

CHIE CKT HIS!

Empowering people to plan for retirement

The role of persuasive message strategies and readability

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Annemarie van Hekken

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Check This! Empowering People to Plan for Retirement. The role of
Persuasive Message Strategies and Readability

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Empowering people to plan for retirement

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Contents

Chapter 1	Introduction and Dissertation Outline	9
Chapter 2	Less Complexity Pays off. Effects of the Readability of Financial Texts on Financial Planning for Retirement	37
Chapter 3	Check This! The Influence of Persuasive Messages on Financial Planning for Retirement	73
Chapter 4	Getting the Picture. A Visual Metaphor Increases the Effectiveness of Retirement Communication	105
Chapter 5	General Discussion	141
	English Summary	175
	Samenvatting in het Nederlands	185
	Appendices	197
	Acknowledgements	213
	Curriculum Vitae	215

Chapter 1

Introduction and Dissertation Outline

The current dissertation contains a collection of studies that examined the effectiveness of retirement communication on planning for retirement. Although individuals hope for or expect a carefree future, most individuals prepare inadequately for retirement or not at all (Ekerdt, Hackney, Kosloski & DeViney, 2001). Only shortly before their retirement date, people become more active (Ekerdt, Kosloski & DeViney, 2000; Petkoska & Earl, 2009).

Pension providers create a wide variety of communication materials, aimed at informing their participants and helping them to plan for retirement. To what degree do these materials indeed help their participants? Various studies examined understanding of retirement information (e.g., Banks & Oldfield, 2007, Heuts & Klaver, 2011; Nell, Lentz & Pander Maat, 2016; Visser, Oosterveld & Kloosterboer, 2012) i.e., to what extent do individuals who receive information about retirement actually grasp the ideas and concepts presented in this information? Research on the relation between retirement communication and planning for retirement is rare. This dissertation aims to enhance academic understanding of the effects of communication in the financial domain in two respects. First, I examined which factors predict financial planning for retirement. Secondly, I investigated whether persuasive message strategies and readability contribute to behaviour change and stimulate citizens to prepare for retirement.

Studies in this thesis zoom in on a specific aspect of retirement planning: the adequacy check. The adequacy check provides an answer to the question 'do I accrue enough?'. In order to answer this question, individuals must know how much they have accrued or expect to accrue and how much they need after retirement. The adequacy check is an important component of planning for retirement, as it enables citizens to make informed choices aimed at improving their financial situation after retirement, e.g., save extra or work longer. In the remainder of this thesis, the adequacy check is labelled as 'financial planning behaviour'.

I furthermore use and introduce the term 'empowered citizens'. Many people have no idea how much retirement income they are expected to receive and how much they need for their preferred lifestyle (Alessie, Van Rooij & Lusardi, 2011). They think it is difficult to plan for retirement and do not take any initiative to know their situation. I suppose that these citizens are 'not empowered'. When citizens demonstrate involvement

and self-confidence to engage with one's financial planning for retirement, they are empowered.

The studies described provide empirical evidence of the relation between specific message strategies and the degree to which citizens plan for retirement. Findings point to the use of simple language, persuasive message strategies and visual metaphors to activate citizens to plan for retirement. The insights gained are bundled into a set of recommendations that help organisations in the retirement domain to activate citizens and stimulate them to adequately prepare for old age.

The Dutch case

The research described in this dissertation was executed in the Netherlands. This country is relevant for studying the contribution of communication to financial planning behaviour for three reasons. First, the pension system in the Netherlands is comparable to the systems in many other European countries: there is a state pension for every citizen (first pillar), which is a pay-as-you-go system. In this system the benefits are paid by the working population. More than 90% of the Dutch citizens accrue an additional retirement income via their employer (second pillar). 90% of the pension arrangements are administered by a pension fund and 10% by other type of pension providers, for example insurance companies. Citizens can also arrange private individual pension products (third pillar). The accrual of the pension rights or the pension capital (depending on the pension plan) in the second pillar is paid by the employers, with in most cases a contribution of the employee. In case an employee accrues a capital, the capital will be converted into a monthly payment at the retirement date. The premiums are invested and together with the returns on the investment they form the financial resources of the pension providers. All current and future pensions have to be financed through these means. If it emerges that the financial means of the pension fund are insufficient to pay the pensions of the complete group of participants, the benefits will be lower than originally envisaged. Although the firmness of the commitments depends on the type of plan, no plan is able to provide absolute certainty about the level of pension. Reduction of accrued pension rights is not a theoretical possibility: in 2013 and 2014 over 6 million citizens were confronted with a reduction and will therefore receive less than expected. This system is more or less similar to most pension plans in Europe. At

the same time, the size of the pension investments is the largest in the world, compared to the size of the economy (OECD, 2016). The pension sector in the Netherlands is a large, highly developed sector that could function as a role model.

A second reason is related to the extent to which citizens have to feel empowered to plan for retirement. The Dutch pension system is ranked as second best in the world (Mercer, 2017) and until recently, most people could expect an adequate accrual. The level of activity is therefore low: people did not need to check their accrual, as the standard settings were good for most of them. Some dark clouds appeared at the horizon however: In 2010 the Dutch Authority for the Financial Markets (the AFM) presented a report on the replacement rate people expect (the percentage of a person's pre-retirement income that is paid out as pension upon retirement), which appeared to be unrealistically high (AFM, 2010). On average, Dutch workers expect to receive 70% or more of their final wage (Alessie et al., 2011; Van Duijn, Mastrogiacomo, Lindeboom & Lundborg, 2013). In reality, fifty percent of the citizens face a retirement income (state pension and pension via their employer) of less than 70 percent of their current income. Every fifth citizen is expected to have serious problems: this group cannot afford their minimal expenditures, even if they would draw down housing wealth (De Bresser & Knoef, 2015). Being unprepared is thus undesirable and poses a large risk: If individuals rarely or never set and check their personal target, an inadequate income in the future lurks for the majority of citizens. Planning for retirement and empowering citizens to plan their future income is therefore necessary, also in the Netherlands.

The third reason pertains to a large misconception among Dutch citizens. The majority (79%) of the Dutch citizens believe they pay for *other* individuals who are already retired (Pensioenfederatie, 2016). This conception is incorrect: Dutch employees gradually accrue their own retirement income via their employer. In the present thesis I propose that targeted communication can help to dissipate the actual misconception.

Empirical findings in the economic domain: explanations for inactive behaviour

Previous research on retirement-related behaviours has investigated causes of lack of engagement and low level of activity. A common explanation in the economic domain for not empowered behaviour, as defined in the present thesis, is lack of financial literacy (e.g., Alessie et al., 2011; Fore, 2003, Lusardi & Mitchell, 2007). A second explanation is lack of self-control or willpower (Benton, Meier & Sprenger, 2007; Van Rooij, Kool & Prast, 2007; Tiemeijer, Thomas & Prast, 2009).

Financial literacy can be defined as the ability to make informed judgments and effective decisions (Gale & Levine, 2011; Mandell, 2008). A prerequisite for this ability is basic understanding of financial concepts, such as 'inflation' and 'interest'. Several scholars have proposed that, as the level of literacy is low, people are clueless and do not know where to start. Researchers in this domain conclude that citizens in general are poorly informed about financial products and practices, and propose that "this is troubling, in that financial illiteracy may stunt peoples' ability to save and invest for retirement, undermining their well-being in old age" (Lusardi & Mitchell, 2007, p. 28).

Some researchers nuance the 'low literacy' explanation. It is difficult to increase financial literacy (Choi, Laibson, Madrian & Metrick, 2005; Mandell & Klein, 2009). The level of literacy is mostly the result of years of education, with many hours spent on learning. Facilitating a comparable process is out of reach for pension funds. Behavioural economists also point to the questionable role of education. Even with correct and complete information, people tend to make wrong decisions based on cognitive and predictable mistakes that can cause financial misery (Bodie & Prast, 2012; Kahneman & Tversky, 1979).

The second explanation of low activity pertains to the situation in which citizens are capable of understanding, but choose to do nothing due to lack of willpower. Without willpower, individuals tend to procrastinate the desired behaviour and do nothing, even "while they intellectually 'understand' the benefits of a specific behaviour, and they may have some idea of how to get started" (Mitchell & Utkus, 2004:5). The short-sighted 'doer' in a person prevails in favour of the long-lived planner (Prast, van Rooij & Kool, 2005; Thaler & Shefrin, 1981) and the rational

response to the information, which involves psychological cost of planning or hard thinking, is overruled by the need for immediate gratification. Individuals with enough willpower can overcome the psychological costs of planning (Thaler, 1994). Perhaps more often, people do nothing with the information provided. Behavioural economists often conclude that procrastination is typical behaviour for citizens when it comes to retirement (e.g., Benartzi & Thaler, 2007; Van Rooij et al., 2007).

A third explanation for inactive behaviour is perceived lack of influence (Hanemaaijer, 2011; Visser et al., 2012). When people think they have no options to influence their situation (Staring, 2010), it feels useless to put energy in knowing and improving their personal situation after retirement.

The use of standard settings is a partial solution

From the point of view that people lack financial literacy and willpower and behave irrationally, pension plans with default options are a solution. Plans with default options have standard settings, e.g., automatic participation and a certain amount of premium that has to be paid for the accrual of the retirement income. The investment strategy is often ready-made. The standard settings do not need active involvement or a choice of the individual and are expected to be in the best interests of most participants. Depending on the plan, participants can deviate from the standard settings.

The use of defaults has been investigated by e.g., Beshears, Choi, Laibson and Madrian (2009) and Bodie and Prast (2012), who point to the potential role of more nuanced, personalized, defaults that apply only to some individuals in certain situations. For example, an investment strategy can be refined, depending on individual characteristics. However, in the present thesis I propose that even with sophisticated defaults, standard settings do not remedy the current situation in which many citizens do not feel empowered to manage their future income. On the contrary, setting smart defaults may encourage passive behaviour, rather than encourage to understand and check one's personal financial situation. When people think or know there are no possible actions to influence their situation, they may also think it makes no sense to gain insight in their retirement situation.

Moreover, when citizens continue to have the flawed assumption that

they do not accrue their personal retirement income, but just participate in 'some' plan that benefits the older people (cf. the Dutch case), they may start feeling even more powerless. I therefore propose that - besides bringing advantages - defaults do not empower citizens and do nothing to correct flawed mental models, i.e., the set of incorrect basic assumptions many citizens have about retirement.

An underexposed aspect of defaults is the gap between the intended accrual (as set out in the pension plan) and the actual retirement income individuals receive. Pension plans set a default target income mainly based on current salary income, which is supposed to suit every individual participant. This general target is translated into an annual accrual percentage (e.g., 1,75% of the pension base, the part of the annual income that counts towards a pension) or a premium scale. The standard target fits fewer and fewer people. Divergence in lifestyles (Eisinga, Scheepers & Bles, 2012) and unpredictable costs for health care (Van Ewijk, Van der Horst & Besseling, 2013) lead to a wide variety of income targets, targets that may not be achieved with standard settings. Causes of a lower outcome than expected are plenty. Structurally low investment results, low interest rates or a fast increase in average life expectancy affect the financial position of pension funds negatively, which could ultimately lead to a reduction of pension rights. Also, 'abnormalities', like a divorce, unemployment or disability to work can cause a significant drop in eventual retirement income. Furthermore, most defaults were developed on the basic assumption that mortgages have been paid off. High mortgage repayments are in most cases not taken into account and can cause higher housing costs than foreseen in the target. To quote Alessie et al. (2011, p. 528), "There is an increasing need for employees to inform themselves and to invest in retirement preparation".

To summarize, defaults are useful given the low level of involvement and procrastination of citizens when it comes to retirement. Even with defaults, however, financial planning behaviour is sensible and desirable. Insight in the adequacy of the accrual is valuable, also when citizens cannot save extra in case of a gap between expected income and future expenses. Checking the adequacy of the retirement income to expect every now and then prevents citizens from unpleasant surprises by the time they retire. This statement not only holds for countries with poor pension systems, but also for countries with high quality systems.

Lack of studies into effects of communication from a broader perspective

Several scholars have reached the conclusion that there is little point in informing individuals about their pension situation, because individuals first have to become financial literate to understand the information (e.g., Alessie et al., 2011; Mandell & Klein, 2009; Lusardi & Mitchell, 2007). Moreover, even financially literate individuals don't always react on pension information in a sensible way (e.g., Bodie & Prast, 2012; Prast, Teppa & Smits, 2012).

Interestingly, even though communication entails much more than merely informing citizens by sending information from A to B, relevant findings in the domains of persuasive communication and text comprehension have thus far hardly been considered in the financial domain. The vast majority of empirical studies into the effectiveness of communication investigated the role of information in influencing economic behaviours, e.g. 'saving extra' or 'enrolment in a pension plan' (e.g., Bayer, Bernheim & Scholz, 2009; DeVaney, Gorham, Bechman & Haldeman, 1996; Hershey, Mowen & Jacobs-Lawson, 2003; Ntalianis & Wise, 2011). This limited view on what constitutes retirement communication is all the more surprising, given the challenges retirement communication is faced with. Specifically, developers of communication materials not only have to educate, but also have to appeal to an audience that is not pension-minded; interviews with citizens revealed that people perceive retirement as difficult and boring (Visser et al., 2012) and the public trust in European financial institutions and pension funds in particular is not very deep (De Nederlandsche Bank, 2015; Edelman, 2017).

Given the increasing relevance of communication in the pension domain, and the lack of studies moving beyond the assumption that citizens are too illiterate, irrational, or lazy to plan for retirement; this thesis takes on a different, socio-cognitive and citizen-centred approach to financial planning behaviour. To be more specific, it will be argued that financial planning behaviour can be predicted by using socio-cognitive variables. This is particularly interesting, as these socio-cognitive variables are amenable to change. Persuasive message strategies are expected to influence individual's beliefs and attitudes. Other message strategies, such as using high readable texts and visual metaphors, are related to better understanding and to positive experiences, when processing a message. These

effects are in turn related to the successful performance of behaviours and a higher level of activity. As far as I know, the effects of readability and persuasive message strategies on financial planning behaviour have not yet been investigated. In this thesis, I will focus on examining the relation between readability of - and the use of - persuasive message strategies in financial texts and financial planning behaviour.

Thus, I propose that:

- I. Financial planning behaviour can be predicted by socio-cognitive models of behaviour.
- II. Financial planning behaviour can be improved by reducing the complexity of retirement communication.
- III. Financial planning behaviour can be improved by using visual and textual strategies from the persuasive communication domain.

I. Predicting financial planning behaviour with socio-cognitive models

A first step in understanding what elicits or impedes financial planning behaviour, is to determine the variables that predict such behaviour. Several socio-cognitive models explain socio-demographic variations related to behaviour, e.g., age or social class (Blaxter, 2003; Stajkovic & Luthans, 1998) and cognitive variables (attitudes, beliefs and expectations) as determinants of behaviour.

Many of these models have been applied to health behaviour, such as medicine use, vaccinations or breast screening. Health behaviour resembles financial planning behaviour in several respects. An important feature of both types of behaviour is that recommended behaviours in the present, help to optimize future situations or to avoid or minimize negative outcomes in the long term. In addition, the recommended behaviour can trigger resistance, as the costs in term of time and energy may be perceived as high.

Within socio-cognitive models, one can distinguish a number of motivational models. These models point to motivational factors that predict behaviour at a single point in time (cf. Armitage & Connor, 2000). Both the 'Health Belief Model' (HBM) and 'Protection Motivation Theory' (PMT) recognize two major types of beliefs that predict behaviour. The first type deals with perceptions of threat. The premise of these models is that people act when a) they feel susceptible to the threat and b) they

believe the effect of the threat – should it become reality - is severe. Individuals may for instance believe there is a serious chance that their retirement income will be lower than is needed to afford their desired lifestyle, and that this scenario could have serious consequences for them, for example having to move house.

The other major beliefs pertain to behavioural control or efficacy. Apart from the perception of threat, performance of the behaviour is predicted by the individuals belief that they are able to perform the recommended behaviour (self-efficacy) and the belief that they will benefit from the action (response efficacy). For instance, individuals with high perceived self-efficacy are confident that they can plan for retirement. When individuals expect that they are better prepared for the future when they plan for retirement and they also expect that this planning enables them to make informed choices when necessary (e.g., decide to save extra, perceived response efficacy is also high.

Both major beliefs result from an appraisal of a situation, mostly triggered by a fear appeal. The extended parallel process model (EPPM) is an extension of PMT and explains why fear appeals in some cases do not lead to the desired response. When the perceived threat is low, individuals are not motivated to act. When the perception of threat is high (enough), but the perceived threat exceeds perceived efficacy, the response is fear control. Individuals will begin to assess how they can control their fear, instead of acting and avoiding or reducing the threat (Witte, 1992). The Retirement Belief Model predicts the intention of searching for information related to retirement. This model also points to perceptions of threat and efficacy as important predictors (Eberhardt, Brüggem, Post & Hoet, 2016).

Another branch in the socio-cognitive models is the one that addresses attitudes as predictors of behaviour. The framework of the Theory of Reasoned Action was grounded in the attitude-behaviour literature (Fishbein, 1967) and suggested that two constructs, the attitude towards the behaviour and social norms (perceived influence or pressure of significant others), predict behavioural intention. Ajzen extended the Theory of Reasoned Action with perceived behavioural control and developed the Theory of Planned Behaviour (1991).

I chose to use PMT as the socio-cognitive model to assess predictors of financial planning behaviour at individual level in Chapters 2 and 3.

PMT explicitly formulates expectations on individual response to threatening situations. It specifically proposes that threat perceptions increase the motivation to engage in behaviours to eliminate this threat, provided that these behaviours can be adequately executed and are effective in their threat reduction. The use of a socio-cognitive model like PMT, contrasts with the information-based perspective often used in economic research, which assumes that ‘knowledge is power’. Contrary to true understanding of financial matters, socio-cognitive beliefs can be very irrational or based on flawed perceptions, but still predict behaviour, possibly even more so than factual knowledge.

Thus far, a handful of studies point to the importance of socio-cognitive predictors for financial planning behaviour. Most notably, perceived efficacy regarding saving for retirement, appeared a strong predictor of planning preparedness (Croy, Gerrans & Speelman, 2010) and saving behaviour (Davis & Hustvedt, 2012; Magendans, 2014; Perry & Morris, 2005).

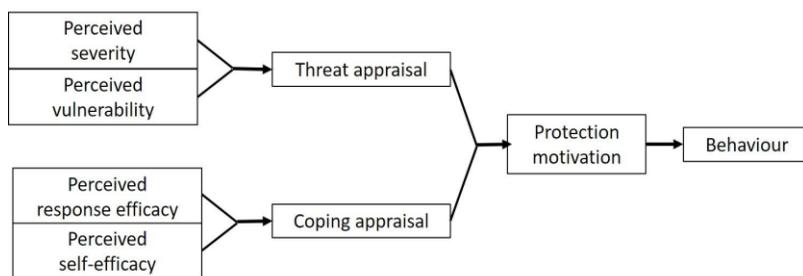


Figure 1.1 Rogers' (1983) Protection Motivation Theory

II. Reducing the complexity of retirement communication: the role of understandable language

In this thesis, I focus on retirement communication aimed at groups or subgroups. This type of communication mainly consists of texts provided online or printed. Most participants are reached via this type of communication as individual communication is relatively lengthy and expensive (see Nell, Lentz, Pander Maat & Koole, 2015) however for a noticeable research into individual verbal retirement communication via a helpdesk).

It seems that those writing texts on retirement assume that the texts

will be processed with undivided attention. It could be questioned however, whether this is actually the case. It was argued above that currently the literature on retirement assumes that irrational responses to retirement communication are due to lack of literacy and of willpower. However, the absence of the desired effect may also be caused by the materials themselves. Specifically, the level of textual complexity can hinder the full processing of the information. Words and the complete meaning of texts can be misinterpreted (e.g., Ellis, 1995, Kintsch & Vipond, 2014), and a bad reading experience can influence the response to a similar text from a similar source (Meyers-Levy & Malaviya, 1999). Literature on language and psycholinguistics shows that a wide set of textual factors is related to better understanding and desired behaviour. Overall, simple and well-structured texts are better understood. This effect is stronger when the target audience has low reading skills or little knowledge of the subject (McNamara & Kintch, 1996). As participants of pension plans generally have little knowledge about retirement-related topics, the level of textual complexity could affect the response to the message. When the texts are not understood at a basic level, it is impossible to convey a message on retirement.

Texts on retirement can be seen as language units, with characteristics that are related to comprehensibility on the lexical level, sentence level and textual level (Hacquebord, 2012). Traditional reading formulas predict the reading ease of texts with one or more of these characteristics. A well-known formula is for instance the Flesch-Kincaid metric (Klare, 1974) that defines average word length and average sentence length as important features to assess readability. The Flesch-Kincaid metric is a strong predictor of the amount of time it takes to read a passage. The underlying idea is that the word length variable may be a proxy for prior knowledge on the topic. Difficult and under-utilised words tend to be longer and demand more prior knowledge. Long sentences require more of the working memory and often have a more complex syntax, which also complicates a text.

Two other metrics, DRP (Koslin, Zeno, & Koslin, 1987) and Lexile (Stenner, Burdick, Sanford & Burdick, 2006) relate levels of comprehensibility to the performance of a cloze task, in which words in a text are replaced by blanks and those tested have to fill in the missing words. The more words that can be filled in on average, the higher the readability of

a text. Sophisticated automated tools for text analysis, like Coh-metrix (Graesser, McNamara, Louwerse & Cai, 2004) and T-scan (Pander Maat & Dekker, 2016) assess features that are related to a deeper level of comprehension than the basic components like average word length and sentence length (Graesser & McNamara, 2011; Kintsch, 1998; Snow, 2002). The tools measure for instance word frequency, how concrete a word is and aspects of cohesion in a text that are likely to contribute to the understanding of the subject.

As far as I know, only a few studies have been conducted on the typical features of retirement texts related to comprehensibility. One study showed that readers with poor reading skills understood layered texts better, probably because non-layered texts require more reading (Nell et al., 2016). A second study tested whether a simplified pension statement was better understood compared to a more complex variant. The study does not describe how the text was adjusted, except that the amount of words was reduced by half and the wording was simplified. A significantly larger number of respondents found and understood the information in the simplified statement (Lentz & Pander Maat, 2013).

Difficult texts appeared to be related to underperformance or less active behaviour in various domains: insurances (Boom, Desmet & Van Dam, 2016); jurisdiction (Charrow & Charrow, 1979) and health (Herber, Gies, Schwappach, Thürmann & Wilm, 2014). Until now, no studies described the relation between the reading-ease of retirement texts, and financial planning for retirement.

III. Beyond providing mere information: message strategies and visual metaphors

Some scholars state that providing information or education is supposed to increase factual knowledge and comprehension, which in turn relates to active behaviour (e.g., Clark, d'Ambrosio, McDermed & Sawant, 2006; Lusardi, 2008; Lusardi & Mitchell, 2007). Other scholars claim that persuasive communication affects *beliefs* and *attitudes*, which in turn predict behaviour according to socio-cognitive models (e.g., Ajzen, 1991; Rogers, 1983). Whereas an informative text mainly aims at attaining knowledge, persuasive texts aim at persuading the reader to have a specific attitude towards the topic of the text or to undertake some action. A persuasive message takes the position of the receiver into account and matches its

form to it, which increases the message impact.

Providing merely information may suffice for pension organisations that only focus on compliance with the law. When other, more participant-centred goals come into play, persuasive communication becomes increasingly important. I propose that empowering citizens to plan for retirement is a specific goal that also requires persuasive communication. Getting involved with retirement evokes negative emotions (Bockweg, Ponds, Steenbeek & Vonken, 2016). Misconceptions can enforce the belief that any activity is useless (Pensioenfederatie, 2016). Persuasive communication can help to reach citizens and change their beliefs and behaviours about retirement.

The domain of persuasion includes many message factors (see Perloff, 2017; Hoeken, Hustinx & Hornikx, 2012), some of which have been investigated extensively: factors relating to the content (e.g., evidence and narratives), to emotional appeals (e.g., fear appeals), to type of language and the use of frames that define a problem and recommend a solution. This thesis integrates findings from the persuasion domain into the pension domain and financial planning for retirement.

An example of a narrative in retirement communication is the use of a role model, who explains how to prepare for retirement, e.g.: "I wanted to know whether I accrue enough. I saw on the pension fund website a tool to assess whether the pension I will receive will be enough for me. It really helped me to get insight into my situation." A possible fear appeal in retirement communication is the warning that structurally low investment results may lead to a lower pension, e.g.,: "If the returns on investment are structurally low, the pension fund might have to cut your pension entitlements." An important language component is the use of visuals and visual metaphors versus words. The last factor, the use of frames and a recommended solution, can be illustrated by a message like: "It is important that you avoid unpleasant surprises shortly before retirement. Log on to our website and see how much you have accrued so far".

The role of message strategies: text

Thousands of studies in the health domain point to the importance of message strategies to influence knowledge, attitudes, beliefs and behaviour. For example, providing evidence via role models and narratives stimulates cancer prevention and control (Kreuter et al., 2007). The use of fear

appeals was analysed in an extensive meta-study, that concluded that fear appeals motivate individuals to follow recommended solutions, provided that perceived self-efficacy is high (Witte & Allen, 2000). Other studies show however, that in some cases, the interaction between fear appeals and perceived efficacy is lacking (e.g., Das, De Wit & Stroebe, 2003). This knowledge has not been translated to the area of pensions. In Chapter 3 of this thesis, a study is described in which I identified the key message strategies currently used by pension providers in the Netherlands, and the relation between these strategies and financial planning behaviour.

The role of message strategies: visuals

In the Netherlands, most of citizens think they do not accrue a pension, but pay for the retirees (Pensioenfederatie, 2016). This is an incorrect mental model. Mental models are based on a small set of fundamental assumptions that guide our thoughts and actions (Byrne & Johnson-Laird, 2009). Citizens with an incorrect mental model may think it makes no sense to follow their personal retirement situation, as they assume they do not accrue a pension at all and 'everything can change' (e.g., Visser et al., 2012). It is desirable that citizens understand it is possible and useful to follow their personal situation, in order to prevent unpleasant surprises shortly before their retirement date. I propose that changing the mental model can contribute to empowering citizens about retirement. A proved way to change a mental model is by using metaphors (Doyle & Ford, 1998). A metaphor is the referring to one thing by mentioning another thing, for the sake of comparison or explanation. Metaphors help to map knowledge or feelings - from one domain (the source) to another domain (the target) (Lakoff & Johnson, 1980).

Visual metaphors in particular are powerful instruments to explain abstract concepts (e.g., Cornelissen, Holt & Zundel, 2011; Forceville, 2008) and change beliefs about complex and abstract concepts, without having to explain specific features in detail.

Although the potential of metaphors is known, their use in retirement communication has not yet been studied. The use of metaphors is especially interesting as most Dutch citizens have an incorrect mental model regarding their retirement accrual via their employer. As explained above, people think they pay for the retirees. This misunderstanding is hard to clear with fact-based education, as citizens are not of their own accord

interested in retirement and do not feel the need to acquire information on how retirement actually works (Visser et al., 2012). Should the government or pension providers try to change the beliefs on retirement with factual information, there is a considerable chance that citizens would process the messages heuristically (Eagly & Chaiken, 1993). Metaphors, and especially visual metaphors, offer a chance to tell another story without conveying literal facts. I thus propose that a visual metaphor can contribute to the creation of a correct set of basic assumptions pertaining to retirement.

Aims and outline of this dissertation

Aims. The involvement of citizens in their retirement situation is low, and only increases shortly before the retirement date. Checking the adequacy of the accrued retirement income is not common behaviour, whereas it is desirable to plan for retirement and check every now and then. A periodical check prevents unpleasant surprises close to retirement date. I label the current behaviour as not empowered. Previous studies focused mainly on the role of information in influencing citizens with regard to economic behaviour, such as saving for (additional) pension. The role of communication in a broader perspective has remained relatively unexplored.

This thesis builds on socio-cognitive models of behaviour prediction to explore three specific aspects of communication: (1) the influence of textual complexity on financial planning behaviour, (2) the impact of different message strategies on financial planning behaviour and (3) the effectiveness of visual metaphors on basic beliefs with regard to the accrual of retirement income. Together these studies shed more light on the effects of the content, form and complexity of retirement communication, and offer pension providers concrete levers to reach and empower their participants.

The present thesis is a multidisciplinary study that spans several subject areas. Knowledge is applied from economics, linguistics and communication science, with a focus on persuasive, risk and visual communication. A variety of research and analysis methods were used: automated analysis of retirement texts, hand-coded content analysis of retirement texts, longitudinal surveys amongst the participants of different pension funds and an experimental study.

Outline. The dissertation opens in **Chapter 2** with a mixed method study on the influence of text characteristics related to complexity, on individuals' self-reported financial planning behaviour. In Study I, I measured individual predictors of financial planning behaviour among 7117 participants from 16 pension providers in the Netherlands. In Study II, I explored and quantified the text characteristics of the communication material used by the same 16 pension providers, and zoomed in on the complexity of the retirement communication per pension fund. In Study III, I assessed the impact of the level of textual complexity of the material provided by pension funds, on top of individual predictors of financial planning behaviour.

Chapter 3 describes a multilevel analysis of the effectiveness of key message strategies to activate and involve participants of pension plans. In Study I, I measured individual predictors of financial planning behaviour among 2975 participants from 14 pension providers in the Netherlands. In Study II, I performed a quantitative content analysis on the complete corpus of the same 14 pension funds to gain insight into the key message strategies currently used by these pension funds. In Study III, I carried out a hierarchical model analysis, with individual predictors, assessed in Study I at individual level and the results of the content analysis of Study II at the message level, to gain insight into the relation between message strategies and financial planning behaviour.

Chapter 4 presents the results of an experiment among 5449 respondents, that compared the extent to which a visual metaphor conveys key features of retirement accrual compared to other presentations (plotted confidence interval, mere text). The metaphor, derived from car navigation systems was built on the well-known 'life-is-a-journey metaphor'. Key dependent variables were the level of agreement of respondents to statements about the key features of retirement accrual, evaluative judgements of retirement and retirement information, and perceived self-efficacy with regard to financial planning behaviour.

Chapter 5 discusses the results of the empirical studies described in Chapter 2 through 4, and connects the findings to existing theories and a larger context, such as the importance of financial literacy versus basic understanding and socio-cognitive beliefs. The strengths and weaknesses of the studies are discussed and directions for future research are provided.

The chapters were submitted as separate journal articles. As a result, there is some overlap in the theoretical framework and the description of the statistical method in Studies I and III, in Chapter 2 and Chapter 3. The advantage for the reader is that each chapter can be read on its own.

Author Contributions

A.M. van Hekken developed the overall study concept and design in collaboration with E. Das. A.M. van Hekken carried out the researches. Multi-level analyses (Chapter 2 and 3) were performed by A.M. van Hekken together with M. Ernestus, and the results were interpreted with E. Das. W. Spooren contributed to the design of the study in Chapter 2 and the text analysis. A.M. van Hekken and E. Das drafted the manuscript. M. Ernestus and W. Spooren provided critical feedback.

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Chapter 2

Less Complexity Pays Off. Effects of the Readability of Financial Texts on Financial Planning for Retirement

This chapter is currently under review at the *Journal of Consumer Affairs* as van Hekken, A. Spooren, W. & Das, E. Less complexity pays off. Effects of the readability of financial texts on financial planning for retirement.

Abstract

This study examined the relation between complexity of financial texts and financial planning for retirement. We explored and quantified text characteristics of 128 retirement texts created by 16 Dutch pension funds with T-scan and zoomed in on the complexity dimension obtained through factor analysis. We then assessed the impact of the level of textual complexity, on top of individual socio-cognitive predictors of (self-reported) financial planning behaviour. 7117 members of the 16 pension funds participated in the study. Findings show that level of complexity negatively predicted planning for retirement, over and above the socio-cognitive predictors. Results suggest that increasing readability of retirement texts directly contributes to financial planning behaviour.

Introduction

Retirement is not a popular topic. The OECD (Atkinson Harrison, Messy & Yermo, 2012) observed a lack of interest and a low level of awareness. In the Netherlands, a country with a high quality pension system, 60% of citizens have no idea whether their pension is sufficient to cover their expenses after retirement (Wijzer in Geldzaken, 2016; van der Schors & Warnaar, 2015), whilst more than 20% of Dutch citizens are faced with pension that is too low to pay their basic expenses (de Bresser & Knoef, 2015). A higher level of activity is thus desirable. Retirement communication should ideally stimulate planning for retirement. In countries with a high quality pension system, it is also important to check the retirement situation on a regular basis. A balance between future expenditure and income is not guaranteed, and only the individual him/herself can establish whether the expected income will be enough for his or her specific situation.

Although pension funds have developed a variety of communication material to inform their participants, it is unclear to what extent the content and legibility of this material contributes to financial planning behaviour. With regard to content, at the very least, funds provide each participant with a personal statement with the annual accrual, and most pension funds provide additional material depending on the national legislation. With regard to legibility, previous research in other contexts, such as mortgages and patient information leaflets, showed that a number of text characteristics related to complexity, affect the way people understand and react to written communication. The role of complex wording is especially relevant for retirement communication, as retirement is an abstract topic, with numerous complicated mathematical aspects, whilst the level of financial literacy of the target audience is often low (Atkinson et al., 2012; Van Rooij, Lusardi & Alessie, 2011; Nell, Lentz & Pander Maat, 2016) and reading skills may not be sufficient to understand the message (e.g., De Greef, Segers, Nijhuis, 2013; Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). It is desirable, and since the introduction of new pension legislation in the Netherlands actually mandatory, for texts to be comprehensible. Texts should also contribute to active planning behaviour, or at least not hinder planning activity.

This study aims to assess whether aspects related to lexical complexity contribute to financial planning behaviour of pension plan participants.

Impact of text characteristics: empirical findings.

Text characteristics can be classified into three categories (Hacquebord, 2012): word complexity, sentence complexity and complexity of the text. Hereafter, we first describe general empirical findings per category, and then zoom in on studies that specifically looked at the relationship between text comprehension and behaviour.

Word Complexity. Word complexity pertains to the average length of words, compositions and the percentage of words that are used frequently. Misinterpretations of words are an important cause of communication errors (Ellis, 1995). Unknown vocabulary in a text interferes with comprehension (Hu & Nation, 2000). The more a text contains high-frequent words, the better a text is understood. The use of low-frequent words can seriously hinder comprehension. Even 2% coverage of low frequent words impedes correct understanding of a text (Carver, 1998).

The effect of word length is under debate. One of the classic readability formulas contains average word length as a factor (Flesch, 1948). When a text contains longer words, children have more difficulties in answering questions about a text. Critics argue, however, that difficult concepts could be built up with two or more fairly simple words (e.g., 'federal grand jury'). These critics claim that the word length effect is confused with a word complexity effect (Hulme, Suprenant, Bireta, Stuart, Neath, 2004). Nevertheless, it can be stated that word length correlates with word difficulty (Duffy & Kabance, 1984).

Sentence complexity. On a sentence level, linguists agree about the idea that average length of sentences is a good measure of readability (e.g., An- dringa & Hacquebord, 2000). It is also commonly accepted that passive sentences are more complex than active sentences (e.g., Chomsky, 1981, 2014; Bresnan, 1981; Gazdar, Klein, Pullum & Sag, 1985). This complexity is also reflected in processing: readers need more time to understand passive sentences than active sentences (Forster & Olbrei, 1973; Ferreira, 2003), have more difficulty in correctly interpreting passive sentences (Ferreira, 2003), and assess the validity of passive sentences slower than active sentences (McMahon, 1963). Readers have also more difficulty to remember passive

sentences (Mehler, 1963) and words in passive sentences (Savin & Perchonock, 1965). One study disputed the effect on reading speed: passive and active sentences were found to be read equally rapidly (Carrithers, 1989).

Text complexity. A first aspect of complexity on text level is coherence. Texts with high coherence contain words that explain causal relationships between elements in the texts, e.g., 'because' and 'however' (Beck, McKeown, Sinatra & Loxterman, 1991). According to most discourse psychologists, coherence in a text is a major predictor of text comprehension (Kintsch & Vipond, 2014; van Dijk, Kintsch & van Dijk, 1983). Linguistic cues help the reader to understand the structure of the text (e.g., Gaddy, van den Broek & Sung, 2001; Sanders, Schilperoord & Spooren, 2001) and speed up information processing. (Sanders & Noordman, 2000; Maury & Teisserenc, 2005). Comprehension and reading time also depend on the readers' reading skill (McNamara & Kintch, 1996) and background knowledge. Without connectives and signalling phrases, readers have to understand the text on the basis of their own background knowledge. Filling in with words like 'because' and 'however' proved to be very effective for readers that lacked the domain knowledge.

For coherence, referential cohesion is of importance: the overlap in content words or co-reference. Referential cohesion helps readers to make connections between the sentences and to understand the complete text (Halliday & Hasan, 1976, McNamara & Kintsch, 1996). As participants of a pension plan generally have little knowledge of retirement-related topics, texts with low levels of coherence, and specifically low levels of co-reference could be difficult to process.

The effects of coherence and co-reference described above are not endorsed by all scholars. Some authors claim there is a negative impact of connectives on text comprehension (e.g., Millis, Graesser, & Haberlandt, 1993). The diverging findings could be caused by the choice of research method, such as spontaneous recall of the information in the text: the methods used may not have been suitable to measure the effects of linking words (Spyridakis, 1989a, 1989b; Degand & Sanders, 2002).

A second aspect of complexity at the text level is how identifiable it is: the degree to which the reader can identify with the author or with the characters in the text. A text can be written in a distant tone, with few per-

sonal pronouns and a high density of nominalisations, or in a more identifiable style, with a more frequent use of personal pronouns. Readers of texts with identifying characteristics connect better with the characters in the text and experience the content as more relevant. This is described as the so-called 'interestingness-effect' (Hidi & Baird, 1986). Interested readers have a higher understanding of - and memory for- the content of a text (Land, Sanders, Lentz & Bergh, 2002, Hidi, Renninger & Krapp, 2004).

Text characteristics and behaviour. There is no known research that investigated the effects of text complexity on financial planning for retirement. A limited number of studies outside the retirement context zoom in on the effects of readability on actual behaviour of the reader. One study on patient information leaflets (PILs) showed a low degree of readability of the description of possible side effects in PILs was a major reason for discontinued use of prescribed medication (Herber, Gies, Schwappach, Thürmann & Wilm, 2014). Another study investigated performance of lay jurors, demonstrating that jurors who read complex instructions paraphrase these instructions much worse than jurors who read easy readable instructions (Charrow & Charrow, 1979). Finally, a recent study in the financial domain revealed that easier written insurance contracts led to more willingness to undertake legal action in case of a claim denial (Boom, Desmet & van Dam, 2016).

Individual predictors of financial planning behaviour: empirical findings

Several socio-cognitive models define demographic factors e.g., age or social class (Blaxter, 2003; Stajkovic & Luthans, 1998) and cognitive variables (attitudes, beliefs and expectations) to predict behaviour as determinants of behaviour.

Results from the limited number of studies into the influence of demographic variables showed that age (Ekerdt, Kosloski & DeViney, 2000; Petkoska and Earl, 2009), being male (Jacobs-Lawson, Hershey & Neukam, 2004), income (Hastings, Mitchell & Chyn, 2010; Noone, O'loughlin & Ken-dig, 2012) and education (Glass & Flynn, 2000) are positively related to planning for retirement.

The influence of socio-cognitive variables are also interesting, as these are amenable to change. The Health Belief Model (Rosenstock, 1974), as well as Protection Motivation Theory (Rogers, 1975, 1983) and the Extended

Parallel Processing Model (Witte, 1992) recognize two major types of beliefs that predict behaviour. The first type of beliefs regards perceptions of threat. The premise of these models is that people take action when a) they regard themselves as susceptible to the threat and b) they believe the effect of the threat - when the threat becomes reality - is severe. Individuals may for instance believe there is a serious chance their retirement income will be lower than necessary to afford their desired lifestyle and they may also believe that this scenario will have serious consequences for them, because they have to move.

The second type of beliefs is related to coping with the threat. The first determinant in this type of beliefs is the evaluation of the behavioural option to diminish the threat, the perceived self-efficacy. This is the level of confidence an individual has to successfully undertake the recommended behaviour: to plan for retirement. Perceived self-efficacy might be an important predictor of financial planning behaviour, as many citizens think gathering and interpreting information about the retirement income is not an easy task (AFM, 2011; Visser, Oosterveld & Kloosterboer, 2012). The second determinant of coping with the threat is perceived response efficacy. This is the extent to which people believe that planning for retirement will benefit them (Bandura, 1977; Boer & Seydel, 1996).

Although the models have been mostly used in a health context, they also form the basis of the Retirement Belief Model, which focuses on predicting the intention to search for information related to retirement. All four beliefs appeared to be significant predictors of the intention to search for information related to retirement (Eberhardt, Brüggem, Post & Hoet, 2016).

The present research

Previous research suggests that next to socio-cognitive and demographic variables, such as age and perceived self-efficacy, a wide set of textual factors is related to better understanding and to desired behaviour. Overall, simple and well-structured texts are better understood. Previous research suggests when writing for an audience lacking domain knowledge, texts should include commonly used words, an active tone, and a high degree of coherence and 'identifiability'. Previous studies have not identified whether these aspects impact (in a positive and negative way) active behaviour when it comes to financial communication. The present research sets out (1) to

assess the individual factors that predict financial planning behaviour, (2) to quantify text characteristics of communication material used by 16 pension providers in the Netherlands, and (3) to identify text characteristics that impact financial planning behaviour, on top of the individual predictors of financial planning behaviour. Financial planning behaviour was defined as checking the adequacy of the actual accrual or the pension to be accrued.

Study I

In Study I, individual predictors of financial planning behaviour were assessed. For this purpose we used Protection Motivation Theory (PMT) as a conceptual framework to predict actual (self-reported) financial planning behaviour.

Method Study I

Participants

Pension fund members of 16 pension funds participating in an employer-sponsored plan and accrued pension at the time of the study, were invited to complete an online survey. The sample group of pension funds was deliberately diverse, as we strived for an optimal reflection of the actual make-up of society within the group. respondents. In order to attract also respondents who are less 'pension minded', we offered an incentive (chance to win a week in a holiday home) to participants who finished the complete survey. 7117 respondents completed the survey and answered all questions (response rate 16.1%). Ages ranged from 20 to 64 years ($M = 48.41$, $SD = 10.97$); 67% was male. The number of respondents differed per fund (from 26 to 2326).

Measures

The target behaviour of interest was checking the adequacy of the accrued pension or the pension to expect: 'is it expected to be enough?' (*Financial planning behaviour*). We chose this binary measure (yes/no) at individual level because the check is a form of rather complex behaviour: a person has to compare the income to expect with a benchmark. The benchmark could

be the current salary or (for instance) the estimated expenditures after retirement. We asked whether the respondent had assessed the adequacy of the accrual in the 12 months prior to the survey. The distribution for the *Financial planning behaviour* was 46% indicating no activity and 54% indicating one check or more the previous 12 months.

The possible predictors we investigated were psychological and demographic factors. To assess whether psychological factors predict financial planning behaviour, we used the components of Protection Motivation Theory related to the perception of threat and related to coping the threat.

Perceived threat in Protection Motivation Theory comprises perceived *severity* of the threat ('how serious is situation X for you when it becomes reality?') and perceived *susceptibility* to the threat ('how likely do you think it is that situation X becomes reality for you?'). An example survey question to measure perceived severity was 'How problematic would it be if your income after retirement is not sufficient to cover your desired lifestyle?' Respondents were asked to indicate on a 100-point bipolar scale the estimated severity of not receiving enough retirement income a) to pay the basic needs and b) to afford the desired lifestyle (0 = *not problematic at all*, 100 = *very problematic*). The results of the two items were used to create a composite scale '*Severity*', with the remark that Cronbach's alpha is moderate to low ($\alpha = .64$, $M = 80.70$, $SD = 14.75$). The second aspect of perceived threat was measured by asking the respondents to estimate the chance that the retirement income will not be enough a) to pay the basic needs and b) to afford the desired lifestyle (0 = *certainly not going to happen*, 100 = *will certainly happen*). The results of the two items were used to create a composite scale '*Susceptibility*' ($\alpha = .81$, $M = 49.65$, $SD = 22.81$). Note that the estimation of the respondents is not an estimation of the actual chance, but an indication of the perceived threat.

The second two psychological predictors pertained to efficacy: the degree to which a person thinks he can perform the desired or recommended behaviour (self-efficacy) and the expected benefit of the behaviour (response efficacy). In order to assess self-efficacy beliefs, respondents were asked to rate different levels of tasks on a 100-point bipolar scale (Bandura, 2006). Respondents were provided with preliminary instructions in order to establish the appropriate mind-set. They were asked to judge their actual capabilities to execute tasks *now* instead of their expected capabilities in the future. The respondents had to estimate the difficulty level of seven

tasks (0 = *very difficult*, 100 = *very easy*) and to indicate their level of confidence of successfully accomplishing the seven task tasks (0 = *no confidence at all*, 100 = *100% confident I can*). Factor analysis with varimax rotation yielded that the fourteen self-efficacy items loaded consistently on one factor. All items were combined in the scale '*Self-efficacy*' (Eigenvalue = 6.5, $\alpha = .91$, $M = 46.75$ $SD = 16.78$).

Perceived '*Response efficacy*' of financial planning behaviour was assessed with four items. A sample item was 'I will profit from checking every now and then whether I accrue enough pension'. All items employed also a 100-point response format (0 = *fully disagree*, 100 = *fully agree*). Factor analysis with varimax rotation yielded that the four response efficacy items loaded consistently on one factor (Eigenvalue = 2.8, $\alpha = .86$, $M = 64.98$, $SD = 19.55$). Table 2.1 shows the descriptive statistics of the combined scales.

Table 2.1 Descriptive statistics of combined scales

Variables	N	Mean	SD	Min.	Max.
Severity (0-100)	7.117	80.70	14.75	0	100
Susceptibility (0-100)	7.117	49.65	22.81	0	100
Self-efficacy (0-100)	7.117	46.75	16.78	0	100
Response efficacy (0-00)	7.117	64.98	19.55	0	100

Respondents were furthermore asked to indicate their age, level of education, level of income, gender, marital status and the type of industry they work in (financial/non-financial). The complete questionnaire is presented in Appendix A.

Results Study I

Preliminary analyses

Prior to analysis, all data distributions were checked for deviations from normality, abnormal skew, and irregular kurtosis. All measures were distributed normally, although most of the distributions had a high kurtosis, probably due to the fact that more respondents chose the middle option

(meaning ‘neither agree, nor disagree’) than would be expected in a perfectly normal distribution. The results for the estimated severity of receiving not enough pension were somewhat skewed, most likely caused by the fact that the most left option (*‘not problematic at all’*) was not a realistic answer.

Baseline model

We specified a baseline model with significant predictors of financial planning behaviour. A regression analysis was performed, entering the psychological and demographic variables of financial planning behaviour into the equation. ‘Age’, ‘Susceptibility’, ‘Severity’, ‘Self-Efficacy’ and ‘Response efficacy’ were significant predictors (model fit AIC: 7666.5). Besides age, other demographic variables did not add to the baseline model. Table 2.2 shows the baseline model, with five scaled predictors.

Table 2.2 Baseline model for financial planning behaviour with individual predictors

Individual predictor	Estimate	Std. Error	z value	P r(> z)
Intercept	.24	.10	2.37	.02
Age	.91	.03	27.32	< .001
Susceptibility	.09	.03	2.80	.005
Severity	.08	.03	2.85	.004
Self-efficacy	.70	.04	19.44	< .001
Response efficacy	.21	.03	6.99	< .001

We did not find any random effects (differences in intercepts or slopes of variables between pension providers).

Conclusion Study I

This research examined demographic and socio-cognitive predictors of financial planning behaviour. Building on Protection Motivation Theory, it was expected that perceived threat and perceived efficacy would play a role in predicting financial planning behaviour.

The results confirm that age is an important predictor of planning for retirement. Gender, income and education were, however, not related to planning behaviour.

Besides the demographic variable age, perceived threat and efficacy beliefs indeed predicted financial planning for retirement. Especially perceived self-efficacy with regard to financial planning behaviour, that indicates the extent to which an individual believes he can successfully plan for retirement, played a key role. Findings suggest that financial planning for retirement is not only a result of knowledge and lack of willpower, but for an important part a result of beliefs that individuals have about planning behaviour, most notably about the perceived self-efficacy with regard to financial planning for retirement.

Study II

In Study II, a quantitative content analysis, using T-scan, was carried out on a Dutch corpus of pension messages, in order to gain insight into the linguistic characteristics of financial texts and to uncover possible patterns. The objective was to create a composite scale indicating the readability of financial texts.

Method Study II

Pension funds

Sixteen Dutch pension funds made the communication material that was sent to (groups of) participants in the year prior to the online survey (April 2013 – April 2014) available, reported in Study I. The 16 pension funds differed in size (700 – 1.200.000 participants), type of fund (company funds, industry pension funds and occupational pension funds) and type of plan (defined benefit plans and a combination of defined benefit and defined contribution plans).

Materials

The corpus contained all communication material except individual letters and custom written e-mails. In total, we analysed 128 different items, grouped into 10 clusters (see Table 2.3). Each cluster contained all material

of one type, e.g., 'brochures' or 'emails'. Clusters could contain passively disseminated material, available for those interested, or actively disseminated materials (sent upon request). An example of a passively disseminated material is the cluster 'brochures', available on the internet in pdf-format. An example of an actively disseminated material is an email. The maximum number of items per cluster was limited to three; we assumed that three items represented the cluster when a cluster contained more items.

Table 2.3 Descriptive statistics of communication material provided by participating pension providers (used or sent between April 2013-April 2014) and analysed via T-scan

Cluster	Funds using cluster	Materials analysed	Range of materials
Start letter ¹	15	15	min = 0, max = 3
Explanation of Uniform Pension Statement ²	11	11	min = 0, max = 3
Letters	11	17	min = 0, max = 3
Emails	4	8	min = 0, max = 3
Brochures	11	25	min = 0, max = 3
Digital newsletters (sent via email)	8	15	min = 0, max = 3
Printed newsletters (sent via regular mail)	8	15	min = 1, max = 1
Posters and leaflets	2	4	min = 2, max = 2
Web texts	16	16	min = 0, max = 3
Other	1	2	min = 0, max = 3
Total		128	

¹⁾ A start letter describes the content of the pension scheme. It is required by Dutch law that pension funds send the start letter to new participants within three months of starting to accumulate pension entitlements. One fund does not send start letters, as this fund is 'closed'. No new participants can start accrual via this fund.

²⁾ The explanation of the Uniform Pension Statement (UPO) covers the items and amounts in the annual statement. The explanation is sent together with the UPO.

T-scan analysis

T-scan is a tool for automatic analysis of Dutch texts (Pander Maat et al., 2014). The purpose of T-scan is to assess characteristics that may impact the complexity of a text. T-scan analyses texts with regard to lexical complexity (e.g., average word length and word frequency in a number of corpora), sentence complexity (e.g., average sentence length, number of passives and negations), referential cohesion and lexical diversity (e.g., type-token ratio, which is the ratio between the number of unique words and the total number of words), relational coherence (e.g., connectives and causal words), concreteness, personal style (e.g., use of personal pronouns), verbs and time phrases and parts of speech.

All materials were prepared for analysis in T-scan, conform the T-scan guidelines (Pander Maat et al., 2016). In addition, we replaced all proper names by 'Name', all places by 'Place' and all URLs by 'website'.

At the time of the analysis, T-scan returned 418 features for a single text. The goal was to assess a composite scale indicating the readability of financial texts. To reduce the large set of variables to a workable and relevant set of features usable for a factor analysis, all features were subjected to an iterative process. We evaluated the features on the basis of three criteria:

1. Literature: previous studies must relate the feature to readability.
2. Practical use: it must be possible to use the feature to evaluate and optimize a text. Consequently, highly specific grammatical features were excluded.
3. Representativeness: when a group of features is very similar and strongly related to another, one feature was chosen to represent the group.

This selection procedure resulted in a set of 19 features (see Appendix B). These features were related to complexity on word level, sentence level and text level. The features were used in a factor analysis, to discover a possible pattern in writing style. Initially, the factorability of the 19 items was examined. Several well-recognised criteria for the factorability were used. Firstly, it was observed that 18 of the 19 items correlated at least .45 with at least one other item, suggesting reasonable factorability. Secondly, the Kaiser-Meyer-Olkin measure of sampling adequacy was .75, above the commonly recommended value of .6, and Bartlett's test of sphericity was significant ($\chi^2(171) = 566.10, p < .001$). Given these overall indicators, factor analysis was deemed to be suitable with the selected 19 features.

Results Study II

Factor analysis showed that 13 features loaded on one factor and explained 48.4% of the variance. The 13 features were standardized and combined in the composite scale 'Complexity' (Eigenvalue = 9.2, $\alpha = .78$, $M = 0$, $SD = 1$). Related to complexity at word level were average amount of letters per word, density of composite words, nominalisations (the use of a noun phrase instead of a verb, e.g., 'the rapid fall in interest rates' instead of 'interest rates fell rapidly'), average amount of morphemes per word (smallest grammatical unit in a word, e.g., "happiness" has three morphemes: 'hap', 'y' and 'ness') and the proportion of frequent content words (i.e., proportion of words that belong to the most frequently used 1000 words). Related to complexity at sentence level were: the average amount of words per sentence and the average amount of words per clause. Related to complexity at text level were: use of passive voice, density of linking words, density of causal content words, density of personal pronouns, amount of juxtapositions and listings and density of adverbial clauses. *Complexity* scores for passively and actively disseminated materials were averaged to have one variable per fund. Descriptive statistics of the combined scale and the (non-standardized) items in the combined scale are shown in Table 2.4. The variables with '*' were negatively correlated with the other variables in the scale.

Table 2.4 *Descriptive (non-standardized) statistics of items in composite scale Complexity*

Variable	Mean	SD
Letters per word (average)	5.30	.23
Composite words (average amount per 1000 words)	33.08	7.72
Nominalisations (average amount per 1000 words)	45.15	9.37
Morphemes (average per word)	1.45	.05
Content words top 1000 * (proportion in text)	.35	.05
Words per sentence (average)	14.08	1.68
Words per clause (average)	9.20	1.05
Passive voice (average amount per 1000 words)	9.20	1.05
Causal connectives * (average amount per 1000 words)	14.90	3.00

Variable	Mean	SD
Causal content words (average amount per 1000 words)	6.89	1.84
Personal pronouns * (average amount per 1000 words)	82.50	21.63
Juxtapositions/listings per sentence	.47	.11
Adverbials (average amount per 1000 words)	119.72	9.61

* negatively correlated with other features

Discussion Study II

This study quantified characteristics, such as average words per sentence and average amount of causal connectives per 1000 words, from the 16 pension funds in the Netherlands. We selected 19 features and found that 13 features could be merged into one reliable composite scale '*Complexity*'. Funds with low levels of *Complexity* used relative short sentences, many linking words (e.g., 'therefore') and avoided the passive voice and complex, composite words (such as *beleidsdekkingsgraad*, 'policy coverage ratio'). They furthermore used less nominalisations, which means that the sentences contain more verbs and personal pronouns and less abstract nouns. Overall, this writing style could be described as less vague, less formal and less complex (Onrust, 2013). Linking words (e.g. *omdat*, 'because' and *daarom*, 'therefore') are related to high readable retirement texts, while the use of content words that express causal coherence (e.g., 'this is due to....' or 'as a result ...') is related to less readable texts (Sanders, 2001).

We used *Complexity* as a measure to represent the entire sub corpus of a pension fund, as if that sub corpus consisted of a homogeneous set of texts that do not vary in complexity. This is of course a simplification, but there were several reasons why we opted for this choice. First, each fund makes use of different text genres, but the content is very homogeneous. A major part of the information in the texts is prescribed by law, although the exact wording is often a matter of the individual style of the author. Secondly, we assume that texts within a pension fund are written by the same author or set of authors and as a result of that the similarities between the texts in the sub corpus outnumber the differences. Thirdly, the different genres do not occur systematically in each sub corpus and are used in all

sorts of combinations; this hinders the analysis of the effectiveness of separate genres.

Study III

Study III examined the relationship between the complexity of texts used by pension funds, and the financial planning behaviour of their participants. We defined financial planning behaviour as: checking the adequacy of the accrual ('is it expected to be enough?'). As the data were organized at two random levels (that of the individual respondent and that of the pension fund in which the respondent participated), we performed a multilevel analysis. This type of analysis enabled us to analyse the relationship between the complexity of the texts used by pension funds on financial planning behaviour, while taking into account the differences between respondents. The average level of text complexity used by a pension fund, which was a composite scale of 13 text characteristics (see Study II) was entered into a regression equation at pension fund level (level 2), whilst individual characteristics and self-reported financial planning behaviour were entered at individual level (level 1).

Method Study III

Hierarchical linear effects analysis

We extended the baseline model described in Study I with the group-factor *Complexity*. This new model was created for purposes of comparison with the baseline model. Because we were interested in the effects of the group-factor *Complexity* on financial planning behaviour, on top of individual predictors of financial planning behaviour (assessed in Study I), we used a multilevel or 'hierarchical linear effect' design. This method enabled us to analyse the effects of the group-factor on financial planning behaviour (fixed effect, the conventional linear regression part), while taking into account differences between respondents and differences between pension funds (both being random effects; e.g., Hox, 2010). We conducted the analysis using the lme4 package available from R Statistics. Because the dependent variable was binomial, we used a generalized linear model with the binomial link function.

Inter-individual sources of variance, i.e., age, perceived susceptibility, perceived severity, self-efficacy and response efficacy were modelled at level 1 of the hierarchical linear effects analyses, using the results of Study I as input. All level 1 variables were standardized; we converted each predictor at individual level to a scale with an average of 0 and standard deviation of 1. Next, the factor *Complexity* was modelled at level 2, the group level. We used the results of the T-scan analyses (see Study II) as input for the variable at level 2. Note that the survey was conducted in May 2014 and the factor *Complexity* was created based on the analysis of the materials that were used or sent between May 2013 and May 2014.

Results Study III

The group-factor *Complexity* was a significant predictor of financial planning behaviour. Adding *Complexity* to the baseline model as a fixed effect improved model fit substantially (AIC = 7663.5, $\chi^2(1) = 4.95, p = .03$). Table 2.5 shows the impact of *Complexity* on financial planning behaviour.

Table 2.5 Results of hierarchical model analysis for the factor *Complexity* (level 2) on top of baseline model

Predictors	B	SE	z value	P r(> z)
(Intercept)	.30	.09	3.44	<.001
Age	.91	.03	27.37	< .001
Susceptibility	.09	.03	2.72	.007
Severity	.09	.03	2.90	.004
Self-efficacy	.70	.04	19.46	< .001
Response efficacy	.21	.03	7.05	< .001
Complexity	-.13	.06	-2.40	.02

These results suggest a relationship between the readability of texts used by pension funds and financial planning behaviour. The more complex the retirement texts, the less active citizens are in planning for retirement.

We checked whether the four individual predictors were influenced by *Complexity*. For this purpose, we performed hierarchical linear model analyses with the individual predictors as dependent variables. We specified four baseline models, one for each individual predictor. Entering Complexity as level 2 predictor to the baseline model of Response efficacy (with age, income and level of education as significant level 1 predictors of Response efficacy) improved the model ($p < .001$, AIC value changed from 18938 to 18928). Complexity predicted Response efficacy in positive direction ($\beta = .11$, $p = .002$), which means that the expected benefit of planning for retirement was higher when level of complexity of the texts provided by the pension fund was higher. *Susceptibility*, *Severity* and *Self-efficacy* were not predicted by *Complexity* at level 2. AIC values of the models with *Complexity* at level 2 were marginally lower (<2) or even higher than AIC values of the baseline model. Chi square tests for comparison of the new models with the baseline models reported no significant p-values.

Discussion Study III

This study assessed whether the level of complexity of texts used by 16 Dutch pension funds (used between April 2013 and April 2014) is related to financial planning behaviour in the same 12 months. Financial planning behaviour was defined as checking the adequacy of the accrued income. The adequacy check provides an answer to the question 'do I accrue enough?'. To answer this question, individuals must know how much they have accrued or expect to accrue, and how much they need after retirement. Results showed that level of complexity of the retirement communication material significantly predicted financial planning behaviour. The more complex the retirement communication, the less often financial planning behaviour was reported.

We developed a composite scale, with 13 characteristics related to text readability. The aim of this composite scale was to make it possible to generalise the conclusions from 16 pension funds texts to retirement and financial texts in general.

The composite scale contained thirteen features, including 'average sentence length'. Previous research already showed that readers find short sentences easier to read than long sentences. (e.g., Andringa & Hacquebord, 2000). For some reason, sentences in retirement texts often aim to

tell the complete story, e.g., "*Because the new pension scheme from 1 January 2006 has an accrual percentage of 2% and also applies the minimum deductible, employees who have only been in service for a short time will not have much TDC.*" This sentence could easily be divided in shorter sentences, with linking words. Note that TDC is an abbreviation of 'tax deferral capacity', which is not a common term. If the author had used the full expression, the sentence would have been even longer.

Additionally, we found that nominalisations were part of the composite scale that predicted a lower level of activity. This is interesting, as nominalisations are common in retirement communication. For instance, most choices are presented in the form of nominalisations. Participants of pension plans can choose for 'value transfer', which is explained by a fund as follows: "*In value transfers the value of the allocated pension entitlements at resignation is assessed on the basis of standard assumptions*". This explanation also contains nominalisations (value, entitlements, resignation and assumptions) and lacks an actor. It is understandable that a reader does not feel that this text describes a choice he can make, as any connection between the pension plan and the reader is missing. The wording is also abstract and abstracts texts are in themselves related to lower comprehensibility (Gerritsen, 2001; Sadoski, 2001). Frequent use of nominalisations could be perceived as formal, bureaucratic language (Onrust, 2013), which does not help to keep the interest of the reader.

The passive voice, e.g., "*is assessed*" in the previous example, also makes a text impersonal, less clear and boring (Burger & de Jong, 1997), as does leaving out personal pronouns. In the sentence "*the cost-covering contribution rate is the price that is paid now for accruing a future (lifelong) pension*", the person that pays the premium (probably the reader) is left unmentioned, adding to the impersonality and unattractiveness of the text. It is only in rare cases that the passive voice is more appropriate than its active counterpart, for example when something happens automatically, is caused by an inanimate agent or when the identity of the agent is irrelevant (Cornelis, 1997). Furthermore, the use of composite words can be classified as complex writing. Like German, the Dutch language contains many unhyphenated compounds consisting of two or even three base words (e.g., *vastbedragenregeling*, 'flat-rate scheme' and *beleidsdekkingsgraad*, 'policy coverage ratio'). Compounds affect the average word length and seem to trigger a specific problem. The components of a compound may be fairly

easy to understand, but give rise to difficulties when they occur in the compound. An example is the Dutch term *partnerpensioen*, “partner’s pension”. The meaning of the compound is not transparent based on the meaning of its component words: it is not clear that the partner only receives this allowance after the participant has died. It could also be interpreted as a payment for the partner when the participant is retired. A compound may also confuse readers because it suggests that the reader should know it. An example is the use of the word *indexatiebesluit* (the decision on indexation): it is very unlikely that the reader knew the word in advance.

In the factor analysis, we used the variable 'causal connectives' (e.g., 'therefore'). Other types of connectives are additive (e.g., 'and'), adversative (e.g., 'yet' and 'but') and temporal (e.g., 'then') (Hasan & Halliday, 1976). These connectives might also belong to the components that indicate low complexity with regard to retirement texts and positively contribute to behaviour. The effect of other connectives on the readability of retirement texts should be researched further.

Frequently used content words, causal connectives (words that express a causal relation e.g., “because”) and personal pronouns loaded negatively on the factor ‘complexity’. This result aligns with previous findings that word frequency (e.g., Klare, 1968; Marks, Doctorow & Wittrock, 1974) and the use of personal pronouns (e.g. Flesch, 1948) are related to readability. Causal connectives are supposed to increase the coherence of a text and also positively influence processing of the content (e.g., Haberlandt, 1982, Meyer, Brandt & Blut, 1980). However, the use of causal content words (e.g., ‘later’) was positively related to features that indicate complex writing. We suppose that this type of words is especially used in texts that explain something. In that case, the content itself might be complex, not only the wording.

Finally, it seems that short clauses without verbs (the juxtapositions and listings) do not help to increase readability. This type of sentence is suitable for an overview, but may hinder easy reading.

We checked whether the individual predictors of financial planning behaviour were related to reading ease. One predictor, perceived response efficacy, appeared to be predicted by reading ease (in a positive direction). This finding led to the question whether we could use all four variables in the baseline model. We decided to do so, as perceived response efficacy is

an important predictor of planning for retirement. The relationship between readability, response efficacy and financial planning behaviour seems to be paradoxical: Complex writing is positively related to perceived response efficacy, response efficacy is positively related to financial planning behaviour, whilst complex writing is negatively related to financial planning behaviour.

Further research and analyses could focus on the different effects of readability on planning behaviour and the individual predictors. The relation between reading ease and perceived response efficacy may for instance not be caused by the content of the texts, but by having read a similar (complex) text in the past. Respondents possibly reject similar new texts out right and feel guilty about this behaviour. This might influence their perceptions of response efficacy ('I should be more involved with my retirement situation, I know it is useful, but ...'). We do not know whether this type of perceived response efficacy is also positively related to financial planning behaviour.

General Discussion

This research examined the effects of complexity of retirement communication texts on financial planning behaviour. We found that participants of funds that disseminated relatively complex texts were less active with regard to planning for retirement. Previous studies (e.g., the study of Duffy & Kabance, 1982) already showed that easily readable texts are better understood. This study adds to these findings by showing that level of complexity is directly related to financial planning behaviour.

Bogaert et al. (2008) described how complex texts can be counterproductive. The authors state that an easily readable text is processed at four levels. The four levels consist of a) understanding the words, b) understanding the sentences in conjunction, one with the other, c) understanding the meaning of the complete text and d) evaluating the text (i.e., connecting the 'text world' with the personal world). This model positions financial planning behaviour as the ultimate result of processing a text. We assume that that processing can already fail at the first level. Failing to achieve the fourth level can stem from various reasons. Most studies that

have investigated the impact of readability on behaviour, attribute improvements in behaviour to better understanding and vice versa: inactivity is a result of misunderstanding. This reflects the view that people always deliberately process a text. We propose that a lower level of activity can also result from 'bad experiences' in the past. People who receive material that is too complex to understand or more complex than desirable, may turn away and be 'closed off' to the messages in the material. They become numb, as it were. This explanation accords with the findings of Meyers-Levy and Malaviya (1999), who mention the 'experiential processing strategy' as a third strategy, alongside the systematic and heuristic processing strategy. Experiential processing is different from heuristic processing since heuristic processing is more rational and – albeit superficially – based on actual processing of the text. Experiential processing can lead to a rejection at first sight. This is very undesirable, as pension funds invest a great deal of energy in reaching their participants (EIOPA, 2016). The use of complex language seems to counteract the efforts. This process may also explain the positive effect of complexity on response efficacy, which is a positive predictor of retirement related behaviour, whilst complexity is negatively associated with financial planning behaviour. It is possible that complex texts discourage actual behaviour, but strengthen peoples' guilty feelings and beliefs with regard to the use of active behaviour at the same time ("I should be more active").

The current study revealed that level of complexity did not impact other socio-cognitive predictors of retirement behaviour, i.e., perceived threat (the chance that an individual will not receive enough and the severity of such an outcome) and perceived self-efficacy with regard to checking the personal retirement situation. The absence of impact on perceived threat and self-efficacy beliefs may be caused by the very diverse and rather generic content of the different materials. Relatively few messages in the complete corpus pointed in the direction of the desired behaviour: Most messages were informative, and large pieces of the texts contained an explanation of the pension plan and the financial situation of the fund; such an explanation does not lead to the desired behaviour. This finding does not necessarily imply that level of complexity will never impact on these three socio-cognitive predictors of retirement behaviour. Rather, when texts contain explicit referrals to financial planning behaviour and explain how to

plan for retirement, the finding of relationships between message complexity and perceived self-efficacy becomes more likely.

The composite scale as developed in this study, is in some respects comparable to a readability formula, in this case specifically for retirement communication. Readability formulas have proven their efficiency in assessing the complexity of texts, but are also disputed (Duffy & Kabance, 1982; Jansen & Lentz, 2008) as instruments to simplify texts. Traditional readability formulas may suggest that editing a text is just a matter of cutting sentences and using short words. Critics of these reading ease formulas state there is a correlation between the measures in the composite scale and reading ease, but not per se a causal connection; it has even been suggested that rewriting texts with the traditional readability formulas in mind could make a text even harder to understand (Davison & Kantor, 1982). The scale developed in this study may contain elements however, that have a causal connection with reading ease. The use of simple words, active voice, short sentences, causal connectives and personal pronouns might be directly related to better understanding, the attitude towards retirement and - in the end - to desired retirement related behaviours. The idea of a specific set of textual characteristics that should be taken into account when writing retirement texts is supported by Hartley (2016), who states that readability measures can never be general, but should be related to specific targets or topics. Exploring the specific effects of the measures in the composite scale could be subject to further research.

We realize that it is difficult for pension funds to provide easy-to-read materials, because legislation forces the institutions to write about a wide variety of complex and abstract topics. The communication has to be transparent (this could be understood as detailed), correct (which is often explained as very nuanced) and balanced (which means that the benefits and risks must be described in an equivalent way) (Rijksoverheid, 2015). Regulation focuses mainly on the content of the material. As a result, pension providers might be reluctant to simplify texts, as this could mean the exclusion of vital information.

At the same time, the linguistic style must be geared towards the reader. Only then will individuals read the material, understand the messages and evaluate them. As most citizens lack basic knowledge on retirement (e.g., Pensioenfederatie, 2016; Wijzer in Geldzaken, 2016), writers of retirement

communication material should base writing decisions on low levels of (financial) literacy. Otherwise the content is correct, but the materials are aimed at a more sophisticated audience than it is reality. Omitting information can form a barrier, as what is most difficult to understand is that which is not mentioned (Jansen & Lentz, 2008). This is in line with our finding that complex wording, and leaving out connectives, affects behaviour – possibly due to lower levels of understanding. The words and expressions are often unexplained, implying that they should be understood by themselves.

Pension providers could evaluate their material with the measures in the composite scale in mind, but they could also conduct pilot-testing. Pre-readers without prior knowledge can help to uncover missing connections in the text, and unjustified assumptions with regard to basic knowledge.

This study is one of the first to measure the influence of text complexity on behaviour in a real-life situation. Most available studies focus on laboratory settings. Reading in a laboratory differs from reading in a 'normal' reading situation. Both contexts have advantages and disadvantages when measuring effects of text characteristics on processing (cf. Sanders & Noordman, 2000). We deliberately decided to conduct this research in a functional context, as retirement communication does not have the exclusive attention of the reader. Pension funds have to compete with many other parties. It is precisely the divided and selective attention of the average citizen that forces pension providers to create materials that also convey the message in a 'noisy', distracting environment. Measuring in a real-life situation however, also meant that we were not able to measure the real-time processing of the texts. The impact of the items in the composite scale that resulted from the analysis in Study II on attitude and understanding, could be investigated in more detail in an experimental environment using eye tracking (Van Silfhout, Evers-Vermeul & Sanders, 2015). The current study can be seen as a baseline for similar studies to be conducted in the future.

Future directions

This study is one of the first to provide concrete evidence that the complexity of retirement communication affects financial planning behaviour. Further research is necessary to better understand why the characteristics found impact financial planning behaviour and which other characteristics

also influence planning for retirement. It is also interesting to better understand why complex texts are positively related to perceived response efficacy, and negatively to financial planning behaviour. Further research should also investigate whether this finding indeed pertains to experiential processing of the texts. Research could furthermore focus on how proactively disseminated and passively disseminated material could be improved, in order to catch the attention of the reader, and be processed in the desired manner. In this study, we focused on the average level of complexity of all material used by pension providers in the Netherlands. A systematic analysis of differences between genres and of the impact of comprehensible language in other countries, with other pension systems, should be considered as well.

The current study shows the importance of simple and concrete language, with an active voice, clear connectives and few nominalisations, as it contributes to active retirement behaviour. This behaviour is desirable as it reduces the number of citizens that discover too late that their retirement income will be lower than expected or than is necessary. We do not know why some pension funds feel uncomfortable writing simple texts, whilst other funds already create easily readable texts and help citizens to prepare themselves for their financial future. Which factors hinder or stimulate the use of simple language? Further research could also be directed towards answering this question.

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Chapter 3

Check This! The Influence of Persuasive Message Strategies on Financial Planning for Retirement

This chapter is currently under review at *Financial Services Review* as van Hekken, A. Ernestus, M. & Das, E. Check This! The influence of message strategies on financial planning for retirement.

Abstract

This research investigated the role of communication in stimulating financial planning behaviour. The content of all communication material of 14 Dutch pension funds was analysed with regard to fear appeals, efficacy messages and instructions. The effects of these messages on financial planning for retirement were assessed in a multilevel research design. 2975 members of 14 pension funds participated in the study. Findings show that the use of instructions positively predicts financial planning for retirement, over and above predictors at individual level.

Introduction

Most individuals have no idea how much money they will actually need when they retire (Ekerdt, Hackney, Kosloski & DeViney, 2001). 47% of employees do not know if they are on track to achieve their desired retirement income (Aegon, 2013) and in e.g., the Netherlands, over 60% of citizens do not know whether their expected retirement income is sufficient to cover their expenses after retirement (van der Schors & Warnaar, 2015; Intomart Gfk, 2014). To put it briefly, individuals do not understand their pension situation and do not react to pension information in a rational way. We suppose that many individuals are 'not empowered'. When individuals demonstrate involvement and self-confidence in engaging with their financial planning for retirement, they are empowered. It is undesirable that individuals are not empowered with regard to planning for retirement: If they rarely or never check their accrued or expected retirement income, and never compare the accrual with a target income, the worries or optimism concerning the personal retirement situation are not based on facts, but on guesswork.

The Dutch government adopted the Pension Communication Act in 2015. The act requires, amongst other things, that pension funds communicate the content of the pension plan, the actual accrual, the forecast pension and events that may affect the retirement income. According to the explanatory memorandum to this act, the purpose of retirement communication is to inform participants on how much income they can expect and how they can check whether this is enough or not (Rijksoverheid, 2014, p. 1). This purpose is in line with our definition of empowered citizens. To the best of our knowledge, the effectiveness of retirement communication in activating and involving citizens in financial planning, has hardly been studied before. No study is known with respect to the content of retirement communication.

Does communication actually contribute to financial planning behaviour? And if so, what types of messages are effective? Do, for instance, persuasive messages impact behaviour? And does it matter whether the messages are actively disseminated or not? The objective of the present research was to provide empirical answers to these questions.

The research was executed in the Netherlands.

The pension system of the Netherlands is ranked as second best in the world (Mercer, 2017) and until recently, people could trust the system blindly. This has changed however. Gradually people accrue less retirement income (AFM, 2011, 2012). Economic developments, in combination with an increasing life expectancy, have led to a situation where every fifth citizen will receive less income than needed to pay the basic and necessary expenses, such as housing and grocery costs. (de Bresser & Knoef, 2015). In the Netherlands too, a realistic insight is desirable, because it enables people to manage their future financial situation in a conscious way and to make informed choices on whether to act or not. People who plan for retirement report greater satisfaction and higher wealth levels (Lusardi & Mitchell, 2007; Glass & Flynn, 2000; Moen, 1996). Hence, there is an increasing need for effective retirement communication, aimed at empowering citizens regarding their retirement situation.

Influencing financial planning for retirement: empirical findings

Empirical investigations on the actual communication strategies used by pension providers are scarce. Most studies focused on the effects of providing information. The vast majority of these empirical studies investigated the target behaviour: 'saving extra' or 'enrolment in a pension plan'.¹ The conclusion of many studies is that it is pointless informing participants of pension plans of their situation, because people do not (want to) understand it and do not (want to) react to pension information in a sensible way. As far as is known, all studies on the effectiveness of messages consider knowledge as the main predictor of behaviour, and communication as a means to convey sheer facts. No studies are known on the effectiveness of other message strategies, whereas these are actually interesting. Socio-cognitive models specify *beliefs* and *attitudes* as important predictors of behaviour and these predictors in turn, can be influenced by persuasive communication. Persuasion goes beyond mere information-based knowledge dissemination, by using different message strategies such as fear appeals, or attribute framing, to convince message receivers that they should follow

¹ E.g. Alessie, van Rooij & Lusardi, 2011; Bayer, Bernheim & Scholz, 2009; Bodie & Prast, 2012; DeVaney, Gorham, Bechman & Haldeman, 1995; Hershey, Jacobs-Lawson & Walsh, 2003; Lusardi & Mitchell, 2007b; Mandell & Klein, 2009; Ntalianis & Wise, 2011; Prast, Teppa & Smits, 2012.

message recommendations (e.g., Erwin, 2001; Stiff & Mongeau, 2003).

There is extensive literature on the effectiveness of persuasive messages targeting health behaviour change using socio-cognitive models. Nevertheless, there is only limited research that uses these models to predict or influence retirement related behaviours. An example of a study based on a socio-cognitive model is the research by Croy, Gerrans and Speelman (2010), who used the theory of planned behaviour (Ajzen, 1991) to show that the perception of planning importance (a behavioural belief) is a strong antecedent of planning preparedness as well as a direct antecedent of perceived behavioural control. Beshears, Choi, Laibson, Madrian and Milkman (2015) found in an experimental study, that information about peers (aimed at influencing normative beliefs) had a negative effect. The experimental group received information on a retirement saving program and the actual fraction of co-workers that participated in this program, whereas the control group only received information on the program. Contrary to what the researchers expected, information about peers led low-saving individuals to shift away from the peer norm and decrease their savings relative to the group that did not receive peer information.

To our knowledge, no studies investigated the effectiveness of messages that targeted control beliefs (perceived efficacy), which is the third component of behaviour in the theory of planned behaviour. There are studies however, that point to perceived efficacy as a strong predictor of savings behaviour (Davis & Hustvedt, 2012; Magendans, 2014; Perry & Morris, 2005). Related to these findings, an Australian study showed that employees who felt ill-informed, reported lower levels of confidence regarding saving decisions, i.e., lower levels of self-efficacy (Clark-Murphy & Gerrans, 2001).

As fear appeals are most typical for retirement communication, we also searched for studies that examined the effectiveness of these fear appeals in retirement communication. Interestingly, a study exists that shows that saving behaviour is dependent both on worries about the future and on planning drive. The higher the planning drive, the larger the (negative) effect of worries about the future. Low motivated individuals hardly planned or saved, regardless of the level of worry (Neukam & Hershey, 2003). The authors suggest that individuals with a low planning or saving motivation, can be activated by communicating clear tasks and messages aimed at goal setting. Highly motivated individuals could benefit from communication

that allays fears. A more recent experimental study suggests that communicating (negative) fear appeals leads to a higher intention to save for retirement, than communicating the (positive) expected result of saving for retirement. The effect seems to depend on age and descriptive style: in the case of younger individuals, abstract descriptions of the recommended behaviour were particularly effective, whereas older individuals benefitted more from concrete descriptions, such as specifying the steps to take (Montgomery, Szykman & Agnew, 2011).

Communication consists not only in content, but also in the way it is distributed. Messages can be distributed actively or passively. Passive distribution means that the messages are available for the target audience, but conveying the message happens on initiative of the receiver and is uncontrolled. Active distribution however, also labelled as 'active dissemination', means that the sender actively brings the messages to the attention of the receiver in a controlled manner. Previous studies on dissemination strategies in general, show that passive distribution of messages is not as effective as active dissemination strategies (e.g., McCormack et al., 2013). For instance, new insights are more likely to be used when the information is actively disseminated to the target audience, instead of merely being put at its disposal via a brochure on a website for example.

Research questions and hypotheses

The present research set out (1) to explore and quantify the occurrence of message strategies in the complete spectrum of communication material used by pension providers in the Netherlands, and (2) to assess the impact of key message strategies on financial planning behaviour. Financial planning behaviour was defined as a) checking the accrual of retirement income and b) checking the adequacy of the actual accrual or the pension to be accrued. As different researchers found a positive effect of self-efficacy beliefs on saving for retirement (Davis & Hustvedt, 2012; Magendans, 2014; Perry & Morris, 2005), we expected that messages aimed at changing self-efficacy beliefs, i.e., persuading messages, would positively predict financial planning behaviour. Given the mixed findings regarding fear appeals, we explored the type of impact these messages had, without having put forth a hypothesis.

Study I

In Study I, individual predictors of financial planning behaviour were assessed. For this purpose, we used Protection Motivation Theory (PMT) as a conceptual framework to predict actual (self-reported) financial planning behaviour.

Method Study I

Participants

Individuals participating in an employer-sponsored plan and accruing pension income out of the 14 pension providers mentioned earlier, were invited to complete an online survey. We invited respondents that participated in the research in Chapter 2 and agreed to be invited again for a second study a year later. In order to persuade the less 'pension minded' respondents to participate, we again offered an incentive (the chance to win a week in a holiday home) to those who completed the survey. 2975 respondents (response rate 49%) started the survey, and 2675 finished it. Age ranged from 20 to 64 years ($M = 50.9$, $SD = 10.6$); 69% was male. The number of respondents differed per fund (from 8 to 804).

Measures

The target behaviour of interest was: checking the adequacy of the accrued pension or the expected pension: 'is it expected to be enough?' (*Financial planning behaviour*). We chose this binary measure (yes/no) at individual level because the check itself requires rather complicated behaviour: a person has to compare the expected income with a benchmark. The benchmark could be the current salary or (for instance) the estimated expenditure after retirement. We asked whether the respondent assessed the adequacy of the accrual in the 12 months prior to the survey. The distribution for the *Financial planning behaviour* was: 43% indicating no activity and 57% indicating one check or more the previous 12 months.

The possible predictors we investigated were psychological and demographic factors. To assess whether psychological factors predict financial planning behaviour, we used the components of Protection Motivation Theory related to the perception of threat and related to coping with the

threat (Rogers, 1975, 1983).

Perceived threat in Protection Motivation Theory comprises perceived *severity* of the threat ('how serious is situation X for you should it become reality?') and perceived *susceptibility* to the threat ('how likely do you think it is that situation X actually happens to you?'). An example survey question to measure perceived severity was 'How problematic would it be if your income after retirement is not sufficient to cover your desired lifestyle?'.

Respondents were asked to indicate on a 100-point bipolar scale the estimated severity of not receiving enough retirement income to a) pay the basic needs and b) to afford the desired lifestyle (0 = *not problematic at all*, 100 = *very problematic*). The results were used to create the composite scale '*Severity*', with the remark that Cronbach's alpha is moderate to low ($\alpha = .65$, $M = 79.84$, $SD = 15.08$). The second aspect of perceived threat was measured by asking the respondents to estimate the probability that the retirement income would not be enough to a) pay the basic needs and b) afford the desired lifestyle (0 = *certainly not going to happen*, 100 = *will certainly happen*). The results were combined in the scale '*Susceptibility*' ($\alpha = .83$, $M = 46.82$, $SD = 23.47$). Note that the questions aimed to assess the perceived threat and not the actual threat.

The second two psychological predictors pertained to efficacy: the degree to which a person thinks he can perform the desired or recommended behaviour (self-efficacy) and the expected benefit of the behaviour (response efficacy). In order to assess self-efficacy beliefs, respondents were asked to rate different levels of tasks on a 100-point bipolar scale (Bandura, 2006). Respondents were provided with preliminary instructions in order to establish the appropriate mind-set. They were asked to judge their actual capabilities to execute tasks *now* instead of their expected capabilities in the future. The respondents had to estimate the difficulty level of seven tasks (0 = *very difficult*, 100 = *very easy*) and to indicate the level of confidence they had of successfully accomplishing the seven task tasks (0 = *no confidence at all*, 100 = *100% confident I can*). Factor analysis with varimax rotation yielded that the fourteen self-efficacy items loaded consistently on one factor. All items were combined in the scale '*Self-efficacy*' (Eigenvalue = 6.8, $\alpha = .92$, $M = 50.24$ $SD = 17.48$).

Perceived '*Response efficacy*' of financial planning behaviour was assessed with four items. A sample item was 'I will profit from checking now and then whether I accrue enough pension'. All items also employed a 100-

point response format (0 = *fully disagree*, 100 = *fully agree*). Factor analysis with varimax rotation yielded that the four response efficacy items loaded consistently on one factor (Eigenvalue = 2.8, $\alpha = .85$, $M = 64.67$, $SD = 19.72$). See Table 3.1 for the descriptive statistics of the combined scales.

Table 3.1 Descriptive statistics of combined scales

Variables	N	Mean	SD	Min.	Max.
Severity (0-100)	2.869	79.83	15.08	1	100
Susceptibility (0-100)	2.869	46.82	23.47	0	100
Self-efficacy (0-100)	2.831	50.24	17.48	0	100
Response efficacy (0-100)	2.779	64.67	19.72	0	100

Respondents were furthermore asked to report their age, level of education, level of income, gender, marital status and type of industry they work in (financial/non-financial). Results from the limited number of studies on the influence of demographic variables showed that age (Ekerdt et al., 2000; Petkoska & Earl, 2009), being male (Jacobs-Lawson, Hershey & Neukam, 2004), income (Hastings, Mitchell & Chyn, 2010; Noone, O'loughlin & Kendig, 2012) and education (Glass & Flynn, 2000) are positively related to getting personal insight in the retirement situation.²

We conducted linear regression analysis, using the lme4 package available from R Statistics. Because the dependent variable was binomial, we used a generalized linear model, with the binomial link function.

For a complete overview of the survey questions, we refer to Appendix A.

² Many other studies investigated the relation between demographics and choices with regard to retirement. (for example Glass and Kilpatrick, 1998; Sunden and Surette, 1998; Bernasek and Shwiff, 2001).

Results Study I

Preliminary analyses

Prior to analysis, all data distributions were checked for deviations from normality, abnormal skew and irregular kurtosis. All measures were distributed normally, although most of the distributions had a high kurtosis, probably due to the fact that more respondents chose the middle option (meaning 'neither agree, nor disagree') than would be expected in a perfectly normal distribution. The results for the estimated severity of receiving not enough pension were somewhat skewed, most likely because the most left option ('*not problematic at all*') was not a realistic answer.

Baseline model

We specified a baseline model with significant predictors of financial planning behaviour. A regression analysis was performed, entering the psychological and demographic variables of financial planning behaviour into the equation. 'Age', 'Self-Efficacy' and 'Response efficacy' were significant predictors (model fit AIC: 2810.4). Besides age, other demographic variables (gender, level of education, income, marital status) did not add to the baseline model. The baseline model consisted therefore of three predictors. See Table 3.2 for the baseline model.

Table 3.2 Baseline model for financial planning behaviour with three scaled predictors

Fixed effects	Estimate	Std. Error	z value	P r(> z)
Intercept	.45	.10	4.43	<.001
Age	.97	.06	17.63	<.001
Self-efficacy	.75	.06	13.44	<.001
Response efficacy	.22	.05	4.41	<.001

We did not find any significant random effects (differences in intercepts or slopes of variables between pension providers).

Conclusion Study I

This research examined demographic and socio-cognitive predictors of financial planning behaviour. Building on Protection Motivation Theory, it was expected that perceived threat and perceived efficacy would play a role in predicting financial planning behaviour.

Efficacy beliefs indeed predicted financial planning for retirement. This held particularly true for perceived self-efficacy with regard to financial planning behaviour, that indicates the extent to which an individual believes he can successfully plan for retirement. Perceived susceptibility and severity were not significant predictors in this study. Findings suggest that financial planning for retirement is not only a result of knowledge and lack of willpower, but also for an important part, a result of beliefs individuals hold about planning behaviour, most notably the perceived difficulty of financial planning for retirement.

Study II

Previous research has documented the effectiveness of different forms of factual information on saving and planning behaviour, but has not examined persuasive retirement message strategies. In Study II, a quantitative content analysis was performed on a Dutch corpus of pension messages. The researchers set out to explore and quantify the occurrence of specific kinds of message strategies.

Method Study II

Pension funds

Fourteen Dutch pension funds made available the communication material used (sent or made available to participants) in the year prior to the online survey (April 2014 – April 2015), reported in Study I. The 14 pension funds differed in size (700 – 1.200.000 participants), type of fund (company funds, industry pension funds and occupational pension funds), type of plan (defined benefit plans and a combination of defined benefit and defined contribution plans).

Material

The corpus contained all communication material, except individual letters, custom written e-mails and telephone calls. In total, we coded 310 different materials, grouped into 17 clusters. Each cluster contained all materials of a specific means of communication, e.g., 'brochures' or 'e-mails'. Some clusters were passively disseminated, meaning the materials and the messages in the materials were not actively disseminated, but made available for those interested. An example is the cluster 'brochures'. Other clusters contained material with messages that were actively disseminated to (a large part of) the participants, for example 'emails'. Per pension fund was assessed whether the material in a cluster were disseminated pro-actively or passively. If a cluster contained material that were distributed passively and pro-actively, we coded the cluster as 'pro-active'. See Table 3.3 for the descriptive statistics of the communication material.

Table 3.3 Descriptive statistics of communication material

Cluster	N funds ⁴	N materials ⁵	Range ⁶
Start letter ¹	13	14	min = 0, max = 2
Explanation of Uniform Pension Statement ²	13	15	min = 0, max = 2
Letters	9	26	min = 0, max = 5
E-mails	5	50	min = 0, max = 16
Digital newsletters	7	25	min = 0, max = 7
Printed newsletters	7	14	min = 0, max = 3
Cards	4	10	min = 0, max = 3
Brochures	10	50	min = 0, max = 9
Posters and leaflets	2	18	min = 0, max = 10
Banners	4	14	min = 0, max = 11
PR; articles in external media	2	2	min = 0, max = 1
Handouts of presentations	3	7	min = 0, max = 3
Online tools	7	10	min = 0, max = 2
Animations/movies	6	15	min = 0, max = 7
Web texts level 1 ³	14	14	min = 1, max = 1

Cluster	N funds ⁴	N materials ⁵	Range ⁶
Web texts level 2	13	13	min = 0, max = 1
Web texts level 3	13	13	min = 0, max = 1
Total		31 ⁰	

¹ A start letter describes the contents of the pension scheme. One fund has no start letter, as no new participants can start accrual via this fund. One fund manages two pension schemes and has two start letters.

² The explanation of the Uniform Pension Statement covers the items and amounts in the annual statement.

³ Web texts are split in three groups: Level 1 texts are texts on the homepage. Level 2 texts are linked to from the homepage. Level 3 texts regard all other texts on the website.

⁴ The number of funds using materials in the cluster.

⁵ Numbers of the specific materials in this cluster, used by all pension funds together.

⁶ Range of materials per cluster used by a provider.

Coding scheme

Using a coding scheme, we assessed per pension fund, which types of messages were communicated in each cluster. Preliminary analysis of the materials showed that three types of messages were used alongside the mandatory information on the pension plan, the accrual and the fund: fear appeals, efficacy messages and instructions. We developed a coding scheme with the criteria for fear appeals, efficacy messages and instructions. Developing the coding scheme was an iterative process that enabled us to refine the criteria and to formulate precise descriptions of the different messages. The items in the coding scheme are described more in detail hereafter.

All materials were coded per cluster, per pension fund. Within a cluster, we coded the presence of a message: did one or more materials in the cluster contain the specific message? Coding was binomial, we coded per cluster a 'yes' (1) or a 'no' (0). When a pension fund did not use a cluster of materials, we noted a 'o' (cluster contained no messages).

To ensure objective coding of the materials, 52 items (17% of the materials) were independently coded by a second rater. After pilot coding, three criteria were refined and another 46 items (15% of the materials) were double coded. An evaluation of inter-rater agreement on each item, was performed using the Kappa statistic, in order to determine the reproducibility of the method. For a complete overview of the coding guidelines, we refer

to Appendix C.

Fear Appeals

We coded messages that explicitly referred to the possibility the retirement income will be too low or lower than expected, due to the accrual not being enough or to possible future events negatively affecting the retirement income, e.g., negative returns on the investments. Intercoding reliability for coding this type of messages was .86 for Cohen's κ (95% CI, 0.80-0.91). The number of clusters containing fear appeals were counted per pension fund (*Threat*), and subsequently divided up into the number of clusters with actively disseminated messages (*Threat Pro-act*) and those with passively disseminated messages (*Threat Pas*).

Efficacy messages

Analyses of the communication material revealed that it contained messages aimed at increasing perceived self-efficacy in the form of encouragements and role models. Encouraging messages could be aimed at eliciting a positive self-image ("You can do it.") or a positive image of active behaviour (e.g., "It is not difficult, we will help you!"). Role model messages were for instance testimonials, experiences or quotes with names, illustrating, explaining or recommending financial planning behaviour. Both strategies to increase self-efficacy (role models and encouragements) are expected to motivate participants as described by Bandura (1977). Efficacy messages (Cohen's $\kappa = .70$) were counted in all clusters (*Efficacy*) and split up into clusters with actively disseminated messages (*Efficacy Pro-act*) and passively disseminated messages (*Efficacy Pas*).

Instructions

The third category concerned messages that simply describe the recommended behaviour (Cohen's $\kappa = .78$). These messages included a reference to, or an explanation of how to plan for retirement. As previously described, we focused on (a) the accrual check, i.e., checking the accrued pension rights/capital now or the amount to be accrued in the future and (b) the adequacy check: finding out whether the accrued pension rights are enough / in balance with expenses (e.g., 'check whether your accrual is enough for you!'). An example of an instructive message is 'Check the

amount of retirement income you have accrued. Look at your pension statement'. The number of clusters that contained one or more instructions were counted per pension provider (*'Instruction'*) and subdivided into clusters with actively disseminated messages (*'Instruction Pro-act'*) and passively disseminated messages (*'Instruction Pas'*).

Results Study II

Descriptive statistics of the coded messages are shown in Tables 3.4 and 3.5. Table 3.4 shows the number of funds with clusters with one or more coded messages and the average number of clusters with coded messages per funds. Table 3.5 shows a breakdown by type of message.

Fear appeals, and instructions were more often communicated than efficacy messages. Analyses revealed that there were more 'passive' materials with fear appeals, efficacy messages and instructions than 'pro-active' materials (i.e., materials directly sent to the target audience) with these messages.

The overall strategies differed largely per fund: some funds hardly used any message strategy (one fund only used fear appeals in one cluster), whilst others used all three types of messages in almost all clusters. Funds that did not communicate any of the coded messages, informed the participants mainly about the characteristics of the pension plan (type of plan, accrual rate, contribution threshold, et cetera), the accrual and the pension fund (board, governance structure, elections, et cetera).

Table 3.4 Overall descriptive statistics of coded messages

Message	N ¹	Mean ²	SD	Min. ³	Max. ³
Clusters with messages	14	12.50	9.36	1	31
Clusters with pro-actively disseminated messages	12	4.21	2.89	0	9
Clusters with passively disseminated messages	13	8.29	6.85	0	23

¹ The number of pension funds that uses one or more of the coded messages.

- ² The mean number of clusters with coded messages per fund. When a cluster contained multiple messages, e.g., 'threat' and 'efficacy', this cluster counts as '2'.
- ³ Min. and Max. refer to the minimum and maximum amount of coded messages in all clusters per fund

Table 3.5 Descriptive statistics of coded messages per type of message at cluster level

Message	N ¹	Mean ²	SD	Min. ³	Max. ³
Threat	14	5.57	3.27	1	11
Threat Pro-act	12	1.64	1.01	0	3
Threat Pas	13	3.93	2.50	0	8
Efficacy	10	2.79	3.02	0	9
Efficacy Pro-act	7	0.97	0.79	0	3
Efficacy Pas	9	2.00	2.29	0	7
Instruction	13	5.64	3.52	0	12
Instruction Pro-act	11	1.79	1.19	0	3
Instruction Pas	10	2.26	2.44	0	8

The descriptive statistics are shown per type of message and detailed by pro-active dissemination and passive dissemination.

¹ The number of pension funds that used the message.

² The mean number of clusters with the message per pension fund.

³ The minimum and maximum number of clusters containing the message at pension fund level.

Discussion Study II

This study quantified key message strategies in pension communication. Analysis of the materials revealed that pension funds use fear appeals, efficacy messages and instructions on top of information on the plan and the fund.

All funds, except one, instructed participants to get insight into their personal situation.

Efficacy messages aimed at increasing self-efficacy were used by 10 of the 14 participating funds. This message strategy is supposed to contribute

to the desired behaviour as efficacy expectations can be influenced with specific messages like role models and encouragements (Bandura, 1977). Efficacy expectations in turn predict behaviour (Bandura & Adams, 1977). The number of clusters used to communicate the efficacy messages differed largely per pension fund. Some funds did not communicate efficacy messages at all, and others communicated efficacy messages via a (sometimes wide) variety of materials. This difference points to a deliberate strategy of the latter. While coding, it emerged that a specific type of efficacy messages, namely messages dealing with perceived response efficacy, were virtually absent. This type of message is aimed at increasing the perceived use of the desired behaviour. It answers the question 'what's in it for me?'.

We found that almost every pension fund in the study used fear appeals, as the funds informed about risks that might affect the amount of retirement income. Although we did not code the strength of the fear appeals, it was noticed that the fear appeals were mildly formulated, even when the consequence of an event was serious for an individual.

Overall, we conclude that retirement communication is heavily reliant on the 'knowledge is power' premise. This premise may not hold for topics that do not prompt spontaneous interest of individuals (Petty & Cacioppo, 1986). Individuals may be unwilling and/or unable to process the (huge amounts of) information. Funds may think that a more steering and convincing style could be interpreted as 'interference' with the personal situation of participants. This could be the reason for the objective and somewhat distant tone of voice. The most extreme form of non-steering communication was leaving out the instructions regarding the recommended behaviour at all. Participants of funds that did not communicate any instruction at all, received facts about the plan, risks and uncertainties, but had to find out by themselves what to do with this information. Drawing a comparison with health communication, it is like informing on the risks of an unhealthy circulation system or blood pressure value, without explaining how to assess whether your values are healthy and what to do when your blood pressure is too high or too low.

Study III

A handful of experimental studies have examined the effectiveness of specific messages on saving for retirement, but not much is known about the relationship between message strategies used by pension funds, and financial planning behaviour of their participants: checking the accrual and checking the adequacy of the accrual. In Study III, a multilevel analysis was performed, in which we used the results of Study I (the predictors of financial planning behaviour at individual level) and the content analysis (Study II) at message/group level, to gain insight into the effectiveness of message strategies on financial planning behaviour, whilst taking individual differences affecting this behaviour into account.

Method Study III

Hierarchical linear regression analysis

As we were interested in the effects of different message strategies on financial planning behaviour, we used a multilevel design. Hierarchical linear regression analysis enables to analyse the effects of different variables simultaneously on a dependent variable, while taking into account differences between respondents and between pension funds (e.g., Hox, 2010).

We conducted hierarchical linear regression analysis, using the lme4 package available from R Statistics. Because the dependent variable was binomial, we used a generalized linear model, with the binomial link function.

The inter-individual sources of variance, age and efficacy beliefs, were modelled at level 1 of the hierarchical linear effects analyses, whereas the presence of specific messages in the communication materials, such as fear appeals and efficacy messages, were modelled at level 2, the group level. We used the model we constructed in Study I as a baseline model with variables at level 1. The results of the content analysis in Study II were used as input for the variables at level 2.

Results Study III

To test the hypotheses concerning the effectiveness of group level messages, we ran several hierarchical linear models, in which we added the number of clusters with one specific message type as a level 2 predictor to the baseline model. Six models were thus run separately. When a level 2 predictor was a significant predictor, we compared the new model with the baseline model. Note that the model fit (AIC) of the baseline model was 2810.4.

Hereafter the results of the Chi square tests are reported in the text. Note that all variables were standardized; we converted the results to a scale with an average of 0 and standard deviation of 1.

First, we tested the effectiveness of using messages in general. We divided the pension funds in two groups: the seven least active funds ('0'), and the seven most active funds ('1'), communicating most often one or more of the coded messages. Adding 'using messages in general' to the baseline model as a level 2 variable, improved the model fit substantially (AIC = 2801.8, $\chi^2(1) = 10.59$, $p = .001$).

The next step was to test whether the effectiveness of the messages in pro-active clusters differs from messages in passive clusters. All clusters with a specific type of message (threat, efficacy or instruction) were counted. The scores were added for pro-active clusters and passive clusters (see Table 3.4 for overall statistics) and added as a level 2 component to the baseline model. Results showed that messages in passive clusters did not predict '*Financial planning behaviour*' ($p = .28$), whilst messages in pro-active clusters improved the baseline model substantially (AIC = 2804.5, $\chi^2(1) = 7.87$, $p = .005$).

The final question was what type of pro-active message was most effective. Results showed that instructions in pro-active materials ('*Instructions Pro-act*') (AIC = 2802.2, $\chi^2(1) = 10.24$, $p = .001$), and fear appeals in pro-active materials ('*Threat Pro-act*') (AIC = 2806.0, $\chi^2(1) = 6.44$, $p = .01$) positively affected '*Financial planning behaviour*' over and above the three control predictors. Efficacy messages in pro-active materials ('*Efficacy Pro-act*') appeared to be a significant predictor, but only marginally improved the baseline model (AIC = 2808.9, $\chi^2(1) = 3.47$, $p = .06$).

Table 3.6 shows the effectiveness of the coded message strategies in pro-

active and passive clusters. The results for level 1 predictors in the six models were almost identical and for that reason left out of the table. The AIC is reported in the table when the message strategy was a significant predictor in the new model.

Table 3.6 Results of hierarchical linear model analysis

Level 2 message strategy	B	SE	z value	P r(> z)	AIC ¹
Threat Pas	.07	.08	.80	.42	
Threat Pro-act	.24	.08	3.07	.002	2806.0
Efficacy Pas	.10	.10	1.05	.29	
Efficacy Pro-act	.16	.08	1.96	.05	2808.9
Instruction Pas	.12	.10	1.20	.23	
Instruction Pro-act	.26	.06	4.36	<.001	2802.2

¹ AIC of the baseline model was 2810.4

The use of fear appeals and instructive messages in pro-active materials were strongly correlated ($r = .91$). For this reason, we could not add these two variables to the baseline model together. Adding the variables separately, revealed that the AIC of baseline model enriched with the variable instructive messages was 3.8 points lower than the AIC of the baseline model enriched with the variable fear appeals at level 2. These results suggest that the effect of instructive messages was stronger than the effect of fear appeals. Possibly, fear appeals have no effect at all; the significant p -value could be the result of the strong correlation of both variables. This presumption is supported by two additional analyses, in which we orthogonalized the two variables. First, we created a new variable for the use of instructions in pro-active clusters. In this new variable, the part of the old variable that correlated with the use of fear appeals in pro-active clusters was removed. Adding both variables (*NEW Instruction Pro-Act* and *Threat Pro-act*) together to the baseline model revealed that both variables were predictive. The same procedure for fear appeals in pro-active materials revealed that the new threat variable lost all predictive power.

Note that *Self-Efficacy* and *Response efficacy* were not influenced by any

type of messages at level 2 and could therefore be used as independent variables at individual level. In addition, *Susceptibility* and *Severity* were not predicted by any of the key messages. We checked this by performing hierarchical linear model analyses, with the self-reported individual characteristics (e.g., level of *Self-Efficacy*) as dependent variables and entering the key message strategies as level 2 predictor to the model. Both AIC and Anova revealed that key messages did not add any predictive power to the baseline models that predict each individual predictor. AIC values of the models with messages strategies at level 2 were marginally lower (<2) or even higher than AIC values of the base line model. Chi square tests for comparison of the message strategy models with the baseline model, reported no *p*-values smaller than .25.

Discussion Study III

This study assessed which specific message strategies in the communication material used by pension providers most strongly related to financial planning behaviour. Financial planning behaviour was defined as checking the adequacy of the accrued income: is it enough? It was expected that efficacy messages in particular, aimed at increasing perceived self-efficacy, would activate citizens to plan for retirement. Contrary to expectations, instructive messages and fear appeals in pro-active materials were related to individuals' behaviour, of which 'instructive messages' was the strongest predictor. The instructive messages had to contain a reference to financial planning behaviour. An example of an instructive message was 'Use our planner to check whether your pension is enough for you'. Efficacy messages appeared to be a significant predictor, but only marginally improved the baseline model.

General Discussion

This research examined the effects of message strategies in retirement communication on financial planning behaviour. We focused on a specific phase in the retirement planning process: getting insight into the personal retirement situation. We measured specifically the effectiveness of message

strategies aimed at checking the adequacy of the expected retirement income. In order to measure these effects, we first quantified key message strategies in the pension communication of 14 pension providers in the Netherlands. We coded all communication material that was actively and passively disseminated over the year prior to the survey amongst participants of the 14 funds. Next to the mandatory information on the pension plan and the pension fund, we found three types of messages in the materials: fear appeals, efficacy messages (aimed at motivating participants) and instructions with regard to financial planning behaviour. The message strategies were substantially different: some funds used hardly any message strategy, whilst others used all three types of messages in almost all materials. We found that fear appeals and instructions were used most frequently.

We then analysed the effects of using these three message types on financial planning behaviour. For this purpose, we constructed hierarchical models with predictors of financial planning behaviour at individual level (i.e., age, perceived self-efficacy and perceived response efficacy) nested in data regarding the messages at pension fund level.

Communication strategies currently focus on conveying knowledge on the pension plan and the risks that may affect the amount of retirement income. This study shows that pension providers should move beyond mere information and include clear instructions regarding the desired behaviour. Participants of pension plans might be best activated by simple 'commands' that explicitly explain how the desired behaviour can be performed. Fear appeals, warning for the possibility that the accrual could be too low or lower than expected, may also stimulate individuals to plan for retirement, provided that these are combined with instructions. Tentatively, efficacy messages could influence behaviour.

It is important to note that the findings show the effectiveness of strategies used by the participating providers, not of strategies per se. We coded only texts that were in use and did not create new texts to test. We chose deliberately for a descriptive study and not an experiment, as we were interested in the effects of message strategies in a real-life situation, where the messages on retirement have to 'compete' with other (often more attractive) topics. This method provided the insight that actively disseminated messages are effective; the presence of messages in passively disseminated material did not predict financial planning for retirement, even

though the number of messages in passively disseminated materials was much larger. Passive messages could be seen as ‘sleeping’, waiting for a participant to find them. As a majority of the participants is not actively looking for information, many passive messages are not discovered.

This research can be seen as a baseline for similar future studies when communication on retirement is further developed and hopefully insights from other domains are applied in practice by the pension providers. Instructions on financial planning behaviour could be presented in a powerful and catchy way, communicated as a clear single message. The use of calls to action (it’s time to check your pension’) is preferred over a suggestion with qualifiers that decrease the persuasive quality of a message (‘if you want to, you can ...’).

The fact that efficacy messages, aimed at increasing self-efficacy, were not significantly related to more active behaviour can be interpreted in two ways. One explanation is that using efficacy messages is apparently not the most appropriate strategy to empower individuals. Another explanation is that persuasion via efficacy messages is effective, but the messages are not strong or explicit enough. Although not coded, we noticed that role models in the corpus were mostly peers who showed ‘perfect’ behaviour, but the use of perfect role models may even increase the gap between active and non-active participants (Beshears et al., 2015). Realistic role models, confessing that they were inexperienced or uncertain about performing the behaviour but then tried it anyway, may lead to better results (Atkin, 1994; Slater, 1999). After presenting a recognizable situation, these role models could demonstrate the behaviour step by step. Regarding the use of persuasive messages, retirement communication may benefit from learnings in other domains, like health communication, where the use of advanced persuasive messages is common and frequently tested (e.g., Backer, Rogers & Sopory, 1992; Maibach & Parrott, 1995).

Likewise, we want to note that fear appeals were mostly formulated in a ‘dry’ and technical way. Although we did not code the intensity of the fear appeals, we noticed that really ‘fearful’ threats were not present in the material. The effect of fear appeals may change when they are presented in a more penetrating manner, for instance, by presenting them more prominently and in more direct and persuasive terms. The effect - positive or negative - of more fearful threats, with and without clear instructions, could be subject of further research as instructions and fear appeals were

used together by most funds.

Societal implications

Pension providers could reconsider their communication strategy and use insights from this study to activate participants, and help reduce the number of citizens that will face an unpleasant surprise at retirement date. Results from this study show that a pension provider can reach their participants with actively disseminated instructions and 'lead' participants with these instructions to information or tools that help to plan for retirement. The importance of financial planning behaviour is increasing, due to the growth of the risk of a lower than expected income. (OECD, 2014) This also applies to countries with a mandatory and 'high quality' pension system (AFM, 2012). Checking the adequacy of the accrual enables citizens to gain a realistic insight and to make considered choices (when necessary) at various moments during the accrual period.

It was remarkable that we did not find messages in the communication material that explained or underlined the use of gaining insight in the expected financial situation after retirement. A reason for not addressing the expected benefit could be that just a check is not enough to improve the personal situation. Nevertheless, a pension fund may explain or underline the use of checking the accrual and the expected adequacy of the accrual now and then, even if this behaviour does not improve the financial situation directly. The insight itself and the possibility of taking action in time is valuable and socially desirable.

Another implication of the finding that message strategy matters, concerns legislation on retirement communication. Legislation should not only focus on information requirements, but also on persuasion and behaviour change. It could be extended to include clear calls to action and instructions. This applies for example to the Dutch Pension Communication Act, which entered into force on 1 July 2015. Although the explanatory memorandum to this act states that retirement communication should enable participants to check the adequacy of their accrual, the law only spells out information requirements. Citizens do not always know whether information on the consequences of an event are merely a threat (latent or manifest) or a materialized risk. Should participants know that a risk has been materialized (e.g., 'my pension is not indexed'), they can hardly estimate the effect of that risk upon their future financial situation (AFM, 2011;

Visser, Oosterveld & Kloosterboer, 2012). Planning for retirement on a regular basis provides insight into the long-term effects of such events. Results of this study show that clear instructions stimulate citizens to gain a picture of these long-term effects.

Future directions

There is much evidence to prove that the retirement message strategy can affect whether a person plans for retirement. Further research is necessary to better understand what kinds of messages activate participants. The effectiveness of fear appeals in combination with instructions and/or motivating messages could also be examined more in depth. It is furthermore interesting to research the effectiveness of new forms of communication: e.g., animations, vlogs, apps and interactive online tools that guide and help people to prepare for retirement. In this study, we focused on the explicit messages in retirement communication. Analysis of the effectiveness of indirect messages and subtle hints to financial planning behaviour should be considered as well.

This research agenda should be approached with urgency. A well-balanced retirement communication strategy is important to reduce the number of citizens that discover (too) late that their retirement income will be lower than expected or necessary. Instructions in material that is actively disseminated activate citizens to plan for retirement and help to empower citizens to manage their future financial situation.

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Chapter 4

Getting the Picture: a Visual Metaphor Increases the Effectiveness of Retirement Communication

This chapter is currently under review at *Futures* as van Hekken, A. & Das, E. Getting the picture: a visual metaphor increases the effectiveness of retirement communication.

Abstract

Citizens who accrue pension via defined benefit systems, do not always have a correct idea of how the concept of retirement accrual works. Basic understanding of the pension system is desirable as incorrect conceptions affect the attitude towards retirement, and retirement behaviour. Visuals, specifically visual metaphors, help to understand abstract concepts. In this study, we tested whether information on pension accrual, with a visual expressing a navigation metaphor, better communicates the basics of pension accrual, compared to information with a simple visual or a plain text version. Sixteen pension funds and 5449 respondents participated in the study. Results show that the navigation metaphor conveyed the best the concept that pension gradually grows, and that the expected amount has not yet been granted. Communicating these facts mediated metaphor effects on the attitude towards retirement and information on the accrual, as well as self-efficacy with regard to checking the adequacy of the accrual. Findings suggest that the navigation metaphor functions as an organising principle that may increase the effectiveness of retirement communication.

Introduction

Citizens who accrue pension via defined benefit systems, do not always have a correct idea of how the accrual of retirement works. Basic understanding of the pension system is desirable as incorrect conceptions affect the attitude towards retirement and retirement behaviour (Griffin, Loe & Hesketh, 2012, Visser, Oosterveld & Kloosterboer, 2012). It is important to check the adequacy of the accrual every now and then because pension providers cannot guarantee a balance between future expenditures and income. When citizens have an incorrect view of the pension system, this can be defined as a mental model problem. Mental models are based on a small set of fundamental assumptions that guide our thoughts and actions (Byrne & Johnson-Laird, 2009). A mental model is typically believed to be true, although the assumptions behind the model can be false (Byrne, 2007).

A metaphor can be useful to reframe the mental model that is applied to retirement (cf. Doyle & Ford, 1998). Especially visual metaphors are a powerful instrument to explain abstract concepts (Cornelissen, Holt & Zundel, 2011; Forceville, 2008; Jaspert, Van de Velde, Brône, Feyaerts & Geeraerts, 2011) and change mental models. Metaphors can reframe the perception of an object, by adding new meaning, features or views, which help to understand complex, abstract topics and to make sense of the information (Lakoff & Johnson, 1980; Schön, 1993). Previous research showed for example that metaphors help to change the way people think about electricity (Gentner & Gentner, 1983). Specifically, a metaphor of flowing water through pipes increased understanding of batteries, whilst a metaphor of moving crowds resulted in better understanding of the concept of resistance. The researchers concluded that the associations with the source domain (water, crowds) truly were reflected in the target domain (electricity).

In this research we investigated whether a visual navigation metaphor can help to increase public understanding of and reasoning about the accrual of pension. The experiment reported in this paper tested which form communicated best the basics of retirement accrual: information about the accrual of retirement income with a visual metaphor, versus information without a metaphor. We also investigated whether (better) communicating the basics impacts the attitude towards retirement in general and perceived self-efficacy towards checking the adequacy of the accrual.

The potential of metaphors

Metaphors map knowledge or feelings about one domain (the source) to another domain (the target) (Lakoff & Johnson, 1980), e.g., *life* (target) is a *journey* (source) (Gentner & Gentner, 1983; Lakoff, 1993). Visual metaphors are a specific form of metaphors. Both target and/or source can be depicted (Ojha, 2013). A metaphor gives certain elements greater perceived relevance than they would in the abstract visualisation (Nisbet, 2009; Scheufele, 1999) and can improve the transfer of knowledge (Eppler, 2003). When individuals see a visual metaphor, they knowingly or unknowingly understand that the visual is not a straightforward representation of the information, and they start thinking about the possible meaning (McQuarrie & Mick, 1999; Phillips, 1997). The way a visual metaphor is elaborated (the 'thinking') is not clear (Phillips, 1997; Proctor, Proctor & Pappasolomou, 2005). Understanding a metaphor depends on the level of familiarity with the metaphor and the quality of the metaphor (Gerring & Healy, 1983; Lakoff, 1993).

The target we want to clarify is the pension system in the Netherlands. In the Netherlands, 79% of Dutch citizens believe they pay for other individuals who are retired (Pensioenfederatie, 2016). This mental model is incorrect: only the state pension is accrued this way³. The correct conceptualization is that Dutch employees accrue their own retirement income gradually via their employer. Each month, the employer pays the pension fund a premium for the personal accrual of pension rights of the employees. Employees often pay a personal contribution that is deducted from their gross salary. Once employees retire, they receive the pension they accrued themselves.

³ The state pension, the so-called AOW (Algemene Ouderdomswet, General Retirement Law) is a monthly sum that everybody in the Netherlands above the state pension age receives. Individual pensions are accrued in addition to this state pension.

Figure 4.1 shows the current mental model and the actual situation in the Netherlands.

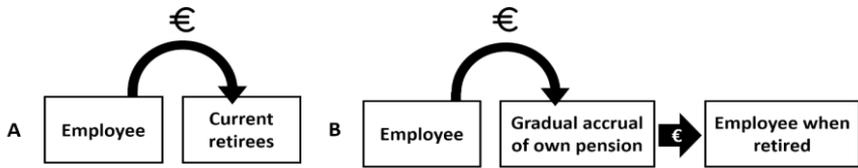


Figure 4.1 Current mental model (A) and reality (B) of Dutch retirement system

An analysis of Dutch communication material showed that pension providers already use verbal metaphors to explain retirement. Most of them are related to 'growing' and 'building', and thus take a long-term perspective. Citizens, however, speak of financial matters in terms of here and now. Researchers conclude that retirement messages are difficult to understand as the two repertoires do not match (Sanders, van Krieken, Prast & Boggio, 2016).

We propose that the current mental model can be changed by using the concept of a navigation system. In car navigation systems, the route from now to the future destination is projected. The system gives information about one's personal journey, with a personal estimated outcome, the expected time and length of the journey. It is commonly known that the arrival time shown by the navigation system is an estimation that changes with 'events' like traffic jams or accidents. The navigation system concept (source) may help citizens understand basic knowledge on the accrual of pension (target). Specifically, it may convey the idea that people gradually accrue personal pension rights, rather than 'save money for other people currently retiring'. The navigation metaphor is closely related to the journey metaphor, which was the subject of several studies. The journey metaphor is well recognized by people and can be transferred to targets in another domain (Landau, Oyserman, Keefer & Smith, 2014). It is associated with a sense of purpose and control (Semino et al., 2017). We propose that a navigation metaphor can solve the current mental model problem as it connects the 'now' with the 'future,' and visualizes a personal goal. Figure 4.2 shows how the navigation metaphor is applied to information on the retirement accrual.



Figure 4.2 Navigation metaphor applied to projection of future retirement income

Effects of understanding

A mental model consists of a set of beliefs (characteristics, qualities) on a certain subject. The attitude theory proposes that attitudes are a function of belief strength and evaluations (Fishbein, 1963, Fishbein & Ajzen, 1975). Beliefs about pension accrual can thus mediate the effects of accrual information and the attitude towards retirement. 22% of Dutch citizens currently take into account that no money will be left for them after retirement. Understanding that part of the pension is already accrued, and that the pension will continue to grow, might be perceived as positive and could lead to a more positive attitude towards retirement. The sender of the message might also benefit from better understanding. Gaining insight is a positive experience and leads to a favourable judgment of the communicators' credibility (Bowers & Osborn, 1966; Osborn & Ehninger, 1962). Thirdly, a positive experience is related to higher perceived self-efficacy to perform the expected behaviour (Bandura, 1977). Understanding *how* pension is accrued may thus lead to higher perceived self-efficacy with regard to checking whether *enough* pension is accrued.

These three aspects: attitude towards retirement, perceived honesty and perceived self-efficacy are interesting aspects, as these positively influence retirement related behaviours (Ajzen, 1985; Bandura, 1977; Taylor-Carter, Cook & Weinberg, 1997). Given the fact that only 9% are willing to invest time in their retirement situation (Visser et al., 2012), 60% of Dutch citizens have no idea whether they can make ends meet after retirement (van der Schors & Warnaar, 2015), and more than 20% of Dutch citizens face a pension that is too low to pay their basic expenses (de Bresser & Knoef, 2015), a higher level of activity is desirable.

Textual effects

We compared the effects of metaphorical and abstract images to plain text characteristics, which also impact the evaluation of visuals. Previous studies on the textual characteristics of communication around uncertainties suggest that the level of text detail can impact the understanding of the content. Two studies showed that a higher level of information detail increases the understanding of the information (Inglis & Farnill, 1993, Mazur & Hickam, 1990). Other studies showed that a higher level of detail was not related to better understanding (Quaid, Faden, Vining & Freeman, 1993) or only slightly influenced the comprehension (Zwijenberg et al., 2003). In the Netherlands, it is required by law that the pension statement shows three aspects relevant for the future situation: the income in an optimistic scenario, the neutral scenario and the pessimistic scenario. The chance of receiving exactly one of the three amounts is negligible. Mentioning three amounts is a simplification of the actual estimation: only the bounds of the confidence interval and the point estimate are described. A more detailed text could describe that the income can be lower than the lower bound (in the pessimistic scenario) and higher than the upper bound (in the optimistic scenario).

The level of detail with regard to the *probability* that the optimistic or the pessimistic scenario comes true, can also vary. A more detailed text would provide information on the chance a scenario comes true. A less detailed text just describes the possibility that a scenario can come true, without any reference to a probability. A probability can be expressed in a percentage, but people have difficulties in understanding percentages (e.g., Tversky & Kahneman, 1982) and transform percentages immediately into verbal labels, e.g., 'low chance' or 'high chance' (Bottorff, Ratner, Johnson, Lovato & Joab, 1998; Palmer & Sainfort, 1993). A reason for this might be that concepts of probability were developed approximately three centuries ago, whilst verbal expressions for uncertainty levels exist in most languages for a much longer period. People feel more familiar with words than with figures (Zimmer, 1983). A downside of probability phrases, is the great variability in interpretation on the part of the receiver. E.g., 'doubtful' could be interpreted as very unlikely, but also as a significant probability. Nevertheless, the interpretation of some phrases is consistent when used in the same context (e.g., Wallsten, Zwick, Forsyth, Budescu & Rappaport, 1988).

'A small chance' and 'poor chance' are examples of such phrases. The present study uses different levels of detail to further explore the importance of textual elements.

Information on the accrual of pension is a mandatory part of communication for pension providers in the Netherlands. Currently Dutch pension providers communicate one amount, but the Dutch Government adopted a law that has to enable employees to obtain a more realistic insight into their retirement situation. The 'Pension Communication Law' (2015) prescribes that pension providers have to communicate the expected income via an optimistic, a neutral and a pessimistic scenario. The idea behind the legislation is that the outcome is mostly not a certain, fixed amount. Even though most citizens in the Netherlands accrue retirement income via a defined benefit plan⁴, also in this type of plan the accumulated pension can be lowered (and sometimes raised) during the accrual, due to unforeseen developments. The format of communicating the scenarios is not elaborated yet.

We controlled the results for the effects of the level of detail in the text.

Research questions and hypothesis

To the best of our knowledge, no studies have been carried out on the impact of using visual metaphors for processing financial information. The primary goal of this study was to test whether a navigation metaphor (the source) communicated in a better way the basic principles of retirement accrual (the target). We specifically tested whether the navigation metaphor communicated better that (a) a range of outcomes is possible, instead of only the amounts mentioned in the communication (*Range Outcomes*), (b) the amounts presented can be different next year (*Variability*), (c) the retirement income is accrued gradually (*Gradual Growth*) and the estimated outcome has not yet been granted (*No Right*). We hypothesized that the navigation metaphor communicates best the basic features of retirement accrual, more than a plotted confidence interval and information without a visual.

We furthermore assessed whether conveying the basic features of the pension system mediated effects of the metaphor on a) the attitude towards retirement accrual information; the perceived honesty, b) retirement in

⁴ In 2016 91% of Dutch employees accrued pension via a defined benefit plan (DNB).

general and c) self-efficacy beliefs regarding checking the adequacy of the accrual.

Method

Design

This study used a 3 (Visual; 'Navigation Metaphor', 'Slider' and 'No Visual'-control group) x 2 (Text Detail Outcome; yes vs. no) x 2 (Text Detail Probability; yes vs. no) between subjects factorial design.

Twelve labels were created, each with one level of visualization and a combination of the two text factors (four combinations). Participants were randomly assigned to one of the twelve labels and answered a set of questions with regard to the label and their personal situation.

Materials

Each label with retirement accrual information showed the same minimum, expected and maximum amounts (840, 1300, 1400 euro), based on realistic scenarios for an average worker accruing a retirement income in the Netherlands⁵. The three amounts were chosen based on data from the Statistics Netherlands and forecasts of the Dutch Central Bank (AFM, 2012).

Visual. The factor 'Visual' was operationalized by three levels: 'Navigation Metaphor', 'Slider' and 'No Visual'. Both visuals showed an outlook; the future prospects based on the knowledge at the present point in time. Figure 4.3 shows an example of 'Navigation Metaphor' and 'Slider'.

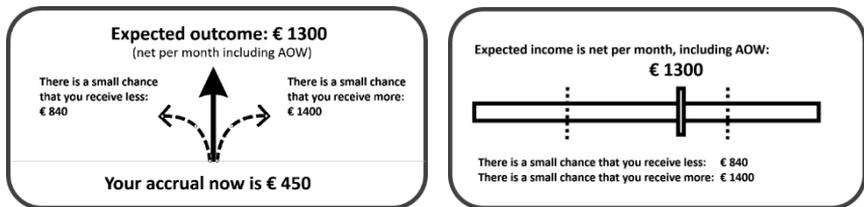


Figure 4.3 'Navigation Metaphor' and 'Slider', with one of the text versions (AOW is the state pension in the Netherlands)

⁵ Possible effects of inflation and purchasing power were not taken into account when assessing the fictitious amounts.

The 'Navigation Metaphor' shows the development from the current accrual to the expected outcome in the future. The visual was based on the screen in car navigation systems. The arrows illustrate a direction of movement (from the amount accrued now to the amount to expect) and indicate the (temporal) distance (between now and the moment you retire) (Kurata, 2007; van der Waarde & Westendorp, 2000). The text indicating the expected income was held constant with slight adjustments, in order to fit the navigation metaphor. For instance, we added text about the current accrual and the term 'expected income' was changed into 'expected outcome'.

The 'Slider' shows the confidence interval with three amounts: the expected income (the likelihood of receiving less or more is 50% in both cases) and the amounts related to the lower and upper boundary of the confidence interval. The position of the expected income is not in the middle of the range, but relatively close to the upper boundary, as the distribution of possible outcome is not symmetrical.

Level of detail in text

Four versions of texts were used, with variations on two aspects. The first aspect concerned the level of detail with regard to the outcome. The detailed text described that the income can be lower than the lowest amount (in the pessimistic scenario) and higher than the highest amount (in the optimistic scenario), whilst the text without detail just mentioned three amounts. The factor *Level of Detail Outcome* was operationalized by the phrases "...you receive 840/you receive 1400 euro" ('No Detail Outcome') and "...you receive less than 840 euro/you receive more than 1400 euro" ('Detail Outcome').

The second aspect, *Level of Detail Probability*, was operationalized with the phrases "*als het tegenzit, ...*" (in Dutch), which can be translated as 'in case of a setback' and the positive equivalent "*als het meezit*" (in Dutch), which can be translated as "if all goes well" ('No Detail Probability'). The more detailed text, with information about the probability, was: "there is a small chance that ..." ('Detail Probability'). The reason for using a verbal probability is that people translate numerical probabilities (e.g., 5% chance) immediately into verbal probabilities (Bottorff et al., 1998; Palmer & Sainfort, 1993) and people prefer to use them (Zwack & Wallsten, 1989).

The combination of the two textual factors *Level of Detail Outcome* and *Level of Detail Probability* resulted in four groups of phrases, see Appendix D.

Participants

Individuals participating in the employer sponsored plan of 16 Dutch pension funds were invited to complete an online survey. The research sample consisted of a group of respondents from fourteen pension funds who participated in a panel study in 2014 and 2015, supplemented by the participants of two new funds. In total 31,733 participants were invited. 5,449 respondents completed the survey, giving a response rate of 17.2%. We assessed outliers with Mahalanobis distance analysis (Aggarwal, 2015), after which 43 respondents were removed from the dataset.

In order to control for demographic variables: age, level of education, level of income and gender were measured. We also measured the estimated financial literacy and the actual financial literacy with a set of four questions. The questions regarding financial literacy were developed by OECD (2014) and tested basic knowledge of inflation, compound interest and risk of investment. Furthermore, we assessed the level of trust in the pension fund (of actual accrual), expectations with regard to economic developments in the near future, expectations with regard to their own financial situation and financial planning behaviour in the last 12 months: (a) checking the accrual and (b) checking the adequacy of the accrual. A one-way Anova test shows that the participants who answered the question were equally divided across the twelve labels with regard to all control variables, see Table 4.1. Post-hoc tests also show no significant differences between the funds. The number of respondents per question differs, as answering the questions was not mandatory.

Age varied from 20 to 64 ($M = 52.6$, $SD = 10.2$); 78% was male. The large amount of male respondents was due to the fact that a large number of the pension funds participating in this study implement a pension scheme for employees (>25,000 of the invited) in a male-dominated sector.

Table 4.1

Results one-way Anova: between group differences

Control variable	F statistics
Age	$F(11,5018) = .88, p = .56$
Income	$F(11,4677) = .46, p = .80$
Level of education	$F(11,5044) = .79, p = .65$
Percentage male	$F(11,5016) = 1.24, p = .19$
Financial literacy	$F(11,5033) = 1.19, p = .28$
Estimated financial literacy	$F(11,5042) = .75, p = .70$
Expectations economic developments	$F(11,4718) = .31, p = .98$
Expectations own financial situation	$F(11,4912) = .41, p = .95$
Trust in pension fund	$F(11,4860) = .77, p = .67$
Behaviour: Checking accrual	$F(11,5448) = .90, p = .54$
Behaviour: Checking adequacy accrual	$F(11,5048) = 1.17, p = .30$

Procedure

All respondents were invited via email to take part in an online survey. Respondents were provided with preliminary instructions in order to establish the appropriate mind-set: they were explicitly asked to react to a test label. It was explained that the amounts on the label did not reflect their personal accrual, nor their expected pension. The survey tool selected randomly one of the twelve labels per respondent. All questions regarding the label concerned one randomly assigned label. All labels were assigned an equal amount of times. In order to decrease the chance of a selection bias towards participants interested in the topic, we offered an incentive (chance to win a week in a holiday home) to respondents who finished the complete survey.

Measures

A set of statements was presented to the respondents. They were asked to indicate their agreement or disagreement on each statement on a 100-point bipolar scale (0 = *fully disagree*, 100 = *fully agree*).

The extent to which the label conveyed key aspects of the pension accrual was assessed with four individual items that pertain to different aspects of understanding. The items concerned the variability of the expected outcome (*Variability*, $M = 65.29$, $SD = 33.06$), the range of outcomes; the

fact that other outcomes than the three amounts are possible (*Range*, $M = 75.27$, $SD = 28.58$), the fact that the expected outcome has not yet been granted (*No Right*, $M = 51.51$, $SD = 38.52$) and the fact that the pension has not been accrued yet, but gradually grows (*Gradual Growth*, $M = 34.57$, $SD = 33.67$).

Attitudes towards the retirement information and retirement in general were assessed with two individual items: the degree to which the label was perceived as genuine: *Perceived Honesty* ($M = 56.88$, $SD = 31.10$) and the degree to which the label made the respondents feel good about retirement (*Positive Attitude*, $M = 35.29$, $SD = 28.13$), each with one item.

Next, we measured perceived self-efficacy with four sub items (Bandura, 2006). We assessed to which degree each label was perceived to be helpful, in order to gain insight into the personal financial situation after retirement. A sample item was 'This label will help determine whether you receive enough pension'. Factor analysis with varimax rotation yielded that all four self-efficacy sub items loaded consistently on one factor (*Self-efficacy*, Eigenvalue = 2.6; $\alpha = 0.82$, $M = 48.50$, $SD = 25.27$).

Manipulation check

To test that we successfully manipulated Level of Detail Outcome, we performed a manipulation check and measured the level of agreement with the statements that there is a possibility that income can be lower than the lower bound and higher than the higher bound. The level of agreement should be higher with 'Detail Outcome' than with 'No Detail Outcome'. For a complete overview of the survey questions, we refer to Appendix E.

Results

Manipulation check

The data confirmed that the labels with 'Detail Outcome' better conveyed the information that the expected retirement income can be lower than the lower bound ($M = 48.23$, $SD = 33.82$) than with 'No Detail Outcome' ($M = 36.40$, $SD = 34.40$), $F(1, 5061) = 152.39$ $p < .001$, $\eta^2 = .03$). The labels with 'Detail Outcome' also conveyed better that the income can be higher than the upper bound ($M = 40.67$, $SD = 31.31$) than with 'No Detail Outcome' ($M = 29.38$, $SD = 30.17$), $F(1, 5020) = 169.57$ $p < .001$, $\eta^2 = .03$).

Main results

ANOVAs were conducted to compare the main effects of the use of a visual, level of detail in text and interaction effects between the three conditions on the dependent variables. For this analysis, we used the respondents that answered all questions: 4009 cases. The presented analyses below first describe the extent to which the labels conveyed key aspects of retirement accrual. We only describe effects with $\eta^2 \geq .01$. For detailed results, we refer to Tables 4.2, 4.3 and 4.4. We then describe the main mediation effects of the labels on the derived variables that pertain to attitude and self-efficacy. A complete overview of the results of the mediation analysis is presented in Table 4.5.

Conveyance of basic facts

A unifactor ANOVA with visual (metaphor, slider, no visual) as fixed factor was used to determine whether labels with the navigation metaphor (with different levels of text detail) produced a higher level of agreement with a set of statements on basic facts about the accrual of retirement income. The analyses revealed that the visuals yielded significant variation $F(2,4008) = 742.45$ $p < .001$, $\eta^2 = .27$ with regard to communicating that the income is accrued gradually ('*Gradual Growth*'). We found a similar result for communicating that the expected income has not yet been accrued ('*No Right*'): $F(2,4008) = 120.68$ $p < .001$, $\eta^2 = .06$. Post hoc Tukey tests showed that Navigation Metaphor communicated most clearly that the income is accrued gradually ('*Gradual Growth*') and has not been accrued yet, compared to the slider and the information without a visual (both $p < .001$).

A small, but significant difference ($p = .02$) was found for communicating that the expected income can vary over time ('*Variability*') between Navigation Metaphor ($M = 67.29$) and Slider ($M = 63.90$). Navigation Metaphor and No Visual did not differ significantly with respect to Variability. The extent to which the label shows that a wide range of outcomes is possible instead of the three amounts mentioned in the label ('*Range Outcomes*') did not differ for the three levels of the visual.⁶

⁶ Even though we checked whether the respondents were evenly distributed among the conditions, we checked whether conveyance of the key features was influenced by level of education and financial literacy. The means of the labels with the navigation metaphor were consistently higher than the means of the other two types of labels at all levels of education and financial literacy.

It was hypothesized that Navigation Metaphor would best communicate the key features of retirement accrual: gradual accrual, the fact that the amounts in the information can be different next year, the fact that the estimated outcome has not yet been accrued and the possibility of a range of outcomes, compared to Slider and No Visual. As Navigation Metaphor only resulted in a significantly higher level of agreement on the statement that the labels shows a) the gradual accrual and b) the fact that the expected outcome has not yet been accrued, data support the hypothesis only partially.

Regarding text effects on understanding and perceived comprehensibility, 'Detail Outcome' communicated better that a wide range of outcomes is possible (*Range Outcomes*) ($M = 80.33$, $SD = 23.89$) than 'No Detail Outcome' text ($M = 71.44$, $SD = 31.60$), $F(1, 4008) p < .001$, $\eta^2 = .02$. No other effects of text were found. Besides the main effects, we found no interaction effects.

Table 4.2 Results for Visual

Statements ¹	No Visual (1)	Slider (2)	Navigation Metaphor (3)	F statistics	η^2	Tukey's HSD
Gradual Growth	$M = 20.91$ $SD = 26.09$	$M = 22.55$ $SD = 26.49$	$M = 58.53$ $SD = 33.02$	$F(2,4008) = 742.45$ $p < .001$.27	1,2 < 3
No Right	$M = 47.77$ $SD = 39.09$	$M = 41.61$ $SD = 37.70$	$M = 63.24$ $SD = 35.56$	$F(2,4008) = 120.68$ $p < .001$.06	2 < 1 < 3
Variability	$M = 66.39$ $SD = 33.28$	$M = 63.90$ $SD = 33.51$	$M = 67.29$ $SD = 32.72$	$F(2,4008) = 3.75$ $p = .02$	-	2 < 3
Range Outcomes	$M = 75.18$ $SD = 29.16$	$M = 75.82$ $SD = 28.05$	$M = 76.38$ $SD = 28.11$	$F(2,4008) = .60$ $p = .55$	-	

¹0 = fully disagree, 100 = fully agree

Table 4.3 Results for Level of Detail Outcome

Statements 0 = <i>fully disagree</i> , 100 = <i>fully agree</i>	No Detail Outcome	Detail Outcome	F statistics	η^2
Gradual Growth	$M = 34.90$ $SD = 34.10$	$M = 34.66$ $SD = 33.34$	$F(1,4008) = .06$ $p = .81$	-
No Right	$M = 52.04$ $SD = 38.83$	$M = 50.19$ $SD = 38.22$	$F(1,4008) = 2.32$ $p = .13$	-
Variability	$M = 65.88$ $SD = 33.30$	$M = 65.89$ $SD = 33.08$	$F(1,4008) = .00$ $p = .99$	-
Range Outcomes	$M = 71.44$ $SD = 31.60$	$M = 80.33$ $SD = 23.89$	$F(1,4008) = 100.39$ $p < .001$.02

Table 4.4 Results for Level of Detail Probability

Statements 0 = <i>fully disagree</i> , 100 = <i>fully agree</i>	No Detail Probability	Detail Probability	F statistics	η^2
Gradual Growth	$M = 34.75$ $SD = 33.51$	$M = 34.31$ $SD = 33.94$	$F = (1,4008) = .17$ $p = .68$	-
No Right	$M = 50.98$ $SD = 38.25$	$M = 51.28$ $SD = 38.83$	$F = (1,4008) = .06$ $p = .80$	-
Variability	$M = 68.27$ $SD = 32.35$	$M = 63.46$ $SD = 33.85$	$F = (1,4008) = 21.21$ $p < .001$	-
Range Outcomes	$M = 75.77$ $SD = 29.02$	$M = 75.83$ $SD = 27.83$	$F = (1,4008) = .004$ $p = .95$	-

Predicting attitudes and self-efficacy

To test the mediating role of communicating key features of retirement accrual, the SPSS macro provided by Preacher and Hayes (2008) was used. Figure 4.4 is a graphical representation of the tested mediation effect. Panel A illustrates the total effect of X on Y (path c), without mediators M in the model. Panel B represents the mediation design with multiple mediators. The direct effect is the effect of X on Y that does not pass through the mediators M and is depicted as path c'.

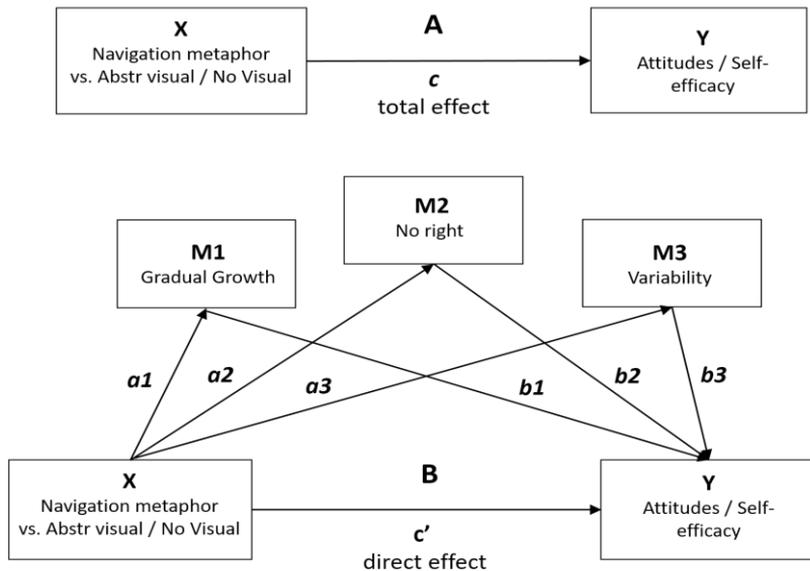


Figure 4.4 Graphical representation of tested mediation effects

We tested indirect effects on the relationship between the factor 'Navigation Metaphor' and the attitude towards retirement in general, perceived honesty (= attitude towards the label) and perceived self-efficacy via communicating the gradual accrual (M1: *Gradual growth*), the fact that the expected income has not yet been granted (M2: *No right*) and that the expected income can be different next year (M3: *Variability*). The extent to which the retirement information demonstrably communicated these three aspects was significantly influenced by the navigation metaphor. We

used 'indicator' or dummy coding (Hayes & Montaya, 2017), with 'No Visual' and 'Slider' as a combined reference group.

The visual metaphor affected *Gradual Growth* and *No right* significantly. The bootstrapped 95% confidence interval for the effect of visual metaphor on *Variability* included zero [-.01, 4.31], meaning that *Variability* did not function as mediator. The two remaining measures positively affected perceived honesty of the retirement information and the attitude towards retirement in general. The effect of the navigation metaphor on perceived self-efficacy was also mediated by *Gradual Growth*, but not by *No Right*. Analysis showed that *Gradual Growth* was the strongest mediator of the two for each of the three dependent variables. A complete overview of the results of the mediation analyses is presented in Table 4.5.

Table 4.5 Mediation analysis with multiple mediators

Path X→M	Effect	BootLLCI	BootULCI	SE	T	P-value
a ₁ (X→M ₁ Gradual Growth)	36.78	34.90	38.65	0.96	38.48	<.001
a ₂ (X→M ₂ No right)	18.53	16.09	20.97	1.24	14.90	<.001

Y Perceived Honesty						
Path M→Y	Effect	BootLLCI	BootULCI	SE	T	P-value
Total effect (c)	6.19	4.19	8.19	1.02	6.07	<.001
Direct effect (c')	-0.64	-2.94	1.66	1.17	-0.55	0.58
b ₁ (M ₁ Gradual Growth →Y)	0.14	0.11	0.17	0.02	8.14	<.001
b ₂ (M ₂ No right →Y)	0.09	0.06	0.12	0.01	6.76	<.001
Indirect effects						
Total indirect effect	6.83	5.55	8.19	0.67		
a ₁ b ₁	5.17	3.83	6.52	0.69		
a ₂ b ₂	1.67	1.11	2.28	0.30		

Y Attitude towards retirement						
Path M→Y	Effect	BootLLCI	BootULCI	SE	T	P-value
Total effect (c)	6.49	4.67	8.31	0.93	7.00	<.001
Direct effect (c')	-4.25	-6.29	-2.22	1.04	-4.10	<.001
b ₁ (M ₁ Gradual Growth →Y)	0.28	0.25	0.31	0.02	18.10	<.001
b ₂ (M ₂ No right →Y)	0.03	0.01	0.05	0.01	2.70	.007
Indirect effects						
Total indirect effect	10.74	9.49	12.10	0.66		
a ₁ b ₁	10.16	8.86	11.50	0.67		
a ₂ b ₂	0.59	0.14	1.06	0.23		

Y Self-efficacy						
Path M→Y	Effect	BootLLCI	BootULCI	SE	T	P-value
Total effect (c)	5.05	3.43	6.67	0.82	6.12	<.001
Direct effect (c')	-1.09	-2.95	0.77	0.95	-1.15	.25
b ₁ (M ₁ Gradual Growth →Y)	.16	0.13	0.19	0.01	11.54	<.001
b ₂ (M ₂ No right →Y)	.01	-0.01	0.03	0.01	1.09	.28
Indirect effects						
Total indirect effect	6.14	5.04	7.27	0.57		
a ₁ b ₁	5.92	4.77	7.07	0.58		
a ₂ b ₂	0.22	-0.20	0.65	0.21		

Conclusion and Discussion

Conclusion

Can a navigation metaphor help people to understand the basic principles of retirement accrual? An experimental study assessed the effects of using a navigation metaphor in retirement communication on conveying the basic facts and via conveying these facts on the attitude toward retirement, the perceived honesty of the retirement information and perceived self-efficacy with regard to checking the personal retirement situation.

As expected, the navigation metaphor communicated best the key features of retirement accrual. Respondents who received the accrual information with the navigation metaphor, indicated a substantially higher level of agreement that retirement income is accrued gradually, that the expected income can vary over time and is not guaranteed, than respondents who saw the information with a realistic confidence interval or no visual at all. Findings suggest that this visual metaphor, representing being 'on the go', may have emphasized the changing nature of the outcome. The visual with the realistic confidence interval, Slider, communicated the least clearly that the expected income is not accrued yet, even less clearly than information without a visual.

Further analysis revealed that the navigation metaphor also impacted the attitude towards retirement and perceived honesty of the message, as well as self-efficacy via better communicating the basics of retirement accrual. We found that using a navigation metaphor contributed to these three aspects, in particular by communicating better that the pension is gradually accrued, and to a lesser extent by communicating that the expected income has not yet been granted. Communicating that the retirement income is accrued gradually can dismantle the current misunderstanding that employees pay for the retirees (Pensioenfederatie, 2016). Understanding that the accrued pension is not static, but grows in the future may cast a different and more positive light on pension in general. The message that the expected pension has not yet been granted, could be perceived as negative, but results show the opposite. The implicit messages ("you are part-way" and "your pension will keep on growing") may be perceived as positive. Another possible explanation is that – next to the evaluation of the concept itself – understanding a concept more easily results in a more positive evaluation of the concept (Burgers, Konijn, Steen & Iepma, 2015).

Similar effects were found for the association between the navigation metaphor and perceived honesty of the message. The navigation metaphor conveyed better the basics of retirement accrual, which in turn positively affected perceived honesty of the message. Gaining new insights may again be a positive experience that leads to a favourable judgment of the communicators' credibility. This conclusion is consistent with the results of previous studies of Bowers and Osborn (1966) and Osborn and Ehninger (1962).

Finally, the navigation metaphor contributed to increased self-efficacy with regard to financial planning behaviour, via conveying the information that the pension is accrued gradually. Conveyance of the fact that the expected pension has not yet been granted did not contribute to higher self-efficacy. We assume that understanding this fact may have contributed to higher perceived self-efficacy ("I see that I accrue, now I know that I can check my accrual"). When citizens think they do not accrue a pension (and pay for the retirees), the concept of checking their own accrual may seem a bit odd. Visualizing the personal accrual makes related behaviours, like checking the accrual, more relevant and possible.

Overall, the effects of the text manipulations were minimal. The only effect found, regarded level of detail about the outcome. The detailed text explained that the income will be lower than the lowest amount in the pessimistic scenario and higher than the highest amount in the optimistic scenario, whereas the text without detail only identified three amounts. The level of detail regarding the outcome increased understanding that a range of outcomes is possible, instead of the three amounts mentioned. Apparently, the message that the income can be lower (or higher) than the boundaries of the interval was also interpreted as meaning the income can be somewhere between the boundaries. The navigation metaphor did not impact this interpretation: respondents who saw a visual (regardless of the type of visual) did not report a higher level of agreement to the statement that the income could exceed the boundaries.

Discussion

Metaphors help in thinking about complex issues (Lakoff & Johnson, 1980) and can reframe a mental model, by adding new meaning, features or views (Schön, 1993). A visual metaphor depicts a complete concept that can be mapped onto the topic that needs explanation (Ojha, 2013). This research

examined the effects of the use of a navigation metaphor on communicating key features of retirement accrual and identified a number of mediation effects of the message that was conveyed on evaluative judgements of retirement and retirement information, and perceived self-efficacy with regard to getting insight into the financial situation after retirement.

The study was conducted in the Netherlands, where citizens think the state pension system also applies to the pension they accrue via their employer. A large majority (79%) of citizens think they pay for the retirees via their employer. In reality they pay for the accrual of their own retirement income. Citizens should understand that the pension income they can expect is accrued gradually and has not yet been granted. Communication about the expected retirement income should help to understand these basic features. The communication should ideally also contribute to a positive attitude towards retirement and the message itself, as a positive attitude may help citizens become more involved, and stimulate them to follow their personal retirement situation (Atchley, 2004; Taylor & Shore, 1995).

Overall, the effects of using a visual and specifically the navigation metaphor, largely exceeded the effects of using different texts. The visual with the navigation metaphor communicated most clearly that the pension is accrued gradually and that the expected outcome has not yet been granted. The 'dual coding principle' (Clark & Paivio, 1991; Paivio, 1991), stating that people understand complex messages better when a text is combined with a visual and both are conceptually organized, seems to apply to the navigation metaphor. In addition, communicating clearly that the pension right gradually grows and the expected income has not yet been granted, contributes to a positive attitude towards retirement and is perceived as most honest. Communicating these principles clearly also contributes to higher perceived self-efficacy. This conclusion is supported by earlier findings that visual metaphors not only help to explain, but also contribute to positive evaluations of the issue that has to be explained (Burgers et al., 2015).

Results suggest that the navigation metaphor is a good organising principle that helps to reframe the idea about retirement via better understanding. Presenting the information via a navigation metaphor may give the information more meaning (Gamson & Modogliani, 1989) and makes the ingredients congruent ('a journey is uncertain' > accrual of your retirement income is a journey > 'the outcome is uncertain'). Congruent messages that

are better understood are deemed trustworthy and more persuasive (Selin, 2006). The finding that the visual with the realistic confidence interval communicated the least that the expected outcome can vary over time and is not yet accrued even less clearly so than the labels without a visual and inconsistent mediation effects of communication these principles on the attitude towards retirement and perceived self-efficacy, endorses this idea. Showing an expected income as static information may be not congruent with the fact that the actual outcome is not guaranteed.

In this context it is noteworthy that the visual with the slider led to a number of spontaneous reactions. Respondents were offered the possibility to leave a comment at the end of the survey. A number of respondents who saw the slider with the realistic confidence interval, pointed out that we made a mistake when drawing this visual, because we did not position the expected income in the middle. This group was apparently offset by the skewed division. A too precise visualisation of the confidence interval may be undesirable, as this emphasizes aspects of the retirement accrual that are very difficult to explain. The navigation metaphor with the same (skewed) amounts did not lead to the spontaneous corrections. Were the skewed division a core message though, a precise visualisation might be used for better understanding.

Other spontaneous comments regarded the wording. Around 60 respondents requested a translation of 'a small chance' or 'in case of a setback' into concrete percentages. Although previous research showed that people translate numerical information into verbal labels (Bottorff et al., 1998; Palmer & Sainfort, 1993), this group of respondents indicated they felt uncertain because of the 'vague' wording. Some respondents also asked whether the chance of the pessimistic and the optimistic scenario were equal. We are not sure whether presenting a concrete percentage helps the respondents to get a grip on the information. The questions may also point to a need for certainty and it is doubtful whether a pension fund would meet this need by providing percentages. The navigation metaphor did not raise these questions.

Communicating a clear and coherent concept, and not only informing individuals about amounts, is desirable and even necessary. Ideally, individuals would have a realistic idea about their personal situation and feel able to act in case they face the risk of a too low income or lower than expected. Individuals who are involved in their personal financial situation

after retirement and feel able to follow their situation, are empowered. Currently, many Dutch citizens do not know what to expect (Van der Schors & Warnaar, 2015), their expectations are unrealistically high (AFM, 2010; Alesie, Van Rooij & Lusardi, 2011) and only 9% is willing to invest time in getting insight into their own situation (Visser et al., 2012). Every fifth Dutch citizen is expected to have serious problems after retirement: this group will not be able to afford their minimal expenditure, even if they would reduce their housing costs (de Bresser & Knoef, 2015). This attitude and behaviour could be labelled as 'not empowered'. The importance of empowering citizens with regard to retirement is evident, not only in the Netherlands, but in every country where a balance between retirement income and expenditure cannot be taken for granted.

Effective retirement communication should thus not only inform well, but also contribute to perceptions and beliefs that are related to being empowered: the situation in which individuals set meaningful goals, take action towards these goals and reflect on the impact of these actions (Cattaneo & Chapman, 2010).

Findings in this study provide starting points. If pension providers want to change the way individuals think and feel about their future retirement income: namely as a personal income that is accrued by themselves gradually (instead of a pay-as-you-go system) and that they can keep track of it, they should invest in developing a good conceptual idea that can be used for visual messages, combined with text. A consistent and positive frame that illustrates the gradual accrual, is useful. The navigation metaphor we developed and derived from the journey metaphor (Landau et al., 2014, Semino et al., 2017) seems appropriate to change the current mental model and to empower citizens to manage their retirement situation. It is recommended not only to focus on the future, but also on the present situation. A metaphor illustrating the (uncertain) route from the present to the future seems to be 'the way to go'.

Future directions

Worldwide, a large number of employees accrue pension via a so-called defined contribution (DC) plan, whilst Dutch employees in this study accrue pension via a defined benefit (DB) plan or a hybrid plan (combination of DB and DC plan). In full DC plans, projections of the expected income are already presented; mostly via amounts and sometimes via abstract

graphics, with time on the horizontal axis. It is interesting to investigate the effects of using visual metaphors, and the navigation metaphor in particular, on employees with a full DC plan. These employees are used to the idea that the expected income can vary and is not guaranteed. Nevertheless, empowering citizens is also desirable with regard to participants of DC plans.

Further research could also focus on elaborating and testing other visual metaphors and texts. Although we tested two visuals and four texts, we did not test different text variations, different amounts and/or different visual metaphors per condition.

Concept, design and personalisation are elements to be further investigated. It would be interesting to investigate the effect of mentioning the accumulated pension (the current location in the navigation metaphor) in mere text. Also the medium, moment and frequency could impact understanding and perception of the communication.

Concluding Remark

The finding that a visual metaphor effectively conveys key features of retirement accrual and that effective conveyance in its turn leads to positive evaluations of the accrual of retirement income and higher self-efficacy, asks for a change in the communication strategies used by pension providers. As such, it calls for a closer examination of the observed effects and further elaboration of the concept tested.

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Chapter 5

General Discussion

This dissertation investigated the effectiveness of various aspects of retirement communication, with as aim to induce financial planning behaviour. Most people appear to have little idea of their retirement situation. In countries with mandatory pension plans, it is common for citizens to start planning for retirement at a late point in time (e.g., Bernardino, 2017; Hershey, Henkens & Van Dalen, 2007).

Several beliefs, plus a lack of basic understanding of how retirement works, keep many in a state of passivity. I proposed in this dissertation that these citizens are 'not empowered'. When citizens are not empowered and do not plan for retirement, they face a risk. At retirement, their pension may be unexpectedly low. Citizens that start to plan for retirement later in life, may be confronted with limited options to improve their future financial situation.

In contrast, when citizens demonstrate involvement and self-confidence in engaging with financial planning for retirement and take action, they are empowered (cf. Cattaneo & Chapman, 2010). This dissertation takes a socio-cognitive and citizen-centred perspective on financial planning for retirement and aims to enhance academic understanding of the effects of various message strategies on citizens and the degree to which they are empowered regarding financial planning for retirement. Studies in this thesis zoom in on a specific aspect of financial planning behaviour: the adequacy check. The adequacy check provides an answer to the question 'do I accrue enough?'. To answer this question, individuals must know how much they have accrued or expect to accrue and how much they need after retirement. The adequacy check is an important component of planning for retirement, as it enables citizens to make informed choices aimed at improving their financial situation after retirement, e.g., save extra or work longer.

I proposed that:

- I. Financial planning behaviour can be predicted by socio-cognitive models of behaviour.
- II. Financial planning behaviour can be improved by reducing the complexity of retirement communication.
- III. Financial planning behaviour can be improved by using visual and textual strategies from the persuasive communication domain.

In order to investigate these propositions, I first assessed which socio-cognitive and demographic variables predict financial planning behaviour at

individual level. Socio-cognitive variables are interesting, because they are amenable to change; they can be targeted with persuasive messages. Persuasive message strategies are expected to influence an individual's beliefs and attitudes.

I then investigated whether the level of text complexity currently used by pension providers, and the persuasive message strategies in these texts, were related to financial planning behaviour, on top of the individual socio-cognitive predictors. As far as I know, the effects of textual complexity and persuasive message strategies on financial planning behaviour have, as yet, not been investigated. Finally, I conducted an experiment on the effects of using a visual metaphor to communicate the basic features of retirement accrual.

I collected data via field studies amongst a wide range of participants from a varied group of pension funds in the Netherlands. This allowed me to investigate the relation between the naturalistic communication of pension providers and the beliefs and financial planning behaviour of their participants.

Together these studies shed more light on the effects of content, form and textual complexity of retirement communication and offer pension providers concrete levers to reach and empower their participants.

This concluding chapter covers the main findings and their theoretical implications. I also reflect on the research methods used and end with an overall conclusion.

Main findings

In order to assess the effects of textual complexity and of the message strategies used by pension providers in the Netherlands, I first assessed the relevant predictors of financial planning behaviour at individual level, based on the components of the Protection Motivation Theory (PMT; Rogers, 1983). Two components are related to the appraisal of the threat that the retirement income will be too low or lower than expected: perceived susceptibility (the estimated vulnerability to the threat that the income will be too low) and perceived severity (the estimated impact of receiving a low pension).

The two other components are related to the appraisal of coping with the threat of a low retirement income: perceived self-efficacy (the extent to

which individuals believe they can plan for retirement) and perceived response efficacy (the extent to which individuals believe they will benefit from planning for retirement).

Two studies in this dissertation (described in Chapters 2 and 3) describe the assessment of the individual predictors. In both studies individuals with higher levels of perceived self-efficacy and response efficacy reported more financial planning behaviour. Perceived self-efficacy was by far the strongest socio-cognitive predictor of the two.

Additionally, perceived susceptibility and perceived severity predicted financial planning behaviour in the first study, which had the largest sample size of the two studies. The predictive power of perceived susceptibility outperformed the predictive power of perceived severity. This finding aligns with the findings of previous research (e.g., Das, de Wit & Stroebe, 2003; Orji, Vassileva & Mandryk, 2012).

Furthermore, age was a predictor of financial planning behaviour in terms of demographics, next to the socio-cognitive variables. These findings show that socio-cognitive models are suited to predict retirement related behaviours at individual level, suggesting that these behaviours are not necessarily 'irrational'.

Part 1: Can financial planning behaviour be changed by reducing the complexity of retirement communication?

In **Chapter 2**, the influence of the readability of texts provided by pension funds on financial planning behaviour was examined. An automatic content analysis of 128 texts of 16 pension funds (sent and/or available in the period April 2013-April 2014) with the tool T-scan yielded the principal component 'Complexity', which consisted of 13 variables related to complexity at the word level, sentence and text level. Funds with low levels of *Complexity* used relatively short sentences and avoided the passive voice and composed words. Their texts were also characterized by a low level of nominalisations: these funds used sentences with verbs and personal pronouns more often than abstract nouns.

Next, a survey was conducted among 7117 participants of the 16 pension funds participating in the research. The respondents received the material analysed with T-scan or could download or request these from their pen-

sion fund. All respondents indicated whether they had planned for retirement in the past twelve months or not. A hierarchical multilevel analysis revealed that the complexity of written communication was negatively related to financial planning behaviour, on top of the relevant individual socio-cognitive predictors of financial planning behaviour. The more complex the retirement communication, the less often financial planning behaviour was reported. Hence, the findings show that financial planning behaviour can be changed by reducing the complexity of retirement communication.

Part 2: Can financial planning behaviour be changed by using message strategies from the persuasive communication domain?

Research in domains other than finance has shown that persuasive message strategies are effective at activating people. Persuasive message factors such as providing evidence or narratives and the use of frames that define a problem and recommend a solution can steer attitudes and behaviour, by putting a particular spin (a frame) on the message and the content (Perloff, 2017). An empirical study, described in **Chapter 3**, focused on acquiring insight into the key message strategies that pension providers currently use to involve and activate participants to plan for retirement. Analysis of the complete corpus of 14 pension funds showed that the pension providers in the Netherlands do not use many different sophisticated persuasive techniques. Three factors were used on a systematic basis: emotional appeals in the form of fear appeals (e.g., "your retirement income might be lower than expected"), efficacy messages in the form of role models and verbal encouragements and instructions that describe retirement as something that should be followed ('check whether you are on track with your pension accrual'). I labelled these messages: fear appeals, efficacy messages and instructions.

In order to analyse whether the use of these message strategies affected retirement planning behaviour, additionally a survey was conducted among 2975 participants from the 14 pension funds. Hierarchical multilevel analysis with individual predictors at level 1 and key message strategies at level 2 (group level) revealed that instructions and fear appeals in directly distributed materials (e.g., letters and emails) significantly impacted individuals' behaviour, the use of instructions being the strongest predictor.

This means that financial planning behaviour can be changed by using message strategies from the persuasive communication domain. This study was the first study to assess the effectiveness of persuasive message strategies in retirement communication. The observed factors reflect the use of persuasion techniques that define a problem and recommend a solution (Perloff, 2017). This study found a significant relationship between the use of such techniques and financial planning behaviour.

Part 3: Can visuals help to empower citizens about financial planning behaviour?

Changing existing pension beliefs is a relevant issue in the Netherlands, as a majority of citizens think they do not accrue a pension for themselves, but pay for the pension of other retirees (Pensioenfederatie, 2016). This misunderstanding is hard to clear with fact-based education, as citizens are not spontaneously interested in retirement and do not feel the need to acquire information about how retirement actually works (Visser, Oosterveld & Kloosterboer, 2012). Metaphors, and specifically visual metaphors are known as powerful instruments that influence beliefs about complex and abstract concepts, without explaining the specific features of the concept in detail (Doyle & Ford, 1998).

Although metaphors are known for their potential, the use of metaphors in retirement communication has not yet been studied. I investigated whether a visual metaphor could communicate the basic features of how retirement accrual actually works. For this purpose, I developed a set of visuals, including a visual with a metaphor based on a car navigation system. Car navigation systems show both the actual situation, the expected outcome in terms of arrival time and the uncertainty of the outcome. Based on previous research on metaphors (Landau, Oyserman, Keefer & Smith, 2014; Semino et al., 2017), the premise was that the navigation visual enables people to automatically map knowledge about the navigation domain to the retirement domain, more so than a plot of the confidence interval of the income to expect, or mere information about the accrual without a visual. This knowledge was expected, in turn, to be related to a higher level of empowerment: when people understand that they accrue a pension themselves, they might also understand it is possible to monitor their retirement situation during the period of accrual.

Chapter 4 presents the results of an experiment among 5449 pension fund members. As expected, the visual metaphor communicated best that (a) the retirement income is accrued gradually, (b) the amounts presented can be different next year, and (c) the estimated outcome has not yet been accrued. Further analysis revealed that these key features mediated the effect of the visual metaphor on the individuals' attitude towards retirement, the perceived honesty of the message and the perceived self-efficacy with regard to financial planning behaviour. The influence of textual variations was minimal.

Findings support the idea that visual metaphors are a powerful instrument to convey complex knowledge in a simple, understandable way, which, in turn, influences beliefs and attitudes. Results suggest that the navigation metaphor is a good organising principle that helps to reframe the idea of retirement by better understanding the key features of accrual.

Theoretical implications

The aim of retirement communication is to inform participants of pension plans of the features of the plan and to create awareness and stimulate citizens to plan for retirement ahead of time (Rijksoverheid, 2015). However, previous studies showed that citizens are not very active regarding planning for retirement (e.g., Visser et al., 2012). The main question in this thesis, is whether communication can actually contribute to financial planning behaviour and if so, what types of message are most effective? The following findings could be made on the basis of the research results in this dissertation.

Reading ease and experiential processing

The results of the study described in **Chapter 2**, show that the reading ease of texts on retirement is related to financial planning behaviour: the lower the reading ease of texts used by pension funds, the less active their participants were with regard to financial planning. These results support the explanation that easily readable texts enable the processing of substantive messages.

Based on previous research, it could be expected that reading skills and level of education influence the effect of reading ease on behaviour. Nell,

Lentz and Pander Maat (2016) found that highly educated and financially literate people are better able to understand retirement texts. These researchers found that general domain knowledge (i.c. financial literacy) was more important than topic knowledge (i.c. pension knowledge). This finding is consistent with studies on the role of domain knowledge in other areas (e.g., Alexander, Kulikowich & Shulze, 1994). For the readability study described in this dissertation, level of education was not a significant predictor of financial planning behaviour, suggesting that the relation between reading ease and financial planning behaviour was not influenced by differences in education at individual level. Nevertheless, it cannot be excluded that reading skills and financial literacy influence the processing of a retirement text and financial planning behaviour.

The above-mentioned studies are based on the assumption or assessment that texts are somehow processed (e.g., Pearson, 1974; Shrank, Avorn, Rolon & Shekelle, 2007). This is not necessarily true. It is possible that reading a complex text leads to an unpleasant experience, as people have trouble understanding the text and end up with a mental barrier as result. The negative experience may cause similar new messages to be rejected a priori, without judging the content or the form (Meyers-Levy and Malaviya, 1999). This response is a second explanation of the findings in this thesis. The finding that response efficacy is positively related to the level of complexity supports this explanation. It would be expected that reading ease influences individual predictors of financial planning in a positive direction. Easily readable texts might help to understand the topic and increase perceived self-efficacy and response efficacy (the expected benefit of financial planning behaviour) (Bandura, 1977). The relationship between readability, response efficacy and financial planning behaviour appears paradoxical though: the results in Chapter 2 show that complex writing is positively related to perceived response efficacy, response efficacy is positively related to financial planning behaviour, whilst complex writing is negatively related to financial planning behaviour. This paradoxical relationship indicates another form of processing retirement texts than purely rational. Possibly, the relation between reading ease and perceived response efficacy is not influenced by the content of the texts, but by a negative experience with reading a similar (complex) text in the past. When citizens reject similar new texts in advance, they may feel guilty about this behaviour. This guilty feeling might influence their perceptions of response efficacy ('I should be

more involved with my retirement situation, I know it is useful, but ...'). Results of a Dutch study (Visser et. al, 2012) support this idea: 65% of Dutch citizens think their pension should be arranged properly, whilst at the same time 44% dread reading retirement information. As a result, only 9% is willing to invest time in their retirement situation.

The results indicate that creating readable texts is important. The findings do not show how exactly reading ease influences financial planning behaviour, and why readability of retirement texts is directly related to financial planning for retirement, without affecting three key predictors of this behaviour at individual level and affecting a fourth in an opposite direction. Further research could focus on the relation between readability, financial planning behaviour and its individual predictors.

The observed findings in Chapter 2 may also be explained in another way; funds with active participants are possibly more involved with their participants and motivated to keep their engagement. As a result, they may produce more readable materials. Future studies should further look into issues of causality.

Readability not only depends on textual characteristics. Clerehan, Buchbinder and Moodie (2004) developed a framework to assess the readability of a text that includes a wide set of components alongside the lexical aspects: the overall organization and structure of a text, the clarity of the rhetorical elements (is it clear to the reader what to do with elements in the text?), the meta discourse (is the purpose of the complete text clear?), headings (are these present and appropriate?), the factual content (is it complete and correct?), the relation between writer and reader (is it clear who the writer is?) and format. The latter aspect, also referred to as 'typography' (font, spacing, position of images and icons, use of whitespace and use of colours) is especially known to influence cognitive performances (e.g., Larson & Picard, 2005). It should be taken into account that the effect of reading ease as measured in this study is influenced by these factors.

Finally, the set of variables related to readability in the present research may be used as a readability formula specifically for retirement communication. Possibly, such a formula could cover a wider domain, e.g., 'financial texts for a non-expert audience'. Further research could focus on the question of which other characteristics of retirement texts or financial texts in a broader sense are related to readability and financial planning behaviour.

The role of persuasive messages in retirement communication

Analysis of the material of 14 pension funds in the Netherlands revealed that the funds currently use three types of persuasive messages that could be seen as cues to elicit the processing of the message: emotional appeals in the form of fear appeals, efficacy messages in the form of role models and verbal encouragements and instructions that describe retirement as something that should be followed. A fear appeal was for instance 'we cannot exclude the possibility that your pension will be lowered in the future'. An efficacy message was: 'It only takes ten minutes. Just try it!' An example of an instruction was 'Log on and see whether you are on track with your accrual'.

Of all types of messages, the presence of an instruction was most strongly related to financial planning behaviour. Findings in **Chapter 3** in this thesis suggest that it helps to communicate the tasks related to planning for retirement explicitly, at least in the financial domain, to activate and persuade people to plan for retirement. Individuals often do not know of their own accord what is understood by 'sensible behaviour' in retirement matters. The message probably has to contain specific details regarding the desired action, e.g., 'use our calculator to estimate your future expenses'. Some pension funds that participated in the studies in this thesis did not use concrete instructions. Some participants might not even know of the possibility to plan for retirement. In extension to the research in this thesis, it would be interesting to assess the effectiveness of persuasive retirement message strategies when the communication always contains an instruction that describes how to plan for retirement. It is expected that the effectiveness of other persuasive message strategies (e.g., providing evidence, using emotional appeals and use of impactful wordings) will be greater when the desired behaviour is communicated explicitly, compared to communication in which financial planning behaviour is not mentioned explicitly.

It was found that the use of a concrete instruction is a predictor of financial planning behaviour. This is remarkable, because the coded instructions were basic, without much substantive content. The finding suggests that retirement communication is often not processed completely, not with full attention and the instruction functions as a cue.

The results in this study indicate a link between instructions and financial planning behaviour, but do not prove a causal link. It is possible that

pension providers accommodate their messages to their target audience. A pension fund that already knows that its participants are difficult to activate may refrain from communicating instructions, whilst a fund that knows its target audience is open to activating messages may use these messages more frequently. Future longitudinal studies should clarify the causal connection and the direction of the relationship between the use of instructions and financial planning behaviour.

Furthermore, it should be noted that fear appeal theories propose that recommended behaviour should directly help to avoid or diminish the threat. The interplay between the threat and the coping appraisal is different when it comes to retirement and financial planning. The recommended behaviour investigated in this dissertation could be interpreted as assessing whether the threat (a lower or too low pension) is relevant to individuals. When individuals plan for retirement, they know whether the income to expect is indeed (too) low. Beliefs about susceptibility are converted into knowledge about the actual situation. The knowledge does not diminish the threat or the impact of the threat. However, actions that can follow from this insight, like saving extra or postponing the retirement date, can help to deal with the threat. Providing tailor-made information about the possible effects, including tailor-made solutions, might be more effective than general threat appeals and general recommendations. This assumption should be investigated further.

The role of visual language in retirement communication

Metaphors are known to map knowledge and feelings about one domain (the source) to another domain (the target) (Lakoff & Johnson, 1980). Especially visual metaphors are powerful instruments to explain abstract concepts (e.g., Cornelissen, Holt & Zundel, 2011; Forceville, 2008) and change beliefs about complex and abstract concepts, without explaining the specific features of the concept in detail.

The results of **Chapter 4** showed that a visual metaphor based on the concept of a car navigation, indeed helped to communicate key features of retirement accrual effectively. Textual variations (more or less detailed information) hardly influenced the results. These findings prove that complex messages can be conveyed successfully with imagery. One single visual communicated that the expected retirement income is accrued gradually, and is not yet a pension right and can vary over time. The difference in

communication power between the visual with the metaphor and the slider with the confidence interval was remarkable: the visual metaphor communicated key features of accrual significantly better, especially the fact that the pension is accrued gradually. In turn, conveying this specific fact influenced the perceived honesty of the message, the attitude towards retirement and perceived self-efficacy.

The influence of the visual on the self-efficacy belief and the two attitude components suggest that the visual will also impact financial planning behaviour. When people believe that the information is honest and have a positive attitude towards the subject (i.c. retirement), it is more likely that the attitude towards the desired behaviour (i.c. planning for retirement) changes in a positive direction (Petty & Cacioppo, 1986) and the desired behaviour becomes more likely. The results of Chapter 4 thus suggest that financial planning behaviour can be influenced by the use of a visual that enables fluent processing via the peripheral route and more specifically, with the use of a visual based on car navigation systems.

Although the current study showed that the navigation metaphor best conveyed key features of the retirement accrual, it cannot be concluded that the visual metaphor led to better understanding how retirement accrual works. Better understanding can be an additional effect though; the visual metaphor may help to change or refine the complete mental model regarding retirement accrual. It is interesting to underline the difference between changing a mental model on the one hand and educating people about retirement and trying to increase knowledge on the other. Whereas knowledge involves knowing a body of facts, understanding is about making sense of these facts (e.g., Bloom, 1956; Wiggins & McTyghe, 2005). The results in Chapter 4 indicate the latter. The fact that successfully conveying the gradual accrual influenced beliefs on retirement and financial planning suggests that the visual metaphor led to a better understanding and not only communicated isolated topical facts.

A second conclusion with regard to the use of visuals pertains to *how* visual metaphors are processed and *how* they might enhance the understanding of complex and abstract financial topics. The visual assumption theory (Gregory, 1970) states that people interpret a visual on the basis of what they expect, believe and already know. People use previously stored information to process the visual. This study showed that it is possible to

communicate quite complex information on retirement accrual, using previously stored information from a completely other domain (car navigation systems). The visual metaphor helps to convey important information.

Findings in Chapter 4 underline the conclusion that visuals help to communicate abstract concepts and are more effective than textual explanations alone (e.g., Gyselinck & Tardieu, 1999). A visual can convey less topical facts than text can, but this does not seem problematic. Findings show that conveying a limited number of key features contributes to beliefs and attitudes that stimulate financial planning. Although I did not investigate the effect of visuals metaphors on actual behaviour, it could be questioned whether being financially literate in the broad sense is necessary to activate citizens with regard to retirement (OECD, 2005). Is it necessary to better understand inflation, interest and investing, the standard components of financial literacy tests? Or is it useful to define a form of retirement literacy, with a participant-centred point of view? This type of literacy could consist for instance of a basic understanding of retirement accrual, how to plan for retirement and the possibilities of improving one's financial situation after retirement. It is furthermore interesting to know to what extent people should know facts or have a correct and coherent set of 'vague' assumptions. Perhaps it is not necessary to have knowledge that can be expressed in words, but to have a correct mental model, as described by Johnson-Laird (1998): abstract and non-verbal. The concept 'financial literacy' could be elaborated more in-depth with regard to retirement in order to better understand how it is related to planning for retirement. In addition, it could be investigated how visual metaphors contribute to actual and necessary knowledge and/or mental models related to retirement.

Retirement communication and elaboration likelihood

The elaboration likelihood model of persuasion (ELM) of Petty and Cacioppo (1986) is a well-known theoretical model that describes how behaviour can be influenced with persuasive communication. ELM describes how stimuli (e.g., messages about the accrual of pension) are processed via two routes. The first route, the 'central route' is based on logical thinking. This route is used when people are motivated and able to think about retirement and financial planning for retirement. Following the central route means that the message gets full attention and the arguments are processed in-depth. Knowledge of the subject plays an important role in driving the

central route, as is motivation. Understanding a message and sensible decision making on the basis of the message is more likely when the message is well understood and can be placed in a wider context, and when the receiver is motivated to process the message.

Via the peripheral route, messages are processed superficially, based on judgemental heuristics. Processing via this route means that persuasion results from the associations people have with cues in the messages (e.g., attractiveness of the message and credibility of the source) and inferences people draw from these cues. Processing a message via the peripheral route is likely when people are not very interested in the message and lack in-depth knowledge about the subject.

Literature on financial planning behaviour assumes in most cases that retirement information is processed via the central route, with full attention. Citizens are expected to examine the merits of all arguments in the message. Knowledge of basic financial concepts (inflation, interest and risk diversion) is supposed to be a prerequisite for 'thinking about retirement' (Alessie, van Rooij & Lusardi, 2011; Fore, 2003). For retirement planning, citizens need to be 'advanced in financial literacy' (van Rooij, Kool & Prast, 2012). Behavioural economists have labelled 'postponing behaviour', the act of not responding to rational messages on retirement and the absence of planning, based on the assumption that people "intellectually 'understand' the benefits of a specific behaviour, and they may have some idea of how to get started" (Mitchell & Utkus, 2004, p.6).

However, several studies point to the possibility that consumers process messages on financial planning for retirement via the peripheral route. People are not interested in their retirement situation (e.g., Visser et al., 2012) and lack basic knowledge (e.g., Pensioenfederatie, 2016; Wijzer in Geldzaken, 2016); both factors hinder systematic, central route processing.

Findings in this dissertation indicate that retirement communication is indeed often processed via the peripheral route or the experiential route (Meyers-Levy & Malaviya, 1999). First, reading ease was related to financial planning behaviour, but did not impact self-efficacy, which would be expected if the retirement communication was processed via the central route. Furthermore, response efficacy was higher when the texts were more complex.

The results suggest that people may not process the content of a complex text actively (= central route) when they have read a similarly complex

text in the past. This form of processing aligns with the 'third route' that Meyers-Levy and Malaviya added to the ELM framework. Along the third route, messages are processed experientially. Experiential processing of a text requires a minimum level of cognitive resources and is especially likely when the processing of the message strains an individual's cognitive capacities.

Second, a simple cue ('check your pension') appeared to be the strongest predictor of planning behaviour, which also indicates that retirement messages are processed superficially and based on cues. Thirdly, visual metaphors are most probably processed via the peripheral route as the message can be elaborated rapidly and on the basis of associations with the source of the metaphor. The fact that textual variations in the information on the retirement accrual, (with more or less detailed information), hardly influenced the results, supports the idea that processing information on retirement accrual follows the peripheral route. As people get older, their interest in retirement grows (Ekerdt, Kosloski & DeViney, 2000; Petkoska and Earl, 2009). Probably, reading messages on retirement follows the central route only as people get close to retirement age. Until that happens, the peripheral route is more likely.

Results show that it is possible to follow the peripheral route using existing knowledge from another domain. People 'read' the visual about retirement accrual and understand the message without education. This phenomenon is also called 'implicit learning'. Implicit learning means understanding complex concepts in an incidental manner, without awareness of what has been learnt (Sun, 2008). Implicit learning via visuals is supposed to be effective for retirement related topics, as spontaneous interest is low and explanations about retirement related topics are often packed with words and terms beyond the vocabulary of the average citizen. Retirement communication can easily be complicated and boring. Implicit learning may thus be a promising avenue for future research and for future retirement communication efforts.

Influencing financial planning in steps: bridging the economy and persuasion domains

This thesis combines economic, psychological, language and communication literature. Bridging these domains is necessary to understand why

findings in this study point to persuasive techniques for empowering citizens to plan for retirement, whilst previous studies in the economic domain often conclude that communication does not yield the desired outcome. A lack of financial literacy would hinder understanding the communication (e.g., Alessie et al., 2011; Fore, 2003, Lusardi & Mitchell, 2007) and even if people understand the message, they lack the self-control or the willpower to act (Benton, Meier & Sprenger, 2007; Van Rooij, Kool & Prast, 2007; Tie-meijer, Thomas & Prast, 2009) or they respond irrationally (Bodie & Prast, 2012; Kahneman & Tversky, 1979). These conclusions can be nuanced with the findings described in this dissertation.

Level of measurement

The dependent variable in this dissertation was financial planning behaviour. More specifically, I investigated whether respondents performed an adequacy check in the 12 months prior to the surveys. The adequacy check provides an answer to the question 'do I accrue enough?'. In order to answer this question, individuals need to know how much they have accrued or expect to accrue and how much they need after retirement. The adequacy check is an important component of planning for retirement, as it enables citizens to make informed choices aimed at improving their financial situation after retirement, e.g., save extra or work longer.

The adequacy check forms part of a larger behavioural concept, which could be defined as 'preparing for retirement'. Other behaviours that form part of the larger concept are, for instance, 'assessing the desired retirement date' and 'saving extra'. During the sequence of actions, preferences may grow or disappear (Zwick, Erev & Budescu, 1999). The studies in Chapter 2 and 3 investigated the beliefs and attitudes related to the first step, the adequacy check. Zooming in on small and concrete behaviours helps to understand how and when beliefs and attitudes are formed and changed during the steps that people take when they prepare for retirement. Each part in the sequence of actions may be stimulated with different message strategies, varying from using fear appeals, motivating messages and providing evidence. Chapter 3 showed that providing fear appeals and concrete instructions are related to taking a first step in the sequence. It is conceivable that further in the sequence other types of messages are more effective to activate citizens. Choosing a retirement date could be triggered for example with the offer to go through an e-course in order to understand all options.

Taking the course implies taking the central route.

Future studies should investigate via which route, the peripheral or the central route, messages related to each step in financial planning are processed. As argued before, it is possible that messages related to the first step in the sequence, which lead to being prepared for retirement, are mainly processed via the peripheral route. People are not at that point experienced yet or involved. Messages related to more complex steps that may follow (like saving extra) might be processed more frequently via the central route.

Level of concreteness

It is also worth considering the level of concreteness of the separate behaviours that can be grouped under the heading 'financial planning behaviour'. Ajzen (1985) positioned behaviours on a continuum, with easy and measurable behaviours on one end and complex and composite behaviours on the other. Behaviours on the complex side of the continuum represent 'goals'. The adequacy check is concrete and relatively easy behaviour and can be positioned on the easy side of the continuum. The outcome of the behaviour, insight in one's personal situation, is an aim in itself and also a basis for further – more complex – behaviours.

Behaviours in an economic sense can often be positioned at the more complex end of the continuum. In the case of saving extra, individuals have to first define a target amount to save, next a saving solution has to be selected, and finally, the preferred saving solution has to be arranged. Zooming in on different steps and the distinction between easy and complex behaviours is relevant when economical and psychological explanations of behaviour are compared. Current explanations of inactive behaviour from the economical perspective are lack of willpower, the tendency to procrastinate and lack of financial literacy. The explanations are related to complex behaviours, like 'preparing for retirement' or 'enrolling in a savings scheme'.

The psychological literature helps to understand why individuals find it hard to plan for complex goals, and how individuals can be supported in reaching such a goal. Each single step of the complex behaviours may be related to certain beliefs (e.g., efficacy beliefs) and attitudes. Furthermore, comprehension of a limited number of topics may be enough for a specific step, instead of having to be financially literate in the broad sense.

Predictors of behaviour and how to stimulate behaviour

As far as is known, persuasive retirement messages have not been studied in the economic domain. A possible explanation for this is that economists seldom investigate the mental processes that hinder or stimulate actual behaviour. They assume that environmental resources are scarce, but mental resources are available to everybody. Psychologists, on the other hand, assume that internal processes are limited (Zwicky et al., 1999). The outcome of processing the information, via the central route or peripheral (if processed at all) is influenced by many internal processes. Although behavioural economists acknowledge that people do not process information completely rationally (via the central route), they use the term 'bias' to indicate an irrational response. This thesis showed that, apart from actual knowledge, people's beliefs about financial planning behaviour (e.g., '*planning for retirement is quite difficult*', '*looking at my situation is useful*') and about themselves in relation to financial planning behaviour (e.g., '*I think I am able to estimate my future expenses*') predict financial planning behaviour. These beliefs can derive from actual knowledge or are experience-based. Beliefs are not necessarily based on factual information. As actual knowledge on pension plans and pension accrual is low, it is likely that beliefs are based on ideas that are held to be true or on experiences from the past. In the first case, the beliefs can be described as a 'mental construction' or 'schema' (Sigel, 1985) that is based on a small set of fundamental assumptions (Byrne & Johnson-Laird, 2009). Such a mental construction can be '*when you are old, you receive a pension. It is difficult to understand how this works. You have to wait and see*'. In the second case, negative experiences in the past can lead to similar low efficacy beliefs. When people try to read a letter from the pension fund and fail to understand the content or how to respond, they can feel foolish with low perceived self-efficacy and learned helplessness as a result.

Attitudes and beliefs form important theoretical constructs that determine behaviour (Eagly and Chaiken, 1993; Fishbein and Ajzen, 1975; Bandura, 1977). Communication should be persuasive in order to change attitudes, beliefs and at the end of the line, behaviour.

In order to understand what hinders or stimulates financial planning behaviour and which persuasive messages are effective to activate citizens to plan for retirement, it is important to focus on specific behaviours and the underlying beliefs and attitudes that are relevant to them. Without a focus

on the sub steps, the link between the message, the behaviour and underlying beliefs and attitudes that positively influence the behaviour is a bit fuzzy. An easy and one-dimensional questions from the point of view of behavioural economics, like 'what would you do in the case your pension is lowered?', is for instance not simple at all from a psychological perspective. Those who know how much they can expect can probably answer the question. Others must first assess the severity of the threat. After assessing the severity, individuals may differ strongly with regard to perceived self-efficacy. It is precisely self-efficacy that is important for behaviours (and behavioural intentions) that are complex and non-habitual (Ajzen, 1985). Even when people think the threat is serious and should be dealt with, low self-efficacy can cause a negative response. It is important to acknowledge that such beliefs can affect financial planning behaviour, alongside financial literacy. The influence of financial literacy may be different depending on the sub step in the financial planning process and the route via which financial messages are processed. Being financially literate is probably necessary to follow the central route. Educating citizens is difficult however. Investing in the other route seems a promising strategy to appeal and motivate citizens to start planning for retirement. Empowering them via the peripheral route could serve as a stepping-stone towards further planning steps and reaching the end goal: being fully prepared for retirement.

Practical implications

How can pension funds improve their communication and stimulate their participants to plan for retirement? Although financial literacy is related to planning for retirement (Alessie et al., 2011; Fore, 2003, Lusardi & Mitchell, 2007), previous studies have shown how difficult it is to increase financial literacy (Choi, Laibson, Madrian & Metrick, 2005; Mandell & Klein, 2009). An individuals' level of literacy is mostly the result of years of education, with many hours spent on learning. Facilitating a comparable process is out of reach for pension funds. The present thesis points to an alternative, more viable route by showing that financial planning for retirement is related to specific beliefs and attitudes. These beliefs and attitudes can be influenced with persuasive message strategies. Citizens feel retirement is a difficult topic and they do not know where to start planning for retirement. They want to understand the basics, without learning. Conveying key messages

in a comprehensible and attractive way helps citizens to understand the basics of retirement, and to get them involved in their retirement situation.

Give clear instructions

The findings of Chapter 3 show that providing clear instructions is related to active behaviour with regard to planning for retirement. Tell people what to do. Link the instructions to concrete steps and present the instructions in a distinctive way. Explain for example in detail how someone can assess whether the expected pension will be sufficient or not. Focus in the call to action on the first step (e.g., 'log in to our website and check with tool X whether you are on track with the accrual of your pension'). Both text and lay-out of the instruction can help to highlight the call to action. Present the instructions for instance as a step-by-step plan, in a frame with an eye-catching lay-out. Use direct wordings and avoid disclaimers such as 'if you wish, you can...'

Keep the reader in mind

Citizens think retirement is difficult and they are not motivated to find their way through difficult texts. It is advisable to adjust the level of complexity of retirement texts to a level the reader can understand. As the results in this thesis suggested (Chapter 2), texts with low readability may cause an immediate rejection of the message, without processing the content of the text. Easily readable texts on the other hand are related to more active behaviour. Creating easily readable texts may enable the processing of the content of the message. The level of readability depends on factors at three levels: factors at word level, sentence level and text level. Writers could focus on all three levels. To increase readability at word level, writers could avoid jargon (e.g., 'franchise' or 'pensionable income') and composite words. Instead of *pensioenfondsvermogen* (fund's assets) it is also possible to write *'het vermogen van het pensioenfonds'* (the assets in the pension fund). It is further advisable to avoid nominalisations. Write 'the interest rates fell rapidly' instead of 'the rapid fall in interest rates'.

Complexity at sentence level can be lowered by avoiding too long sentences, clauses and by using the active voice. At the text level, simple linking words can be used to signal the coherence of a text. Avoiding technical expressions ('you accrue pension on this component') is also expected to

increase the readability of a text. Understanding technical expressions requires prior knowledge, which may be lacking. New texts could be tested (De Jong & Schellens, 1995) among representatives of the target audiences: how are the texts perceived and understood?

Use cues

Based on the assumption that people often process retirement messages via the peripheral route, it is recommended to stimulate message-processing with cues. Cues help to persuade people to accept and think about the message. People are more likely to accept messages from a credible and attractive source. This could be a role model or an appealing person from the environment of the participants. Furthermore, the attractiveness of the message can function as cue. A different size of material, an elegant or eye-catching lay-out and the use of animations and interactivity make a message distinctive and attractive. As the communication efforts are (indirectly) paid by the participants, it is important to keep the balance between investments and desired effect in mind. Otherwise, reputation risks arise.

Limit the amount of information

Within the limits of legal requirements, pension providers can filter the information they provide and only communicate that which is relevant and understandable. By communicating too many details, the risk arises that texts become complex and difficult to read. The reader may have a negative experience after reading a text with many details that are not relevant. A negative reading experience may cause an immediate rejection of a similar text in the future. An in-depth explanation of the investment strategy could for instance be published on a website instead of being the main article in a newsletter. It is helpful to personalize the communication, for example by using conditions when merging text files or after logging on to the website. Information that is not necessary or relevant could be left out, to increase the chance of conveying the key message. As the experiment with the labels showed (Chapter 4), providing extra textual details did not lead to a more positive attitude towards retirement or better conveyance of the key message.

Use imagery

Current findings point to the importance of communicating the key features of retirement accrual and the power of visuals to convey the key features. With these key features, citizens can construe a mental model with a coherent and correct set of basic assumptions. It is useful to assess the existing mental models with regard to retirement in detail, in order to understand the context in which citizens view retirement messages. Should current mental models turn out to be incorrect, pension providers could use visual metaphors to visualize the key features of complex and abstract constructs. The journey metaphor and, more specifically, the navigation metaphor help to communicate key features of pension accrual. Visual metaphors should be selected carefully. People need to have knowledge of the source domain of the image, especially with regard to the components that are mapped onto retirement. The imagery could be presented in a vivid and interactive way. An attractive presentation can function as a trigger to watch and process the message.

Use explicit warnings

A warning in combination with a concrete recommended solution seems a promising way to activate citizens. An example of such a message could be: "Avoid unpleasant surprises short before your retirement. Check your situation with this simple online test and see immediately what you can do to improve your financial situation in the future". The use of fear appeals without an instruction on how to plan for retirement, was not related to active planning behaviour, as the results in this thesis showed. Combining fear appeals and instructions appear a viable strategy to increase active behaviour. General warnings may be (too) abstract for some people (e.g., the warning that the pension can be lowered, or that bad investment results can affect the future income). In order to overcome this problem the threat can be translated into concrete consequences (e.g., "a 2% reduction means you receive 8 to 12 euro less every month"). The probability can be visualized if figures are available. For example, it is known that one out of three marriages ends in a divorce.

Focus on the result of communication

Finally, pension providers, but also governments and regulatory authorities

(e.g., the Authority Financial Markets in the Netherlands) can focus on the effectiveness of the communication. Effective retirement communication can empower citizens, as can be concluded from this thesis. Legislation could not only aim to increase knowledge of the pension plan and the risks related to pension accrual, but also to stimulate financial planning behaviour. As argued in this thesis, factual knowledge and financial planning behaviour are not necessarily related to each other. Society may profit from paying attention to what hinders financial planning, e.g., low reading ease of the materials and leaving out concrete instructions with regard to financial planning. When retirement communication is effective and citizens have positive experiences with planning for retirement, the chance of the behaviour being repeated increases and thereby the insight in the personal situation after retirement.

Limitations and recommendations for future research

Discussion of research methods

The data from pension funds participants' was collected via three online surveys. Collecting data via a survey brings with it the risk that pension-minded participants are overrepresented in the results. I used incentives to prevent such a selection bias. I strived for a diverse group of respondents, in order to have data of both highly educated employees, as well as employees without secondary education; interested and uninterested participants. The invitations were (slightly) adjusted to interest the diverse groups in participating in the studies. With a general approach, I would not have been able to collect such a diverse group of respondents. Data collection was furthermore incentivized; in order to decrease the chance of a selection bias, I offered an incentive (i.e., the chance to win a week in a holiday home in Portugal) to respondents who finished the survey. Nevertheless, the present research probably includes a larger proportion of respondents interested in the topic retirement than in the real world. The average age of the respondents may be an indication of selection bias: the average age in the first survey (discussed in Chapter 2) is almost 7 years higher than that of the employed working population in the Netherlands. In the second survey (discussed in Chapter 3), only respondents who had indicated that we could contact them for a survey the following year were invited. The average age

of the second survey was 9 years higher than the average age of the employed working population. The rise can be partly explained by the fact that the whole population aged one year. The other part points to an overrepresentation of interested and possibly empowered participants. Despite the bias, there were significant differences between the active and inactive respondents among the funds. I also assume that the selection bias was more or less equal for all funds.

I furthermore chose to invite participants randomly, without checking whether they had seen, read or remembered messages from the communication material of their pension providers. I believe that the choice to study the effectiveness of pension communication via this approach led to the most naturalistic picture of the actual situation. A downside of this method was that I had to work with rough measures and could not draw conclusions about the effectiveness of specific genres or detailed messages. Future research could focus on the research questions in Chapter 2 and 3 and conduct the study in an experimental setting.

The studies in this dissertation were conducted across a time span of three years during which many events occurred and changes took place in the external environment. Economic developments, media-attention given to retirement topics and discussions at political level may have influenced the response. During the research, the central government announced that the pensionable age pursuant to the General Old Age Pensions Act (AOW) will increase faster than expected (Rijksoverheid, 2015). In addition, a number of pension funds had to reduce their pension rights (Wijzer in Geldzaken, 2015), including three of the funds that participated in this research. These events might have affected the beliefs and attitudes of the participants of these funds, as well as their behaviours. Future studies could focus on the effects of media reports on expectations, for example via agenda setting or availability heuristic.

The surveys in this thesis used self-reported behaviour. Other methods were explored for obtaining data that objectively reflected actual behaviour, like using log data of online tools, but privacy regulations made it very difficult to obtain these data. There are a number of weaknesses in self-reports. The responses may not exactly reflect the way respondents behaved. Wordings of the question can influence the response, as well as the socially desirable responding (Paulhus & Vazire, 2007). I tried to reduce these biases via the survey construction and the instructions given to the

respondents. For example, the introductions stated explicitly that there were no right or wrong answers and that respondents could indicate that they think retirement is boring. The extent to which the respondents agreed with this statement suggests that a lot of them answered the question in an honest way: 59% of the respondents agreed to the statement that retirement is boring.

In current studies, 54% (Chapter 2) and 57% (Chapter 3) of the respondents reported that they planned for retirement once or more in the previous 12 months. It is difficult to assess whether this self-reported behaviour reflects reality. Another study reported that 40% of the citizens reported that they planned for retirement (van der Schors & Warnaar, 2015). The fact that planning for retirement can be carried out in many ways complicates an objective measure. Future research should aim at including behavioural data.

Future research

In this dissertation, it was established that participant-centred communication helps to emancipate citizens with regard to their future financial situation. I focused on three aspects of 'targeted' communication: textual complexity, persuasive key messages and the use of visual metaphors. Further research is necessary to better understand how complexity, key messages and the use of visual metaphors can help to engage citizens in their own retirement situation. In addition to the recommendations in the section about theoretical implications, some other aspects of retirement communication could be further investigated in depth. In this study, I focused on the average level of complexity of all materials used by pension providers in the Netherlands, which is an aggregated measure. Analysis of the impact of simple language in specific genres (e.g., emails, letters, web texts), other countries, and with other research methods should also be considered.

Another aspect to take into account is the design of the materials. The design may influence the processing of the text. In this research, I did not control for differences in lay-out. Possibly, lay-out choices (e.g., font, colour, use of visuals) affects noticing and processing key messages. These aspects could be the subject of future research.

It is also interesting to investigate the dynamics at pension fund level that cause the differences in writing style. What organisational processes are related to the creation of easily readable and participant-centred texts,

knowing that all pension funds have to be compliant with the legislation regarding retirement communication? Further research should be directed towards answering these questions.

Communicating risks and uncertainties on pension accrual provide interesting challenges. The uncertainties are wide. Both the first study in this dissertation, Protection Motivation Theory (Rogers, 1983) and the newly developed retirement belief model (Eberhardt, Brüggem, Post & Hoet, 2016) designate perceived susceptibility and perceived severity as relevant variables for retirement related behaviours that benefit the citizens in the long term. In the Netherlands, communicating risks is legally required, whilst the individual appraisal of fear appeals with regard to future retirement income and the influence of these appraisals on separate behaviours that can be grouped under the heading 'financial planning behaviour' are not clear. Future research could focus on the optimal form of risk communication and the influence on the different behaviours related to planning for retirement.

General conclusion

A well-balanced retirement communication strategy can reduce the number of citizens that discover (too) late that their retirement income will be lower than expected or required. Previous studies and current findings suggest that people feel helpless, because they do not know how to get insight and do not see the benefit of getting involved in their own situation.

Findings in this thesis point to the use of simple language, persuasive message strategies and visual metaphors to activate citizens to plan for retirement. People who plan for retirement know – at least approximately – how much retirement income they can expect. This insight prevents unpleasant surprises short before retirement date and is necessary to make informed choices aimed at improving the financial situation after retirement.

The use of complex language is related to a lower level of financial planning. Possibly people reject less readable texts in advance, and do not process the content of the text. The use of simple language enables the processing of substantial messages in a text, whether superficially or more in-depth, and seems a prerequisite when the aim is to motivate citizens to plan for retirement.

Results in this thesis show furthermore that – for texts to be processed – they should contain concrete instructions on planning for retirement. Planning for retirement is not a habitual behaviour for most citizens and is often perceived as difficult and/or not useful. Concrete instructions in material sent directly to the target audiences are related to a significant higher percentage of citizens that plan for retirement. The use of fear appeals in combination with instructions on how to plan for retirement seems to be effective as well. While coding the materials, it emerged that the persuasive messages were not very outspoken. We noticed that the majority of the material was somewhat traditional and not based on state-of-the-art knowledge of persuasion and education. This means there are many opportunities to improve the messages and make these more persuasive.

Thirdly, this thesis showed that a visual metaphor is a powerful instrument to convey key features of retirement accrual. A visual metaphor based on the concept of car navigation systems communicated for instance clearly that individuals accrue their pension gradually. The associations with the source of the metaphor ('you are on the way to your destination') appeared to be mapped onto retirement successfully by individuals. The visual outperformed the text in the provision of information on retirement accrual. Conveying that pension is accrued gradually in turn influenced important beliefs and attitudes: individuals perceived the information as more honest when it conveyed that the future income is accrued gradually; they showed a more favourable attitude towards retirement in general and they thought more frequently they were capable of planning for retirement. When people believe the information is honest and have a positive attitude towards the subject (i.e. retirement), it is more likely that the attitude towards planning for retirement changes in a positive way and the desired behaviour becomes more likely.

This study took a first step in determining how communication can empower people to plan for retirement. The results provide leads to improve retirement communication with strategies that go beyond mere informing and thus help citizens to adequately prepare for their old age.

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English Summary

Introduction

Most people have no idea how much money they will need when they retire¹. They do not prepare well, or at all, for their retirement, and their expectations are often unrealistically high given the amount of pension they can accumulate via their pension plan². The general feeling is that planning for retirement is difficult³. This behaviour and beliefs could be considered 'non empowering'. In this dissertation, empowered behaviour is central: behaviour that demonstrates involvement and self-confidence with regard to planning for retirement. It is argued that empowered behaviour is necessary to prevent unpleasant surprises short before the retirement date. This is also true for countries with a high quality pension system. The pension system in the Netherlands is ranked as second best in the world⁴. At the same time, fifty percent of citizens face an expected retirement income (state pension and pension via their employer) of less than seventy percent of their current income (which is considered the norm for an economically healthy retirement income). One out of five citizens is expected to face serious problems: this group will not be able to afford their minimal expenditure, even if they were to reduce their housing costs⁵. Being unprepared is undesirable and poses a large risk: if individuals never set targets and do not check what they have accumulated, they face the risk of an insufficient income by the time they retire. Assessing the adequacy of the accrual ("is the pension I can expect enough for me?") is a necessary part of empowered behaviour. It is the first step in financial planning for retirement. This first step is central in this dissertation. Can we predict this behaviour and can we encourage it with appropriate communication?

Current views on planning for retirement and the role of communication

Current research suggests there is little point in communicating more to encourage citizens. First, many researchers claim that low financial literacy is related to inactivity. Those who are financially literate understand for example the concept of inflation and compounded interest. People who are financially literate plan more often^{2,6,7}.

A second explanation for this inactive behaviour is that people are irra-

tional^{8,9,10}. Even if clear arguments are presented explaining why it is important to plan for retirement, people do not always take action. Behavioural economists conclude that most people lack willpower with regard to financial subjects, like investing, saving and planning for retirement^{11,12,13}. A third explanation is the perceived lack of influence^{14,15}. When people think they have no options to influence their situation, it seems useless to devote energy to knowing more about what their personal situation will be after retirement.

The conclusion of the above-mentioned research is twofold. Those who focus on financial literacy emphasize the importance of financial education^{2,7}. Others state there is little point in informing individuals about their pension situation, because people don't react to this information in a sensible way^{11,17}. Furthermore it appears hard to increase the level of financial literacy via education^{16,18}.

Retirement communication is more than education; it is possible to 'raise' citizens with communication, but also to motivate and persuade them. These other forms of communication have hardly been studied in the retirement domain. This dissertation investigates whether communication can empower citizens to plan for retirement. It examines aspects that received little attention so far in research: the influence of the readability of texts on planning for retirement, the use of persuasive messages and the use of images to inform citizens and to encourage them to check the adequacy of their pension accumulation.

Financial planning is predictable

Two empirical studies in this dissertation examined the question whether 'planning for retirement' is predictable behaviour. Protection Motivation Theory¹⁹ was used as conceptual framework to assess socio-cognitive predictors at individual level. The theory states that two aspects determine whether people are motivated to engage in (protective) behaviour. They first assess their susceptibility to the threat ("is there a risk that I will receive a low pension?") and the severity of the threat ("what is the impact of receiving a low pension?"). The second aspect pertains to coping with the threat: the perceived self-efficacy ("do I think I can plan for retirement?") and response efficacy ("will I benefit from planning for retirement?").

Chapters 2 and 3 of this dissertation investigate whether these socio-cognitive aspects predict planning for retirement. 7117 (Chapter 2, study I)

and 2675 (Chapter 3, study I) respondents completed an online survey, with questions on their beliefs and behaviour with regard to retirement.

Results showed that perceived self-efficacy was by far the strongest socio-cognitive predictor of planning for retirement. Apart from age, it is specifically the extent to which planning for retirement seems easy and the level of confidence felt that predict whether people plan for retirement, or not. Perceived response efficacy was also a significant predictor in both studies. The appraisal of the threat (perceived susceptibility and severity) appeared to be additional predictors in the first study.

Results suggest that planning for retirement not only depends on knowledge and willpower, but for an important part also on beliefs with regard to planning: is it easily feasible and is it useful?

Financial planning behaviour is related to communication

The following step was to examine whether, besides the predictors at individual level, certain aspects of communication are related to planning for retirement. For this purpose, the complete corpora of 16 (chapter 2) and 14 (chapter 3) pension funds were analysed. The corpora consist of texts that were sent to, or available for, their participants between 2013 and 2015. Next, hierarchical linear regression analyses were conducted, with the individual predictors at level 1 and text characteristics at level 2. Hierarchical linear regression analysis enables one to analyse the effects of different variables simultaneously on a dependent variable (i.e. planning for retirement), while taking into account differences between respondents and between pension funds.

Readability of texts

Using T-scan, we conducted an automated content analysis of 128 texts of 16 pension funds (distributed or available between April 2013 and April 2014). A set of data with 19 characteristics per text was used for a factor analysis. The factor analysis revealed that 13 characteristics were related and could be used to compose a 'complexity-scale'. The level of complexity was related to characteristics at word, sentence and text level. Pension funds with highly readable texts used for instance short sentences and avoided the passive voice and compound words.

Multilevel analysis revealed that participants of funds that used com-

plex texts were less active with regard to planning for retirement. Remarkably, the level of complexity was not related to perceived self-efficacy (contrary to what one would expect), but to perceived response efficacy, in the positive direction. The more complex a text is, the more people think planning for retirement is useful. Possibly people feel guilty when they leave texts unread. The study shows that it is important to write comprehensibly. It is not clear however how readability influences planning behaviour and response efficacy, because readability is not related to the three other important predictors of planning for retirement at individual level.

Concrete incentives and fear appeals

Chapter 3 provides an empirical study on the relation between persuasive messages and planning for retirement. For the purposes of the study, texts (distributed or available between May 2014 and May 2015) of 14 pension funds were analysed for the presence of persuasive messages. Content analyses revealed that pension funds systematically use the following messages: fear appeals (e.g. 'possibly your pension will be lowered in the future'), motivating messages (e.g. 'within 5 minutes you will have insight into your financial situation after retirement') and concrete incentives (e.g. 'log in and check your situation'). Next, the relation between these messages and planning for retirement was investigated, using a multilevel analysis. Concrete incentives and fear appeals in materials that were directly sent via the post or email were related to planning for retirement. The presence of a concrete incentive was the strongest predictor of the two.

Findings suggest that the tasks related to financial planning have to be communicated explicitly in order to activate people. It is probable that most people are unaware of how planning for retirement is handled. It is expected that other persuasive messages will be found to be related as well, when concrete incentives are a standard part of the texts.

Planning for retirement was defined as: assessing the adequacy of the accrual in the 12 months prior to the survey. The adequacy check is relatively simple behaviour that provides insight into the financial situation after retirement, and enables people to take measures if necessary. Assessing the adequacy of the accrual is part of the planning behaviour in a broader sense, which could be labelled 'preparing for retirement'. Other behaviours covered by 'preparing for retirement' are 'saving extra' and 'choosing the retirement date'. Beliefs and attitudes are formed and change during the

various steps covered by preparing for retirement. The study in this dissertation shows that zooming in on a specific aspect of the planning behaviour helps to understand which beliefs relate to the specific behaviour. Zooming in on sub-behaviours will possibly also shed a new light on the current explanations for inactive behaviour (lack of knowledge and willpower).

Presumably communication is processed superficially at first (when people are not yet planning or have just started to plan). They still feel distanced from their retirement and have little knowledge about the subject. As experience is gained with planning for retirement, the content of the messages is possibly processed at a more in-depth level and with more attention. The role of knowledge then probably grows in importance.

In order to understand what hinders or stimulates planning for retirement, it is thus important to focus on specific and concrete behaviours. Without this focus, the link between message, behaviour and underlying beliefs remains fuzzy. Each link in the chain of behaviour can be stimulated with specific persuasive messages, varying from fear appeals, motivating messages and substantive arguments.

Use of a visual metaphor

The majority (79%) of Dutch citizens believe they pay for *other* individuals who are already retired²⁰. This assumption is incorrect: Dutch employees gradually accrue their own retirement income via their employer. Chapter 4 presents the results of an experiment with 5449 participants, that investigated the impact of a visual metaphor with information about retirement accrual on this (incorrect) belief. A metaphor helps to understand intuitively abstract and complex subjects. People use associations with, and knowledge about, the source of the metaphor and transfer these onto another subject (the target). In the experiment, travelling with a navigation system was used as source, and pension accrual as target. A visual using a navigation metaphor depicting the road from current accrual to the expected accrual as navigation systems do, performed best in communicating the message that retirement income is gradually accrued, that the expected income can vary over time and that it is not yet a right (compared to information with an abstract visual or no visual at all). The clearer the visual conveyed the basic features, the more often people thought the information was honest, that retirement was something positive and that the visual

helped to get a picture of one's own retirement situation. The results suggest that using a visual metaphor can influence planning for retirement as well. When people think the information is honest, have a positive attitude towards retirement and think they can plan for retirement, actual planning behaviour is more likely.

Discussion and recommendations

Communicating effectively about retirement

Findings in this dissertation show that it is possible to successfully communicate a complex and abstract topic like retirement, without prior knowledge being required. The results suggest that initially (when people are not yet planning for retirement or have only just started to plan) messages about retirement are read superficially. People are not involved yet in their retirement situation and have little knowledge. As they gain experience, the content may be processed with increased attention and awareness. Possibly, the factor 'knowledge' becomes more important at that time. This means that in the beginning, people should not be triggered to plan for retirement with substantive arguments. Using a persuasive cue such as a concrete instruction on how to plan, and creating easily readable texts, increases the chance that people will start to plan for retirement. Furthermore, the use of a visual navigation metaphor appears appropriate to communicate the basic features of retirement accrual. The results align with previous findings suggesting that visuals are more effective than words when a complex message has to be conveyed²³. Possibly people 'read' the image and interpret it, without being aware that they are learning. This form of learning is called 'implicit learning'²⁴. Implicit learning is effective when the topic is complex and does not arouse much enthusiasm – as is the case of retirement. Although a visual can convey less topical facts than a text, it could be questioned whether it is in effect necessary to communicate many facts. The results in this dissertation show that conveying a limited number of facts is sufficient to influence important beliefs and attitudes. This raises the question to what extent people have to be financially literate in order to want and be able to plan for retirement. It might be useful to develop a new form of financial literacy, pertinent to retirement and participant-centred. This new form of literacy could cover: understanding retirement accrual, how to plan for retirement, and the possibility of

improving the financial situation after retirement. It is also worth investigating to what extent citizens must be literate or if a correct mental model is enough. Such a model consists in a coherent web of abstract and non-verbal associations²⁵. Findings suggest that the navigation metaphor functions as an organising principle that helps adjust the current mental model of retirement.

Bridging economic and communication knowledge

Planning for retirement was defined in this thesis as assessing the adequacy of the retirement accrual in the 12 months prior to the online survey. This is relatively simple behaviour that provides insight and enables people to act (based on the insight) and improve their financial situation after retirement. This research shows that zooming in on specific behaviours helps to understand which beliefs are related to (non-)performance of the behaviour. Zooming in on sub-behaviours will possibly shed new light on economic explanations for inactive behaviour (lack of knowledge and lack of willpower). Other factors may play a role, depending on the phase in the planning process, and the specific behaviour. Someone might feel insecure or not expect any results from action. By thoroughly determining the relevant beliefs related to each phase of financial planning, it might be clearer why people do or don't take action. Without a focus on concrete behaviour and the underlying beliefs, the relation between message, behaviour and belief is unclear and communication is ineffective. Every part of the planning process can probably be encouraged with specific persuasive messages, varying from fear appeals, motivating messages to substantive arguments.

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Samenvatting in het Nederlands

Inleiding

Veel mensen hebben geen idee hoeveel geld zij nodig hebben als zij met pensioen zijn¹. Mensen bereiden zich niet goed of helemaal niet voor op hun pensioen en de verwachtingen ten aanzien van de hoogte van het pensioen zijn vaak onrealistisch hoog, gegeven dat wat men redelijkerwijs binnen een regeling kan opbouwen². Plannen voor hun pensioen vinden mensen moeilijk³. Dit gedrag en deze houding kunnen we beschouwen als 'niet *empowered*'. In dit proefschrift staat '*empowered* pensioengedrag' centraal: gedrag waaruit betrokkenheid en zelfvertrouwen blijkt als het om pensioen gaat. Betoogd wordt dat *empowered* gedrag noodzakelijk is om onaangename verrassingen kort voor de pensioenleeftijd te voorkomen, ook in landen met een hoogwaardig pensioenstelsel. Het pensioenstelsel in Nederland is bijvoorbeeld beoordeeld als het op één na beste stelsel ter wereld⁴. Tegelijkertijd kan 50% van de burgers een pensioen tegemoetzien (AOW en pensioen via de werkgever) dat lager is dan 70% van hun huidige salaris (de gangbare norm voor een toereikend pensioen). Daarnaast is de verwachting dat één op de vijf mensen serieus in problemen komt: deze groep krijgt een pensioen dat lager is dan wat men minimaal zegt nodig te hebben is, zelfs als men drastisch bezuinigt op woonlasten⁵. Onvoorbereid zijn is onwenselijk en levert serieuze risico's op: als mensen nooit vaststellen hoeveel zij denken nodig te hebben en hun pensioenopbouw niet volgen, lopen zij de kans onverwacht tekort te komen tegen de tijd dat zij met pensioen gaan. Het beoordelen van de toereikendheid van de opbouw ("is het pensioen dat ik kan verwachten genoeg voor mij?") is een belangrijk onderdeel van *empowered* gedrag. Het is de eerste stap binnen financiële planning voor pensioen. Deze eerste stap staat centraal in dit proefschrift. Kunnen we dit gedrag voorspellen? En is dit gedrag aan te moedigen door middel van communicatie?

Huidige visie op plannen voor pensioen en de rol van communicatie

Eerder onderzoek suggereert dat meer communiceren met het doel om mensen te activeren niet veel zin heeft, om verschillende redenen. Allereerst leggen veel onderzoekers de oorzaak van het inactieve gedrag bij de

lage financiële geletterdheid van mensen. Wie 'financieel geletterd' is begrijpt bijvoorbeeld wat inflatie is hoe rente op rente werkt. Mensen die financieel geletterdheid zijn, plannen meer^{2,6,7}.

Een tweede verklaring voor inactief gedrag is dat mensen irrationeel zijn^{8,9,10}. Zelfs wanneer men duidelijke argumenten gepresenteerd krijgt, die laten zien waarom het belangrijk is te plannen voor pensioen, gaan mensen niet altijd over tot actie. Gedragseconomen concluderen dat mensen een gebrek aan wilskracht hebben als het gaat om financiële onderwerpen, zoals beleggen, sparen en plannen voor pensioen^{11,12,13}.

Een derde verklaring is het gevoel dat men geen invloed heeft^{14,15}. Als mensen denken dat zij hun financiële situatie na hun pensionering niet kunnen beïnvloeden, dan denken zij ook dat het nutteloos is energie te steken in het kennen van hun eigen situatie.

Bovenstaande verklaringen zijn aanleiding voor twee soorten conclusies: degenen die focussen op financiële geletterdheid, benadrukken het belang van financiële educatie^{2,7}. Anderen stellen dat financiële educatie toch geen effect heeft, omdat men niet verstandig reageert op pensioeninformatie^{11,17}. Ook blijkt het moeilijk de financiële geletterdheid te vergroten door middel van educatie^{16,18}.

Communiceren over pensioen behelst echter meer dan alleen educatie; met communicatie kan men mensen niet alleen 'opvoeden', maar ook motiveren en overtuigen. Deze andere vormen van pensioencommunicatie zijn nauwelijks onderzocht. Dit proefschrift onderzoekt of en hoe communicatie kan bijdragen aan het empoweren van burgers op het gebied van pensioen. Het gaat in op verschillende aspecten van communicatie die nog weinig aandacht hebben gehad in onderzoek: de invloed van leesbaarheid van teksten over pensioen op gedrag, het gebruik van persuasieve boodschappen en het gebruik van beeld om deelnemers te informeren en aan te sporen om de toereikendheid van hun pensioenopbouw te checken.

Financiële planning is te voorspellen

Aan de hand van de Protectie Motivatie Theorie¹⁹ zijn socio-cognitieve voorspellers op individueel niveau vastgesteld. De theorie stelt dat twee aspecten samen bepalen of mensen gemotiveerd zijn om in actie te komen. Allereerst schatten in of zij kwetsbaar zijn (loop ik de kans weinig pensioen te ontvangen?) en schatten ze de impact in van de dreiging ('hoe erg is een laag pensioen voor mij?'). Het tweede aspect betreft de omgang met de

dreiging: mensen hebben een beeld van hun zelfredzaamheid ('denk ik dat ik kan plannen voor mijn pensioen?') en het nut van plannen voor pensioen. Deze twee laatste overtuigingen vallen onder de noemer *efficacy beliefs*.

In hoofdstuk 2 en 3 van dit proefschrift is onderzocht of deze socio-cognitieve aspecten plannen voor pensioen voorspellen. 7117 (hoofdstuk 2, Studie I) en 2675 (hoofdstuk 3, studie I) respondenten vulden een online vragenlijst in, met vragen over hun overtuigingen en gedrag met betrekking tot pensioen.

Van alle socio-cognitieve overtuigingen was gepercipieerde zelfredzaamheid verreweg de sterkste voorspeller. Naast leeftijd, bleek de mate waarin plannen voor pensioen makkelijk lijkt en het vertrouwen dat iemand erin heeft dat hij in staat is om te plannen voor pensioen een belangrijke voorspeller. Gepercipieerd nut was in beide studies eveneens een voorspeller. De beoordeling van de dreiging (kwetsbaarheid en impact) was alleen in de eerste studie een voorspeller van gedrag.

De resultaten wijzen erop dat de vraag of iemand plant voor pensioen niet alleen afhangt van diens kennis en wilskracht, maar voor een belangrijk deel samenhangt met de overtuigingen die iemand heeft ten aanzien van het plannen: is het uitvoerbaar en is het nuttig?

Financiële planning voor pensioen is te relateren aan communicatie

De volgende stap was te onderzoeken of bepaalde aspecten van communicatie te relateren zijn aan het plannen voor pensioen, naast de socio-cognitieve voorspellers van dit gedrag op individueel niveau. Voor dit doel zijn de complete corpora van respectievelijk 16 (hoofdstuk 2) en 14 (hoofdstuk 3) pensioenfondsen geanalyseerd: de corpora bestonden uit teksten die verzonden zijn aan of beschikbaar waren voor deelnemers aan de pensioenregeling(en) van deze fondsen tussen 2013 en 2015. Vervolgens zijn multilevel analyses uitgevoerd, met individuele voorspellers op niveau 1 en kenmerken van de teksten op niveau 2. Deze analysetechniek maakt het mogelijk om te kijken of er een verband is tussen kenmerken van de teksten en het gedrag van de deelnemers, waarbij rekening wordt gehouden met verschillen tussen de deelnemers, op individueel niveau en groepsniveau.

Leesbaarheid van de teksten

Met behulp van T-scan is een geautomatiseerde inhoudsanalyse uitgevoerd van 128 teksten van 16 pensioenfondsen (verzonden en/of beschikbaar gesteld tussen april 2013 en april 2014). Een dataset met 19 kenmerken per tekst is gebruikt voor een factoranalyse. Uit deze analyse bleek dat 13 kenmerken systematisch samenhangen en konden worden gebruikt om één *complexiteitsschaal* samen te stellen. De mate van complexiteit hield verband met kenmerken op woord-, zins- en tekstniveau. Pensioenfondsen die laag scoorden op 'complexiteit' gebruikten bijvoorbeeld relatief korte zinnen en vermeden de lijdende vorm en samengestelde woorden.

Multilevel analyse wees uit dat de deelnemers van fondsen die complexe teksten gebruikten, minder actief waren met betrekking tot financiële planning voor hun pensioen. Opvallend was dat er geen verband zichtbaar was met de gepercipieerde zelfeffectiviteit (wat men wel zou verwachten) en wel met gepercipieerd nut van plannen voor pensioen, in positieve richting. Hoe moeilijker de tekst, hoe nuttiger men het plannen voor pensioen vindt. Mogelijk voelen mensen zich schuldig als zij teksten ongelezen opzij leggen. Het onderzoek laat zien dat het belangrijk is om begrijpelijk te schrijven. Het is echter nog niet duidelijk hoe leesbaarheid van invloed is op het planningsgedrag en gepercipieerd nut, omdat er geen verband is gevonden tussen leesbaarheid van pensioenteksten en de drie belangrijke voorspelers van plannen voor pensioen op individueel niveau.

Concrete aansporingen en angstboodschappen

Hoofdstuk 3 beschrijft een empirische studie naar de relatie tussen persuasieve boodschappen in een tekst en plannen voor pensioen. Voor dit doel zijn teksten (verzonden of beschikbaar gesteld tussen mei 2014 en mei 2015) van 14 pensioenfondsen geanalyseerd op de aanwezigheid van persuasieve boodschappen. Inhoudsanalyse wees uit dat fondsen systematisch gebruik maken van de volgende boodschappen: angstboodschappen (bijvoorbeeld: 'mogelijk wordt uw pensioen in de toekomst verlaagd'), motiverende boodschappen (bijvoorbeeld: 'binnen 5 minuten heeft u al een beeld van uw pensioensituatie') en concrete aansporingen (bijvoorbeeld: 'log in en kijk hoe u ervoor staat').

Vervolgens is met behulp van een multilevel analyse onderzocht of deze boodschappen te relateren zijn aan plannen voor pensioen. Concrete aansporingen en angstboodschappen in materialen in die verzonden zijn via

post of e-mail bleken positief gerelateerd aan plannen voor pensioen. Van deze twee was aanwezigheid van een aansporing in teksten de sterkste voorspeller van actief gedrag.

De resultaten in dit onderzoek wijzen erop dat de taken die verband houden met financiële planning expliciet gecommuniceerd moeten worden om mensen te activeren. Mensen weten waarschijnlijk niet uit zichzelf hoe je plannen voor pensioen aanpakt. De verwachting is dat – wanneer concrete aansporingen in alle teksten opgenomen zouden zijn – andere persuasieve boodschappen ook te relateren zijn aan actief plangedrag.

‘Plannen voor pensioen’ was gedefinieerd als het vaststellen van de toereikendheid van de opbouw in de 12 maanden voorafgaan aan de enquête. De toereikendheidstoets is relatief eenvoudig gedrag, dat inzicht geeft in de financiële situatie na pensionering en het mogelijk maakt om tijdig in actie te komen. Het vaststellen van de toereikendheid van de opbouw maakt onderdeel uit van planningsgedrag in bredere zin, dat aangeduid kan worden als ‘voorbereiden op het pensioneren’. Andere gedragingen die onder het voorbereiden vallen, zijn bijvoorbeeld ‘extra pensioen opbouwen’ en ‘de pensioendatum kiezen’. Overtuigingen en attitudes ontstaan en veranderen gedurende de verschillende stappen die men doorloopt als men zich voorbereidt op pensioneren. Onderzoek dat beschreven is in dit proefschrift laat zien dat het inzoomen op een specifiek aspect van planningsgedrag helpt om te begrijpen welke overtuigingen verband houden dat specifieke gedrag. Vermoedelijk werpt het inzoomen op sub gedragingen nieuw licht op de huidige verklaringen voor inactief gedrag (gebrek aan kennis en wilskracht).

Mogelijk wordt pensioencommunicatie in eerste instantie vooral oppervlakkig verwerkt (wanneer mensen nog niet plannen of eerste stappen zetten met betrekking tot plannen voor pensioen). Pensioen is dan vaak nog ver weg en men weet weinig van pensioen. Naarmate men meer ervaring opdoet met pensioen, krijgt de inhoud van de boodschap meer aandacht en wordt de boodschap grondiger verwerkt. Waarschijnlijk wordt de rol van kennis dan ook groter. Om te begrijpen wat plannen voor pensioen in de weg staat of juist stimuleert, is het dus belangrijk om te focussen op specifieke en concrete gedragingen. Zonder deze focus is het verband tussen de boodschap, gedrag en onderliggende overtuigingen niet duidelijk. Vermoedelijk kan iedere schakel in de keten van gedragingen gestimuleerd

worden met specifieke persuasieve boodschappen, variërend van angstboodschappen, motiverende boodschappen en inhoudelijke argumenten.

Gebruik van een visuele metafoor

De meerderheid van de Nederlanders (79%) denkt dat zij via hun werkgever het pensioen van gepensioneerden betalen²⁰. Dit is een misverstand: Nederlandse werknemers bouwen via hun werkgever geleidelijk een pensioen op voor zichzelf. Hoofdstuk 4 van dit proefschrift bevat de resultaten van een experiment waarin bij 5449 deelnemers de invloed getest is van een visuele metafoor met informatie over de pensioenopbouw op de (incorrecte) overtuigingen met betrekking tot pensioenopbouw. Een metafoor helpt mensen om abstracte, complexe onderwerpen te intuïtief te begrijpen. Mensen gebruiken associaties met en kennis over het brondomein van de metafoor en projecteren die op een ander onderwerp (het doeldomein). In het experiment is reizen met een navigatiesysteem als brondomein gebruikt en pensioenopbouw als doeldomein. Informatie met een visual die de weg toont van de huidige opbouw naar de verwachte opbouw, op vergelijkbare wijze als een autonavigatiesysteem de route toont, communiceerde inderdaad het best dat het verwachte pensioen geleidelijk wordt opgebouwd, nog geen recht is en kan veranderen in de loop der tijd (vergeleken met informatie met plot van het betrouwbaarheidsinterval en informatie zonder een afbeelding).

Hoe duidelijker de visual deze basiskennmerken overbracht, hoe eerlijker men de informatie vond, hoe positiever de houding ten aanzien van pensioen was en hoe meer men van mening was dat het plaatje helpt om een beeld te vormen van de eigen pensioensituatie. Deze resultaten doen vermoeden dat het gebruik van een visuele metafoor ook gedrag positief kan beïnvloeden. Als mensen denken dat de informatie eerlijk is, zij een positieve houding hebben ten aanzien van pensioen en denken dat zij in staat zijn om te plannen, is het aannemelijk dat zij ook daadwerkelijk plannen.

Discussie en aanbevelingen

Effectief communiceren over pensioen

De resultaten van dit proefschrift tonen aan dat het mogelijk is succesvol over een complex en abstract onderwerp als pensioen te communiceren,

zonder dat er basiskennis vereist is van pensioen. De bevindingen suggereren dat pensioencommunicatie in eerste instantie (als men nog niet plant of net begint met plannen voor pensioen) op een oppervlakkige manier gelezen wordt. Mensen zijn nog niet betrokken bij hun pensioen en bespreken over weinig kennis. Naarmate men ervaring heeft opgedaan met plannen voor pensioen, wordt inhoud van de boodschappen mogelijk met meer aandacht en bewuster verwerkt. Vermoedelijk gaat de factor 'kennis' dan ook een grotere rol spelen.

Dat betekent dat mensen in eerste instantie op een andere manier geprikkeld moeten worden om te gaan plannen voor pensioen dan met inhoudelijke argumenten. Door persuasieve cues te gebruiken, zoals een concrete instructie met betrekking tot het plannen voor pensioen en teksten eenvoudig leesbaar te maken, is de kans groter dat men ook daadwerkelijker gaat plannen. Verder blijkt het gebruik van een visuele navigatiemetafoor geschikt om basiskennissen van pensioenopbouw over te brengen. De resultaten sluiten aan bij de eerdere vindingen dat afbeeldingen effectiever zijn dan woorden als er een abstracte en complexe boodschap moet worden overgebracht²³. Mogelijk 'lezen' mensen de afbeelding en interpreteren zij deze, zonder dat zij zich ervan bewust zijn dat ze iets leren. Deze manier van leren wordt ook wel 'impliciet leren' genoemd²⁴. Impliciet leren is effectief als het onderwerp complex is en er weinig spontane interesse is voor het onderwerp, wat het geval is bij pensioencommunicatie. Hoewel beeld minder feitelijke informatie kan overbrengen dan tekst, is het de vraag of het nodig is om veel feiten te communiceren. De resultaten in dit proefschrift laten zien dat het overbrengen van een beperkt aantal boodschappen al voldoende is om belangrijke overtuigingen en houdingsaspecten te beïnvloeden.

Deze constatering leidt tot de vraag in hoeverre mensen financieel geletterd moeten zijn om te kunnen en willen plannen voor pensioen. Wellicht is het zinvol om een nieuwe vorm van financiële geletterdheid vast te stellen die betrekking heeft op pensioen en waarbij de deelnemer centraal staat. Deze vorm van geletterdheid zou betrekking kunnen hebben op begrip van pensioenopbouw, hoe te plannen voor pensioen en de mogelijkheden er zijn om de financiële situatie na pensionering te verbeteren. Het is ook interessant om te onderzoeken in hoeverre er daadwerkelijk sprake moet zijn van geletterdheid, of dat een correct mentaal model voldoende is. Een dergelijk model bestaat uit een samenhangend web van associaties,

abstract en non-verbaal²⁵. De resultaten wijzen erop dat een navigatiemeetafloop een goed ordenend principe is, dat helpt om het beeld dat men van pensioen heeft bij te stellen.

Een brug tussen economische en communicatiekennis

Plannen voor pensioen was in dit onderzoek gedefinieerd als het beoordelen van de toereikendheid van de opbouw in de 12 maanden voorafgaand aan de online enquête. Dit is relatief eenvoudig gedrag, dat mensen inzicht geeft in hun financiële situatie na pensionering en hen in staat stelt om (op basis van dit inzicht) maatregelen te nemen waardoor zij hun financiële situatie na pensionering verbeteren.

Dit onderzoek laat zien dat inzoomen op specifiek gedrag helpt te begrijpen welke overtuigingen verband houden met het al dan niet vertonen van het gedrag. Mogelijk werpt het inzoomen op deelgedrag daarmee ook nieuw licht op de economische verklaringen voor inactief gedrag (gebrek aan kennis en wilskracht). In plaats van een gebrek aan kennis en wilskracht in het algemeen, spelen mogelijk andere factoren een rol op bepaalde momenten. Zo kan iemand onzeker zijn of er geen vertrouwen in hebben dat een actie resultaat oplevert. Door grondig uit te zoeken welke overtuigingen een rol spelen in de verschillende fases van financiële planning, kan wellicht duidelijker worden waardoor mensen precies wel of niet in actie komen.

Zonder de focus op concrete gedragingen en de onderliggende overtuigingen is het verband tussen de boodschap, het gedrag en de overtuigingen niet duidelijk, en is communicatie ineffectief. Ieder onderdeel van de reeks gedragingen kan vermoedelijk gestimuleerd kunnen met specifieke persuasieve boodschappen, variërend van angstboodschappen, motiverende boodschappen tot inhoudelijke argumenten.

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Appendices

Appendix A

Questionnaire (translated from Dutch)

Chapter 2 and Chapter 3

Here below you will find a variety of words describing different emotions. Please, describe your feelings evoked by the word retirement. The middle position is neutral.

Worried-Carefree (relaxed) (1-5)

Not satisfied-Satisfied (1-5)

Passive, passive-Aware/attentive (1-5)

Not interested-Interested (1-5)

How problematic would it be if your income after retirement does not cover your desired lifestyle? Choose a number between 0 and 100 by moving the slider to the left or right.

Your estimation (0-100)

What are the chances that your retirement income is not sufficient to cover your desired lifestyle?

Your estimation (0-100) (certainly not going to happen – will certainly happen)

How problematic would it be if your retirement income is not sufficient to cover your basic needs?

Your estimation (0-100) (not problematic at all – very problematic)

What are the chances that your retirement income is not sufficient to cover your basic needs? Indicate the chance on a scale from 0 to 100.

Your estimation (0-100) (certainly not going to happen – will certainly happen)

How problematic would it be if your retirement income is too low to afford your desired lifestyle?

Your estimation (0-100) (not problematic at all – very problematic)

Indicate to what extent you agree or disagree.

(0 = *fully disagree*, 100 = *fully agree*).

- I want to know whether I accrue enough pension
- I think a lot is going to change when it comes to retirement.
- Others (for example my employer and/or the government) are responsible for my retirement income.
- At the end I am responsible for my retirement income.
- I will pay attention to my retirement when I am older.
- To be honest, I think retirement is a boring topic.
- I should pay more attention to my retirement situation than I do now
- I have no idea what to do regarding my pension.
- I trust the information I receive from my pension fund 100%.

Indicate the difficulty or ease of every task by moving the slider to the left or right

(0 = *very difficult*, 100 = *very easy*)

- Get an impression of the amount of pension I can expect
- Estimate my expenses after retirement
- Estimate whether my expected retirement income is enough for me
- Get an impression of the extent to which I am on track with the accrual of my pension
- Get an idea of the uncertainties and risks applicable to my pension.
- Get an idea of the possibilities of improving my retirement situation.
- Influencing my financial situation after retirement.

How confident are you that you can successfully perform the following tasks?

(0 = *not confident at all*, 100 = *100% confident*)

- Get an impression of the amount of pension I can expect
- Estimate my expenses after retirement
- Estimate whether my expected retirement income is enough for me

- Get an impression of the extent to which I am on track with the accrual of my pension
- Get an idea of the uncertainties and risks applicable to my pension.
- Get an idea of the possibilities of improving my retirement situation.
- Influencing my financial situation after retirement.

Can you indicate whether you agree or disagree with the following statements?

(0 = *fully disagree*, 100 = *fully agree*).

- I benefit from checking periodically if I accrue enough pension
- I benefit from estimating my future expenses after retirement, now
- I will not face unpleasant surprises if I check my pension now and then.
- I get more grip on my financial situation when I look at my future income and expenses now
- and then.

Did you look at the amount of your accrued retirement income the last 12 months?

Multiple choice: No / Yes, once / Yes, more than once

Did you look whether your retirement income is sufficient to cover your expenses after retirement the last 12 months?

Multiple choice: No / Yes, once / Yes, more than once

Appendix B

Selected T-scan variables for factor analysis

Chapter 2

Variables

Letters per word (average)

Composed words (average per 1000 words)

Nominalisations (average per 1000 words)

Morphemes (average per word)

Content words top 1000 (proportion in text)

Words per sentence (average)

Words per clause (average)

Passive voice (average per 1000 words)

Causal connectives (average per 1000 words)

Causal content words (average per 1000 words)

Personal pronouns (average per 1000 words)

Juxtapositions/listings per sentence

Adverbials (average per 1000 words)

Type token ratio (TTR)

Density of content words (average per 1000 words)

Negatives on sentence level

Correlative conjunctions for phrases (average per 1000 words)

Multiple negations (average amount per 1000 words)

Appendix C

Coding Guidelines

Chapter 3

Fear appeals

Two types of fear appeals were found. The first type refers to the possibility that the accrual is not high enough or lower than expected.

The second type refers to events in the future that may negatively affect the retirement income. The messages must contain a link between the risk and the retirement income (or the purchasing power of the income) that may be lower as a result of the materialized risk.

References to the personal choices that affect the retirement income are not considered to be messages of this second type.

Examples of events that can affect the balance between income and expenses negatively:

- Economic developments, low returns on investments
- Increased life expectancy
- Changes in the personal situation: e.g., salary increase, divorce, part time working
- No or conditional indexation
- Reduction of the accrued rights or pensions

Examples of fear appeals:

- Your retirement income is possibly lower than expected.
- Do you accrue enough?
- When you face a gap between your income and expenses, you can..
- A balance between your retirement income and expenses is not a matter of course.
- When your pension is not indexed, you can buy less.

The sentence “Returns on investments can be lower than expected” is not considered a fear appeal (link with retirement income is missing). Also the sentence “Changes in your personal situation might affect your retirement

income” is not considered a fear appeal, because changes in the personal situation can also affect the income positively.

Instructions

This type of message describes what kind of behaviour is desired or possible. Coded is whether the text refers to one of the following behaviours:

1. Looking at the accrued pension rights/capital or those to be accrued in the future
2. Setting the target: estimating of / thinking about expenses after retirement or pension needed/desired
3. Checking the adequacy of the accrual: finding out whether the accrued pension rights are in balance with expected expenditures or own expectations

Efficacy messages

Does the text contain messages aimed at increasing the motivation to perform the desired behaviour?

Two types of efficacy messages are coded: messages about a role model performing the desired behaviour and encouraging messages.

Role model messages can be testimonials, instructions, experiences or a quote with a name. The role model has to illustrate, explain or recommend the desired behaviour.

Examples of encouraging messages:

- A message aimed at a positive self-image, e.g., ‘You can do it!’
- A message aimed at a positive image of the desired behaviour, e.g., ‘It is not difficult’, ‘It only takes 10 minutes’ or ‘simply sign in’, go to our handy tool’.
- A message aimed at just trying, a first experience.

Appendix D

Labels

Chapter 4

The combination of the two textual factors *Level of Detail Outcome* and *Level of Detail Probability* and three levels of *Visual* resulted in twelve labels.

Detail Probability: low / Detail Outcome: low



Expected outcome: € 1300.
(net per month including state pension)
In case of a setback, you receive less: € 840.
When all goes well, you receive more: € 1400.
Your accrual now is € 450.

Detail Probability: low / Detail Outcome: high



Expected outcome: € 1300.
(net per month including state pension)
In case of a setback, you receive less than € 840.
When all goes well, you receive more than € 1400.
Your accrual now is € 450.

Detail Probability: high / Detail Outcome: low



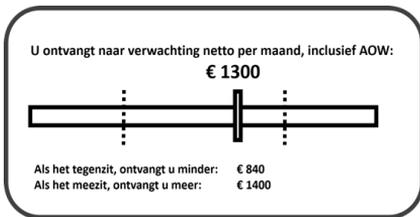
Expected outcome: € 1300.
(net per month including state pension)
There is a small chance that you receive less: € 840.
There is a small chance that you receive more: € 1400.
Your accrual now is € 450.

Detail Probability: high / Detail outcome: high



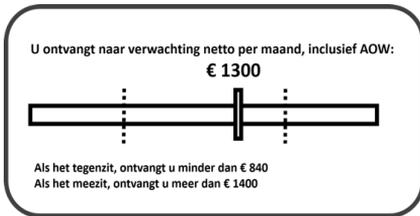
Expected outcome: € 1300.
(net per month including state pension)
There is a small chance that you receive less than € 840.
There is a small chance that you receive more than € 1400.
Your accrual now is € 450.

Detail Probability: low / Detail Outcome: low



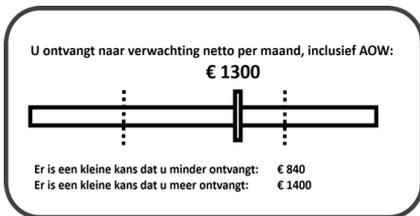
You are expected to receive net per month, including state pension: € 1300.
In case of a setback, you receive less: € 840.
When all goes well, you receive more: € 1400.

Detail Probability: low / Detail Outcome: high



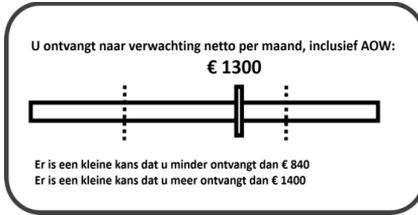
You are expected to receive net per month, including state pension: € 1300.
In case of a setback, you receive less than € 840.
When all goes well, you receive more than € 1400.

Detail Probability: high / Detail Outcome: low



You are expected to receive net per month, including state pension: € 1300.
There is a small chance that you receive less: € 840.
There is a small chance that you receive more: € 1400.

Detail Probability: high / Detail Outcome: high

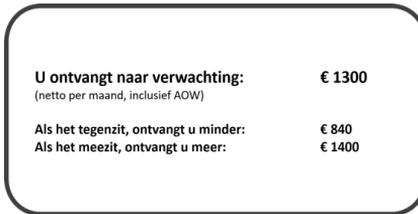


You are expected to receive net per month, including state pension: € 1300.

There is a small chance that you receive less than € 840.

There is a small chance that you receive more than € 1400.

Detail Probability: low / Detail Outcome: low



You are expected to receive net per month, including state pension: € 1300.

In case of a setback, you receive less: € 840.

When all goes well, you receive more: € 1400.

Detail Probability: low / Detail Outcome: high



You are expected to receive net per month, including state pension: € 1300.

In case of a setback, you receive less than € 840.

When all goes well, you receive more than € 1400.

Detail Probability: high / Detail Outcome: low



You are expected to receive net per month, including state pension: € 1300.

There is a small chance that you receive less: € 840.

There is a small chance that you receive more: € 1400.

Detail Probability: high / Detail Outcome: high

U ontvangt naar verwachting: € 1300
(netto per maand, inclusief AOW)

Er is een kleine kans dat u minder ontvangt dan € 840
Er is een kleine kans dat u meer ontvangt dan € 1400

You are expected to receive € 1300 (net per month, including state pension)

There is a small chance that you receive less than € 840.

There is a small chance that you receive more than € 1400.

Appendix E

Survey Questions

Chapter 4

We test a new figure that shows your retirement income. The final result will show personalised amounts. Hereafter, you see an example with example amounts for someone else. All questions concern the same example. We would like to know your opinion on the figure.

Indicate to what extent you agree or disagree. (0 = *fully disagree*, 100 = *fully agree*).

1. This figure shows that the income to expect (in this case 1300 euro) can be different next year.
2. This figure shows that other outcomes than 840, 1300 and 1400 euro are also possible.
3. The person this figure applies to, needs to take into account the serious possibility that he receives less than 840 euro.
4. The person this figure applies to, needs to take account the serious possibility that he receives more than 1400 euro.
5. This figure shows that your retirement income is accrued gradually.
6. This figure shows that you are not entitled yet to your expected retirement income.
7. This figure is honest
8. This figure makes me feel good about retirement
9. This figure helps to get an idea of your future retirement income
10. This figure makes you feel that engaging in pension is terribly complicated
11. This figure gives you a better understanding of your retirement situation
12. This figure helps you to assess whether you receive enough pension after retirement

13. Did you check in the last 12 months the amount of pension you accrued?

- [1] No
- [2] Yes
- [3] I do not know / No answer

14. Did you use your pension statement to assess whether the pension you have accrued (or expect to accrue) is enough for you?

- [1] No
- [2] Yes
- [3] I do not know / No answer

15. Could you indicate your personal trust in your pension fund? (0 = no trust at all, 100 = full trust)

16. Do you expect the economic situation in the Netherlands to improve, to deteriorate or be similar the next 12 months?

- [1] Improve
- [2] Deteriorate
- [3] Similar
- [4] I do not know / no answer.

17. What do you expect regarding the financial situation of your household? Will it improve, worsen or be similar?

- [1] Improve
- [2] Deteriorate
- [3] Similar
- [4] I do not know / no answer.

18. How much do you know about financial issues? (e.g., investing, interest, inflation) (0 = I know nothing about financial issues, 7 = I know a lot about financial issues)

19. Suppose you receive 200 euro in one year from now. The inflation rate is 1% per year. How much can you buy with the 200 euro?

- [1] More than now
- [2] *Less than now*
- [3] As much as now

- [4] *That depends on what I buy*
- [5] I do not know

20. Suppose you put 100 euro on a savings account, with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of five years?

- [1] Less than 110 euro
- [2] 110 euro
- [3] *More than 110 euro*
- [4] It is impossible to tell from the information given.

21. An investment with a high return is likely to be high risk.

- [1] *True*
- [2] False

22. High inflation means that the cost of living is increasing rapidly.

- [1] *True*
- [2] False

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Curriculum Vitae



Annemarie van Hekken was born in 1969 in Rotterdam, the Netherlands. In 1993 she received her MSc degree in Social and Cultural Anthropology at the Faculty of Social Sciences (VU). In her professional life she has been working for the last 16 years as a retirement communication specialist. She was partner and creative director at Bridgevest and is since 2015 owner of Lidewij & Spijker B.V., an agency specialized in retirement communication. Currently she is manager communication at Pensioenfondsvervoer, external expert at Stichting Pensioenfonds Huisartsen and teacher at SPO.