from Murphy et al. (2013), covering the six basic emotions, categorized into one *Positive emotion*: happiness (i.e., “The story about René, made me feel happy”), and five *Negative emotions*: anger, sadness, disgust, surprise, and fear ( $\alpha = .82$ ).

One of the advantages of narratives over more traditional approaches to health promotion is that they can overcome resistance (Kreuter et al., 2007). The *Perceived freedom threat*, the extent to which participants feel reactance towards the narrative, was measured by four items adopted from Dillard and Shen (2005) (e.g., “The story tried to manipulate me”;  $\alpha = .80$ ). Finally, the *Enjoyment* of reading the narrative was measured by three items adopted from the scale developed by Hartmann and Vorderer (2010) (e.g., “I found the story about René: a waste of time, interesting, boring”;  $\alpha = .86$ ).

## 5.3 Results

Given the low number of non-intenders, only a pretest-posttest design without a control group was employed. In Table 1, the results for this group are displayed.

**Table 1. Means (and SDs) for the dependent variables on exercise and narrative experience for the group ‘non-intenders’ ( $n = 22$ ), receiving the risk perception-focused narrative (after recoding, 1 = negative, 5 = positive)**

	T0	T1	T2
<b>HAPA</b>			
Intention	3.09 (0.42)	3.25 (0.63)	X
Risk perception	2.78 (0.68)	2.91 (0.52)	X
Outcome expectancies	3.44 (0.47)	3.46 (0.49)	X
Action self-efficacy	3.52 (0.37)	3.59 (0.40)	X
Action planning	2.93 (0.78)	3.35 (0.83)	X
Coping planning	3.69 (0.59)	3.65 (0.59)	X
<b>SQUASH</b>			
Days per week active	2.41 (1.50)	X	2.59 (2.32)
<b>Narrative</b>			
Transportation	X	3.77 (0.83)	X
Identification	X	3.67 (0.73)	X
Perceived realism	X	4.36 (0.78)	X
Positive emotions	X	3.00 (0.82)	X
Negative emotions	X	2.66 (0.58)	X
Perceived freedom threat	X	3.27 (0.91)	X
Enjoyment of reading	X	3.18 (0.61)	X

First, two paired sample *t*-tests were conducted to assess whether reading the risk perception-focused health narrative yielded higher scores for risk perception and the intention to exercise at the posttest, compared to the pretest. This proved not to be the case (Risk perception:  $t(21) = 1.19$ ,  $p = .25$ ; Intention:  $t(21) = 1.501$ ,  $p = .15$ ). Conducting paired *t*-tests for the other HAPA variables and applying a Bonferroni correction, only yielded an (unexpected) significant difference for action planning: participants scored higher on the posttest than at the pretest ( $t(21) = 2.757$ ,  $p = .012$ ). For none of the other variables, a

difference was found ( $t$ 's < 0.689,  $p$ 's > .50). Finally, the average number of active days was not higher at the posttest compared to the pretest ( $t(21) = 0.546, p = .591$ )

All participants filled out the narrative engagement items after reading the narrative. To assess the narrative experience, one sample  $t$ -tests were conducted in which the participants' ratings were compared to the value 3, the neutral midpoint of the scale. The participants considered the story realistic ( $t(21) = 8.171, p < .001$ ), transporting ( $t(21) = 4.357, p < .001$ ), and felt involved with the character ( $t(21) = 4.343, p < .001$ ). Their appreciation of the story ( $t(21) = 1.387, p = .18$ ), perception of persuasive intent ( $t(21) = 1.402, p = .176$ ), and experiencing of positive emotions ( $t(21) = 0.00, p = 1.00$ ) did not differ from the neutral midpoint. The narrative scored lower than the midpoint with respect to the experiencing of negative emotions ( $t(21) = 2.781, p = .011$ ).

Next, two-way mixed 2 (narrative condition: Planning, Control) x 2 (time of measurement: Pretest, Posttest) ANOVAs were conducted to assess the effectiveness of the planning strategies-focused narrative targeting intending truck drivers (see Table 2a). The hypothesis predicted an interaction between narrative condition and time of measurement; that is, the planning narrative was hypothesized to increase planning strategies and exercise intentions at the posttest. This was not the case for intention ( $F(1, 84) = 0.061, p = .806$ ), nor for coping planning ( $F(1, 84) = 0.243, p = .624$ ). There was, however, an interaction for action planning ( $F(1, 84) = 8.325, p = .005$ ). Comparisons revealed that after reading the tailored planning narrative, the action planning scores increased ( $p = .01$ ), whereas no such effect was obtained for the control narrative ( $p = .23$ ).

**Table 2a. Means (and SDs) for the dependent variables on exercise for the group 'intenders', receiving the planning strategies-focused narrative ( $n = 44$ ) or the control narrative ( $n = 42$ ) (after recoding, 1 = negative, 5 = positive)**

	T0		T1		T2	
	tailored	control	tailored	control	tailored	control
<b>HAPA</b>						
Intention	3.48 (0.57)	3.55 (0.60)	3.48 (0.64)	3.53 (0.75)	X	X
Risk perception	2.77 (0.60)	2.76 (0.65)	2.73 (0.68)	2.93 (0.70)	X	X
Outcome expectancies	3.53 (0.44)	3.57 (0.43)	3.56 (0.38)	3.59 (0.49)	X	X
Action self-efficacy	3.43 (0.51)	3.47 (0.59)	3.45 (0.56)	3.36 (0.65)	X	X
Action planning	2.90 (0.86)	3.15 (0.66)	3.17 (0.77)	3.06 (0.76)	X	X
Coping planning	3.67 (0.52)	3.60 (0.48)	3.19 (0.71)	3.07 (0.70)	X	X
<b>SQUASH</b>						
Days per week active	2.45 (1.21)	2.24 (1.69)	X	X	3.27 (2.45)	2.88 (2.24)

Conducting similar ANOVAs for the other HAPA variables, only yielded an unexpected interaction for risk perception ( $F(1, 84) = 4.193, p = .044$ ). Comparisons revealed that after reading the control narrative, risk perceptions increased ( $p = .01$ ), whereas no such effect was obtained for the tailored planning narrative ( $p = .59$ ). No interaction was found for the self-reported number of active days (Wilks'  $\lambda = .998, F(1, 84) = 0.182, p = .670$ ). The analyses further revealed two significant main effects of Time of measurement. The number of active days was higher at the posttest ( $M = 3.08, SD = 2.35$ ) than at the pretest ( $M = 2.35, SD = 1.46; F(1, 84) = 12.667, p = .001$ ). In addition, the scores for coping planning were lower at the posttest ( $M = 2.87, SD = 0.70$ ) than at the pretest ( $M = 2.37, SD = 0.50; F(1, 84) = 89.282, p < .001$ ). None of the other main effects was significant ( $p$ 's  $> .13$ ).

Finally, a one-way MANOVA (narrative condition: Planning, Control) was conducted to examine any differences in narrative experience between the narrative conditions, which may explain the differences in narrative impact (see Table 2b). A main effect was found of Narrative Condition (Wilks'  $\lambda = .732, F(7, 78) = 4.085, p = .001$ ). Subsequent univariate analyses found significant differences for negative emotions ( $F(1, 84) = 7.883, p = .006$ ), positive emotion ( $F(1, 84) = 4.291, p = .041$ ), and perceived freedom threat ( $F(1, 84) = 12.031, p = .001$ ). The tailored planning narrative yielded a more positive emotion, whereas the control narrative yielded more negative emotions. Compared to the control narrative, the tailored planning narrative evoked more reactance.

In order to assess whether any of the narrative experiences served as a mediator in bringing about an effect of story version on the intention, a mediation analysis was conducted employing Hayes' PROCESS Model, with Story version as the independent variable, intention as the dependent variable, and action planning, coping planning, negative emotions, positive emotion, and perceived freedom threat as potential mediators (number of bootstraps: 10,000). None of the variables served as a mediator ( $p$ 's  $> .19$ ).

**Table 2b. Means (and SDs) for the dependent variables on narrative experience for the group 'intenders', receiving the planning strategies-focused narrative ( $n = 44$ ) or the control narrative ( $n = 42$ ) (after recoding, 1 = negative, 5 = positive)**

	T1	
	intervention	control
<b>Narrative</b>		
Transportation	3.57 (0.56)	3.60 (0.63)
Identification	3.50 (0.67)	3.45 (0.61)
Perceived realism	4.17 (0.88)	4.11 (0.85)
Positive emotions	3.11 (0.58)	2.81 (0.77)
Negative emotions	2.35 (0.64)	2.71 (0.53)
Perceived freedom threat	3.29 (0.60)	2.82 (0.67)
Enjoyment of reading	3.33 (0.76)	3.16 (0.71)



## 5.4 Discussion

This study hypothesized that health narratives tailored to the individual's stage of change have stronger persuasive effects on positive exercise intentions and behaviors than a control narrative. To this end, two tailored narratives that had been proven effective in a previous study were used: a risk perception-focused narrative for non-intending truck drivers, and a planning strategies-focused narrative for intending truck drivers. The subgroup of non-intenders turned out too small ( $n = 22$ ) to test the hypothesis. A pretest-posttest design showed an unexpected significant effect for the non-intenders' level of action planning strategies, which had increased over time. This may be explained by the design of the study in which exercise intentions and behaviors were pre-measured, including the participants' levels of action planning. Responding to questions that are supportive of a behavior, can lead to actual behavior change – also known as the *mere measurement effect* (Godin, Bélanger-Gravel, Amireault, Vohl, & Pérusse, 2011; Maio et al., 2007; Morwitz, Johnson, & Schmittlein, 1993). This may especially apply to questions on action planning; responding to questions around the when, where and how of future exercise activities, can have motivated participants to think more specifically about these activities, thereby increasing their actual action planning levels.

The subgroup of intenders was significantly larger ( $n = 86$ ), allowing for a control condition. Compared to the control narrative, the tailored planning narrative led to higher action planning levels. However, unlike previous research (Boeijinga, et al., 2017b), these concrete action strategies did not result in more positive exercise intentions or behaviors. The tailored planning narrative further yielded a more positive emotion and evoked more reactance. The latter may play a part in the lack of effect on exercise intention and behavior, as the perceived freedom threat can have lowered the planning narrative's persuasive impact (Moyer-Gusé, 2008). The stronger positive emotion may have been the result of the planning narrative's main character serving as a role model. Seeing a similar other successfully overcoming barriers and performing the desired behavior, may evoke rather positive emotions (Raney, 2006; Zillmann & Cantor, 1976).

Compared to the tailored planning narrative, the control narrative yielded higher risk perceptions as well as more negative emotions. While portraying a typical workday including the typical work conditions of the trucking industry, the control narrative may have unintentionally emphasized the audience's membership of a high-risk occupational group. That is, the control narrative may have increased the target audience's feelings of vulnerability, thereby arousing fear and other negative emotions (De Hoog, Stroebe, & De Wit, 2007). Given these unintended effects of the control narrative, the hypothesis was rejected.

The main effects of time of measurement for self-reported exercise behaviors and coping planning could be, again, the result of the mere measurement effect (Godin et al., 2011; Maio et al., 2007; Morwitz et al., 1993). Responding to questions on exercise activities, may have led to an actual increase of these activities. Conversely, questions on strategies to overcome obstacles associated with the supported exercise behavior can have stimulated participants to think about successful strategies, but also –and moreover– about the obstacles themselves. An increased awareness of the obstacles they face can, in its turn, have led to a decrease in the participants' perceived level of coping planning.

One of the most important insights can be derived from the sample sizes. Contrary to prevailing assumptions in the Dutch trucking industry, the majority of the participating truck drivers turned out to be intenders. This subgroup is particularly interesting, as it is already motivated to improve lifestyle behaviors, yet not sufficiently targeted as such in conventional health communication materials. As was presumed in the introduction, there appears to be ample opportunity for improvement in this area. The tailored planning narrative offers potential in this respect, as it previously proved effective in increasing action planning strategies as well as exercise intentions (Boeijinga et al., 2017b). Yet, only the first effect was replicated in this study. The unexpected results challenge our previous findings and give rise to further questions. With the purpose of improving the planning narrative and further testing our second hypothesis, a follow-up study was conducted.

## 5.5 Follow-up study

In the follow-up study, a part of the first study was replicated to (re)test the effectiveness of the planning narrative in comparison to the control narrative. To gain a better understanding of promising areas of improvement, four individual in-depth interviews were carried out among intending truck drivers who participated in the first study. The participants were informed about the approach and results of the study, and were asked to brainstorm on ways to improve the planning narrative in comparison to the control narrative. Remarkably, when confronted with the depicted strategies offered in the planning narrative, all four truckers considered the main strategy 'riding a bicycle to work' as realistic and plausible, yet not applicable to their own situation. One truck driver explained: "That doesn't apply to me. But there are some [colleagues] who do that [ride a bicycle to work], that I know. It depends on your truck stand, relative to where you live, so to say", and another: "To me, it [riding a bicycle to work] seems true to life, but just not true to *my* life".

The HAPA model posits that planning strategies should be concrete and specific (Schwarzer, 2008), however the interviews revealed indications that too specific strategies may back-

fire; while true for a large number of Dutch truck drivers, they disregard individual cases and differences. For this particular reason, Gordon (1978), who specializes in metaphors as a tool for changing behavior, recommends being not too specific, allowing the reader to translate the strategies into one's own experience and situation – thereby increasing the narrative's meaningfulness and impact. He explains, "as the tailor, your job is to select the material and to properly cut-out the pattern for the garment. In this case, however, it is the customer who does the alterations so that the garment fits" (Gordon, 1978, p. 51).

Thus, the above raises the question of whether stories containing less specified planning strategies would improve or only decrease the effectiveness of the planning strategies-focused health narrative tailored to intending Dutch truck drivers.

## 5.6 Method

### ***Materials***

In addition to the planning narrative and control narrative, a less specific version of the planning narrative was developed. This new narrative differed from the original planning narrative in that the "riding a bicycle to work" example was followed by a paragraph with a more generic and metaphorical representation of strategies (i.e., depicting the road to healthier lifestyles as a truck ride: there will always be unexpected obstacles, but it's you behind the wheel – a matter of keeping your destination in view), whereas the original paragraph listed more concrete examples (e.g., going for a walk around the neighborhood). The metaphor was based on truck drivers' figures of speech, derived from a previous qualitative study (Boeijinga et al., 2016). The revised narrative was comparable with the original planning narrative in number of words (831 words) and readability (Gunning Fog Index: 6.94).

### ***Participants, design and procedure***

A total of 95 Dutch truck drivers (97.9% male, 2.1% female) took part, which were recruited via trucking companies and at a highly frequented truckers cafe. Slightly more short-haul (50.5%) than long-haul (44.2%) truckers participated in the study, the remaining 5.3% involved in both types. Most of the participants reported to live with a partner and children (45.3%) or with a partner (31.6%) On average, the participating truck drivers reported lower general secondary education (55.8%) or secondary vocational education (35.8%) as their highest completed education level.

The effects of each narrative were tested using a between-subject design. The participants were randomly assigned to one of the three conditions: (1) original planning narrative ( $n = 32$ ); (2) revised planning narrative ( $n = 32$ ); or, (3) control narrative ( $n = 31$ ).

Participants were asked to individually complete the online questionnaire. In accordance with ethical standards, anonymity was assured as well as the right to stop at any time. The questionnaire took around 20 to 30 minutes to complete. Each participant was debriefed about the nature of the research and any remaining questions were answered. Participants were compensated for their participation with a voucher worth €10.00.

### **Measures**

The design of the follow-up study replicated previous research (Boeijinga et al., 2017b), in which the different routes of narrative effects were examined. To this end, the same dependent variables as the immediate post-measurement (T1) were measured, all resulting in scales with satisfactory to good reliability (Transportation:  $\alpha = .68$ ; Identification:  $\alpha = .92$ ; Intention:  $\alpha = .80$ ; Risk perception:  $\alpha = .83$ ; Outcome expectancies:  $\alpha = .84$ ; Action self-efficacy:  $\alpha = .85$ ; Action planning:  $\alpha = .92$ ; Coping planning:  $\alpha = .92$ ; Perceived realism:  $\alpha = .87$ ; Negative emotions:  $\alpha = .86$ ; Perceived freedom threat:  $\alpha = .79$ ; Enjoyment:  $\alpha = .83$ ).

## **5.7 Results**

A one-way MANOVA (Narrative condition: Planning original, Planning revised, Control) was conducted to assess differences in narrative effects (see Table 3). No main effect of Narrative condition was found for the HAPA variables (Wilks'  $\lambda = .854$ ,  $F(12, 174) = 1.191$ ,  $p = .293$ ). However, subsequent univariate analyses did find a significant difference for intention ( $F(2, 94) = 3.990$ ,  $p = .022$ ). Pairwise comparisons<sup>2</sup> showed that the original planning narrative yielded higher exercise intentions than the revised planning narrative ( $p = .016$ ) and the control narrative ( $p = .017$ ).

A similar MANOVA was conducted for narrative experience (see Table 3). Here, a main effect was found for Narrative condition (Wilks'  $\lambda = .694$ ,  $F(14, 172) = 2.464$ ,  $p = .003$ ). Subsequent univariate analyses found significant differences for perceived freedom threat ( $F(2, 94) = 11.022$ ,  $p < .001$ ) and positive emotion ( $F(2, 94) = 9.471$ ,  $p < .001$ ). Pairwise comparisons showed that compared to the control narrative, the original planning narrative evoked stronger feelings of reactance ( $p < .001$ ) and a stronger positive emotion ( $p = .001$ ). The same pattern was found for the revised planning narrative: compared to the control narrative, the revised planning narrative also evoked stronger feelings of reactance ( $p = .001$ ) and a stronger positive emotion ( $p = .001$ ).

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<sup>2</sup> Pairwise comparisons also showed that the original planning narrative yielded higher levels of coping planning compared to the control narrative ( $p = .05$ ).

**Table 3. Means (and SDs) for the dependent HAPA variables and narrative experience as a function of the Narrative condition (after recoding, 1 = negative, 5 = positive)**

	Original	Revised	Control
<b>HAPA</b>			
Intention	3.71 (0.69)	3.29 (0.57)	3.29 (0.79)
Risk perception	3.08 (0.71)	2.80 (0.75)	2.85 (0.52)
Outcome expectancies	3.76 (0.57)	3.61 (0.53)	3.56 (0.50)
Action self-efficacy	3.63 (0.62)	3.53 (0.60)	3.37 (0.64)
Action planning	3.35 (0.94)	3.17 (0.74)	3.21 (0.67)
Coping planning	3.60 (0.66)	3.40 (0.70)	3.23 (0.83)
<b>Narrative</b>			
Transportation	3.66 (0.52)	3.56 (0.42)	3.50 (0.66)
Identification	3.35 (0.85)	3.30 (0.61)	3.17 (1.15)
Perceived realism	4.08 (0.85)	4.16 (0.91)	4.03 (1.02)
Positive emotions	3.25 (0.88)	3.22 (0.55)	2.48 (0.89)
Negative emotions	2.41 (0.76)	2.52 (0.57)	2.51 (0.76)
Perceived freedom threat	3.34 (0.63)	3.23 (0.75)	2.56 (0.75)
Enjoyment of reading	3.22 (0.65)	3.25 (0.49)	3.08 (0.92)

## 5.8 Discussion

The follow-up study was conducted to assess whether less specifically formulated planning strategies would improve the effectiveness of the planning strategies-focused health narrative. The findings indicate that this is not the case, at least not at the immediate post-measurement. Compared to the control and revised planning narrative, the original version yielded more positive exercise intentions, thereby replicating previous findings (Boeijinga et al., 2017b). The narrative experience of reading the original, specific planning narrative replicated Study 1 in that the planning narrative evoked more positive emotions and reactance. The same pattern was found for the revised, less specific planning narrative. However, its similarity in narrative experience did not translate into persuasive effects. The less specifically formulated strategies required alterations (cf. Gordon's 1978 conceptualization) to fit one's own personal situation. As the effects were measured immediately after reading the health narrative, it is possible that participants had not reached this point when answering the questionnaire. Thus, the results for the control narrative in Study 1 were not replicated.

## 5.9 General discussion and conclusion

The studies presented here draw on previous research examining the potential of a narrative approach to health promotion for Dutch truck drivers. Current health materials targeting this high-risk occupational group show insufficient tailoring to truck drivers'

particular stage of change and health literacy skills. The first three-wave study aimed to investigate whether health narratives tailored to Dutch truck drivers' individual stage of change would lead to stronger persuasive effects. It was hypothesized that for non-intenders a risk perception-focused narrative would be more effective than a control narrative (H1), whereas for intenders a planning strategies-focused narrative would be more effective than a control narrative (H2). As the subgroup of non-intenders turned out too small, the first hypothesis could not be tested. The second hypothesis was rejected, because of unanticipated effects of the control narrative, which unintentionally aroused higher levels of risk perceptions and negative emotions.

The unexpected results gave rise to a follow-up study. As Study 1 indicated that the majority of Dutch truck drivers consists of intenders, the second study focused on the planning narrative, aiming to (re)test and improve its effectiveness. Based on interviews with the target group, it was questioned how specific the conveyed planning strategies should be. Therefore, a revised version of the planning narrative was developed, which provided a more generic and metaphorical take on strategies. However, the original planning narrative proved more effective, indicating that concrete and specific formulations of planning strategies are preferred over less specific ones – at least at an immediate post-measurement. In line with previous research (Boeijinga et al., 2017b), the planning narrative (original version) was effective in increasing exercise intentions.

Compared to the second study and previous research (Boeijinga et al., 2017b), the planning narrative yielded weaker persuasive effects in the first study, whereas it was hypothesized that tailoring to truck drivers' particular stage of change would increase the narrative's persuasive impact. The theoretical concept of stages of change in general as well as the HAPA model in specific have been identified as an effective guideline for tailoring health messages (Noar et al., 2007; Schwarzer, 2008). However, it is possible that the conversion of the HAPA determinants into the narratives that were used in this research was somehow unsuccessful. Another explanation could lie in the difference in research design between the studies. To establish truck drivers' present stage of change, a three-wave measurement (instead of a single immediate post-measurement) was used in Study 1. The pre-measurement could have unintentionally revealed the narratives' persuasive attempt, thereby decreasing their potential persuasive influence. Future research should be conducted to further examine tailored narrative health messages using the HAPA model as a guide as well as ways to measure their accuracy and effectiveness.

Whereas the findings of previous research (Boeijinga et al., 2016, 2017b) were to a large extent replicated in the present studies, there were also differences and inconsistencies.

For example, a previous study (Boeijinga et al., 2017b) showed that the planning narrative's effect on intention was mediated by higher levels of action planning, whereas no such mediation was found in the follow-up study. Also, the planning and control narrative yielded different results in the studies reported in this chapter; the control narrative evoked more negative emotions and higher risk perceptions in the first study, whereas it showed no such effects in the second study. The planning narrative showed an increase in exercise intention in Study 2, but no such effect in Study 1. Meta-analyses and reviews have reported similar differences and inconsistencies (De Graaf et al., 2016; Shen et al., 2015). When, and how, are narrative health interventions effective in influencing health intentions and behavior? Future research is needed to further examine the features and processes that are responsible for narrative impact, both in general and in the particular case of Dutch truck drivers.

There are several limitations to the present studies. First, participation was voluntary and the ultimate sample constitutes a convenience sample. Nevertheless, the sample of real truck drivers in both studies is a welcome change from undergraduate samples. Second, the subgroup of non-intenders turned out rather small, and in a more formal respect, too small to allow for a control condition and thus for testing the first hypothesis (H1). In addition, the exercise behaviors were self-reported and, therefore, subject to error and recall bias. Also, the effects of the revised planning narrative were measured immediately after exposure, although there is the possibility that the results will become stronger over time (Appel & Richter, 2007; Petraglia, 2007).

In conclusion, the studies presented here explored the potential of narrative approaches to health promotion targeting Dutch truck drivers, especially for the majority of truck drivers that can be qualified as intenders. The findings partly replicate previous research (Boeijinga et al., 2017b) and suggest areas for further theoretical development in narrative persuasion research, including the construction and measurement of tailored health narratives. The present research has also important practical implications for the Dutch trucking industry, as it challenges prevailing assumptions around truckers' motivation towards healthy lifestyle behaviors and opens new opportunities for worksite health promotion in this sector. More (implementation) studies should be conducted to further explore and verify these opportunities, and to examine whether, and under which circumstances, a narrative approach can lead to actual lifestyle behavior changes.

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6

# Storybridging: Four steps for constructing effective health narratives

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## 6.1 Introduction

Public health communication generally attempts to motivate people to engage in (e.g. the use of sun care products) or refrain from a certain behavior (e.g. cease smoking), typically by means of providing arguments. Processing these persuasive messages requires considerable cognitive skill (Boeijsinga, Hoeken, & Sanders, 2017a; Schellens & De Jong, 2004) and may be too demanding for target audiences of low socioeconomic status (SES) and health literacy. As a result, this approach is likely to increase health inequities between high and low SES groups. In addition, this approach rests on the assumption that changes in motivation, or intention, will automatically lead to changes in behavior. However, there is ample evidence for the existence of an intention-behavior gap (Sheeran, 2002; Webb & Sheeran, 2006): despite being successful in changing intentions, the subsequent change in behavior often remains modest or absent. Sheeran (2002) reports that people are only half of the time successful in acting upon their health intentions. Motivation to change may thus be a prerequisite for subsequent behavior change, but it appears to be far from sufficient.

### ***Narratives as bridge builders***

Narrative health interventions appear promising for bridging the intention-behavior gap as well as health inequities between high and low SES groups. Narrative presents a sequence of chronological events, which comprises specific characters (Jahn, 2005) and 'a plot that intentionally relates events in the story' (Clough, 2011, p. 704), encompassing a variety of forms (e.g. novels, plays, films, comic strips) and offering 'meaning through evocation, image, the mystery of the unsaid' (Mattingly, 1998, p. 8). Across time and cultures, narratives have been used to disseminate behavioral information. From infancy onwards, human beings are capable of producing and processing narratives – contrary to expository texts that are only mastered in adolescence (Berman & Nir-Sagiv, 2007). In other words, humans are highly capable of comprehending information provided in a narrative format (Graesser, Olde, & Klettke, 2002; Mar, 2004), without explicit education. This makes narratives accessible for a large audience, including target audiences with lower SES and health literacy skills (Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013).

Narratives may also solve the intention-behavior gap. The Health Action Process Approach (Schwarzer, 2008) posits that people may not perform the desired behavior for different reasons: *non-intenders* are not (yet) motivated to perform the desired behavior, whereas *intenders* may be motivated to do so but fail to put this intention into action. According to the Health Action Process Approach, planning strategies are essential in helping intenders to overcome this intention-behavior gap. Such strategies involve specifying the when, where and how of the intended behavior (action planning), and anticipating potential barriers and preparing successful strategies to overcome them (coping plan-

ning). Narratives are especially suited for supporting such planning strategies; they focus on specific characters, their actions and motivations, and express the unfolding events in a temporal and causal framework (Berman & Nir-Sagiv, 2007). Hence, characters can function as role models showing how to put an intention into action, what obstacles to expect, and how to successfully navigate them (Bandura, 2004; Green, 2006).

Overall, narrative health interventions have proved effective in creating positive health beliefs, increasing health attitudes and intentions, and stimulating healthy behaviors – though not for each and every narrative intervention (see for reviews, De Graaf, Sanders, & Hoeken, 2016; Shen, Sheer, & Li, 2015). This variation can be explained by the diversity of narratives used in these studies (De Graaf et al., 2016) and raises the question of how to develop effective health narratives. Whereas previous studies have extensively examined the mechanisms and processes involved in narrative persuasion (e.g. Murphy et al., 2013; Murphy, Frank, Moran, & Patnoe-Woodley, 2011), relatively little attention has been focused on the construction of health narratives.

Some researchers have provided concrete strategies and writing techniques for constructing narratives (Gesser-Edelsburg & Singhal, 2013; Thompson & Kreuter, 2014). Several studies have described the development of their narrative health materials, including a HIV prevention video for company workers in Ecuador (Del Carmen Cabezas et al., 2015), a depression fotonovela for Latinos with limited English proficiency (Cabassa, Molina, & Baron, 2012), photo stories for older adults with limited health literacy (Koops Van 't Jagt, De Winter, Reijneveld, Hoeks, & Jansen, 2016), stories on obesity prevention (Zwald, Jernigan, Payne, & Farris, 2013), and narratives for the African American community on breast cancer screening (Kreuter et al., 2008), HIV prevention (Berkley-Patton, Goggin, Liston, Bradley-Ewing, & Neville, 2009), smoking cessation (Houston et al., 2011), and hypertension management (Fix et al., 2012). The majority of these studies focused on minority groups and, either implicitly or explicitly, addressed the health disparities gap. However, none of the previous studies has addressed the issue of the target group's current stage(s) of behavior change (non-intenders and intenders) in the narrative construction process.

This article introduces the concept of 'storybridging' as a method for constructing effective and well-tailored narrative health interventions, identifying meaningful steps in the construction process with regard to content and form characteristics. The method will be illustrated by examples of health narratives for Dutch truck drivers, which proved effective in increasing health intentions (Boeijsinga, Hoeken, & Sanders, 2017b).



## 6.2 Storybridging: Constructing effective narratives

Storybridging refers to the use of stories as a tool for bridging the gap between health inequities as well as the intention-behavior gap. Below, the characteristics composing effective narrative health interventions are specified and converted into specific steps for narrative development.

### **Content**

With regard to content characteristics, a distinction is made between health narratives targeting non-intenders and intenders, as these groups require different approaches (Schwarzer, 2008).

#### *Narratives for non-intenders*

According to the Health Action Process Approach, the motivation to change one's behavior depends on a person's risk perception, outcome expectancies, and self-efficacy (Schwarzer, 2008). Narratives can portray the negative consequences of risky behaviors, thereby increasing the audience's risk perceptions (De Wit, Das, & Vet, 2008; So & Nabi, 2013). Health narratives focusing on risk perception encompass (a) the present situation/behavior and (b) the consequences of continuing the present behavior. The negative consequences of the current behavior should be presented as both severe and realistic, since 'too severe of a threat and too low of a threat are equally as ineffective' (Averbeck, Jones, & Robertson, 2011, p. 40).

Outcome expectancies refer to the audience's perceptions of the expected consequences of a new behavior. Observing a narrative character's behavior being rewarded can lead to positive intentions to perform this behavior as well. Health narratives focusing on outcome expectancies thus entail (a) the desired situation/behavior and (b) the consequences of performing the desired behavior. The consequences should be presented as both realistic and positive for them to work as a motivator. In addition, conveying the story of a character who was able to successfully perform the behavior may also increase the audience's self-efficacy perception.

#### *Narratives for intenders*

According to the Health Action Process Approach, intenders will benefit from a focus on action and coping planning strategies (Schwarzer, 2008). A universal narrative pattern of action and coping is 'the hero's journey' (Campbell, 2008): the main character – the hero – is called for an adventure into the unknown and faces the beginning of change. During the journey, the hero is tested; dragons have to be slain and barriers passed. Once

the goal is achieved, the hero returns in an essentially changed, and improved, state of being. Put in more generic terms, '*someone* is confronted with *some problem* which he/she/it overcomes (or succumbs to) in *some way*' (Gordon, 1978, p. 7). The way in which a recognizable character resolves recognizable problems can provide an example for the target audience on how to deal with similar problems (Bandura, 2004).

Health narratives focusing on planning strategies include (a) the present situation/behavior, (b) the desired situation/behavior, and (c) the connecting strategy between the present and desired situation/behavior. An important part of the *present* situation/behavior consists of the barriers experienced when trying to perform the *desired* situation/behavior. According to Gordon (1978), a prerequisite for effective narratives is that the presented connecting planning strategies are *well-formed*, in that they lie within the target audience's reach and control.

Again, seeing others successfully perform the desired behavior may not only enhance the audience's planning strategies, but also their self-efficacy perception (*if they can do it, so can I*) (Falzon, Radel, Cantor, & d'Arripe-Longueville, 2015). Within the Health Action Process Approach, perceived self-efficacy is considered an important determinant at both stages of the health behavior change process. For non-intenders, self-efficacy refers to beliefs about one's ability to initiate healthier lifestyle behaviors (*action self-efficacy*), whereas for intenders, it refers to beliefs about one's ability to deal with barriers that arise while performing these behaviors (*maintenance self-efficacy*).

### **Character similarity**

A vital element for narrative characters to serve as role models is that the target audience perceives the character as similar to itself. This perceived similarity may be based on various characteristics of the character such as 'socioeconomic status, group membership, place of residence, life experience, or attitudes, beliefs and values' (Kreuter et al., 2007, p. 229). In depicting characters, language is essential, since the use of authentic, culturally resonant language reflects a target group's culture, including its beliefs, norms and values (Larkey & Hecht, 2010).

Perceived similarity in language and other details (social class and context, gender and profession, etc.) has been suggested as a driver for *identification* (Brown, 2015; Cohen, 2006; Hoeken, Kolthoff, & Sanders, 2016), which is recognized as an important mechanism for narrative persuasion. For example, identification with narrative characters has been found to influence attitudes (De Graaf, Hoeken, Sanders, & Beentjes, 2012; Hoeken & Sinkeldam, 2014; Igartua & Barrios, 2012), as well as intentions and actual behavior (Moyer-Guse, Chung, & Jain, 2011). Not only character similarity but also setting familiarity

seems a promising characteristic to make narratives more persuasive (De Graaf et al., 2016). Familiarity with a character's (living) situation was found to encourage transportation (Green, 2004) and effective in increasing risk perceptions (De Graaf, 2014).

### ***Perspective***

Another driver for identification is the perspective presenting the narrative (De Graaf et al., 2012; Hoeken & Fikkers, 2014; Hoeken et al., 2016). First-person health narratives tend to be more effective compared to third-person health narratives (see for a review, De Graaf et al., 2016). A first-person story perspective, in which the 'I'-character is the deictic *here-and-now-center* of the narrative, requires readers to take the position of the protagonist (Graesser et al., 2002), thus inviting them to process the presented information from their own spatial body perspective (Brunyé, Ditman, Mahoney, Augustyn, & Taylor, 2009); readers appear to use 'self' as an anchor in organizing information (D'Ailly, Murray, & Corkill, 1995). In other words, the strategic use of language can guide people to identify with certain characters (Hoeken et al., 2016).

### ***Medium***

Finally, the medium through which the narrative is presented may be relevant. Although Braddock and Dillard's (2016) meta-analyses did not find clear effects for a superior effect of one medium over the other, this factor should not be underestimated regarding target audiences with lower SES and health literacy. For example, print messages may require higher cognitive demands than audio messages (Wilson & Wolf, 2009).

### ***A four-step method***

These essential characteristics provide guidance for narrative development and can be translated into concrete steps. As non-intenders require a different intervention approach to intenders, the first step is identifying the target audience's present stage of behavior change, which determines the focus, and thus the content, of the narrative. For non-intenders, the narrative should focus on risk perception, outcome expectancies and/or self-efficacy, whereas a narrative for intenders should focus on planning strategies.

Step 2 involves identifying and selecting the content elements of the narrative, based on the audience's stage of change. This implies foremost gaining an understanding of (a) the nature of the present situation/behavior, including significant persons and events. In addition, the following elements need to be identified: (b) the experienced negative consequences of the present behavior, (c) the desired situation/behavior, (d) the positive consequences of the desired behavior and/or (e) corresponding connecting strategies.

The third step involves constructing the story that basically is built on the selected key elements. Regardless of the target audience, stories should be isomorphic in order to be effective: that is, the story should cover the situations/behaviors as perceived by the audience, including relevant characters, events and barriers (Gordon, 1978). The target audience's characteristics and experiences gathered in Steps 1 and 2 thus function as important building blocks in constructing the health narrative, materialized in optimal character similarity, linguistic perspective and medium choice.

The final step involves pre-testing the health narrative with members of the target audience, assessing its authenticity and comprehensibility. Important aspects to test include perceived similarity (To what extent does the target audience relate to/identify with the character?), isomorphism (To what extent are the narrative's key elements perceived as realistic and authentic?) and well-formedness (To what extent are the desired behavior and connecting strategy in reach or control of the target audience?). On the basis of the results from the pre-test, the narrative is repeatedly edited and retested, until it is considered authentic and appealing by the target group. The final version of the health narrative thus results from iterative construction and pre-testing.

For all steps, it is important to integrate the target audience (Miller, Winskell, & Berrier, 2015). In Steps 1 and 2, their personal stories are used as input, and in Steps 3 and 4, they provide valuable feedback on the output (the developed story). In other words, effective narrative health interventions are co-created with the target audience.

## 6.3 Application

The above-presented Storybridging steps are illustrated with a successful case study of narrative health communication for Dutch truck drivers (Boeijinga et al., 2017b): a large, high-risk, low SES group with relatively unhealthy lifestyles that is hard to reach (Sectorinstituut Transport en Logistiek, 2016) and was underserved in attention of health intervention researchers so far (Ng, Yousuf, Bigelow, Van Eerd 2015).

### ***Step 1: Identifying the stage of change***

To identify the current stage of behavior change, semi-structured, in-depth interviews were conducted with members of the target audience ( $n = 20$ ) (Boeijinga, Hoeken, & Sanders 2016). Participating truck drivers were asked general inquiries about their daily life and routines ('What is it like to be a truck driver?') as well as more specific questions about current eating and exercise behaviors, satisfaction with one's physical condition and previous attempts to improve one's condition (e.g. 'Have you ever tried to lose weight or keep from

gaining weight?', 'Can you tell me more about these attempts?'). To avoid socially desirable answers, questions on health-related themes were posed using indirect probing questions or postponed towards the end of the interview. Each participant was debriefed afterwards about the actual nature and purpose of the research.

### ***Step 2: Identifying the key elements***

The content elements were incorporated in the interview design by questions like 'What does a typical day look like?' 'Who are involved?' (present situation/behavior); 'What advantages and disadvantages do you experience from ...?' 'What are your expectations on the long-term?' (consequences of continuing present behavior); 'What would you like to be changed?' 'What changes would you like to make?' (desired situation/behavior); 'What advantages do you expect or experience from ...?' 'Why would you recommend to ...?' (consequences of adopting desired behavior); 'What stops you from ...?' 'How will you be able to ...?' and 'What advice would you give other truck drivers?' (connecting strategy).

### ***Step 3: Building the story***

The story was built around the identified key elements. To enhance isomorphism and perceived similarity, key quotes and comments were extracted from the truck drivers' personal stories and used as building blocks for the health narrative. Similarity of language was ensured to incorporate the target group's culture. In line with previous research, the story was written from a first-person perspective. In addition, the social perspective from which the interviewed truck drivers related their personal experiences – for example, as a truck driver, husband, father and so forth – was taken into account. Health care aspects of the content were checked for accuracy with health scientists. Also, potential media formats were checked with interview data regarding media usage as well as with literature data from other studies.

### ***Step 4: Pre-testing the story***

The pre-test was conducted in collaboration with a Dutch trucking company. The participating truck drivers ( $n = 7$ ) read the story aloud, providing immediate feedback followed up by further questioning and evaluation (e.g. 'What do you think of the story?' 'How does the story make you feel?' 'To what extent can you relate to the story?'). In addition, the story was proofread for authenticity and accuracy by important stakeholders in the transport sector, such as the Dutch National Institute for Transport and Logistics and the editors of a trucking magazine. Based on the pre-test's results, the narrative health intervention was edited and refined.

## 6.4 Findings

### ***Stage of change: Non-intenders and intenders***

The interviews revealed that Dutch truck drivers regard health as important and that they manage to warrant a sense of good health by comparing their own health to that of colleagues who are worse off (e.g. who suffered from heart attack or knee malfunction). This kind of downward social comparison enables truck drivers to maintain a relatively benign image of their own health status. As a result, some truck drivers feel little motivation to change their lifestyle, which qualifies them as non-intenders.

More truck drivers, however, indicated that they actually would like to live a healthier life and had repeatedly tried to do so – qualifying them as intenders. Their attempts were, in most cases, thwarted by barriers within their work environment (e.g. irregular working hours and lack of exercise facilities) and personal environment (e.g. social expectations or obligations). There are thus both non-intenders and intenders among the target audience.

### ***Key elements: A risk narrative and planning narrative***

Two health narratives were developed: a risk narrative in response to the non-intending truck drivers' tendency to downplay their health risks, and a planning narrative to facilitate intenders to put their intention into action. Accordingly, relevant content elements for both narratives were identified.

#### *Present situation/behavior*

The interviewed truck drivers generally described their current work situation as strenuous: 'What is it like to be a truck driver? Working at impossible hours, unsightly hours, stressful, [...] just bad for your health, just a bad job'. Their current health situation was typically related to their work; health-related issues such as overweight, obesity, worn vertebrae, stress and (chronic) fatigue were considered 'part of the job'. The less truck drivers managed to downplay their health threats by downward social comparison, the more they regarded their present health situation as problematic.

With regard to relevant others, the partner's role appeared to be particularly decisive. The partner (if there was one) usually prepared the trucker's lunchbox and was in charge of the groceries and meals at home, thus playing an important role in controlling dietary patterns. At the same time, the partner's expectations (or demands) regarding quality/family time sometimes prevented truckers from exercising during leisure time and, thus, hindered their healthy exercise habits. Crucial appeared the shift from work to home (and the balance between them). Once home, truck drivers experienced more control over their behaviors, but their lack of energy after work prevented them from exercising.

Thus, both the work and personal environment were associated with barriers; irregular working hours and a lack of exercise facilities were indicated as most decisive barriers to healthy lifestyles. The interviewed truck drivers reported unfavorable behaviors regarding both diet (irregular and unhealthy meals) and exercise (a lack of physical activity). In consultation with health scientists, a focus on exercise behaviors was chosen as most promising. Truckers' perceived barrier of 'lack of exercise facilities in the work environment' resulted from their framing 'exercise' as 'going to the gym', which was generally considered too demanding or even outrageous (cf. Caddick et al., 2016). Reframing exercise as 'being physically active' may offer an alternative frame and, thereby, provide more ecological opportunities for truck drivers to act upon. Thus, truck drivers' exercise behaviors appeared to provide a window of opportunity for improvement.

#### *Negative consequences*

Stories about other truckers being worse off provided the content for depicting negative consequences of continuing the present behavior. For example, truck drivers described heart attacks, involving either themselves or their colleagues. Other important downsides experienced by the target audience were being unfit to engage in physical activities with their (grand)children or being afraid of not witnessing them grow up.

#### *Desired situation/behavior*

The intending truck drivers indicated that they would like to adopt healthier lifestyle behaviors in order to feel better and fitter. Specifically, they would like to improve their physical shape so that they would have more energy during/after work. In addition, intenders indicated that they strive to lose weight, not wanting to look like 'typical truck drivers', who are often stigmatized and portrayed as obese, 'meatball-eating' men.

#### *Connecting strategy*

Stories of truck drivers who already managed to improve their health and lifestyle provided strategies for bridging the gap between the present and desired situation/behavior. These strategies involved (a) battling the irregularity by structuring the day, (b) exercising without typical sports equipment, and (c) tackling temptations (e.g. exercising instead of watching television) by willpower. In general, the truck drivers considered themselves in control of their own health; 'your health is in your own hands'.

#### ***Building the story: From quotes to narratives***

The identified key elements served as basic elements for the stories. For both narratives, a storyline was developed around the fictitious, but representative, character with the (in Dutch) neutral name René Louwisse, a 41-year-old trucker, the father of Tim (14 years) and the husband of Anja (38 years). These features were based on the characteristics of

the interviewed truck drivers; the majority was ethnically Dutch, aged between 40 and 50 years and had a partner and children. As the age of 50 was described as a turning point at which physical pains and reduced fitness could no longer be ignored or downplayed, an age of early 40s was chosen; truckers around this age generally feel no need (yet) to engage in preventive health behaviors. Given the importance and influence of the partner and children, who were frequently mentioned as drivers of motivation, both the spouse and child were elaborated upon as characters in the narrative.

#### *Risk narrative*

The risk perception narrative described René during a typical day at work (present situation/behavior). While unloading his truck, he experiences chest pains. At first, he tries to ignore the pain since he is already behind schedule. During his general practitioner (GP) visit the next day, he is immediately referred to the hospital for examination. It turns out that an artery near his heart is clogged and requires immediate surgery (negative consequences); the subsequent operation is successful. René realizes he has been lucky and that he needs to change his current lifestyle, including lack of physical activity and overweight. The next story fragment is taken from the risk narrative with elements derived from the interviews in italics:

*I was on my way to a delivery address in Germany and suddenly felt unwell. [...] Once arrived, I stepped out the truck to unload. I pulled open the side of the trailer and suddenly felt real cold, very uncommon. I called Anja and said: 'There's such a cramp in my chest and guts, damn!'. Usually she would comfort me and make jokes about men and their aches and pains. But not this time. 'I'd rather see you go to the ER, she said. I said: 'Yes, will do', but thought: no way. I'm not going to a hospital abroad, right?*

#### *Planning narrative*

The narrative focusing on planning strategies depicted René, reflecting on the road he travelled to a healthier lifestyle. Seeing his son's embarrassment of his poor physical shape (present situation/behavior), René decides to improve his lifestyle (desired situation/behavior) – which proves easier said than done. His first bike ride to work is not much of a success; he arrives at his truck sweaty and red faced. The rain is not helping his resolution to cycle either, and the couch is tempting after a long day on the truck. Nevertheless, he finds his ways (connecting strategies) to navigate past these challenges and establishes a healthier life by setting fixed biking days (battling irregularity by structuring the day/week), going for walks (exercising without sport equipment) and resisting temptations (willpower) – including a specification of the when, where and how.



All three connecting strategies were incorporated in the storyline. In this way, audience members can decide for themselves which (combination of) strategy is applicable to their personal situation. In addition, an example was given on how to spend family time while getting some exercise – that is, René playing soccer with his son – in response to the experienced social expectations and obligations and the limited ‘exercise-frame’. A story fragment illustrates how these elements were incorporated into the narrative:

On days I don't bike, *I go for a walk. That's easy enough to organize. Anything from a walk around the block to a couple of miles, all depends on my time available. Sometimes together with Anja or the dog. [...] Although it's true, there are still days I don't feel like doing anything. Such days, the couch is very tempting indeed.* The other day, for example, it started raining just when I wanted to go out for a walk. So, I went for walk with my umbrella. [...] *Well, there're always excuses for not going, but it's a matter of focusing on the reasons for going. It's your own choice; it's in your own hands.*

#### *Medium*

Based on the truck drivers' preferences and on previous research findings, the health narratives were presented in a written and audio format; a survey revealed that nine out of 10 truck drivers read trucking magazines, and that they consistently listen to the radio during work (TON Magazine, 2013, p. 12–17), which was confirmed by the interview data (Boeijinga et al., 2016).

#### ***Pre-testing the story: Isomorphic and well-formed***

The pre-test confirmed the health narratives' isomorphism and perceived similarity. After reading the risk narrative, one truck driver remained quiet for a while and then said, 'This story is about me, there is more to heaven and earth ...' It turned out that his name was René as well and that he had also suffered from heart failure. Generally, the desired situation/behavior and connecting strategy as part of the planning narrative were considered well-formed. Some truckers pointed out that the home-to-work bike distance (10 km) was quite ambitious, and it was therefore altered to 6 km. The selected male voices ( $n = 3$ ) for the audio version were all recognized as authentic. The one identified as most representative was used for the final version of the audio versions. The potential of both media formats was confirmed by the stakeholders; that is, by truck drivers themselves as well as by the Dutch National Institute for Transport and Logistics and cooperating trucking companies.

Based on the pre-test, minor changes were made. The final versions of the health narratives consisted of approximately 840 words (risk narrative: 852 words, planning narrative: 825 words). The readability was also similar for both narratives (Gunning Fog Indices:

risk perception-focused narrative: 7.49, planning strategies-focused narrative: 7.13). The recorded narratives were each below 5 minutes (risk perception-focused narrative: 04:50 minutes, planning strategies-focused narrative: 04:37 minutes). Thus, in this case study, the Storybridging approach resulted in four health narratives: (a) a written risk narrative and (b) an auditory risk narrative for non-intending truck drivers; and (c) a written planning narrative and (d) an auditory planning narrative for intending truck drivers.

## 6.5 Discussion

Using the Storybridging method, health narratives were developed for both non-intending and intending Dutch truck drivers. A quantitative study testing the effectiveness of these narratives showed that both narratives were, via different routes and regardless of their medium, effective in increasing truck drivers' exercise intentions (Boeijinga et al., 2017b). These findings endorse the effectiveness of the applied Storybridging method, in which the target audience served as an important stakeholder throughout the development process; their personal stories (input) formed the basis of the health narratives (output). On the basis of this case study, the article aims to offer a practical step-by-step method for constructing effective narrative health interventions.

Although time-consuming and labor intensive, the Storybridging method suggests that it pays off to first gain a thorough understanding of the problem behavior at stake and the stage(s) of behavior change the target audience is at (Step 1). Based on this knowledge, the health narrative's key elements can then be determined (Step 2) and used as building blocks while constructing the story (Step 3). According to the Health Action Process Approach, non-intenders benefit from a focus on risk perception, outcome expectancies and/or self-efficacy, whereas intenders benefit from a focus on action and coping planning.

However, the theoretical concepts implicit in the Health Action Process Approach have a certain interrelatedness, which prevents a clear-cut distinction between them both in practice and while developing health narratives. The developed planning narrative, for example, depicts the story of a role model truck driver who (after a bumpy road) is currently living and enjoying a healthier life. By implying the beneficial aspects of his lifestyle change (e.g. 'being happy with the lifestyle changes'; 'feeling stronger and fitter'), the storyline unintentionally could lead to positive outcome expectancies as well. Planning strategies also operate in concert with perceived self-efficacy, both of which are enhanced by role model behavior of narrative characters. With regard to persuasiveness, the story's quality, accuracy and readability outweigh its strictness and limit in focus. The theoretical concepts should therefore serve as guide rather than fixed rules.

The final step involves pre-testing and refinement (Step 4). The developed health narratives were pre-tested in a research setting, which may differ from truck drivers' real-life setting. The question is whether these narratives would also be read on a voluntary basis under less favorable, everyday conditions. A promising format in this regard is *TON magazine*, a free of charge, national trucking magazine that is widely distributed both in printed (home delivery) and digital format (available at [www.tonmagazine.nl](http://www.tonmagazine.nl)), and well read by Dutch truck drivers (Steijvers & Van der Valk, 2012). The importance and influence of both the work and private context give rise to another limitation. Rather than targeting the target group on its own, narrative health interventions may benefit from a multiple audience design, including significant others such as the partner. Printed home-delivered versions of professionally focused magazines such as *TON* may reach both the primary, professional target group members and their household members, specifically their partners. In collaboration with the National Institute for Transport and Logistics, for example, a special edition of *TON* magazine could be developed targeting truckers' partners by sharing stories and tips (e.g. easy recipes and exercises) on how to facilitate healthier lifestyles. Previous research has indicated that such a holistic, multi-stakeholder health promotion approach –including individual, interpersonal and ecological levels– is an imperative need in the context of the trucking sector (Apostolopoulos et al., 2012; Apostolopoulos et al., 2011).

To conclude, the Storybridging method offers a careful and practical step-by-step approach for co-creating narrative health interventions, in response to the mixed results and wide diversity of narratives used in health-related narrative persuasion research. The steps established are guided by the Health Action Process Approach as well as choices around narrative characteristics. An important implication of this method is that non-intenders and intenders each require a specific approach and, therefore, specific narrative content. Identifying the target group's stage of behavior is thus an essential first step in constructing effective health narratives. The developers of narrative health interventions are recommended to involve the target audience in each step of the development process. Narrative health interventions developed using the Storybridging method are promising in bridging health inequities as well as the intention-behavior gap. Future narrative health interventions should be carried out following the Storybridging steps to further verify the utility and generalizability of the method.

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7



# General discussion



## 7.1 Introduction

This thesis examines the promise of narratives as bridge builders and their potential as an alternative, effective approach to health promotion targeting Dutch truck drivers. To this aim, different studies were conducted involving both qualitative and quantitative methods as well as a corpus analysis. The main objectives of these studies were:

1. *to explore Dutch truck drivers' health perceptions and needs*
2. *to examine the extent to which traditional health promotion is tailored to these needs*
3. *to develop a narrative health intervention for Dutch truck drivers*
4. *to evaluate the developed narrative health intervention*
5. *to provide a systematic approach for developing narrative health interventions*

The studies were conducted in conjunction with societal partners in the Dutch transport sector, including Occupational Health Service ArboNed and the Dutch national Institute of Transport and Logistics (STL, formerly Gezond Transport). In this final chapter, the main findings are presented and reflected upon. Based on these findings, implications and recommendations for research and practice are discussed, putting the findings in a broader context.

## 7.2 Overview of the main findings

Chapter 1 provided the context in which the thesis was undertaken, introducing its relevance and scope: Socioeconomic health disparities continue to grow, while traditional health promotion efforts require cognitive skills that may be too demanding for low SES groups, thereby increasing rather than decreasing health inequities between high and low SES groups. Also, the traditional rhetorical approaches to health promotion do not accommodate for the intention-behavior gap, that is, the fact that people quite often fail to put their intentions into actions. The Health Action Process Approach (HAPA; Schwarzer, 2008) was introduced as well as the narrative format, which was presented as a promising alternative approach – especially in the case of truck drivers, who have relatively low SES and unhealthy lifestyles and face strenuous working conditions, leading up to the question: To what extent does narrative offer an alternative, effective approach to health promotion targeting Dutch truck drivers?

Chapter 2 zoomed in more closely on the case of Dutch truck drivers and aimed to identify current lifestyle behaviors and perceived challenges towards a healthier lifestyle for a thorough understanding of the target group's particular perceptions and needs. For this

purpose, 20 in-depth interviews were conducted combined with seven cases of participant observation. Results of this study revealed that Dutch truck drivers generally regard their health and lifestyle as important, but have unproductive associations with concepts of healthy living believing it will impair their enjoyment of life. They also have a tendency to downplay their health risks by means of downward social comparison. The majority of the interviewed truck drivers indicated that they would like to improve their lifestyle, which qualifies them as *intenders*. However, experienced barriers within both their working and personal environment prevent them from translating their intentions into actual lifestyle changes. Based on these insights, the study suggested three specific areas of focus in developing more effective health promotion interventions for this occupational group: truck drivers' (a) risk perceptions, (b) outcome expectancies, and (c) action and coping planning strategies.

Chapter 3 examined to which degree existing health interventions targeting Dutch truck drivers are sufficiently tailored to the target group's perceptions and needs (Chapter 2) and health literacy skills. A two-step corpus analysis among 21 health materials uncovered the assumption underlying these materials: Dutch truck drivers' unfavorable and unchanging lifestyle behaviors are presumed to be caused by a lack of motivation, thereby qualifying them as *non-intenders*. In line with this assumption, the materials showed a predominant focus on determinants pertaining to HAPA's motivation phase (action self-efficacy, outcome expectancies, and risk perception) and a consistent use of argumentation to motivate the audience to engage in healthy behaviors or refrain from unhealthy ones. The arguments are typically presented in an implicit way requiring considerable effort and skills to identify and evaluate them adequately. This study thus indicated a mismatch between the target group's needs and skills and the materials' focus and format, which could explain the interventions' low level of effectiveness. An additional focus on planning strategies as well as the use of approaches that are tailored to the target group's lower health literacy skills was recommended.

Chapters 4 and 5 built on the previous results and examined the persuasive potential of health narratives as an alternative approach to health promotion targeting Dutch truck drivers. In Chapter 4 an experimental study was carried out among 120 Dutch truck drivers. Narrative content (risk perception-focused vs. planning strategies-focused) and narrative medium (written vs. auditory) were manipulated to assess whether these factors influence truck drivers' intention to adopt a more active lifestyle. No main effects were found for medium. Although these findings are in line with Braddock and Dillard's meta-analysis (2016), the audio format was expected to be more effective for this particular audience. However, narrative medium should not be disregarded as an influential factor when targeting audiences with lower levels of health literacy. Recent research reveals that photo

stories offer a promising format in this context (Koops van 't Jagt, De Winter, Reineveld, Hoeks, & Jansen, 2016; Koops van 't Jagt, Hoeks, Duizer, et al., 2017).

Whereas the narrative's medium did not appear to play a role, the narrative's content did make a difference. Both risk-focused and planning-focused narratives yielded more positive exercise intentions, but via different routes: The risk narrative yielded stronger negative emotions, subsequently influencing intentions, while the planning narrative effectively stimulated concrete action strategies, which also yielded a more positive intention. These findings emphasized the importance of narrative content and endorsed the potential of a narrative approach to health promotion for truck drivers. Tailoring to the target audience's particular stage of change was recognized as a promising next step in increasing the impact of these narratives.

Chapter 5 expanded on Chapter 4 by presenting a three-wave study among 108 Dutch truck drivers, which included tailoring the narrative intervention to the truck drivers' specific stage of behavior change. Based on a pre-measurement, truck drivers were categorized as non-intenders or intenders. Approximately two to four weeks later, the non-intending truck drivers received the risk narrative, whereas the intending truck drivers received the planning narrative, both followed up by a post-measurement, again two to four weeks later. This study revealed that, contrary to prevailing assumptions in the Dutch trucking industry, the majority of truck drivers (79.6%) are intenders – confirming the findings in Chapter 2. The tailored approach did not yield the expected results; compared to the previous study (Chapter 4), the persuasive effects appeared weaker instead of stronger. Like the previous findings, the planning narrative led to higher action planning levels, however, these concrete action strategies did not result in more positive exercise intentions or self-reported behaviors. To retest and improve the planning narrative's effectiveness, a follow-up study (replicating the one described in Chapter 4) was carried out among 95 Dutch truck drivers. The findings of this follow-up study partly replicated the ones in Chapter 4 (the planning narrative proved, again, successful in increasing exercise intentions) and suggested areas for further theoretical development in narrative persuasion research.

Chapter 6 combined the insights developed in all previous chapters and presented the Storybridging method, which offers a practical step-by-step approach for constructing narrative health interventions in response to the wide diversity of narratives used in health-related narrative persuasion research. Guided by essential narrative characteristics as well as HAPA principles, four concrete steps were established: (1) identifying the stage of change, (2) identifying the key elements, (3) building the story, and (4) pre-testing the story. These steps were described and illustrated by the developing process of the health narratives used in the previous studies (Chapter 4 and Chapter 5). Crucial to the

Storybridging method is the integration of the target audience at each stage of the development process; in Steps 1 and 2, their personal stories serve as important input, and in Steps 3 and 4, they provide valuable feedback on the output (the developed story). This study concluded that effective narrative health interventions are co-created with their target group.

## 7.3 Reflection on the findings

Throughout this thesis, narrative was presented and used as a tool for bridging the gap between health inequities as well as the intention-behavior gap. In line with previous research (Schellens & De Jong, 2004; Kreuter et al., 2007; McQueen, Kreuter, Kalesan, & Alcaraz, 2011; Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013), this thesis found that traditional health promotion efforts are limited in their ability to address the particular needs of low SES target groups – thereby potentially contributing to, instead of diminishing, existing health disparities.

Compared to traditional non-narrative formatted health information materials, narrative formats have been proposed to provide a valuable tool in reducing health disparities in light of their unique property to overcome resistance, facilitate information processing, and address sensitive health topics (Kim, Bigman, Leader, Lerman, & Cappella, 2012; Kreuter et al., 2007; Murphy et al., 2013). Indeed, Dutch truck drivers identified the developed health narratives as more appealing and accessible; however, no direct comparison was made between narrative and traditional non-narrative formats because of design considerations. By its nature, narrative consists of “a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed” (Kreuter et al., 2007, p. 222). By contrast, the rhetoric or expository sets out a structure of abstract concepts and their connecting arguments in a complex and static constellation (Graesser, McNamara, & Louwse, 2003). The difference in formats translates to differences in text characteristics (such as text length, average word length, and use of diverse vocabulary), which threatens internal validity and makes a direct comparison with traditional rhetorical approaches difficult. The claim that a narrative approach to health promotion for Dutch truck drivers is more effective in promoting healthy lifestyles compared to conventional approaches can, thus, not be stated based on the studies in this thesis, because no such direct comparison was performed. However, the research findings do endorse the promise and potential of narrative health promotion for Dutch truck drivers in particular and low SES groups in general.

Another design limitation relates to narrative's potential for bridging the intention-behavior gap. This feature proved especially promising given the high percentages of intenders among Dutch truck drivers. Obstacles within the working environment as well as the personal environment seem to prevent truck drivers from translating their overall good intentions into actual actions. The extent to which narratives can overcome this intention-behavior gap was extensively touched upon but not directly measured; behavioral intentions and self-reported behavioral changes were included in different studies, but no direct behavioral measures were employed. From the onset, the project's approach was to incorporate behavioral measures in the research design by participation in an exercise improvement program for truckers. This part of the project was planned to be developed and executed in close collaboration with a societal partner who offers nation wide Occupational Health Services, including interventions in the everyday work setting. Similar to study's objects, the truck drivers, the study itself faced serious obstacles in implementing these plans and intentions: soon after the start of the research project, this societal partner ran into serious financial problems because of the economic crisis and was no longer able to keep its promises with respect to providing the personnel, material and financial support for realizing the exercise improvement program as part of our intervention design. As a result, direct behavioral measures could no longer be employed and, hence, no direct measures of, or claims on, the extent to which health narratives focusing on planning strategies are effective in translating positive exercise intentions into actual exercise behaviors, could be made. Although another societal partner –the Dutch national Institute of Transport and Logistics– did provide close contact with the trucking sector and enabled us to perform studies with members of the actual target groups, narrative health interventions could not, as had been the intention, be tested in a natural professional setting, and had to be conducted in a research setting instead. This raises the question whether the health narratives would attract 'voluntary' readers when presented in everyday conditions, possibly somewhat less favorable. Statistics on readership of trucking magazines in which these narratives could be integrated are promising (9 out of 10 Dutch truck drivers indicated reading national trucking magazines, see TON, 2013), but provide no guarantees.

Another point that should be reflected upon is the matter of tailoring; that is, adjusting health messages to unique, individual characteristics. Meta-analyses showed that tailored health messages are significantly more effective than non-tailored health messages (Lustria et al., 2013; Noar, Benac, & Harris, 2007), particularly when tailored to the individual's stage of behavior change. The research presented in this thesis did not find such an effect; compared to a non-tailored control narrative, the tailored narratives yielded no stronger effects. Also, the persuasive effects of the health narratives proved weaker when tailored to truck drivers' individual, pre-assessed stage of change (Chapter 5, Study 1) than

when truck drivers were randomly assigned to one of the narrative interventions (Chapter 4 and Chapter 5, Study 2). One explanation could be the difference in study design. The pre-measurement assessing truck drivers' individual stage of change could have unintentionally revealed the narratives' persuasive intent. Although a review on health-related narrative persuasion research (De Graaf, Sanders, & Hoeken, 2016) suggested that an overt persuasive context does not inhibit narrative persuasion, this factor might be important in the case of Dutch truck drivers, who explicitly value concepts related to 'freedom' and 'autonomy' – as the main attractions of the job (see also, Snyder, 2012; Van der Beek, 2012). The perceived freedom threat could, thus, (consciously or unconsciously) have threatened the tailored health narratives' potential persuasive impact.

In addition, a factor potentially influencing the effectiveness of these tailored narratives is the target group's low level of SES (Noar et al., 2007). Low-SES groups generally have lower health literacy (Adler & Ostrove, 1999; Twickler et al., 2009) and face more, and often structural, barriers to lifestyle changes (Blankenship, Bray, & Merson, 2000; Heutink, Van Diemen, Elzenga, & Kooiker, 2010). In addition to increased attention to such barriers and levels of health literacy (Noar et al., 2007), tailored health interventions targeting Dutch truck drivers would benefit from a more holistic approach, including interventions at the organizational, institutional, and ecological levels (Apostolopoulos et al., 2011; 2012; Ng, Yousuf, Bigelow, & Van Eerd, 2015). Finally, and moreover, it should be noted that tailoring research has been typically carried out with non-narrative rhetorical messages rather than narrative messages. It is possible that different tailoring mechanisms apply for the narrative format. The use of the Health Action Process Approach (HAPA; Schwarzer, 2008) for tailoring is relatively new as well. Although the first results are promising (Schwarzer, 2008), information on how to convert the HAPA determinants into health messages and storylines is limited. In other words, there is still much to be learned about tailoring narrative health messages, particularly when using the HAPA model.

Meta-analyses and reviews of health-related narrative persuasion research reported differences and inconsistencies in narrative effects (De Graaf et al., 2016; Shen, Sheer, & Li, 2015), which are generally attributed to the widely diverging ways in which narratives are defined and used (Hinyard & Kreuter, 2007). The present findings also showed some inconsistencies; for example, Chapter 4 showed that the planning narrative's effect on exercise intention was mediated by higher levels of action planning, whereas no such mediation was found in Chapter 5 (Study 2). Also, the planning and control narrative yielded different results throughout the studies in Chapter 5: the control narrative evoked more negative emotions and higher risk perceptions in Study 1, whereas it showed no such effects in Study 2 and the planning narrative showed an increase in exercise intention in Study 2, but not in Study 1. As previously described, these differences can be partly



explained by the difference in study design (an immediate-post design versus a three wave design, including a pre-measurement). The use of paper (Chapter 4) versus online questionnaires (Chapter 5) should be mentioned as well in this respect; reading a narrative from paper can significantly differ from reading it from a computer screen (e.g., Jeong, 2012; Mangen, Walgermo, & Brønnick, 2013). The narrative engagement scores, however, were quite similar for both the printed and the digital conditions.

The findings of this study contribute to the wider debate on how to measure narrative effects. One of narrative's advantage over traditional forms of health communication is its implicit, subtle form of persuasion. The evaluation of narrative interventions interferes with this very nature of narrative (Petraglia, 2007). Also, narrative effects are typically measured in isolation and immediately after exposure, whereas narrative persuasion involves neurocognitive and emotional processes that work with an individual's social context to result in persuasive effects, which may even increase over time (i.e., sleeper effect; Appel & Richter, 2007). New measuring techniques, including social settings and neurophysiological methods, could provide more insight in the impact of narrative interventions.

## 7.4 Implications and recommendations

This thesis provides important insights for the development of health interventions targeting Dutch truck drivers. Whereas current health materials are mainly catering to the needs of non-intenders, this thesis revealed that the majority of Dutch truck drivers are intenders and recommends an (additional) focus on action and coping planning strategies to facilitate the putting of truck drivers' health intentions into actions. In terms of format, a narrative approach is recommended to support the target group's planning strategies and match their health literacy skills; narrative is a universal and accessible form of communication that typically deals with characters that have to overcome barriers to reach their goal, translating their intentions into actual actions. For the health interventions to be effective, they should also incorporate a multi-stakeholder strategy, integrating changes at the organizational, institutional, and ecological levels. Dutch truck drivers regard their personal health primarily and increasingly as their own responsibility (Gezond Transport, 2011; 2013), nevertheless there is also a responsibility for the trucking industry – particularly in light of the experienced barriers in the working context that seem to be responsible for the intention-behavior gap (i.e. irregular working hours and lack of facilities). Trucking companies, insurance companies, occupational health services, the national institute of transport and logistics as well as governmental regulatory bodies should work together to collectively create a healthier working environment and to facilitate healthier lifestyle choices. The role of significant others, such as truckers' partners, proved decisive as well;

their influence can be both positive (stimulating, facilitating healthy lifestyle choices) and negative (discouraging, placing social expectations/obligations) for health-related behaviors. Health interventions targeting Dutch truck drivers, thus, benefit from (a) a narrative approach, (b) a focus on planning strategies, and (c) a multiple audience design that includes both the working context and the personal environment.

The thesis also provided an important contribution to health-related narrative persuasion research. While the persuasive effects of narrative health interventions are extensively investigated, relatively little attention has been paid to the actual construction of such narratives. This is reflected in the wide diversity of narratives used which may, at least in part, be responsible for the widely diverging effectiveness of health narratives (De Graaf et al., 2016). In response, this thesis offered a concrete step-by-step approach for constructing narrative health interventions: the Storybridging method. This method was guided by essential narrative characteristics as well as fundamental principles of the Health Action Process Approach, thereby integrating the target group's current stage(s) of behavior change in the narrative construction process – as an important, and previously unrecognized, first step. An important implication of this method is that non-intenders and intenders each require a specific approach and, therefore, a specific narrative content. The subsequent experimental studies endorsed the importance and influence of narrative content on narrative processing: It is the content that evokes particular emotions and influences particular behavioral determinants. To enhance the effectiveness of narrative health interventions, the Storybridging method strongly recommends close collaboration with the target audience throughout the development process (Steps 1-4). The first two steps are oriented toward receiving rather than sending; the target group's personal stories serve as an essential input for identifying the stage of change as well as the narrative's key elements. In the next two steps, the target audience provides valuable feedback on the developed story, thereby increasing its accuracy and effectiveness.

The approach in this study was therefore essentially interactive. The new media offer many new opportunities in this respect, as they can provide a unique and valuable tool to exchange narratives with specific target groups, and in a broader context, to reach out to low-SES and hard-to-reach groups for sharing experiences and stories (Briant, Halter, Marchello, Escareño, & Thompson, 2016; Gubrium, Hill, & Flicker, 2014; Lee, Fawcett, & DeMarco, 2016; Moran et al., 2016). As a valorization part of the research project, we participated in the creation of an online platform<sup>1</sup> in collaboration with the national Institute of Transport and Logistics. Its aim was to collect (input-focused) and share (output-focused) health/lifestyle-related stories, and to stimulate (mediatized as well as vis-à-vis) interaction

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<sup>1</sup> 'DRIVE', acronym for Dream job (Droombaan), Relaxation (Relax), Income (Inkomen), Change (Verandering), and Energy (Energie).

within the target group about –among other issues– ways to lead a healthy lifestyle. Due to subsequent organizational changes, the platform did not reach the intended operational level – emphasizing, once more, the importance of a multi-stakeholder approach, integrating individual, institutional, and ecological levels.

## 7.5 Conclusion

In conclusion, this thesis demonstrated that the conventional health materials' prevailing assumption that Dutch truck drivers' unfavorable lifestyle behaviors are caused by a lack of motivation, is not confirmed, thereby providing new insight into the (lack of) effectiveness of health promotion targeting this low-SES and high risk occupational group. Apart from addressing the problem of insufficient tailored health promotion efforts, it also offered a promising solution: a narrative approach. Narrative characteristics and HAPA principles were used to develop tailored health narratives and translated into four concrete steps: the Storybridging method, which enhances the uniformity and effectiveness of narrative health interventions and can serve as a guiding framework in both research and practice settings. Continued research is needed on the mechanisms underlying narrative impact (e.g., narrative content) to further unravel when and how narrative health interventions are effective. Additionally and more specifically, future research should be carried out to verify the generalizability of the Storybridging approach as well as the promise of a narrative approach to health promotion for low-SES groups in general, and for Dutch truck drivers in particular.

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S

# Samenvatting

## (Summary in Dutch)

Fragmenten uit deze tekst zijn eerder verschenen in Boeijinga, Joling, Hoeken, & Sanders (2013) en Boeijinga, Sanders, & Hoeken (2017).





# Samenvatting

In Nederland zijn er grote, systematische gezondheidsverschillen tussen mensen met een hogere en lagere sociaaleconomische status (SES). Laagopgeleiden leven volgens statistieken gemiddeld 7 jaar korter en 19 jaar minder in goede gezondheid dan hoogopgeleiden. In vergelijking met hoogopgeleiden bezitten ze minder kennis en vaardigheden om met gezondheidsinformatie om te gaan en hebben ze relatief ongezonde leefstijlen. Gezondere leefstijlen worden veelal gepromoot door middel van persuasieve brochures, waarbij argumenten de lezer van het gewenste gedrag –of het nalaten van het huidige, ongewenste gedrag– moeten overtuigen. De verwerking van dergelijke argumentatieve teksten vraagt de nodige aandacht, motivatie en vaardigheden. Deze vaardigheden kunnen (te) veeleisend zijn voor mensen met een lagere SES, terwijl juist die doelgroep de meeste baat heeft bij gezondheidspromotie. Hierdoor nemen de gezondheidsverschillen eerder toe dan af.

De traditionele aanpak van gezondheidspromotie gaat bovendien uit van de veronderstelling dat als mensen maar genoeg gemotiveerd zijn om het gewenste gedrag uit te voeren, ze dit vervolgens ook zullen doen. En omgekeerd: dat als mensen het gewenste gedrag niet vertonen dit het gevolg is van een gebrek aan motivatie, ofwel intentie. Echter, uit eerder onderzoek is bekend dat gezondheidsintenties slechts in de helft van de gevallen door vertalen naar daadwerkelijk gedrag, bijvoorbeeld als gevolg van obstakels en verleidingen. Naast een groeiende kloof in gezondheidsverschillen is er dus ook sprake van een kloof tussen wat mensen willen en wat ze werkelijk doen, een zogenaamde intentie-gedragskloof.

**Hoofdstuk 1** van dit proefschrift gaat in op beide kloven, evenals de vraag hoe deze zijn te overbruggen. Een veelbelovende strategie lijkt het gebruik van narratieve gezondheidscommunicatie. Veel beter dan argumenten in brochures kunnen verhalen concreet voorbeeldgedrag bieden. Verhalen gaan immers over personages die obstakels en verleidingen moeten trotseren op weg naar hun doel. Denk bijvoorbeeld aan de prins die de draak moet verslaan om te trouwen met zijn prinses, of aan Odysseus die de lokroep van de Sirenen moet weerstaan om huiswaarts te keren. Zodoende kunnen verhaalpersonages fungeren als rolmodellen; ze maken de vertaalslag van intentie naar gedrag voorstelbaar. Ze laten zien (*"show, don't tell"*) welke obstakels onderweg kunnen voorkomen en, nog belangrijker, hoe deze zijn te overwinnen. Verhalen zijn bovendien een universele communicatievorm. Al eeuwenlang delen mensen verhalen om informatie en ervaringen uit te wisselen. We zijn dan ook *gehardwired* om verhalen te verwerken, zonder enige benodigde scholing vooraf. Dit maakt verhalen toegankelijk voor een breed publiek, ongeacht opleidingsniveau en SES. Verhalen zijn dus ware bruggenbouwers, zowel door hun inhoud als door hun vorm.

Dit proefschrift gaat over de effectiviteit van gezondheidsverhalen en hun belofte als brug, met de focus op een specifieke lage SES beroepsgroep: vrachtwagenchauffeurs.

“Hoe is het om vrachtwagenchauffeur te zijn? Werken op onmogelijke tijden, onooglijke tijden, stressgevoelig, geen moer verdienen, gewoon slecht voor je gezondheid, gewoon een slecht beroep.”

Zoals beschreven in bovenstaand fragment, zijn de werkomstandigheden in de transportsector zwaar en belastend: lange en onregelmatige werktijden, werken onder tijdsdruk en in verkeersdrukte, hoge mate van concentratie en verantwoordelijkheid, langdurige periodes van rijden en zitten, en veel van huis. In vergelijking met andere beroepsgroepen lopen vrachtwagenchauffeurs grote gezondheidsrisico's en leven zij relatief ongezond. Maar liefst twee derde van de Nederlandse chauffeurs heeft (ernstig) overgewicht, wat de kans op ziekte en uitval vergroot. Ondanks verschillende gezondheidsinitiatieven in de transportsector is deze nadelige situatie tot op heden niet verbeterd.

De intentie-gedragskloof impliceert dat er verschillende redenen zijn waarom mensen het gewenste, gezondere gedrag niet vertonen. Naast een gebrek aan motivatie (een kwestie van willen) kan het probleem ook liggen bij de uitvoeringsfase (een kwestie van kunnen). **Hoofdstuk 2** onderzoekt waar het probleem ligt voor vrachtwagenchauffeurs. Uit interviews bleek dat chauffeurs 'gezondheid' erg belangrijk vinden en dat zij een positieve gezondheidsbeleving waarborgen door zichzelf te vergelijken met collega-chauffeurs die er slechter aan toe zijn (bijvoorbeeld collega's die last hebben van slijtage of hartkwalen). Door deze zogenoemde *downward social comparison* waardeerden sommige chauffeurs hun eigen gezondheidsrisico's als relatief laag; deze chauffeurs waren dan ook niet of onvoldoende gemotiveerd om hun leefstijl aan te passen. Voor een deel bleek het dus een kwestie van willen.

Het merendeel van de geïnterviewde chauffeurs gaf echter aan wel degelijk gezonder te willen leven. Eerdere pogingen waren vaak tevergeefs en strandden veelal door obstakels, die zowel binnen de werkomgeving (zoals onregelmatige werktijden en een gebrek aan faciliteiten) als in de privéomgeving (zoals sociale verplichtingen en verwachtingen) worden ervaren. Hoe kom je toe aan gezond eten en voldoende bewegen als de supermarkt en sportschool al gesloten zijn wanneer je werkdag erop zit? Hoe weersta je bij lekkere trek de verleidingen onderweg? En hoe bouw je een sportmoment in tijdens je kostbare vrije tijd met familie en vrienden? Meer nog dan een kwestie van willen, bleek het voor vrachtwagenchauffeurs een kwestie van (niet) kunnen. Hun persoonlijke verhalen brachten naast behoefte, beleving, en ervaren obstakels ook concrete successtrategieën voor het omgaan met deze obstakels aan het licht.

**Hoofdstuk 3** gaat na in hoeverre met deze behoefte en ervaringen van vrachtwagenchauffeurs rekening wordt gehouden in recente gezondheidsinitiatieven. In totaal werden 21 gezondheidsfolders voor deze doelgroep geanalyseerd. De analyse keek onder meer naar de focus van de materialen, waarbij gebruik werd gemaakt van de *Health Action Process Approach* (HAPA). Deze theorie erkent de intentie-gedragskloof en onderscheidt drie verschillende groepen: 1) *non-intenders* (mensen die nog geen intentie hebben om hun gedrag te veranderen), 2) *intenders* (mensen die de intentie hebben om hun gedrag te veranderen, maar hier nog niet naar handelen), en 3) *actors* (mensen die in lijn met hun 'goede' intenties handelen). De materialen bleken voornamelijk afgestemd op non-intenders, met een focus op determinanten van gezondheidsintenties. Zo zetten de materialen in op het vertrouwen om in staat te zijn te starten met het gewenste gedrag (*action self-efficacy*), op de positieve gevolgen van het gewenste gedrag (*outcome expectancies*), en op het gevaar dat gepaard gaat met het ongewenste gedrag (*risk perception*). Er was nauwelijks aandacht voor intenders; lezers die al van plan waren gezonder te leven kregen nauwelijks informatie over mogelijke obstakels en manieren om deze obstakels te overwinnen (*planning strategies*) – terwijl chauffeurs aangaven juist hierop vast te lopen.

In lijn met het motiverende karakter van de gezondheidsmaterialen, werd er volop gebruik gemaakt van argumentatie. In de tweede stap van de analyse werd aan de hand van de kritische evaluatievragen uit de pragma-dialectiek gekeken wat de verweking van deze argumentatieve teksten inhoudt. De argumentatie bleek vaak impliciet van aard, wat de nodige capaciteiten en vaardigheden vereist van de lezer; deze moet de argumenten reconstrueren, identificeren én evalueren. De materialen waren zodoende meer afgestemd op een hoge dan op een lage SES doelgroep. Kortom: uit de analyses bleek een *mismatch* tussen de heersende gezondheidsmaterialen en de beleving en behoefte van chauffeurs, zowel qua inhoud als qua vorm. Gezondheidspromotie voor vrachtwagenchauffeurs belooft effectiever te kunnen zijn als deze inhoudelijk beter is afgestemd op intenders en als deze gebruik maakt van formats die gemakkelijker te verwerken zijn, zoals het narratieve format.

**Hoofdstuk 4** toetst het narratieve format in een experimentele setting aan de hand van twee verhalen voor vrachtwagenchauffeurs; één gericht op non-intenders en één gericht op intenders. Het verhaal voor non-intenders richtte zich op risicoperceptie, als antwoord op de eerder geconstateerde *downward social comparison* door chauffeurs. Het risico-verhaal beschreef hoe chauffeur René tijdens het werk druk voelt op zijn borst en onverwachts naar het ziekenhuis moet. Daar blijkt zijn hartslagader verstopt, waarna een succesvolle operatie volgt. Het verhaal voor intenders daarentegen richtte zich op planning strategieën, die volgens het HAPA-model essentieel zijn voor het overbruggen van de intentie-gedragskloof. Deze planning strategieën omvatten het hoe, wat, waar, wanneer van het gewenste gedrag (*action planning*) en concrete strategieën bij tegenslag

(*coping planning*). Het planning-verhaal beschreef René zijn weg naar een actievere leefstijl, inclusief obstakels en tegenslagen. Ondanks een slechte conditie en regenbuien, lukt het hem om twee fietsdagen per week in zijn systeem te krijgen. Beide verhalen waren gebaseerd op de interviews uit hoofdstuk 2, die deels letterlijk in de verhalen waren verwerkt.

Omdat chauffeurs naast het lezen van truckmagazines ook veel radio luisteren, werden de verhalen zowel als lees- en als luisterverhaal aangeboden. Elke chauffeur kreeg één van de vier versies, die random onder 120 vrachtwagenchauffeurs waren verdeeld. Uit de resultaten bleek het medium niet van belang, de inhoud juist wel. Beide verhalen bleken negatieve emoties (risico-verhaal) dan wel positieve emoties (planning-verhaal) op te roepen en beide bleken, via verschillende routes, effectief te zijn in het verhogen van gedragsintenties: chauffeurs waren meer van plan om gezond gedrag te vertonen. Mogelijk zouden de effecten nog groter zijn als de verhalen niet *ad random* worden aangeboden, maar afgestemd op de specifieke veranderfase van de individuele chauffeur; het risico-verhaal voor non-intenders en het planning-verhaal voor intenders.

**Hoofdstuk 5** bouwt voort op de vorige studie en onderzoekt of de effectiviteit van de verhalen inderdaad wordt verhoogd wanneer deze zijn afgestemd op de specifieke veranderfase van vrachtwagenchauffeurs (non-intender vs. intender). Op basis van een voormeting werden chauffeurs geïdentificeerd als non-intender of intender. Twee tot vier weken later ontvingen de non-intenders het risico-verhaal en de intenders het planning-verhaal, beide gevolgd door een nameting die opnieuw twee tot vier weken later plaatsvond. In totaal namen 108 vrachtwagenchauffeurs deel aan de studie. Uit de resultaten bleek dat, in tegenstelling tot de heersende aannames in de transportsector, het overgrote deel van de chauffeurs (bijna 80%) intenders zijn – waarmee de bevindingen in hoofdstuk 2 worden bevestigd. De subgroep non-intenders bleek zelfs te klein voor een controlegroep, waardoor de vergelijking voor het risico-verhaal niet kon worden gemaakt.

Het planning-verhaal bleek, tegen de verwachting in, minder effectief. Net als in de vorige studie had het verhaal een positief effect op action planning, maar dit effect vertaalde zich ditmaal niet door naar positievere effecten voor gedragsintenties of zelf-gerapporteerd gedrag. Een vervolgstudie naar het planning-verhaal toonde wel opnieuw positieve effecten voor gedragsintenties. Mogelijk is de lagere effectiviteit van het afgestemde planning-verhaal toe te schrijven aan de onderzoeksopzet; de voormeting kan chauffeurs bewust hebben gemaakt van het persuasieve doel van het verhaal, en daarmee de kracht van het verhaal hebben ondermijnd. De overtuigingskracht van verhalen ligt juist in hun subtiele vorm van beïnvloeding, waardoor ze volgens narratieve theorieën minder weerstand oproepen tegen de onderliggende boodschap.

Verhalen zijn er in vele soorten en maten. De materialen binnen het onderzoek naar narratieve overtuiging in de gezondheidscontext lopen uiteen van korte testimonials en fotoverhalen tot radioshow's en soapseries. De grote diversiteit aan verhalen en hun wisselende resultaten roepen de vraag op wat een verhaal een 'goed' verhaal maakt, en vooral, hoe je een goed verhaal *maakt*; waar er volop wordt gerapporteerd over de effecten van gezondheidsverhalen, blijft het ontwikkelingsproces vaak onderbelicht. **Hoofdstuk 6** introduceert de *Storybridging* methode voor het ontwikkelen van effectieve gezondheidsverhalen, waarin vier stappen worden onderscheiden: 1) de veranderfase vaststellen, 2) de inhoudelijke focus bepalen, 3) het verhaal ontwikkelen, en 4) het verhaal testen.

Waarom vertoont de doelgroep het gewenste gedrag nog niet? Als eerste stap is aandacht voor persoonlijke verhalen van de doelgroep essentieel voor het begrip van de beleving, behoefte en veranderfase. Op basis van de veranderfase kan in stap 2 de focus van het verhaal worden bepaald. In verhalen voor non-intenders staan (a) de voordelen van het gewenste gedrag, en/of (b) de nadelen en risico's van het huidige gedrag centraal. In verhalen voor intenders staan (a) het huidige gedrag, (b) het gewenste gedrag, en (c) de weg tussen beide, inclusief succes-strategieën voor de overwonnen obstakels, centraal. Deze hoofdelementen vormen het geraamte van het verhaal dat in stap 3 verder wordt uitgewerkt in termen van plot, personages en medium. In de laatste stap wordt het verhaal met de doelgroep gedeeld en waar nodig (en zo vaak als nodig) aangepast. De doelgroep fungeert dus als een belangrijke stakeholder in het hele proces; effectieve gezondheidsverhalen worden dan ook altijd in nauwe samenwerking met de doelgroep ontwikkeld.

**Hoofdstuk 7** bespreekt de belangrijkste bevindingen van dit proefschrift en doet aanbevelingen voor de praktijk en toekomstig onderzoek. Waar huidige gezondheidsmaterialen veronderstellen dat vrachtwagenchauffeurs' relatief ongezonde leefstijl te wijten is aan een gebrek aan motivatie, toont dit onderzoek aan dat er sprake is van een intentie-gedragskloof; chauffeurs willen veelal wel gezonder leven, maar lopen vast door ervaren obstakels – zoals onregelmatige werktijden en sociale verplichtingen. Een focus op planning strategieën is aanbevolen, evenals het gebruik van een narratief format. Verhalen lenen zich bij uitstek voor het overbrengen van planning strategieën en sluiten bovendien goed aan bij de gezondheidsvaardigheden van de doelgroep. De ervaren obstakels benadrukken daarnaast het belang van een holistische benadering, waarin ook de werk- en privéomgeving wordt meegenomen. Zo valt er in de transportsector nog veel te winnen op het gebied van gezondheid, waaronder werktijden en werkdruk.

Met de *Storybridging* methode levert dit proefschrift een bijdrage aan het onderzoek naar narratieve overtuiging in de context van gezondheidscommunicatie. In de voorgestelde

aanpak wordt de veranderfase van de doelgroep in het ontwikkelingsproces geïntegreerd als belangrijke eerste stap. De methode impliceert dat non-intenders en intenders een verschillende aanpak, en dus een verschillende narratieve content (inhoudelijke focus), nodig hebben. Uit de studies bleek dat narratieve content inderdaad van invloed is op narratieve overtuiging; de inhoud roept bepaalde emoties op, die vervolgens determinanten van gedrag beïnvloeden. Vervolgonderzoek naar het belang van narratieve content en afstemming op de veranderfase is nodig om de kracht en de toepasbaarheid van de *Storybridging* methode verder te verifiëren en zo vast te stellen in hoeverre gezondheidsverhalen kunnen fungeren als brug voor laag SES doelgroepen in het algemeen, en vrachtwagenchauffeurs in het bijzonder.



A



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Let the story continue.

A

# Appendices



## Appendix A.

### Risk perception-focused health narrative (in Dutch)

#### Een kijkje in het leven van...

René Louwisse, 41 jaar. Trotse vader van Tim (14) en echtgenoot van Anja (38). Als vrachtwagenchauffeur moet hij vaak al vroeg op pad, zo ook vandaag.

Het is nog donker. Ik trek de kraag van mijn jas nog wat hoger. Die kou krijgt mij niet klein. Ik stap de wagen in en drink een slok van mijn warme koffie. Ik hou van mijn werk. Lekker op pad, zien hoe het langzaam licht wordt en de wereld in beweging komt. Dat vond ik vroeger als jochie al mooi als ik in de vakantie een dagje met m'n vader mee mocht op de wagen. Toen wist ik al dat ik ook chauffeur wilde worden. Onderweg naar het eerste losadres zie ik de file op de A12 opduiken. Verdorie, ik had zo gehoopt die voor te zijn. Door gedoe bij het inladen een half uur verknoeid. Voor niets zo vroeg opgestaan dus. Ik sluit aan bij het langzaam rijdende verkeer en denk aan vanavond. Vanavond is het Sinterklaasavond. Het heeft mij een fortuin gekost, maar wat zal Tim blij zijn met de PlayStation. Een goed cadeau voor hem. Dat mag ook wel, want we hebben nogal wat meegemaakt de afgelopen tijd...

Het is inmiddels 2 maanden geleden. Ik was onderweg naar een losadres in Duitsland en voelde me inenen helemaal niet lekker. Ik had een drukkende pijn op mijn borst en even later ook in mijn armen. Dat had ik nog nooit eerder gehad. "Zal zo wel weer wegtrekken" dacht ik. Ik ben niet iemand die snel piept of klaagt. Eenmaal bij de klant, stapte ik uit de wagen om te lossen. Ik trok de zijkant van de trailer open en kreeg het opeens koud, niet normaal. Ik belde Anja en zei: "Ik heb me toch een pijn in m'n borst en sodemieter, verdorie." Meestal stelt ze me gerust en maakt ze grapjes over mannen en hun pijntjes. Maar deze keer niet. "Ik heb liever dat je zo snel mogelijk langs het ziekenhuis gaat" zei ze. Ik zei: "Ja, is goed", maar dacht: mooi niet. Ik ga toch zeker niet naar een ziekenhuis in Duitsland? En dan nog, ik had er helemaal geen tijd voor. Door wegwerkzaamheden had ik flink moeten omrijden. Nog meer tijd verliezen zag ik niet zitten. Ik zou morgen wel gaan, gewoon naar mijn eigen huisarts. Dus ik belde mijn planner en vroeg of ik de volgende dag even langs de huisarts kon. Ik was al flink vol gepland. "Liever een andere keer" was het antwoord. Maar toen hij hoorde dat ik last van mijn borst had zei hij "vooruit dan maar".

De volgende dag dus naar de huisarts gegaan en die stuurde me gelijk door naar het ziekenhuis. Zou het zo ernstig zijn? Eerst een aantal testjes gedaan en allerlei vragen beantwoord. Na een uur kwam de arts met de uitslag: Je hebt nog geluk gehad zei hij. Ik zei "Hoezo?" Hij vertelde me dat er een ader bij mijn hart verstopt zit. Dat was niet niks. Ze

hadden vertrouwen in een goede afloop, maar ik had niet later moeten komen. Dan had ik het misschien niet meer kunnen navertellen. We schrokken ons kapot. Diezelfde middag werd ik nog geopereerd. Een operatie die best gevaarlijk was, maar gelukkig verliep alles goed. Ik was blij toen ik wakker werd en Anja en Tim naast mijn bed zag zitten.

De volgende morgen kwam de arts vragen hoe het met me ging. “Ik heb me wel eens beter gevoeld, maar ik ben blij dat ik er nog ben” zei ik. De arts waarschuwde me om het rustig aan te doen en beter voor mezelf te zorgen. Hij wees me erop dat ik met mijn 105 kilo toch echt aan de zware kant ben en dat mijn hart hieronder geleden heeft. “Vind je het gek” dacht ik. Veel tijd om te sporten heb ik niet en weet je wel hoeveel uren ik op een dag zit? Maar moest toch eerlijk toegeven, het was wel waar... In de jaren op de wagen waren er stiekem aardig wat kilo's bijgekomen. Ik had er nooit zo bij stil gestaan. Ik wist altijd wel iemand te noemen die er erger aan toe was. Dan viel het bij mij toch allemaal wel mee? Hartklachten komen bovendien helemaal niet voor in mijn familie, dus ik dacht altijd dat mij niks zou overkomen. Nou, niet dus. Stel je voor dat ik er niet op tijd bij was geweest, dan had Tim nu geen vader meer gehad. Moet er niet aan denken.

Ik schrik op uit gedachten als ik de wagen voor mij in beweging zie komen. Gelukkig, het rijdt weer door. Een paar honderd meter verder neem ik afslag Utrecht. Bijna bij het industrieterrein Lage Weide, de volgende stop. Daar snel lossen en een bak koffie. Dan weer een lekker stukje rijden naar het volgende adres. Maar weer zien wat de dag brengt. Met een beetje mazzel ben ik op tijd thuis voor Sinterklaasavond. We gaan er een gezellig avond van maken.



## Appendix B.

### Planning strategies-focused health narrative, original version (in Dutch)

#### Een kijkje in het leven van...

René Louwisse, 41 jaar. Trotse vader van Tim (14) en echtgenoot van Anja (38). Als vrachtwagenchauffeur moet hij vaak al vroeg op pad, maar vandaag niet. Vandaag geniet hij van zijn weekend.

Oehhh... net naast. "Dat scheelde niet veel pap" roept Tim. "Je wordt al bijna net zo goed als ik". Ik lach "kijk maar uit, jongen, voor je het weet kun je niet meer winnen van je pa". Het compliment van Tim doet me goed. En er zit wat in, al zeg ik het zelf: mijn prestaties op het veld zijn de afgelopen tijd flink vooruit gegaan. Was ik vroeger al moe na een paar keer heen en weer rennen, nu hou ik het makkelijk een heel partijtje vol. Niet alleen op het voetbalveld, maar ook op het werk ben ik een stuk fitter. Zelfs collega's beginnen het te merken. Maar zo'n conditie bouw je natuurlijk niet op van de een op de andere dag...

Tot mijn achttiende sportte ik regelmatig. Daarna niks meer gedaan; dat krijg je met zo'n beroep. Tot een jaar geleden, toen had ik het er helemaal mee gehad. Veel zweten, moeilijk bewegen en moe, altijd moe. Als ik thuis kwam van werk plofte ik gelijk op de bank. Ik had geen puf meer. Van mijn conditie was weinig over en ook de kilo's vlogen eraan. Toen Tim liever niet meer had dat ik met hem meeding voetballen, was voor mij de maat vol. Je zoon die zich voor je schaamt omdat je na 5 minuten al een kop als een tomaat hebt... Bij mij ging toen de knop om. Vanaf nu: meer bewegen. Maar hoe?

Makkelijker gezegd dan gedaan... Zeker als je vrachtwagenchauffeur bent. Na een drukke dag had ik geen zin om 's avonds ook nog eens met gewichten in de weer te gaan. "Je hoeft niet perse naar de sportschool om wat beweging te krijgen" zei Anja. "Wat dacht je van die fiets in de schuur?" Dat kon weleens een goed begin zijn. Ik sprak met mezelf af dat ik vanaf dat moment elke maandag en woensdag de fiets zou pakken. Met de fiets naar de wagen, heen en terug. Dat is een mooi stukje van zo'n 6 kilometer. Zo kom ik per week zeker aan anderhalf uur fietsen. Ik herinner me de eerste keer nog goed. Met frisse tegenzin stapte ik op de pedalen. Anja zwaaiend vanachter het raam. "Ik ook altijd met mijn grote mond" dacht ik. Maar mooi niet dat ik me zou laten kennen. Ik zwaaide mijn been over het zadel en vertrok. Na de eerste tien minuten begon ik het al te voelen en tegen de tijd dat ik bij de zaak aankwam, had ik een knalrode kop.

De eerste paar ritten waren echt even doorzetten. Maar ik moet zeggen, het ging me steeds beter af. Het kostte steeds minder moeite. En minder zweet. Ik was verbaasd hoe snel dat stukje fietsen in mijn systeem zat. Nog steeds fiets ik elke maandag en woensdag naar werk. Behalve als het 's ochtends hard regent. Dan laat ik de fiets staan. Zeiknat aankomen en zo de wagen in zie ik niet zitten. Dat heb ik er niet voor over. Dan verschuif ik mijn fietsdag naar de dinsdag of de donderdag. Op de dagen dat ik niet fiets, ga ik wandelen. Ook dat is heel gemakkelijk te organiseren. Van een blokje om tot een paar kilometer, afhankelijk van hoeveel tijd ik heb. Soms samen met Anja of de hond. Nog gezellig ook, dan kletsen we even over de dag. Of soms tijdens werk, als het me lukt om de wagen veilig wat verder weg te zetten. Dan loop ik toch een paar honderd meter extra. Ook weer meegenomen.

Al zijn er natuurlijk ook dagen bij dat ik geen zin heb om nog wat te ondernemen. Dan is die bank toch wel heel verleidelijk. Laatst bijvoorbeeld, toen begon het net te regenen toen ik een blokje om wilde gaan. Dat werd dus toch erop uit met de paraplu. Andere keren begint er net een leuk programma op tv. Tja, er zijn altijd excuses om niet te gaan, maar het is een kwestie van kijken naar de redenen om het wél te doen. Het is en blijft je eigen keus, je hebt het zelf in de hand. Ik ben blij met de keuzes die ik heb gemaakt. Nu, een jaar later, voel ik me sterker en fitter dan 5 jaar geleden. Stel je voor dat ik geen actie had ondernomen. Dan was ik nu nog steeds zo slap als een zak aardappelen, puffend en hijgend over dat veld. Ik moet er niet aan denken.

Ik schrik op uit mijn gedachten als de bal rakelings langs mijn hoofd vliegt. "Goaaaaaaaal!", juicht Tim. "Ja, dat krijg je ervan als je staat te dromen pa", zegt hij plagerig. Ik lach, maar denk "wacht maar jongen, nog even en je houdt mij niet meer bij op het veld".

## Appendix C.

### Planning strategies-focused health narrative, less specific version (in Dutch)

#### Een kijkje in het leven van...

René Louwisse, 41 jaar. Trotse vader van Tim (14) en echtgenoot van Anja (38). Als vrachtwagenchauffeur moet hij vaak al vroeg op pad, maar vandaag niet. Vandaag geniet hij van zijn weekend.

Oehhh... net naast. "Dat scheelde niet veel pap" roept Tim. "Je wordt al bijna net zo goed als ik". Ik lach "kijk maar uit, jongen, voor je het weet kun je niet meer winnen van je pa". Het compliment van Tim doet me goed. En er zit wat in, al zeg ik het zelf: mijn prestaties op het veld zijn de afgelopen tijd flink vooruit gegaan. Was ik vroeger al moe na een paar keer heen en weer rennen, nu hou ik het makkelijk een heel partijtje vol. Niet alleen op het voetbalveld, maar ook op het werk ben ik een stuk fitter. Zelfs collega's beginnen het te merken. Maar zo'n conditie bouw je natuurlijk niet op van de een op de andere dag...

Tot mijn achttiende sportte ik regelmatig. Daarna niks meer gedaan; dat krijg je met zo'n beroep. Tot een jaar geleden, toen had ik het er helemaal mee gehad. Veel zweten, moeilijk bewegen en moe, altijd moe. Als ik thuis kwam van werk plofte ik gelijk op de bank. Ik had geen puf meer. Van mijn conditie was weinig over en ook de kilo's vlogen eraan. Toen Tim liever niet meer had dat ik met hem meeding voetballen, was voor mij de maat vol. Je zoon die zich voor je schaamt omdat je na 5 minuten al een kop als een tomaat hebt... Bij mij ging toen de knop om. Vanaf nu: meer bewegen. Maar hoe?

Makkelijker gezegd dan gedaan... Na een drukke dag had ik geen zin om 's avonds ook nog eens met gewichten in de weer te gaan. "Je hoeft niet perse naar de sportschool om wat beweging te krijgen" zei Anja. "Wat dacht je van die fiets in de schuur? Of je eigen benenwagen?" Dat kon weleens een goed begin zijn. Ik sprak met mezelf af dat ik vanaf nu vaker de fiets zou pakken en meer zou lopen. Minimaal twee keer per week, bijvoorbeeld na werk even een blokje om. Zo kom ik toch aan m'n beweging. Ik herinner me de eerste keer nog goed. Met frisse tegenzin stapte ik op de pedalen. Anja zwaaiend vanachter het raam. "Ik ook altijd met mijn grote mond" dacht ik. Maar mooi niet dat ik me zou laten kennen. Ik zwaaide mijn been over het zadel en vertrok. Na de eerste tien minuten begon ik het al te voelen en voor ik het wist had ik een knalrode kop.

De eerste paar keren waren echt even doorzetten. Maar ik moet zeggen, het ging me steeds beter af. Het kostte steeds minder moeite en minder zweet. Ik was verbaasd hoe snel dat stukje fietsen in mijn systeem zat. Nog steeds fiets ik elke maandag en woensdag een stuk. Behalve als het hard regent, dan laat ik de fiets staan. Zeiknat worden zie ik niet zitten. Dan verschuif ik mijn fietsdag naar de dinsdag of donderdag. Op de dagen dat ik niet fiets, ga ik vaak wandelen. Ook dat is heel gemakkelijk te organiseren. Van een blokje om tot een paar kilometer, afhankelijk van hoeveel tijd ik heb. Soms samen met Anja of de hond. Nog gezellig ook, dan kletsen we even over de dag. Of soms tijdens werk, als het me lukt om de wagen veilig wat verder weg te zetten. Dan loop ik toch een paar honderd meter extra. En ik neem elke trap die ik tegenkom. Ook weer meegenomen.

Al zijn er natuurlijk ook dagen bij dat ik geen zin heb om nog wat te ondernemen. Dan blijft die bank toch wel heel verleidelijk. Het is een uitdaging, zeker als je vrachtwagenchauffeur bent. Maar waar een wil is, is een weg. Net als op de wagen is het een kwestie van gewoon doen. De motor starten en gaan. Hoe de weg precies loopt, weet je nooit van tevoren. En dat is maar goed ook; zonder verrassing geen avontuur. Je komt altijd obstakels tegen. Soms maak je een omweg, dan lijkt het allemaal veel langer te duren dan je dacht. Andere momenten gaat het juist weer sneller dan verwacht. Tja, soms zit het mee, soms zit het tegen. Maar wat je ook tegenkomt, zolang je doorreist kom je hoe dan ook bij je bestemming aan. Het is een kwestie van koers houden. Het is en blijft je eigen keus, je hebt het stuur zelf in handen. Ik ben blij met de keuzes die ik heb gemaakt. Nu, een jaar later, voel ik me een stuk sterker en fitter.

Ik schrik op uit mijn gedachten als de bal rakelings langs mijn hoofd vliegt. "Goaaaaaaal!", juicht Tim. "Ja, dat krijg je ervan als je staat te dromen pa", zegt hij plagerig. Ik lach, maar denk "wacht maar jongen, nog even en je houdt mij niet meer bij op het veld".

## Appendix D.

### Control narrative (in Dutch)

#### Een kijkje in het leven van...

René Louwisse, 41 jaar. Trotse vader van Tim (14) en echtgenoot van Anja (38). Als vrachtwagenchauffeur moet hij vaak al vroeg op pad, zo ook vandaag.

De zon komt op. Ik zie de eerste vage gloed verschijnen boven de horizon van het vlakke weidelandschap in het Groene Hart. De wolkenlucht kleurt langzaam rood, oranje en geel. Dan verschijnt de gloeiende bol, die steeds lichter wordt naarmate hij verder stijgt. Een van de mooiste momenten van de dag. En bovendien eentje die maar weinig weggebruikers te zien krijgen. Toch kan ik er vandaag minder van genieten. Naast de zon doemt namelijk ook de gebruikelijke file op de A12 op. Verdorie, dit had ik kunnen weten. Na die verjaarsvisite gisteravond was het heel verleidelijk om niet om vier uur maar om vijf uur op te staan. Maar kijk, nu zit ik meteen met deze ellende, die ik anders een heel eind vóór had kunnen zijn!

Balend schakel ik terug tot de snelheid van het zeer langzaam rijdende fileverkeer. Ik neem een slok uit mijn thermoskan koffie en werk een boterham weg. Zo zie je maar weer hoe belangrijk dat uurtje in de ochtend is. Door zo'n file loop je meteen de hele dag achter de feiten aan. Het zal vandaag wel weer een dag van vijftien uur worden. Ik rek me uit en gaap zo hard dat het achterin mijn kaak kraakt. De koffie werk nog niet echt, dus nog maar een flinke slok. Het komt slecht uit dat ik vanavond weer laat thuis ben. Anja klaagt de laatste tijd toch al dat ze me zo weinig ziet. Hoewel ze natuurlijk als geen ander weet dat ik door mijn werk niet veel keus heb. Het is ook iedere keer hetzelfde. Eigenlijk moet ik eraan vasthouden dat ik nooit later dan vier uur opsta. Misschien zelfs nog wel eerder? Of ik zou het advies van oud-collega Theo moeten opvolgen door gewoon elke week alleen maar nachtdiensten te gaan draaien. Maar ja, wat blijft er dan nog over van m'n sociale leven? Dan leef je helemaal tegen de stroom in. En andere collega's zeggen dat je met zo'n schema de neiging hebt om op zaterdag, als je uit je dienst komt, wakker te blijven en de hele dag door te gaan. Zodat je ieder weekeinde in feite een volle nacht overslaat. Dat kan op den duur ook niet goed voor je zijn.

Chagrijnig kijk ik voor me uit. Er is weinig waar ik zo'n hekel aan heb als aan files. Waarom ze daar nog steeds geen oplossing voor hebben gevonden, is me een raadsel. Ik schrik op uit gedachten als de luxeauto vlak voor me opeens remt. Hoewel ik altijd rekening hou met onverwachte en stompzinnige acties van medeweggebruikers, zag ik deze niet aankomen. Terwijl ik vol op de rem trap, roep ik een verwensing naar de stuntelige chauffeur. Ook al hoort hij me niet, het lucht in ieder geval op. Tijdens het bruuske remmen hoor ik achter

me, in de laadruimte, gebonk en weet meteen wat dat betekent: de rolcontainers zijn niet goed vastgezet. Shit, dat zul je altijd zien: als je haast hebt, gaat alles verkeerd. "Haast u langzaam", zei mijn vader altijd. Jammer dat ik me die goede raad meestal pas achteraf herinner... Hoe dan ook, bij de volgende stop zal ik voor de zekerheid controleren of ik de boel wat beter kan klemzetten. Anders zit ik straks nog met schade ook.

Eindelijk bereik ik de afslag bij Gouda en rij opgelucht in de richting van industrieterrein Kromme Gouwe, mijn volgende stop. Het winkelpand waar ik moet zijn ligt net tussen het industriegebied en de woonhuizen in. Ik zet de vrachtwagen achter de supermarkt bij het magazijn en spring eruit. Rolcontainers afleveren, dat doe ik al jaren op de automatische piloot. Losmaken, op de laadklep, naar beneden, wegrijden en zo economisch mogelijk neerzetten. Als er dan straks nog een collega komt, kan die ook nog wat kwijt. Wel zo prettig. De winkel zelf is nog gesloten. Het is maar goed dat ik geen computers of andere dure elektronica vervoer, want op zo'n open, verlaten terrein ben je anders behoorlijk kwetsbaar. Je hoort zoveel rare dingen de laatste tijd. Diefstallen, overvallen, het komt allemaal voor. Weliswaar meer in het buitenland dan hier, maar toch! Ik zou niet graag een moersleutel of een bandenlichter in m'n nek krijgen, alleen omdat een of andere crimineel het op m'n lading heeft voorzien.

Zo, de laatste rolcontainer staat ook weer op zijn plek. Ik werk de administratie bij en controleer de containers op de achterste rij, maar die staan allemaal vast. Zo gaat het altijd: als er eentje los zit, is het altijd een van de voorste. Dan maar wat voorzichtiger rijden. Tijd om te vertrekken, anders krijg ik rond het middaguur last als ik vier containers moet afleveren in het centrum van Leiden. Daar kan ik maar beter vroeg op de morgen aankomen. Met een beetje geluk haal ik dan ook nog wat van mijn verloren uren in.



C



# Curriculum vitae



## Curriculum vitae

Anniek Boeijinga (Utrecht, 1986) studied Language & Communication (BA) and Rhetoric, Argumentation Theory & Philosophy (research MA) at the University of Amsterdam. After her graduation she worked as a teaching assistant at the Faculty of Social and Behavioral Sciences and as a consultant at Tabula Rasa, advising on behavior change communication strategies. In December 2012 she started working as a PhD candidate at the Centre for Language Studies at Radboud University and became member of the HealthNar program; an international network of renowned scholars on narratives in health communication. As of September 2018, Anniek will be working on different projects at the intersection of storytelling, user experience and behavior change and on a series of children's books.

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- Hoeken, H., Boeijinga, A., & Sanders, J. (under review). The argument from example in health communication: Persuading and enabling patients to live a healthier life.
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