



Network for Studies on Pensions, Aging and Retirement

# Netspar DESIGN PAPERS

*Elisabeth Brügger, Ingrid Rohde  
and Mijke van den Broeke*

## Different people, different choices

The influence of visual stimuli in  
communication on pension choice



The background of the page is a white space filled with a series of thin, black, curved lines. These lines originate from the left side and curve towards the right, creating a sense of movement and depth. The lines vary in curvature and density, with some being more pronounced than others.

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DESIGN PAPER 15



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## PREFACE

Netspar seeks to stimulate debate on the effects of aging on the behavior of men and women, (such as what and how they save), on the sustainability of their pensions, and on government policy. The baby boom generation is approaching retirement age, so the number of people aged 65 and over will grow fast in the coming decades. People generally lead healthier lives and grow older, families have fewer children. Aging is often viewed in a bad light since the number of people over 65 years old may well double compared to the population between 20 and 65. Will the working population still be able to earn what is needed to accommodate a growing number of retirees? Must people make more hours during their working career and retire at a later age? Or should pensions be cut or premiums increased in order to keep retirement benefits affordable? Should people be encouraged to take personal initiative to ensure an adequate pension? And what is the role of employers' and workers' organizations in arranging a collective pension? Are people able to and prepared to personally invest for their retirement money, or do they rather leave that to pension funds? Who do pension fund assets actually belong to? And how can a level playing field for pension funds and insurers be defined? How can the solidarity principle and individual wishes be reconciled? But most of all, how can the benefits of longer and healthier lives be used to ensure a happier and affluent society?

For many reasons there is need for a debate on the consequences of aging. We do not always know the exact consequences of aging. And the consequences that are

nonetheless clear deserve to be made known to a larger public. More important of course is that many of the choices that must be made have a political dimension, and that calls for a serious debate. After all, in the public spectrum these are very relevant and topical subjects that young and old people are literally confronted with.

For these reasons Netspar has initiated Design Papers. What a Netspar Design Paper does is to analyze an element or aspect of a pension product or pension system. That may include investment policy, the shaping of the payment process, dealing with the uncertainties of life expectancy, use of the personal home for one's retirement provision, communication with pension scheme members, the options menu for members, governance models, supervision models, the balance between capital funding and pay-as-you-go, a flexible job market for older workers, and the pension needs of a heterogeneous population. A Netspar Design Paper analyzes the purpose of a product or an aspect of the pension system, and it investigates possibilities of improving the way they function. Netspar Design Papers focus in particular on specialists in the sector who are responsible for the design of the component.

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# DIFFERENT PEOPLE, DIFFERENT CHOICES

## Summary

One of the major challenges for national governments, pension funds, and life/pension insurance companies is to stimulate people to think about their retirement income. For many people, retirement is so far away that it decreases their motivation to acquire relevant information, evaluate different options, or take necessary decisions. This reluctance to consider retirement-related information can lead to severe problems in the future as pension systems all over the world come under pressure as a result of the current financial crisis and aging of the population. The extent of the problem may be more pronounced in certain segments of the population. For example, research has shown that women are more risk-averse than men.

Recently, Hershfield et al. (2011) proposed an innovative way to make people more future-oriented, namely to age-process their pictures so that they can better visualize themselves at retirement. In our tool, we have applied this method to a mass communication context and have systematically developed different visualizations of retired people using the literature on possible selves. More specifically, we have crafted pictures that reflect "hoped-for" versus "feared-for" future selves in general as well as in a material and social setting. The advantage of using such visualizing stimuli is that they can be used in regular pension communications such as the cover letter of the Uniform Pension Statement (UPO) or in general advertisements. We have

also added the slogan “Will your future look like this in approximately the last 30 years of your life?”, a slogan that supports the visuals in stimulating people to think about their future and that is adequate for advertising.

To provide support for our tool, we conducted two pre-tests as well as one pilot study. The results indicate that pictures have the potential to activate possible future selves. The choices that people make may thus differ, depending on the visual stimuli that they are exposed to. Our results as well as earlier work in this area suggest that this avenue is worth future research.

## **Policy recommendations**

### **Different risk perceptions for pensions and financial products in general**

One of the biggest differences between pensions and financial products in general is that the consequences of pension decisions will only be felt in the distant future. Research has shown that consequences which occur at a later stage in time have less impact on today's decisions the more distant they are in the future. Thus, people will only think very abstractly about the desirability of a decent pension income, and they discard unique features of different actions that would be needed to achieve such pension income. The time gap from retirement also enhances self-control problems as it is tempting to give in to immediate gratification at the expense of more risky benefits in the distant future. Also, people may plan to save more money for retirement but may procrastinate searching for the best option. The main goal for pension communication is thus to bring the distant future closer, thereby stimulating more concrete representations of the feasibility of the desired level of retirement income.

### **Activation of possible future selves to affect risk and time perceptions**

Instead of altering the way consumers think about future rewards, we suggest aiding consumers in imagining their future self and how this will benefit (or suffer) from the outcome of decisions made today. This is in line with recent work by Hershfield and colleagues (2011), who created age-progressed renderings of possible future selves. They found that respondents who were exposed to their possible future selves showed lower discounting of future rewards and higher contributions to savings accounts.

With our tool, we have applied this general idea to a mass communication context and have systematically developed different visualizations of possible future selves based on the literature on possible selves. More specifically, we have selected and designed pictures that reflect “hoped-for” or “feared-for” future selves in general, as well as along the material and connective dimension. Our two pre-tests and pilot study indicate that such visual priming has the potential to activate possible future selves.

### **Active future self = worries?**

In line with existing research, we expected that activating “feared” future selves may better stimulate people to take action and think about retirement since negative information has a larger impact on attitude evaluation and self-regulation. Ellen et al. (2012), however, suggest that feared future selves may paint a scary picture that has a paralyzing effect and prevents people from coming into action. Our initial empirical evidence suggests that the feared manipulations make respondents slightly more risk-seeking.

### **Different people, different choices**

The general consensus in the literature is that women are more risk-averse than men. Women tend to worry more about risks in general and financial risks in particular and therefore enroll more often in voluntary pension plans and make larger contributions. The relationship between age and risk and time preferences, however, is less clear. Some studies suggest that older people exhibit higher levels of risk aversion whereas other studies suggest the opposite; some studies suggest a U-shape relationship

between age and time preferences, whereas other studies report a simple negative relationship or even no relationship at all.

### **The role of culture**

Research has shown that culture has a strong influence on risk perception. For example, countries characterized by high levels of uncertainty avoidance or individualism are associated with strong hyperbolic discounting (i.e. people prefer to consume more now rather than more at a later point in time). This suggests that, on average, we would find strong hyperbolic discounting in the Netherlands, since it scores high on both dimensions (uncertainty avoidance: 53; individualism: 80). Another study compared the risk preferences of Chinese, Americans, Germans, and Poles and found that Americans were most risk-averse, Chinese were risk-neutral, and Germans and Poles ranked in between. This indicates that pension communication should be adapted to the specific cultural background of the persons approached.

## 1. Introduction

The pension system in the Netherlands is under pressure. Although the Melbourne Mercer Global Pension Index has again ranked the Dutch pension system as the best in the world (Mercer, 2011), it is unsustainable in its present form. Pension funds and insurance companies are facing problems and can no longer guarantee the pension rights of pension participants (Schouten, 2011). Developments such as population aging and the financial crisis have led to historically low coverage ratios of the Dutch pension funds. The result is that pensions will not be indexed and that pension benefits may have to be lowered (Schouten, 2011).

In times when employees have to bear more risk and make pension choices, the communication around pensions gets more and more important. But how can information around pensions be communicated in the best way? Since research has shown that pension information has a positive effect on behavioral *intentions* but not or only to a limited extent on *real* behavior (Prast, 2011), the biggest challenge for pension communication is to develop tools that motivate people to change their behavior. In this paper, we will investigate how insights from behavioral economics and marketing can be applied within the context of communication of pension-related information. More specifically, we advance research by Hershfield et al. (2011), who proposed an innovative way to make people more future-oriented, namely to age-process their pictures so that they can better visualize themselves at retirement. In the tool that we have developed, we apply this idea to a mass communication context and systematically develop different visualizations of retired people using the literature on possible selves. More specifically, we have crafted pictures that reflect “hoped-for” versus “feared-for” future selves in general,



as well as in a material and social setting. To stimulate respondents to think about retirement-related future selves, the pictures were carefully selected and designed. We also included the slogan "Will your future look like this in approximately the last 30 years of your life?" The purpose of those pictures and the slogan is that they can be used in regular pension communications such as the cover letter of the UPO or in general advertisements.

Our paper will provide the following insights for Netspar:

- It provides an up-to-date overview of the latest findings in behavioral economics and psychology with respect to individual decision-making. These findings will be linked to the context of retirement.
- We generate insights on whether socio-demographic variables influence choices. That provides information on whether pension communication should be customized to different segments or not.
- Contrary to other Netspar projects that focus on communication as such, we take a marketing and behavioral economic stance and look at how consumer choices can be influenced through the visual stimulation of possible future selves. Thus, our focus lies on the person for whom the communication is meant rather than on communication as such.
- We develop a novel approach, based on findings in behavioral economics and psychology, to activate people's possible future selves through visual stimuli that can be used in pension communication. We extend the work by Hershfield et al. (2011) by experimentally examining whether different photos as typically used in mass communication to pension participants can also strengthen the connection between present and future selves, thereby causing them to perceive risks differently and to allocate more resources to the future.

## 2. Literature overview

Various studies on pensions have shown that the Dutch have overly optimistic pension expectations, leading to a so-called expectations gap (AFM, 2010). Their expectations about future retirement income do not correspond with the retirement income they will actually receive. There are two main reasons for this gap. First, people have trouble understanding pension risks and cannot accurately assess the effect of the type of pension scheme, personal factors, and economic circumstances on their pension benefits (Bernheim, 1995, 1998; Lusardi & Mitchell, 2007; Van Rooij, Kool, & Prast, 2007). Second, people do not give enough thought to their pension arrangements because retirement is too far away (e.g. Van Els, van den End, & van Rooij, 2004; Van Rooij, Lusardi, & Alessie, 2011). The focus of this paper is on the second point. More specifically, we propose and test a novel way of priming people through visual stimuli that can be used in pension communications to activate their future selves, thereby motivating them to think better about their pension and to take the appropriate actions. Before we discuss the development of our tool, we will first present an overview of the relevant literature on risk and time perceptions, summarize the insights on individual differences between people, and present the literature on possible selves.

### 3. Pension decisions: the issue of risk and time perception

#### 3.1 Perception of risk

Risk is inherent in life. It is therefore not surprising that decision-making under risk has attracted the attention of researchers for many centuries. Ever since Bernoulli proved in 1738, through the St. Petersburg paradox, that people do not maximize the expected monetary value of a gamble, researchers have tried to develop the ultimate theory that correctly describes decision-making under risk. At the same time, new paradoxes (e.g. the Allais paradox) have been found, providing additional evidence that the existing rational models are systematically violated. When making decisions, people use rules of thumb and shortcuts, also known as “heuristics”. The advantage of using such shortcuts is that they are adaptable to changing environments, reduce the cognitive load, and save time. Heuristics work well under most circumstances, but in certain cases they lead to systematic errors or *cognitive biases*. In this paper we will mainly focus on the affect heuristic and the effects of feelings. We know that feelings which play a significant role in the context of retirement-related decision-making, such as pension decisions, are heavily influenced by emotions such as hope or fear (Nenkov, MacInnis, & Morrin, 2009). Those emotions can be weakened or strengthened through the words or visual elements used in pension communications. As we will explain in detail in the sections below, research has shown that strong emotional responses to a stimulus (e.g. fear) alter a person's *judgment* and influence decisions.

#### 3.2 The effect of feelings

Feelings play an important role in the decision-making process. Damasio's somatic marker hypothesis (1994) suggests that a

pleasant gut feeling encourages a person to consider the available options, whereas a negative gut feeling leads to discouragement. Furthermore, the affect heuristic emphasizes that affective evaluations – liking versus disliking – shape risk perception (Finucane et al., 2000; Slovic & et al., 2002). People perceive lower risk for activities they like and higher risk for activities they dislike, even when the actual risks are equal (Roszkowski & Davey, 2010). Similarly, the risk-as-feelings hypothesis of Loewenstein et al. (2001) suggests that behavioral responses to risk are affected by emotions such as fear, worry, and anxiety.

Psychometric research also recognizes that risk perception is influenced by a combination of cognitive and affective evaluations (e.g., Fischhoff et al., 1978; Sjöberg, 2000; Slovic, Fischhoff, & Lichtenstein, 1984). Risks are evaluated according to characteristics such as voluntariness, dread, immediacy, and controllability. The map of hazards by Slovic (1987) condenses the broader domain of characteristics to two dimensions or factors of risk. The first dimension is dread, i.e. the extent to which people experience lack of control, feelings of dread, and catastrophic potential. The second dimension, risk of the unknown, is characterized by unobservable or new activities, often with delayed consequences. Feelings of dread appear to be most highly correlated with risk perceptions (Fischhoff et al., 1978), which confirms the importance of affective evaluation.

Another strand of research involves the dual-process theories, which posit that risks are identified and prioritized by a combination of two systems that are used simultaneously; i.e. reasoning and intuition (e.g., Chaiken & Trope, 1999; Hammond, 1996; Sloman, 1996). According to Kahneman (2003), people mainly rely on their intuition to compensate their limited capacity for mental effort. Whereas reasoning is a deliberate and effortful

process, intuition is more spontaneous and effortless. Intuition operates by principles of similarity and temporal proximity and is highly context-dependent. Because intuitive thoughts are emotionally charged and formed by habit, they can be hard to control or adjust. The reasoning system monitors judgments very lightly, only coming into action after a potential error has been detected. Because the systems are used simultaneously, they can lead to intrapersonal conflict. With regard to risk perception, this implies that emotional reactions to risk can differ significantly from cognitive evaluations of risk (Nesse & Klaas, 1994). Many people fear airplane crashes, even though most are aware that these are seldom occur. In contrast, people are not afraid of car accidents, even though these are both more frequent and more severe. Thus, risk perception is to a large extent determined by affect and emotions.

Retirement-related decision-making is associated with both positive and negative emotions. On the one hand, negative feelings can be triggered by the fact that retirement is associated with demise and death and possible financial dependence. These negative emotions can lead to what Hayslip et al. (1997) call retirement anxiety. Neukam and Hershey (2003) find that people who experience retirement anxiety are less likely to plan and save for the future. On the other hand, positive feelings can be evoked through associations of greater freedom (especially in terms of time management) and more leisure time; these can stimulate people to save for retirement.

### **3.3 Perception of Time**

Many real-life decisions involve a trade-off between immediate and delayed benefits and costs. This trade-off is especially pronounced for long-term tasks that require effort over time, such

as saving for retirement. A well-known fact is that people tend to be impatient and prefer to receive a certain utility today instead of receiving that same utility tomorrow (Frederick, Loewenstein, & O'Donoghue, 2002). People discount future utility and as a result prefer to receive benefits immediately, delaying costs to a later point in time. A hurdle is that in many situations, such as retirement planning, the costs need to be paid immediately, whereas the benefits will only be reaped in the distant future. The normative model for intertemporal decision-making is the discounted utility model (Samuelson, 1937). This model captures people's impatience by assuming that utility is discounted exponentially over time and that people have time-consistent preferences. This means that if a person decides to start next month with saving an extra amount of money for retirement, he or she will most likely still exhibit the same preference when the month is over, and will thereby carry out his plan.

### *Time inconsistency*

Research has shown that this assumption of time-consistent preferences is incorrect (e.g., Frederick, Loewenstein, & O'Donoghue, 2002; Read, 2004). People exhibit what are called present biased preferences and tend to pursue immediate gratification in a way that is not appreciated by their long-term selves (O'Donoghue & Rabin, 1999a). Current utility is weighted disproportionately higher than utility in any future time period, leading to a systematic conflict between a person's short-term and long-term preferences (Laibson, Repetto, & Tobacman, 1998). Those conflicts can even lead to reversal of a person's preferences. For example, research has shown that if two benefits lie in the distant future (e.g. a 15-minute work break in 100 days versus a 30-minute work break in 101 days), people tend to act relatively

patiently and prefer the more rational choice of a 30-minute work break in 101 days. However, when these benefits are brought forward in time (e.g. a 15-minute work break today versus a 30-minute work break tomorrow), people tend to reverse their preferences, become impatient, and choose the immediate gratification (Laibson, Repetto, & Tobacman, 1998).

Several studies have formally modeled intertemporal decision-making with time-inconsistent preferences (e.g., Goldman, 1979; Goldman, 1980; O'Donoghue & Rabin, 1999a; Peleg & Yaari, 1973; Pollak, 1968; Strotz, 1956). The standard approach in these studies is to use multiple-self frameworks to emphasize the conflict between long-term patience and short-term impatience. This conflict can be captured by hyperbolic discount functions, in which the discount function declines at a steeper rate in the short term than in the long term (Laibson, Repetto, & Tobacman, 1998). In other words, the per-period discount rate decreases as temporal distance increases. This is a result of people perceiving the difference between today and tomorrow as larger than the perceived difference between 100 and 101 days from now (Baucells & Heukamp, 2012).

### *Self-control problem*

Psychologists and economists agree that these declining discount rates can lead to problems of self-control (e.g., Laibson, Repetto, & Tobacman, 1998; Loewenstein & Prelec, 1992; O'Donoghue & Rabin, 1999a, b). The decision-maker is involved in an intrapersonal conflict between the farsighted planner and the myopic doer (Thaler & Shefrin, 1981). The planner looks at the long term, whereas the doer wants immediate gratification. Therefore, when people are asked about their preferences, their "planner" mode is activated and they respond with a "should" option (*I should save*

additional money for retirement). However, if tempting opportunities come along, the “doer” mode is activated and pushes for the “want” option (I *want* this great car now). Within the context of pension planning we observe that self-control problems lead to insufficient retirement saving, as it is tempting to give in to immediate gratification at the expense of risky benefits in the distant future (Laibson, Repetto, & Tobacman, 1998; Strotz, 1956). In addition, self-control problems lead to procrastination of unpleasant tasks such as planning for retirement. For example, people plan to invest their savings optimally, but procrastinate searching for and implementing profitable investment strategies, thus ending up with suboptimal or even no investments (O’Donoghue & Rabin, 1999b). This finding also applies to third-pillar pension saving in the Netherlands, where people need to decide which saving options they want to employ, such as a salary saving scheme, a life-course saving scheme, or investments in shares or mutual funds. Thus, people may plan to save an additional amount of money but procrastinate searching for the best saving option, leading to a suboptimal saving plan. How severe the effect of self-control problems is depends on the decision-maker’s beliefs about future behavior. This can be (1) sophisticated, where people have rational expectations about their future behavior and are aware of self-control problems, or (2) naïve, where people are fully unaware of their future self-control problems (O’Donoghue & Rabin, 1999a, b, 2001; Pollak, 1968; Strotz, 1956). Therefore, naïve people can continue to believe that if they do not complete a task today, they will do so tomorrow. Since the foregone retirement savings from a one-day delay are negligible but the immediate effort of making a decision is considerable, a naïve person may procrastinate forever. In contrast, sophisticated people know exactly how long they will



procrastinate if they do not complete the task immediately. They will not tolerate a large delay unless they have an extreme self-control problem. Therefore, in the context of saving for retirement, people with a sophisticated belief are always better off (O'Donoghue & Rabin, 1999b).

Procrastination can moreover increase if people are provided with additional options (O'Donoghue & Rabin, 2001). Consider a person who would normally execute task  $t_1$  immediately. If an additional task  $t_2$  is offered with a higher long-term benefit, this will become the preferred choice. The person is now only concerned with deciding when to execute task  $t_2$  and considers the availability of task  $t_1$  to be irrelevant. However, if task  $t_2$  has a high immediate cost relative to the immediate benefit, the person will procrastinate. Thus, this person may forego an attractive option because he or she plans to complete a more attractive project that, in the end, may never be completed. Similarly, procrastination may increase as the goal gains in importance (O'Donoghue & Rabin, 2001). For more important goals, people have more ambitious plans, which require more effort. This increases the immediate cost and makes it more attractive to procrastinate. O'Donoghue and Rabin (2001) argue that procrastination may therefore occur more often among people who attach more value to their retirement consumption and among those who have more money to invest.

### *Perception of the future*

Besides giving greater weight to immediate compared to future utility, people also tend to underweight the distant future versus the near future because they underestimate their future needs and thereby undervalue future payoffs (Lynch Jr. & Zauberman, 2006). This mainly affects decisions with a long-term payoff,

such as saving for retirement. People may discount utility in the distant future because they are more uncertain or because they expect their tastes to change over time. Furthermore, people may expect not to live long enough to reap sufficient benefits, or they expect social security legislation to change. Similarly, people may discount future costs because they expect to be wealthier in the future, or because they believe that their opportunity costs will become lower.

One theory dealing with such time inconsistencies is the resource slack theory, which argues that resources that are expected to be more abundant in the future are discounted more heavily (Zauberman & Lynch, 2005). Different resources may be discounted at different rates if resource slack is expected to increase more for one resource than for another. For example, Zauberman and Lynch (2005) show that people discount time more heavily than money, i.e. they falsely believe that in the future they will have more spare time but not spare money. As people consistently overestimate their spare time in the future, they tend to procrastinate tasks which require a lot of effort, such as planning for retirement.

Construal-level theory also suggests that people's mental representations are different for events in the near future versus events in the more distant future (Trope & Liberman, 2003). Events in the near future are represented at a 'low level'; people tend to think concretely about the *feasibility* of these events. In the context of pensions, someone who wants to start saving additional money for retirement may think concretely about searching for and deciding on a suitable product, or what it would do to household income if an additional amount of money were to be set aside each month. In contrast, events in the distant future are represented at a 'high level'; people think more

abstractly about the *desirability* of these events. For example, a high-level construal of retirement might simply be having enough money during retirement. Thus, as one moves to higher level construals, representation becomes increasingly less specific and more abstract. The research stream suggests that people should have a rather abstract representation of themselves at retirement until they approach retirement age. This impedes saving for retirement, as people are more likely to make sacrifices for future events with a more detailed representation (e.g. the predicted enjoyment of living in a house) (Hoch & Loewenstein, 1991; Trope & Liberman, 2003). Although the actual time until retirement remains the same, changing people's temporal perspective can stimulate them to make decisions that are beneficial in the long term (Lynch Jr & Zauberman, 2006). Encouraging people to use imagery processing may lead to more vivid and detailed representations of themselves at retirement (Ellen, Wiener, & Fitzgerald, 2012; Zhao, Hoeffler, & Zauberman, 2007). This, in turn, should lead to reduced discounting of the future and thus encourage people to increase their savings for retirement. In support of this prediction, focus-group studies have concluded that savers are more likely to imagine themselves at retirement than non-savers (Farkas, Johnson, & Kernan-Schloss, 1994).

#### **4. Individual differences between people**

The title of this topicality project is “different people, different choices”. Different in this context has two dimensions. First, people can differ in terms of how they perceive and evaluate risk, which was discussed in the previous section. But people can also act differently depending on their socio-demographic profile. Gender and age, as well as socio-demographic factors, play an important role in the context of pension decisions. Therefore, this section will address individual differences between people.

People are generally risk-averse, meaning that they prefer a certain outcome to a gamble of equal expected value, and a low-risk gamble over a high-risk gamble (Kahneman & Lovallo, 1993). However, a person's propensity to undertake risk is also affected by gender, age, and socio-demographic factors. In several studies, women were found to be more risk-averse than men (e.g., Powell & Ansic, 1997). Women apparently judge health, safety, recreational, financial and ethical risks to be larger and more problematic than men (Finucane et al., 2000; Flynn, Slovic, & Mertz, 1994; Slovic, 1987; Weber, Blais, & Betz, 2002). The tendency of women to worry more about financial risks is consistent with the fact that more women enroll in voluntary pension plans and make larger contributions than men (Sethi-Iyengar, Huberman, & Jiang, 2004). The effects of age on risk and time preferences are less straightforward. Although many experiments have shown that older people exhibit higher levels of risk aversion (e.g., Donkers & van Soest, 1999; Harrison, Lau, & Rutstrom, 2007), other research supports the opposite, namely that older people apparently exhibit lower levels of risk aversion, as evidenced by the fact that they hold more risky financial portfolios than younger people (Ameriks & Zeldes, 2001;

Guiso, Jappelli, & Terlizzese, 1996; Hurd, 2002). For example, Guiso et al. (1996) show that the share of risky assets increases by 20 percentage points throughout the life cycle. Similarly, some researchers have proposed a U-shaped relationship between age and time preferences (e.g., Becker & Mulligan, 1997), while others only find support for a simple negative correlation between age and time preferences (Donkers & van Soest, 1999), and even others find no relationship (Harrison, Lau, & Williams, 2002; Pender, 1996).

Weber and Hsee (1998) studied the effect of cultural backgrounds on the risk preferences of Chinese, American, German, and Polish respondents. They found differences in the pricing of risky options across these cultures. Although respondents from all four cultures were risk-averse in their pricing of risky options, Chinese respondents were closest to risk neutrality whereas Americans were the most risk-averse. These differences have been attributed to cultural differences in the perception of risk rather than cultural differences in attitudes towards perceived risk. Thus, Chinese offered the highest prices for risky options because they perceived the risks to be lower. Wang et al. (2010) studied time preferences across 45 countries. Interestingly, when plotting the median hyperbolic discounting function per country, they found that the US, with  $\beta=0.78$ , had the highest value (i.e. the lowest present bias) and Russia had by far the lowest value ( $\beta=0.21$ ), implying a very impatient attitude for a one-year horizon. Germany and China showed the same value ( $\beta=0.60$ ). When clustering all countries along Hofstede's dimensions of culture, they found that high levels of uncertainty avoidance or individualism are both associated with strong hyperbolic discounting. This suggests that on average, we would also find strong hyperbolic discounting in the Netherlands, since

it scores high on both dimensions (uncertainty avoidance: 53; individualism: 80).

The findings with respect to the Dutch population are generally in line with the findings described above. Women and older people tend to be more risk-averse (e.g., Donkers, Melenberg, & van Soest, 2001) and patient (Kapteyn & Teppa, 2003). At the same time, several studies (e.g., Booij & van Praag, 2009; Von Gaudecker, van Soest, & Wengstrom, 2011) point out that a lot of heterogeneity exists within the population, which can be partially explained by socio-demographic factors such as income.

## 5. Possible selves

The existing literature has identified three broad types of remedies to increase savings. The first remedy is precommitment to starting to save at a future date (e.g., Thaler & Benartzi, 2004), thereby reducing the lure of immediacy and the amount that can be consumed in the present. Precommitment includes all devices that people use to implement constraints today to discourage undesirable or encourage desirable behavior in the future (Ariely & Wertenbroch, 2002). Second, research shows that people are more patient in intertemporal choice tasks when stimulated to think about future outcomes and future uses of money (Weber et al., 2007). This research proposes that directing people's imagination to future uses of money increases the appeal of delaying consumption and the expected pleasure of future consumption. Recently, Hershfield and colleagues (2011) proposed a third and complementary route, which deals with the connection between current and future selves, rather than with current versus future benefits. They show that letting people interact with age-progressed representations of themselves stimulates them to allocate more benefits to the future. This is in line with research that suggests that people cannot identify with their future selves because they have insufficient belief or imagination (Parfit, 1971; Schelling, 1984). Their study set-up was very innovative in that participants interacted with realistic computer-generated renderings of their future selves using immersive virtual reality hardware and interactive decision aids. The drawback of this approach, however, is that it is individualized and cannot be used on a large scale through mass communication means. Instead, participants have to be motivated enough to make the effort to sign up and participate

in an age-progressed rendering exercise. Therefore, the focus of this project is to investigate whether possible future selves can be activated through mass communication means and how different segments of the population react in terms of allocating resources. Before we explain our tool in more detail, we will first review the literature on possible selves.

### **5.1 Definition**

The self-concept consists of representations of the self that change from one situation to another (James, 1910). It is “a system of affective-cognitive structures about the self that lends structure and coherence to the individual’s self-relevant experiences” (Markus & Nurius, 1986, p. 955). The working self-concept refers to the self-representations that are accessible in an individual’s thoughts and memories at a certain point in time (Markus & Nurius, 1986). This self-concept includes both chronically accessible self-representations and representations that are activated by the individual’s affective or motivational state or cues in the social environment. Although the self-concept might be dominated by representations of the current self, it also includes representations of the self in the past and the future (Hoyle & Sherrill, 2006). This paper focuses on representations of the self in the future, also called possible selves.

Markus and Nurius (1986) defined possible selves as “individuals’ ideas of what they might become, what they would like to become, and what they are afraid of becoming” (p. 954). Possible selves have both descriptive and motivational characteristics. Images of possible selves influence how current and past selves are evaluated and interpreted (Markus & Nurius, 1986). For example, a representation of the current self as ‘earning an average income’ is perceived differently by someone with a



salient 'destitute' possible self compared to someone for whom the 'wealthy' possible self is most salient. Possible selves also motivate behavior because they are personalized representations of hopes and fears (Markus & Nurius, 1986). For example, a vivid representation of the future self as a 'wealthy retiree' might motivate saving for retirement and avoiding unnecessary expenses. Possible selves can affect current representations of the self and motivate behavior when they are part of the working self-concept (Markus & Kunda, 1986; Markus & Nurius, 1986). Thus, possible selves that are rarely activated have little influence, whereas those that are chronically activated are very influential.

It is important to distinguish between two types of possible selves (Quinlan, Jaccard, & Blanton, 2006). Hoped-for selves are desirable selves that are comprised of positive attitudes and motivate approach behavior. Feared selves are undesirable selves that are comprised of negative attitudes and stimulate avoidance behavior. Because possible selves are future-oriented, they have not been verified or validated by social experience. They are not necessarily realistic or plausible, which makes them more malleable and thus less stable than past and current selves (Hoyle & Sherrill, 2006). Therefore, possible selves are most sensitive to situations in which new or inconsistent information about the self is communicated (Markus & Nurius, 1986).

In the context of preparation for retirement, three future self-representations seem relevant (Ellen, Wiener, & Fitzgerald, 2012). First, the physical future self describes the physical aspects of the body in the future, including someone's looks, health, and energy. This future self is relevant because physical condition is bound to decline with aging, leading to decreased physical ability and increased need of care. Second, the connective future self relates to social and family relationships (Berndt & Burgy, 1996),

which represent future support and responsibilities. Third, the material future self relates to an individual's material assets at some time in the future (Cross & Markus, 1991). This future self is especially relevant (Ellen, Wiener, & Fitzgerald, 2012) as the goal of retirement planning is to accumulate sufficient financial resources for the retirement period.

## **5.2 Impact on behavior**

There are two mechanisms by which possible selves can elicit behavior (van Dellen & Hoyle, 2008). The first mechanism by which possible selves influence behavior is by making behavior that is consistent with these possible selves more accessible and desirable (e.g., Markus & Ruvolo, 1989; Oyserman & Markus, 1990; Ruvolo & Markus, 1992). From this perspective, possible selves affect behavior without reference to the current self. On the one hand, people strive for their hoped-for selves by engaging in approach behavior such as increasing their savings. On the other hand, people want to distance themselves from their feared selves by engaging in avoidance behavior, and may thus increase planning and investing in the future (Ellen, Wiener, & Fitzgerald, 2012). Thus, both positive and negative possible selves should stimulate people to increase their retirement savings. There has been a lot of interest in the differential importance of hoped-for versus feared possible selves. A substantial body of literature suggests that negative information (here: the mental image of a feared-for possible self) has a greater influence on attitude evaluation and self-regulation than positive information (see Baumeister et al., 2001 for a review). In support of this prediction, Quinlan et al. (2006) concluded that only possible-self constructs related to the negative attributes of binge and nonbinge drinkers can predict drinking behavior. Similarly, feared possible selves

related to undesired health outcomes are shown to have a greater effect on health behavior than hoped-for possible selves related to desired health outcomes (Hooker & Kaus, 1994). In contrast, Ellen et al. (2012) found that only hoped-for selves affect retirement preparation, whereas feared selves do not. They argue that feared possible selves may have a paralyzing effect so that people avoid coming into action. However, their findings may result from the types of possible selves that are used: a positive material self is measured against a negative self that includes physical, connective, and material aspects. Altogether, the evidence is equivocal, but there is reason to believe that feared selves have a greater motivational impact than hoped-for selves (Ouellette et al., 2005; Quinlan, Jaccard, & Blanton, 2006). One reason for this difference in motivational impact might be that vividness is higher for feared than for hoped-for selves (e.g., Blanton et al., 2001; Fazio, Sherman, & Herr, 1982; Skowronski & Carlston, 1989). Furthermore, possible selves differ in their degree of valence and in how possible they are (Quinlan, Jaccard, & Blanton, 2006). Some hoped-for possible selves are more positive than others, and some feared possible selves are more negative than others. Possible selves with a higher positive or negative valence should have a larger effect on behavior. Similarly, the potential to influence behavior should be larger for possible selves that are more attainable.

The second mechanism by which possible selves affect behavior is through a comparison of a current self against a possible self in a certain domain (van Dellen & Hoyle, 2008). The link between possible selves and behavior can be explained by control-process models of self-regulation (e.g., Carver & Scheier, 1981; Hoyle & Sowards, 1993). In this context, possible selves serve as behavioral standards against which the current self is compared. The

interpretation of current selves do happen in isolation but depend on the surrounding contexts of possibility. Thus, the student with a journalist possible self will attach a different interpretation to a grade of A in literature than will someone without this possible self. Similarly, different images of possible future selves at retirement may aid the interpretation of financial performance indicators of one's assets. When the discrepancy between the current self and the possible self is too large or too small, an individual encounters negative affect, which motivates behavioral self-regulation (Carver & Scheier, 1990; Higgins, 1987).

## 6. Tool: visualization of possible future selves

The main contribution of this design paper is that we put the literature on possible future selves into practice by developing a set of possible visualizations that should stimulate people to think more about their future, thereby potentially affecting their risk and time perceptions and behavioral intentions. Therefore, we have developed different visualizations of possible future selves (see Appendix 1) that can be used in pension communications such as the cover letter for the UPO or general advertisements. Those future selves should stimulate respondents to envision themselves in the future, thereby increasing their motivation to pay attention to and act on pension information.

Using such visual priming is very innovative since research on possible selves typically relies on verbal priming of either hoped-for or feared possible selves (e.g. Ouellette et al., 2005). Hershfield et al. (2011) are the first to show that exposing people to a visual representation of themselves in the future has an effect on pension decision-making. However, as mentioned earlier, their method is not suited for a mass communication context. To our knowledge, we are the first to systematically develop visual representations of persons at retirement age along the possible selves literature. We started by developing criteria for visualizing hoped-for versus feared, and the possible dimensions of material, connective, and physical future selves. In total, six possible visualizations were developed that differed along two dimensions: (1) the possible-self type: hoped-for vs. feared; and (2) the possible-self dimension: general vs. material vs. connective. The general group manipulated feared-for versus hoped-for selves in general along the dimensions of material, connective, and physical selves. So the hoped-for general picture

shows a healthy elderly couple, together with its relatives, in front of a large house. The feared-for general picture shows an elderly man/woman alone, poorly dressed, in a hospital bed. For the material group, the hoped-for picture showed an elderly couple in front of a large house, whereas the feared-for picture shows the same couple in front of an apartment complex that features a lot of satellite dishes ("schotelflats"). For the connective group, the hoped-for picture shows an elderly couple together with children and grandchildren, whereas the feared-for picture shows the man and woman all by themselves.

When developing the visualizations, we went to great length to ensure that crucial factors besides our manipulations are held constant. For example, the hoped-for material picture features exactly the same couple, in the same clothes, in the same position, only in front of a different house than in the feared-for condition (villa vs. "schotelflat"). All pictures also included the slogan "Will your future look like this in approximately the last 30 years of your life?" to stimulate respondents to think about their retirement-related possible selves.

We argue that, based on the literature of possible future selves, such visualizations in pension communication should prime respondents to think of their possible future selves, thereby increasing their motivation to listen to and act upon the pension communication.

## 7. Empirical support for visualization of possible future selves

To investigate which visualization works best in stimulating people to think about themselves at retirement, we conducted two pre-tests and a pilot study.

### 7.1 Pre-test 1

Twenty-five respondents were asked three questions:

- 1) *What comes to your mind when looking at this picture?* (associations) When analyzing the open-ended responses to this question, the associations that came forth coincided to a very large extent with the desired images.
- 2) *How positive or negative is this picture to you?* (valence) In line with expectations, respondents described the valence as positive for the hoped-for and negative for the feared treatments (except for the connective group, which received a neutral evaluation: not surprising given that we used a neutral picture of a single person).
- 3) *Could you imagine this to be you in a number of years?* (realism) Respondents indicated that they could imagine that they would resemble the people in the hoped-for manipulations, but they had some problems imagining that they would resemble the people in the feared manipulations (5.8 for the hoped-for general self, 4.6 for the hoped-for material self, and 5.6 for the hoped-for connective self versus 2.9 for the feared general self, 1.6 for the feared material self, and 3.7 for the feared connective self).

### 7.2 Pre-test 2

Since, to our knowledge, no previous study has investigated the effect of visual priming on the activation of possible selves in

the working self-concept, it was necessary to conduct another pre-test to inquire whether the manipulations also work as intended when primed unconsciously. We conducted an experiment with a 2 (possible-self type: hoped-for vs. feared) x 3 (possible-self dimension: general vs. material vs. connective) between-subject design, involving 119 participants. Our tests of the different manipulations show that, in general, the means for the different groups point towards the right direction and support the use of pictures to prime different future self-concepts. However, in most cases the analyses of variances (ANOVA) do not show a statistically significant difference between the groups, which may be attributed to the small sample sizes.

### 7.3 Pilot study

To provide more support for the visualizations that we developed, we tested our visuals in a more realistic environment, this time measuring our dependent variables of interest along the 2 (hoped-for vs. feared) x 3 (general vs. material vs. connective) between-subject design. The pictures were included in a banner, which was designed to be suitable for use in regular pension communications (e.g. letters or UPO). Every page included a limited number of questions, to ensure that the banner remained visible throughout the relevant part of the questionnaire. All AEGON employees (n=2300) were invited to participate in our pilot study by posting an announcement on the AEGON intranet website<sup>1</sup>. We obtained 309 responses, of which 198 were complete

1 Note that the goal of experiments is to disentangle differences between different treatments, e.g. whether the feared-for or hoped-for material group leads to higher behavioral intentions or 'better' risk perceptions. Therefore, random assignment to experimental conditions is crucial, whereas the representativeness of a sample is less relevant.



and passed the control questions<sup>2</sup>. Our respondents were typically male, with a partner and children. They make the financial decisions, have a higher education, are on average 40 years old, Dutch, non-religious, and earn twice the modal income or more.

People's risk and time preferences were elicited through various choice lists (e.g., Coller & Williams, 1999; Dohmen et al., 2010), which were adapted to a pension context, using the modal income of the Dutch working population<sup>3</sup>. We also asked respondents how they would spend the money that they earned throughout their lives (Binswanger & Carman, 2012), whether they are "planners" or "rule of thumb" decision-makers (Binswanger & Carman, 2012), and their intentions to gather information about pensions (Prast, Teppa, & Smits, 2012). Three more variables are included as control variables. Respondents were asked (1) whether they would have sufficient income during retirement, even if they did not take additional measures, (2) to what extent they worry about their pension gap, and (3) whether they think they have a pension gap.

A detailed overview of the results per treatment is presented in Table 1. Even though the sample size is limited, we found several interesting results. A one-way between group analysis of variance with Tukey-Kramer post-hoc tests shows that being exposed to stimuli on possible future selves does seem to influence respondents' risk and time perceptions. In the *connective feared-for* treatment respondents are significantly less risk-averse in  $Risk_{2payment\_today}$  than respondents in the *control* treatment. Interestingly, when comparing the difference in number of safe choices from  $Risk_{payment\_today}$  to  $Risk_{payment\_first\_day\_pension}$ , we observe that in the six treatments the number of safe

<sup>2</sup> Details can be obtained from the authors.

<sup>3</sup> The exact survey is available upon request.

choices increases, whereas it decreases in the *control* treatment. Respondents in the six treatments are more risk-averse with regard to money they will receive at retirement than money they will receive today. Visual stimuli seems to make people want to have more safety during retirement. This difference in number of safe choice between  $Risk_{\text{payment\_today}}$  and  $Risk_{\text{payment\_first\_day\_pension}}$  is marginal between the *control* treatment and the *material feared-for* treatment. Another interesting result is that, in the *general hoped-for* treatment, respondents are significantly more willing to consume less today to save more for retirement than in the control treatment.

Unfortunately, we did not find any other significant differences between the various treatments. Table 1 does show several interesting tendencies with regards to gender and age, e.g. some results seem to be driven by the reactions of women below 40. However, the current data are too limited to draw significant conclusions.

## 8. Conclusion and policy recommendations

One of the major challenges for national governments, pension funds, and life/ pension insurance companies is to stimulate people to think about their retirement income. Yet, for most people, retirement is so far away that it decreases their motivation to acquire information, evaluate different options, or take necessary decisions. This reluctance may lead to severe problems in the future as pension systems worldwide come under pressure due to the current financial crisis and population aging. Recently, Hershfield et al. (2011) designed age-process pictures to make people more future-oriented. With our tool, we applied this idea to a mass communication context and developed different visualizations of possible future selves that can be used in pension communications (e.g. the cover letter of the UPO or in advertisements). Using the literature on possible selves, we systematically developed pictures that reflect "hoped-for" or "feared-for" future selves in general as well as along the material and connective dimension only. Our pre-tests and pilot study show that visual priming has the potential to activate possible future selves. In addition, we provide some indication that the activation of possible future selves affects respondents' risk and time preferences. Apparently, our tool stimulated people to choose more safety for retirement. This indication, together with the finding that the general hoped-for respondents are significantly more willing to consume less today to save more for retirement, indicates that using the general hoped-for stimulus might be the best choice for pension communication. Our results did not reveal strong differences between segments, which suggests that the tool appeals to a wide audience. In any case, our results as well as earlier work in this area suggests that this avenue is worth future research.

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## Appendix 1: Visuals

### *Hoped-for general self*

*Will your future look like this....*



*...in approximately the last 30 years of your life?*

### *Feared general self (male)*

*Will your future look like this....*



*...in approximately the last 30 years of your life?*

### *Feared general self (female)*

*Will your future look like this....*



*...in approximately the last 30 years of your life?*

*Hoped-for material self*

*Will your future look like this....*



*...in approximately the last 30 years of your life?*

*Feared material self*

*Will your future look like this....*



*...in approximately the last 30 years of your life?*

*Hoped-for connective self*

*Will your future look like this....*



*...in approximately the last 30 years of your life?*

*Feared connective self (male)*

**Will your future look like this....**



*...in approximately the last 30 years of your life?*

*Feared connective self (female)*

**Will your future look like this....**



*...in approximately the last 30 years of your life?*



<b>Table 1: Mean values</b>	<b>N</b>	<b>Risk today</b>	<b>Risk first day pension</b>	<b>Time1</b>	<b>Time2</b>
<b>CONTROL</b>	<b>27</b>	<b>10,52</b>	<b>10,03</b>	<b>3,81</b>	<b>2,74</b>
Men younger than 40	4	11,00	9,75	2,50	2,75
Men older than 40	16	10,69	10,69	4,50	2,50
Women younger than 40	4	9,75	10,25	3,25	3,00
Women older than 40	3	10,00	6,67	2,67	3,67
<b>MANIPULATIONS</b>					
<b>GENERAL</b>					
<b>Hoped-for</b>	<b>33</b>	<b>8,52</b>	<b>9,36</b>	<b>3,45</b>	<b>3,48<sup>a</sup></b>
Men younger than 40	8	9,13	9,13	4,25	3,63
Men older than 40	17	8,82	9,53	3,18	3,35
Women younger than 40	4	5,00	6,75	2,75	4,25
Women older than 40	4	9,50	11,75	3,75	3,00
<b>Feared-for</b>	<b>33</b>	<b>9,58</b>	<b>10,09</b>	<b>3,76</b>	<b>3,06</b>
Men younger than 40	7	11,43	12,14	3,57	3,14
Men older than 40	14	8,36	7,93	2,64	3,36
Women younger than 40	10	10,30	11,70	4,00	2,70
Women older than 40	2	8,00	10,00	11,00	2,50
<b>MATERIAL</b>					
<b>Hoped-for</b>	<b>18</b>	<b>9,67</b>	<b>10,56</b>	<b>5,44</b>	<b>3,22</b>
Men younger than 40	5	8,80	8,80	2,80	2,40
Men older than 40	6	10,67	12,17	4,50	3,33
Women younger than 40	7	9,43	10,42	8,14	3,71
Women older than 40	-	-	-	-	-
<b>Feared-for</b>	<b>30</b>	<b>8,57</b>	<b>10,03</b>	<b>3,43</b>	<b>2,90</b>
Men younger than 40	12	8,50	8,83	3,17	3,17
Men older than 40	12	8,75	11,08	3,17	2,50
Women younger than 40	3	6,67	6,67	5,67	3,33
Women older than 40	3	10,00	14,00	3,33	3,00
<b>CONNECTIVE</b>					
<b>Hoped-for</b>	<b>30</b>	<b>9,13</b>	<b>9,43</b>	<b>4,17</b>	<b>2,93</b>
Men younger than 40	12	8,50	9,58	2,75	3,08
Men older than 40	9	10,44	9,67	4,11	3,00
Women younger than 40	6	7,83	8,17	8,83	3,00
Women older than 40	3	10,33	10,67	0,67	2,00
<b>Feared-for</b>	<b>27</b>	<b>8,19<sup>a</sup></b>	<b>8,81</b>	<b>3,78</b>	<b>2,85</b>
Men younger than 40	7	9,29	9,14	6,71	2,43
Men older than 40	9	7,44	8,44	1,78	2,89
Women younger than 40	5	8,80	10,20	3,00	3,40
Women older than 40	6	7,50	7,83	4,00	2,83
<b>Average</b>	<b>198</b>	<b>9,13</b>	<b>9,72</b>	<b>3,88</b>	<b>3,03</b>
Men younger than 40	55	9,27	9,56	3,65	3,02
Men older than 40	83	9,25	9,80	3,39	2,98
Women younger than 40	39	8,69	9,69	5,28	3,26
Women older than 40	21	9,05	9,90	3,86	2,86

a = significantly different from control group at a 5% significance level

b = significantly different from control group at a 10% significance level



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## Different people, different choices

For most people, retirement is so far away that it decreases their motivation to acquire information, evaluate different options, or take necessary decisions about their retirement income. This reluctance to consider retirement related information could lead to severe problems for pension systems all over the world. In this paper, Elisabeth Brügger, Ingrid Rohde (both UM) and Mijke van den Broeke (AEGON) present the first results of a pilot study using “hoped-for” and “feared-for” pictures of the old age in pension communication.