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Psychological Construal of Retirement

How to Frame Retirement Saving Information on a Website

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Psychological construal of retirement: How to frame retirement saving information on a website

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Summary

This thesis describes the graduation project of Marco van Heijnsbergen which is performed in partial fulfillment of the requirements for the degree of Master of Science in Human Technology Interaction at Eindhoven University of Technology.

The project investigates the decision to supplement retirement income within the Dutch retirement system. We focus on third pillar arrangements whereby AOW and employment pension are not examined. Many people commonly under-save or procrastinate in starting to save because they are unable to make a trade-off between the concrete costs of saving and the uncertain/abstract amount of financial gains they will receive in the future. This results in an insufficient/unsatisfactory amount of resources during retirement. The main goal of this project is to find ways to (partially) prevent this from happening.

To prevent under-saving and procrastination we look at the psychological construal of retirement saving, specifically we look at the incompatibility between the level of construal of costs, and benefits of saving for retirement. Construal level theory states that the costs, which are in the near future, are construed at a low-level whereas the benefits, which take place in the distant future, are construed at a high-level. Existing pension plans are usually described in a low-level way, which make the saving process, and thus the costs of saving, very concrete.
In an online experiment we examined whether providing high-level pension plan descriptions would improve the amount of risk-taking and generate a higher intention to purchase third pillar retirement products. We expected that a high-level description would generate a higher intention because the high-level description better fits with the naturally high level of construal of retirement. The expectation of increased risk-taking was based on the belief that risk is less prominent in the decision making process when a high-level construal is employed and also that the incongruence between the levels of construal of costs and benefits would diminish. We also employed gain-loss framing to frame participants' goals in selecting a pension plan, whereby we expected higher amounts of risk-taking and intention in the loss-frame. This is because in general messages framed as a loss are more persuasive.
In the experiment we presented participants with a choice between three pension plans differing in amount of risk and amount of potential financial gains. Risk-taking was thus observed by the choice for either a risky or non-risky pension plan. Behavioral intention was measured in a post-questionnaire.

We found that providing a high-level description of retirement plans indeed increases behavioral intention but opposite to our prediction decreases risk-taking. In a high-level construal, abstraction is employed to extract primary aspects of situations and products. In our case we believe risk is a primary aspect. This is because the amount of financial gains for the non-risky option is already desirable and thus a less important decision-making criterion. In the low-level condition there is a trade-off between not only primary factors but also secondary aspects. More attention to secondary factors, such as the potential amount of financial gains, in this case leads to a higher preference for riskier pension plans.

We found no significant effects of the gain-loss framing manipulation. We believe this is due to the fact that manipulation took place prior and separate from the choice task. Another possible reason that the manipulation did not work could be that the manipulation did not take very long.

These findings make it hard to offer a single recommendation on how to present pension plan information on a website which is appropriate for all occasions. A high-level description of pension plan raises behavioral intention but lowers the amount of risk taken. A high-level description is thus more suited for those companies which sell retirement products that are relatively safe, whereas companies who sell riskier retirement plans may benefit more from a low-level description.

1 Introduction

1.1 The retirement decision

Arguably one of the most important decisions in our life is how to save for our retirement (O'donoghue & Rabin, 1998; Goldstein, Johnson, & Sharpe, 2008). Especially when more and more pension plans shift away from a "defined benefit" construction towards a "defined contribution"[1] construction thereby increasing responsibility for participants (Thaler & Benartzi, 2004; Benartzi & Thaler, 2007; Leiser, Azar, & Hadar, 2008; Mitchell & Utkus, 2003). Unfortunately, many people have trouble in making retirement decisions. People often are unaware of how to save for retirement and if they do know and actively make a decision, they often end up with an insufficient amount of savings to continue living at the same level as they are accustomed to (Leiser et al., 2008; Wiener & Doescher, 2008).
Before we can provide prospective retirees with high-quality decision making information we first need to better understand the retirement decision making process. Therefore we focus on understanding why people are having such difficulty with making retirement decisions.

In an initial investigation we examined how people think about retirement. The results of a questionnaire which was performed by the Dutch Netspar institute were used in this investigation. Netspar is an independent network for research and education in the field of pensions, aging and retirement. In 2009 they performed a questionnaire which was filled out by 1097 people. Among other things participants were asked to give their thoughts about retired life in general and retirement income. The results of a word frequency analysis showed that people construe their retirement in a more abstract way if it is further away in the future. This was indicated by a lower diversity of the language used to describe retired life in general and retirement income when retirement was more distant. In other words younger people use a lower amount of unique words to describe their thoughts about retirement than older people. It has been shown that matching information to the way people think is beneficial to processing fluency and persuasion (Lee, Keller, & Sternthal, 2009; Urban, Hauser, Liberali, Braun, & Sultan, 2009; Higgins, 2000). This provided a starting point for our investigation into how to present retirement plan information.

In this thesis the pension decision will be investigated further, first through a literature study and subsequently by performing an experiment. The goal of this thesis is to give recommendations on how to present retirement plan information in such a way that it allows people to more easily make decisions and/or improve the results of those decisions. This should also result in some concrete recommendations for financial companies in how to present their products to their potential customers.

[1] Defined benefit plans guarantee a certain payout at retirement according to a fixed formula, whereas defined contribution plans provide a payout depending on the performance of the investments that were made with the contributions.

1.2 The Dutch retirement system

In order to be able to create a realistic retirement-related experiment for Dutch participants, some knowledge of the Dutch retirement system is necessary. The reader needs to keep in mind that the Dutch pension system differs significantly from the US pension system. This is important to take into account since most literature discussing pension saving problems is based upon the US system (e.g. Benartzi & Thaler, 2007; Wiener & Doescher, 2008; Goldstein et al., 2008). The Dutch system is based on three pillars; state pension (AOW), employment pension and individual arrangements. AOW is provided for all people who lived in the Netherlands between their 15th and their 65th birthday, with each year living abroad within this period diminishing the amount received by 2%. The amount you receive is based on the minimum wage.

The second pillar, Employment pension is offered to most employees (www.pensioenkijker.nl, 28-12-2009). Part of the monthly wages earned during employment is used to save for retirement. Together with AOW this leads to a pension which is somewhat more congruent with your regular wages.
The third pillar consists of individual arrangements such as annuities, personal savings and investments.

In this thesis third pillar arrangements will be the focus of our investigations because this is the area in which individuals have control to make decisions to improve their retirement income. When we refer to pension plans we thus always mean supplemental pension plans.

1.3 Thesis structure

When we decide to save for retirement we make a decision now which affects us in the distant future. This means that there is a lot of uncertainty about the outcome of the decision. Some risk is thus involved, to which people are averse. To limit this uncertainty many people avoid taking any additional risk even though this is usually worth it. Also many procrastinate in making a decision. The main goal of this thesis is to find a way to avoid procrastination and under-saving (as a result of risk-aversion) in the case of supplementing retirement income.

To this end we will first look at how people reason about decisions which have temporal aspects to them. A behavioral theory that describes the way we act within the framework of inter-temporal decision-making is hyperbolic discounting. This theory will be briefly discussed; we will then proceed to try to explain why these behavioral patterns occur by looking at a psychological explanation in the form of Construal Level Theory (CLT hereafter). Gain-loss framing will also be discussed because of its ability to significantly change decision outcomes in risk-related decision making.

From this theoretical framework we gain some insight into retirement decision making. In an experiment we test the influence of level of construal and gain-loss framing on behavioral intention and risk seeking in a setting where participants have to choose a pension plan. Thereby we hope to be able to indicate how to reduce under-saving and procrastination as indicated by a higher amount of risk seeking and a higher behavioral intention.

The main findings are that a higher level of construal decreases risk-taking and increases behavioral intention. These results are discussed and alternate explanations are explored. Finally we draw our conclusions from the result of the experiment and present some concrete recommendations for how best to frame retirement information (on a website).

2 Retirement decision making

2.1 A difficult decision

Retirement saving is a subject which encompasses many different disciplines. Economic theories view retirement saving as an optimization problem where people save money for later in order to maximize some sort of lifetime utility function (Benartzi & Thaler, 2007). This means that people refrain from spending money now in order to have a reasonable amount later. However when we look at the actual behavior of people there are few who approach the problem in this way, even among economists (Benartzi & Thaler, 2007). Also how do we explain why people do not make any decisions at all? Given the importance of the decision it should be clear to everyone that the retirement decision should be given at least some consideration.

It would seem that the main difficulty in making retirement related decisions is that the decision (positively) affects you only in the distant future, whereas the costs are to be paid right now. This hard-to-reconcile trade-off is at the heart of the problem. So in other words, if we wish to enjoy a good retirement, we have to limit our current consumption for a future uncertain gain. Whether we live long enough to actually enjoy this retirement is only one of the uncertain aspects of retirement. An additional uncertain aspect is what the actual income will be that we receive at the age of retirement and how this translates to current income. The future is a rather uncertain place.

We believe the key to simplifying the decision making process in this case lies in changing the perception of costs and benefits. We will focus our investigation on risk-taking and intention to purchase third pillar retirement products. Both of these are important factors in improving the decision-making process and outcome. People can under-save because they are (too) risk-averse and are thus inclined to choose a safe retirement plan with less growth potential (Thaler & Benartzi, 2004). Another problem is that they are also likely to procrastinate in making retirement decisions because of the enormity and difficulty of the decision itself (O'donoghue & Rabin, 1998). If we could somehow create conditions in which people are more likely to take at least some risk and are less likely to procrastinate (indicated by higher intention to act) this would certainly lead to an improved retirement for a large number of people.

The Save More tomorrow program (SMarT hereafter) is a good example of a program which changes the perception of costs in order to improve the decision making process (Thaler & Benartzi, 2004). The SMarT program works as follows. Employees are asked to gradually increase the contribution to their pension savings at some future time which is preferably as distant as is feasible. The increases coincide with pay-raises, which continue with every pay-raise until the desired level of saving is achieved. The SMarT program works because it lets participants make a commitment to save more in the future. Future losses are less imminent and thus less important in decision-making. Also, because each savings-increase coincides with a pay-raise, participants do not perceive the additional contribution as an obvious loss.

In this chapter we will review the literature relating to this thesis. First, we will look at discounting which describes human behavior within the area of inter-temporal choice. Second, CLT will be discussed as the psychological theory (possibly) underlying this behavioral pattern. Last, framing of retirement in terms of gains or losses will be discussed. From this theoretical framework we will formulate hypotheses as to the effects of level of construal and gain-loss framing on risk-taking and behavioral intention.

2.2 Discounting

Many choices we make involve some kind of tradeoff between the present and the future. For instance, we can choose to do our chores now so that we can spend the rest of the day as we would like. Conversely we could put off doing any chores until late in the evening, thereby enjoying yourself during the day. A considerable amount of research shows that people have some form of time preference, a tendency to prefer rewards now over later and conversely to prefer losses occurring later over now (Frederick, Loewenstein, & O'donoghue, 2002; Klaproth, 2008; Lynch & Zauberman, 2006; Weber, Johnson, Milch, Chang, Brodscholl, & Goldstein, 2007). This means that to delay immediate gratification we would like something extra in return. The discounted utility model is a model that aims to provide a generalization of choices which involve such temporal tradeoffs. In this model a single parameter is introduced which determines the relative weight a person attaches to his well-being in different time periods (Hardman, 2009). In other words it can correlate valuations of rewards in different time periods in a quantitative manner. If we are indifferent between €100 now and €150 in a year this factor is 50%. Hyperbolic discounting employs a somewhat different way of discounting; it recognizes that the discounting factor is not constant over time. In fact, when we look at behavior of people it seems that discounting decreases as the temporal distance grows larger (Frederick et al., 2002). People are grounded in the here and now, therefore it makes sense that we are more sensitive to temporal distances that are closer to the present. So for example, the difference between today and next week is much larger perceptually than next year and next year and a week from now. The mathematical formula that hyperbolic discounting uses to describe this phenomenon is depicted below in Figure 1.

$$D(t) = 1/(1 + \alpha t)$$

Figure 1: Hyperbolic discounting formula

D(t) is the discounting factor of the reward at delay t and α is the subjective discounting parameter. The α-parameter allows for personal differences, since some people discount more than others. When the delay (t) increases, discounting (D(t)) decreases. Depicted in Figure 2 is the plot for a hyperbolic discounting function which shows this more clearly.

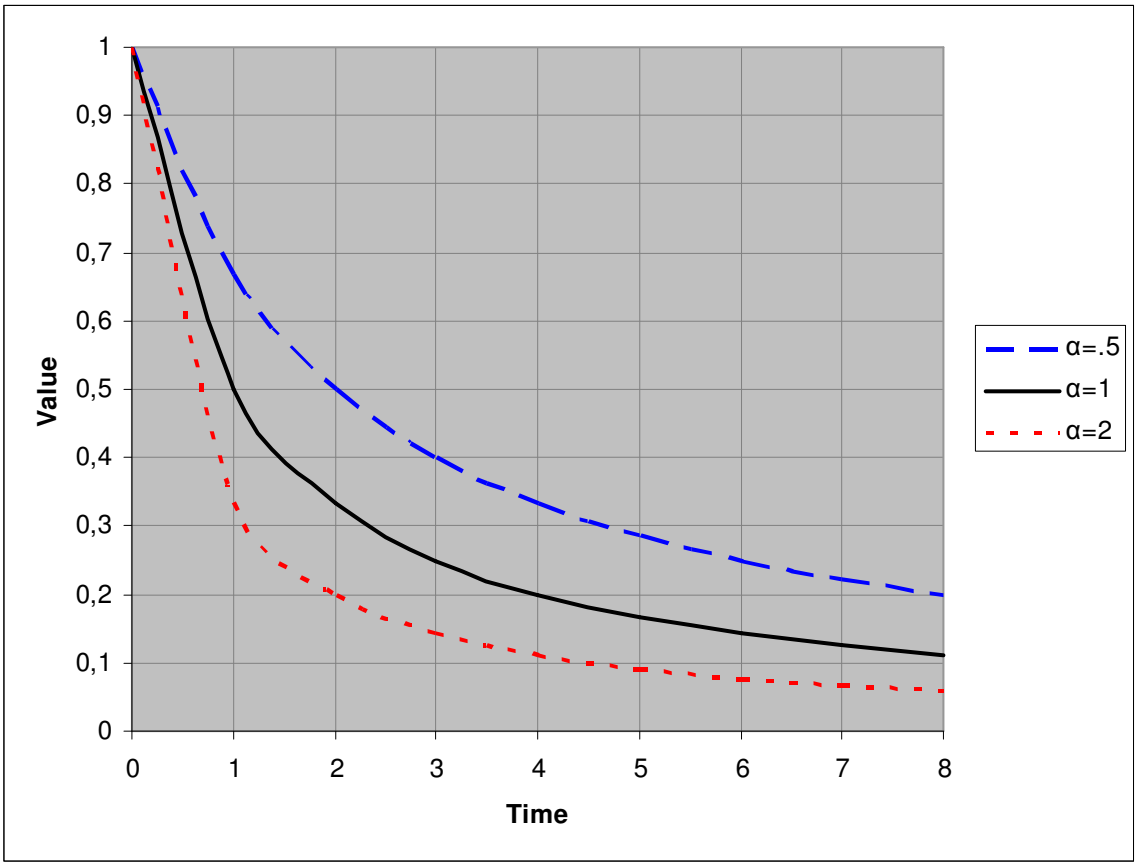

Figure 2: Hyperbolic discounting

The graph shows that the discount factor initially decreases quite fast but later on changes only marginally, this pattern corresponds well with observations in several studies (Frederick et al. 2002). The three lines represent discounting for different values of the α-parameter, the top line is an example of a low amount of discounting (α=.5) and the bottom line represents a high amount of discounting (α=2).

Discounting in this way leads to dynamic inconsistency which is a form of preference reversal. For example, I may prefer to receive €100 next month over €200 in four months but also prefer €200 in a year over €100 in 9 months. The time-difference between both choices is three months, but in the one case I prefer the sooner option and in the other the later option. Hyperbolic discounting provides an explanation for this apparent inconsistency whereas the original discounted utility model does not. In hyperbolic discounting the difference in discounting between 9 months from now and a year is much less than the difference between 1 and 4 months from now. The original discounted utility model however assumes a constant discount factor over time and thus the difference in discounting between two time periods of equal size should be the same, whereas the example shows that this is not the case. Hyperbolic discounting is thus preferred because it better describes actual behavior.

When we look at retirement decisions we know that we have an amount of money that we save now which we hope to use (much) later. If we place this in a hyperbolic discounting context we see that the amount of money we lose now is valued much more highly (in other words, is not discounted) than some unknown amount we might receive in the distant future. Therefore people may be reluctant to save money now even though they realize that they will have to do so eventually.
Even worse, hyperbolic discounting predicts that these people are in danger of continuously putting off their retirement decision making (O'Donoghue & Rabin, 1998). On the one hand it is something which needs to be done in a timely fashion to ensure sufficient funds at the time of retirement, without putting too large a strain on current consumption. But on the other hand the complexity of the decision assures that a large amount of effort, in other words a high cost, is required to come to a satisfactory decision. Furthermore, the financial cost for postponing the decision (a little) is relatively low, because the difference between starting to save now or in a couple of months is negligible. When the decision is postponed, the necessary effort is (strongly) discounted. Thus the decision is postponed, time passes and you once again arrive at a point in time where you have to make a decision and the process starts again. Thus people cope by procrastinating indefinitely. Postponing the decision is the easy solution to the tradeoff between current enjoyment and future responsibility.
Also, because retirement planning is such an important thing to do, you know you should spend a fairly large amount of time on it. This makes you even more likely to procrastinate because if you do not procrastinate you have to put in a lot of effort whereas if you do procrastinate this effort is discounted (O'donoghue & Rabin, 1998). Therefore stressing the importance of this already difficult decision might backfire.

Although the hyperbolic discounting model describes how people reason about inter-temporal decisions it does not yet provide an explanation why this is so. Economists have used this theory since it describes behavior fairly well. However a descriptive model is not satisfactory from a psychological perspective. The underlying psychology should be examined and understood as well. Construal level theory is a psychological theory which deals with how people construe objects and events across temporal distance. It may thus also offer some insight into why valuations differ depending on whether these occur in the near- or distant-future.

2.3 Construal Level Theory

We tend to think very differently about the uncertain distant-future when compared with the concrete near-future. Temporal distance can be compared to spatial distance in the sense that your ability to observe details diminishes the further away you are from an object/event. From a large distance details are no longer clear and only the gist can be approximated. When we think about the distant future we also tend to only approximate the gist. We internalize the distant future with abstract, schematic and decontextualized representations. The near future in turn is internalized in more concrete, relatively unstructured and contextualized representations (Trope & Liberman, 2003). These two distinct ways of representation are called low-level (near-future, concrete) and high-level (distant-future, abstract) construals. Trope and Liberman (2003) offer a more complete

overview of the differences between high and low-level construals which is shown below in Table 1.

Table 1: High- and low-level construal compared, from Trope & Liberman (2003)

High-level construals	Low-level construals
Abstract	Concrete
Simple	Complex
Structured, coherent	Unstructured, Incoherent
Decontextualized	Contextualized
Primary, core	Secondary, surface
Superordinate	Subordinate
Goal relevant	Goal irrelevant

According to CLT when we think about the distant future we construe situations not only more abstractly but we tend to focus more on goal relevant aspects. Leiser et al. (2008) add desirability (high-level) and feasibility (low-level) to Table 1. Desirability is more important in the distant future whereas feasibility becomes more dominant in the near future. People are thus more concerned with how-questions in the near future than the why-questions and vice versa for the distant future.
For example we can think of two children playing with a ball. A high-level construal of this situation could be "having fun". Low-level construals might mention more detailed information like the age of the children or the color of the ball (Trope, Liberman, & Wakslak, 2007).

Recently it has been shown that CLT also applies to dimensions other than just temporal distance, these include spatial distance, social distance and hypotheticality (Trope, Liberman, & Wakslak, 2007; Liberman & Trope, 2008; Trope & Liberman, 2010). Because of this CLT has introduced the more general term psychological distance as the underlying construct. CLT shows that we internalize events and objects across these different psychological distance dimensions in the same way (Liberman, Trope, & Wakslak, 2007; Lynch & Zauberman, 2007; Leiser et al., 2008). The effect has also been shown to be automatic (Bar-Anan, Liberman, Trope, & Algom, 2007) and bidirectional (Liberman, Trope, McCrea, & Sherman, 2008). In other words psychological distance affects the level of construal but level of construal also affects psychological distance. For example, when people think about the distant future they are likely to describe this future in high-level terms. Conversely, when a high-level description of a specific activity is given to you, you tend to believe it is further in the future, compared to when you are given a low-level description (Liberman et al., 2007).

CLT can account for procrastination just like we have seen with hyperbolic discounting. Retirement is something that is far away in the distant future and thus we think about potential benefits in an abstract way. Payments which we must make now are viewed as concrete losses. People are not able to trade-off abstract (uncertain) future gains with the concrete losses they incur now (Liberman et al., 2008). Thus people often decide to postpone retirement planning. Postponing makes the concrete (direct) costs more abstract

and these are therefore perceived as more manageable. However, when after some time you want to start planning again those losses are in the near future again and are suddenly very concrete and thereby are creating a vicious circle in which retirement planning is continuously delayed.

Changing an activity description from concrete (low-level) to abstract (high level) fosters the perception of the distant future (large psychological distance) as being more appropriate for this activity to be enacted (Liberman et al., 2007; McCrea, Liberman, Trope & Sherman, 2008). Therefore, changing the level of construal has the potential to make the psychological distance between costs and benefits smaller, which would make the decision somewhat easier. Costs are normally construed at a low level since these are to be paid within the near future. Benefits are construed at a high level since these take place only in the distant future. This distance can be made smaller either by making the benefits more concrete (low-level) or by making the costs more abstract (high-level). For example, the SMarT program makes costs more abstract by placing them further into the future, by doing so they make costs less salient in the decision making process. Putting people in a distant-future frame of mind also has the effect of activating their long-term goals. In other words, using the SMarT program makes costs less salient and goals more salient. Because of this the participation rates in retirement saving programs increase.
Construal Level Theory states that in general people think more abstractly about the distant future. It thus makes sense that most people who have to choose a pension plan think about retirement in abstract terms since retirement is still a long way of. Matching the shown information with the level of construal people naturally have in their heads has been shown to increase processing fluency and persuasion (Lee et al., 2009; Urban et al., 2009; Higgins, 2000).

Intention to purchase third pillar retirement products should thus also increase if retirement plans are construed at a high level. This is because this puts people in a distant-future frame of mind which increases the salience of long term goals and decreases the salience of costs. The second reason behavioral intentions may be higher when using high-level pension plan descriptions is because of the fit of the pension plan information with the natural level of construal participants have. With a higher behavioral intention we may (partly) prevent procrastination.

> **H1**: High-level descriptions of retirement plans generate higher intentions to buy third pillar retirement products compared to low-level descriptions.

When we look at risk-taking in the context of retirement saving we find that CLT considers risk to be a low-level factor in general, inherent to the near future. Decision-making for the distant future is less likely to take risk fully into account and benefits will be more salient (Trope & Liberman, 2003). For example, bets with a low likelihood of winning and a high pay-off (risky gamble) are preferred more in the distant future than in the near future. Conversely bets with a high likelihood of winning and with a smaller pay-off (safe gamble) are preferred in the near future (Sagristano, Trope, & Liberman, 2002). Similarly, retirement plans can be seen as gambles, some are more risky with a high amount of potential financial gain and others are relatively safe with a lower amount

of potential financial gain. Because the relation between level of construal and temporal distance is over-generalized, and thus bi-directional and automatic, changing the level of construal or changing the temporal distance should affect choices similarly.
Existing retirement plan descriptions are expressed in a low-level way, in other words they are very concrete. Changing these descriptions of retirement plans by expressing them in a high-level way will put people in a distant-future frame of mind and should thus decrease the salience of risk and increase the salience of benefits (Liberman et al., 2007; Trope, et al., 2007). This in turn should lead to an increased preference for risky retirement plans. By increasing the preference for risky retirement plans, the average amount of money saved will be higher and we may thus be able to prevent people from under-saving.

> **H2**: High-level descriptions of retirement plans will lead to a higher preference for riskier retirement plans compared to low-level descriptions.

We thus expect that a high-level (abstract) construal better fits with the natural mode of thinking about future events and is more likely to ignore risk. Thus, people have a higher intention to start saving and take more risk due to their focus on benefits.

2.4 Gain-loss framing

One of the aspects of prospect theory is that losses loom larger than gains (Tversky & Kahneman, 1981). In other words losing €50 is worse than gaining €50 is good. We would thus prefer to avoid losing €50 compared to acquiring €50; this is also called loss-aversion. A message framed in terms of losses will thus be more persuasive. Loss-framing has been shown to increase risk-taking behavior (Tversky & Kahneman, 1981; Meyerowitz & Chaiken, 1987), which in the retirement saving case means that retirement products with more growth potential (and thus more risk) will be chosen. To a certain extent this may solve the problem of under-saving or being too risk-averse.

If messages framed as a loss are more persuasive it is also likely that behavioral intention will be higher. One example in which this was found is in the study of Meyerowitz & Chaiken (1987). They examined the persuasiveness of a gain-loss message in a medical situation, namely that of breast self-examination. It was found that those receiving a loss-frame message manifested more positive breast self-examination attitudes, intentions, and behaviors. We therefore believe that loss-framing will increase intention to purchase third pillar retirement products in a similar fashion.

> **H3:** Loss framing creates higher intentions to buy third pillar retirement products compared to gain framing.

The classic example of the effect of gain-loss framing on risk-taking is the Asian disease problem by Tversky and Kahneman (1981). Participants are asked to imagine that, in preparation for an outbreak of a certain disease which will kill 600 people, two alternative programs have been proposed. Participants then have to choose from these two programs which one to implement. The participants receive information in either a

gain-frame or in a loss-frame. It is important to note that both frames talk about equivalent programs, only the description is different. These descriptions are provided in Table 2.

Table 2: Gain - loss-framing effects on risk-taking

Gain-frame		**Loss-frame**	
Description	*Chosen*	*Description*	*Chosen*
Program A: 200 people will be saved.	72%	Program C: 400 people will die	22%
Program B: A one-third probability that 600 people will be saved, and a two-thirds probability that no people will be saved"	28%	Program D: A one-third probability that nobody will die, and a two-third probability that 600 people will die	78%

Although programs A and C are identical and the same holds for programs B and D, what can be seen is that the preference changes according to which frame is used. When a gain frame is used, emphasizing lives saved, the sure program was preferred (option A). When the loss frame was used, emphasizing expected deaths, the riskier program was preferred (option D). We expect to find a similar preference pattern when employing this kind of framing in the retirement case, thus resulting in a higher preference for riskier retirement plans if framed in terms of losses.

> **H4:** Loss framing leads to more risk-taking behavior, with a resulting higher preference for riskier retirement plans compared to gain framing.

We thus believe that a message framed as a loss is more persuasive in general, thereby increasing the belief that something needs to be done, which subsequently results in a higher intention to act and a higher willingness to take risk to ensure that this potential loss will be avoided.

2.5 Combining framing and CLT

To the best of our knowledge the interaction between gain-loss framing and CLT has not been studied directly. However, McElroy and Mascari (2007) have looked at gain-loss framing in the form of the classic Asian disease problem when occurring after different amounts of time. So for example: “The disease is expected to hit in (a week, one year, three years and thirty years) and kill 600 people”. Since CLT states that temporal distance determines which level of construal dominates, we can view their results as indicative of the interaction between gain-loss framing and CLT. The main effect of more risk seeking in the loss-framing condition was found, thereby replicating the findings of Tversky and Kahneman, 1981. They also found that with increased temporal distance the framing effect increases which is primarily due to increased risk seeking in the loss frame. See also Figure 3.

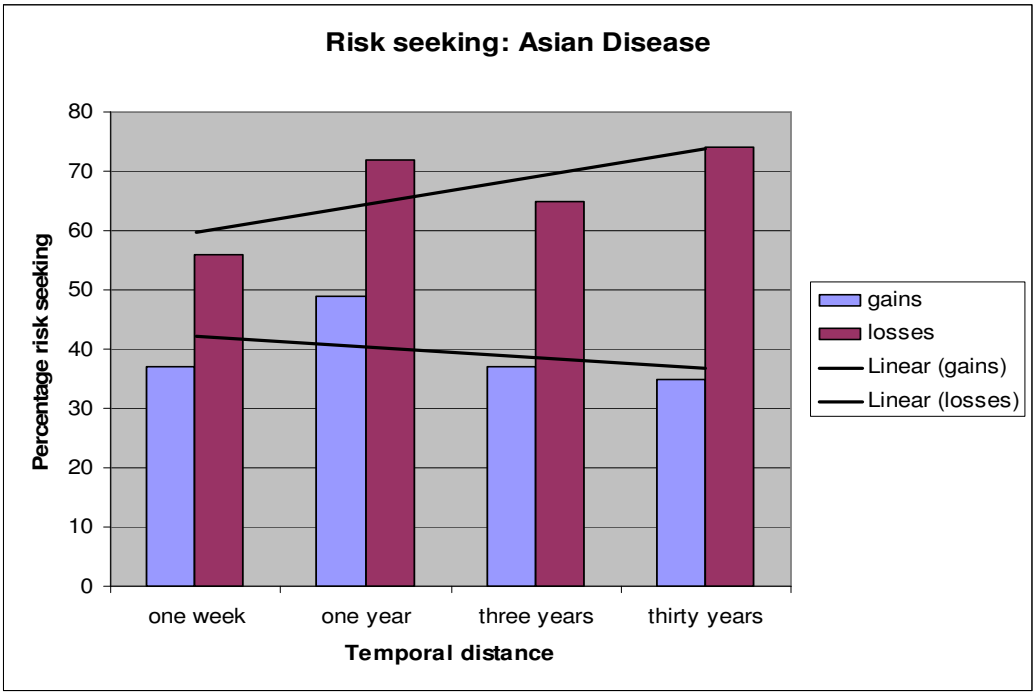

Figure 3: Risk-taking interaction between gain- and loss-framing and temporal distance

McElroy and Mascari do not discuss these results in CLT terms but if we view the leftmost bars as low-level (near-future, one week) and the rightmost bars as high-level (distant-future, thirty years) we see that risk seeking in the gain-frame is not significantly affected whereas in the loss frame more risk is taken in the high-level condition. This relation can also be observed by looking at the black lines which show the linear effect of temporal distance within the gains- (bottom line) and loss-frame (top line) respectively.

We postulate that in the loss-frame, a high-level construal will decrease the salience of risk in the decision-making process and thereby increase risk-taking. That this effect does not seem to occur in the gain-frame could be due to the positive nature/description of the low-risk option and participants may not feel the need to take additional risks.

> **H5**: An interaction between gain-loss framing and level of construal will occur with regard to their effect on risk-taking. This results in a stronger framing effect in the high-level condition.

To test H1-H5 we performed an experiment where we manipulate level of construal and gain-loss framing in a retirement plan choice setting. We thus expect to increase risk-taking and behavioral intention by providing high-level descriptions of pension plans and by putting people in a loss-frame, by doing so we will be able to prevent under-saving and procrastination. This experiment is further described in the next chapter.

3 Experiment

3.1 Experimental design

The experiment should test our hypotheses with regard to the influence of level of construal and gain-loss framing on risk-taking behavior and behavioral intention within the area of supplementing retirement income. We thus have a 2x2 (level of construal x frame) between-subjects design with two dependent variables. Both frame and level of construal are between-subjects factors because both these factors depend on a certain state of mind, whereby a single participant cannot be in both the gain- and loss-frame or in the high- and low-level condition at the same time.

The experiment task consisted of selecting a supplemental pension plan from a mock-up website where information about various plans was provided. Plans differ in level of risk and level of potential financial gains.

We will first describe how the dependent and independent variables are operationalized, this will be followed by a description of the experiment itself.

3.2 Dependent variables

Risk-taking

We operationalize risk-taking by the choice that is made by the participant for either a risky or a non-risky pension plan. Three levels of risk are provided by three different pension plans. Of course extra risk is offset with (the potential of) additional financial gains in order to keep all options equally attractive from a utilitarian standpoint. Thus one pension plan has low risk and provides a low amount of financial gain whereas another has medium risk and medium gain and the third one has high risk and high gain.

Type of payment, either lump sum (single large amount) or annuity (periodic payments), has also been shown to affect the perceived risk of pension plans (Drinkwater & Sondergeld, 2003). This is because with a lump-sum payment you receive all your savings at once, thereby avoiding the risk of not receiving (the rest of) your savings due to early death. With annuities it is also often unclear if, and what part of, savings are inherited by your family. We thus chose to keep type of payment the same between all three pension plans to avoid further complicating the decision for the participants. When referring to the result of a pension plan we always refer to a single ‘amount’, thereby indicating a lump sum.

The order in which the pension plans were displayed was counterbalanced, to control for potential order effects.

Behavioral intention
Intention is measured by two separate questions. The first is about the chosen pension plan and whether it would be likely that action would be taken if the participant were to receive an offer for this plan. The second question asks to what degree a participant agrees it is likely that they will undertake action in the next 12 months, with regard to supplementing retirement income in general. Both questions are answered on a 1-5 scale with 1 being strongly disagree and 5 being strongly agree. For a full list of all the questions that were asked in the questionnaire see Appendix I.

Decision making difficulty
Participants' actions on the website were also logged to be able to examine the decision making process more precisely. Specifically, we log the amount of time spent looking at each pension plan. We also include two questions about the amount of difficulty experienced in making a decision, to check whether difficulty is affected by either frame or level of construal.

3.3 Independent variables

Level of construal
We manipulate the level of construal by creating two different sets of pension plan descriptions. Low-level descriptions are more concrete, presenting numbers and percentages. They talk about the near future where you start saving. Some secondary information is also given which provides more information but which should normatively not significantly alter the decision. High-level descriptions are more abstract and more concise, focusing only on goal-relevant aspects. They describe the distant future and the end result of the pension plan. Only an indication of risk is given which ostensibly is from the 'financiële bijsluiter'. For the full text of these descriptions (in Dutch) see appendix III.
To test whether these descriptions remained equivalent on amount of perceived risk and amount of potential financial gains they were pre-tested by having students match the individual descriptions with one of three possible resulting wealth-distributions. Four students participated and only 1 mismatch was made (out of 24); we thus concluded the descriptions to be adequately equivalent.

Gain-loss framing
The other manipulation employed is the gain-loss framing. Instructions were framed in such a way as to put participants in either a loss- or gain-frame. In other words, in the gain frame we accentuate the benefits and enjoyment that supplemental pension plans can provide; whereas in the loss frame we focus more on preventing a deficit of retirement income and the resulting loss of freedom to engage in enjoyable activities (see Appendix II). In both the loss- and gain-frame the same action is recommended, which is to purchase third-pillar retirement products. We thus only frame the goal of supplementing retirement income. To strengthen the framing effect we included three questions on this page about how participants felt about retirement, thereby increasing the amount of elaboration on the framing information. The first two questions were also framed to

further strengthen the framing effect, whereas the third one was kept neutral so that the effect of framing could also be measured. These questions can be found in Appendix I.

Personal / situational characteristics
In the post-questionnaire several questions were included as covariates that relate to various personal/situational characteristics which affect risk-taking and/or intention.
Age could be a significant covariate of risk-taking because the timing when you start planning for retirement determines the amount of money that needs to be saved per year in order to end up with a good retirement. Age also directly determines the temporal distance to the time of retirement which determines the initial level of construal.
Risk preference is another possible covariate of risk-taking. Some people are inherently more inclined to take risks than others. Three questions are selected from several risk profile questionnaires from financial companies (Financial Innovations LLC and RBS Morgans) which together give an indication of risk preference.
Resource slack is a term coined by Zauberman and Lynch (2005). In our case it represents the amount of resources that are available for saving for retirement. Risk-taking will likely be affected by the amount of resources that are available. Two questions were included that asked whether the participant thought that he/she had enough resources available to save for retirement or that his/her expenditures could be adjusted to make enough resources available towards this end.
Education partly determines the amount of money available for saving (resource slack) and may therefore also affect risk-taking.
The amount of **financial knowledge** influences the ability to make (good) decisions when faced with a financially difficult problem. This may have an effect on both risk-taking and behavioral intention.
Living situation (alone or together) arguably determines whether the savings process has to be conducted with one or two savers. This might affect risk-taking.
Gender previous research has shown that men and women commonly differ on several of the aforementioned independent variables. It is therefore likely that gender also, either directly or indirectly, affects risk-taking.

3.4 Experiment description

The experiment consists of several parts (pages) as depicted in Figure 4. Participants were first asked to imagine that their AOW and employment pension were all in order and that the pension plans shown thus (merely) supplemented the income they received from these two sources. This was done to avoid unemployment (and having lived abroad) as mediating factors in the decision making process. They were also urged to participate at a moment when they had sufficient time and attention available to complete the experiment.

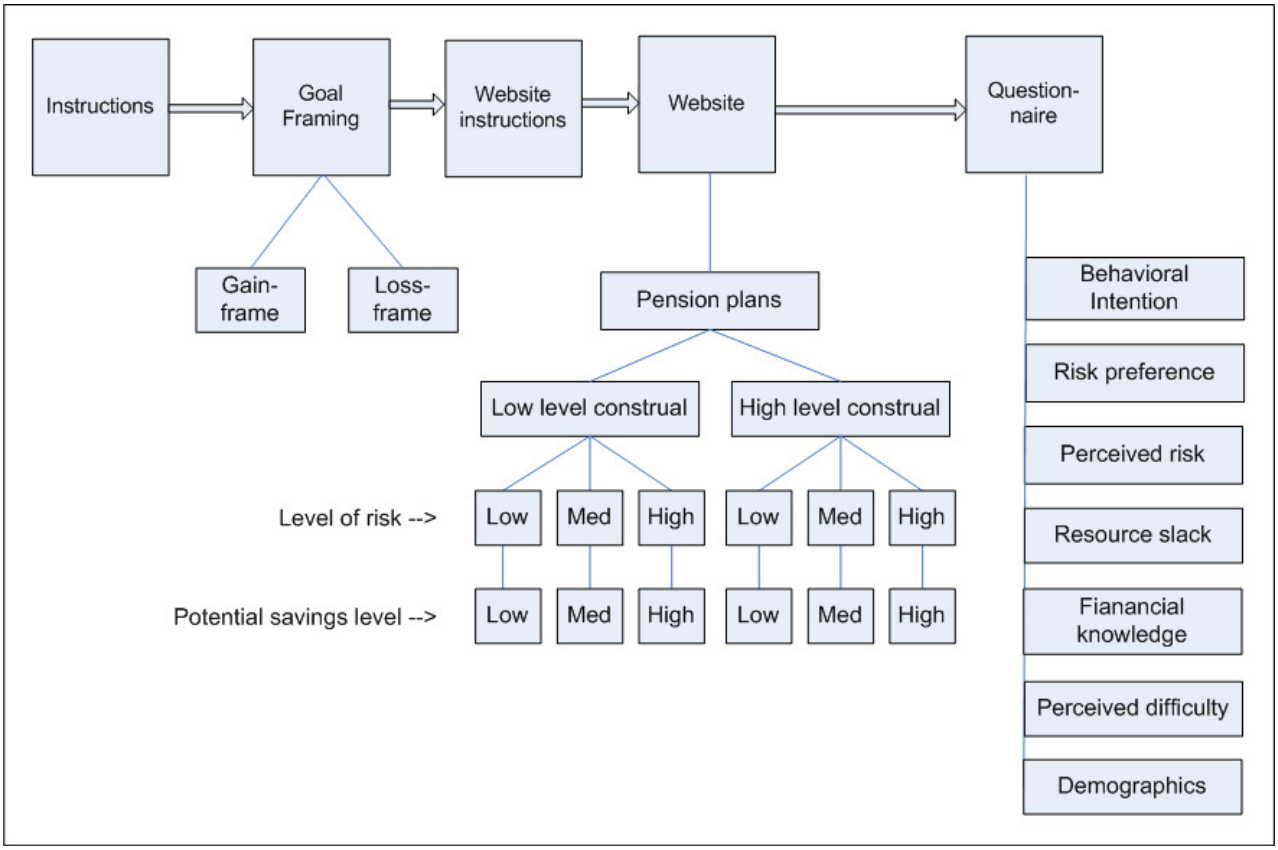

Figure 4: Design of the experiment

After the initial instruction, participants were induced into either a gain- or a loss-frame. This was done by framing the goal of the task (See Appendix II). After the goal framing they received another set of instructions which told them how to go about selecting a pension plan on the website. When they had read these instructions and clicked on the 'next' button they were taken to the website (see Figure 5).

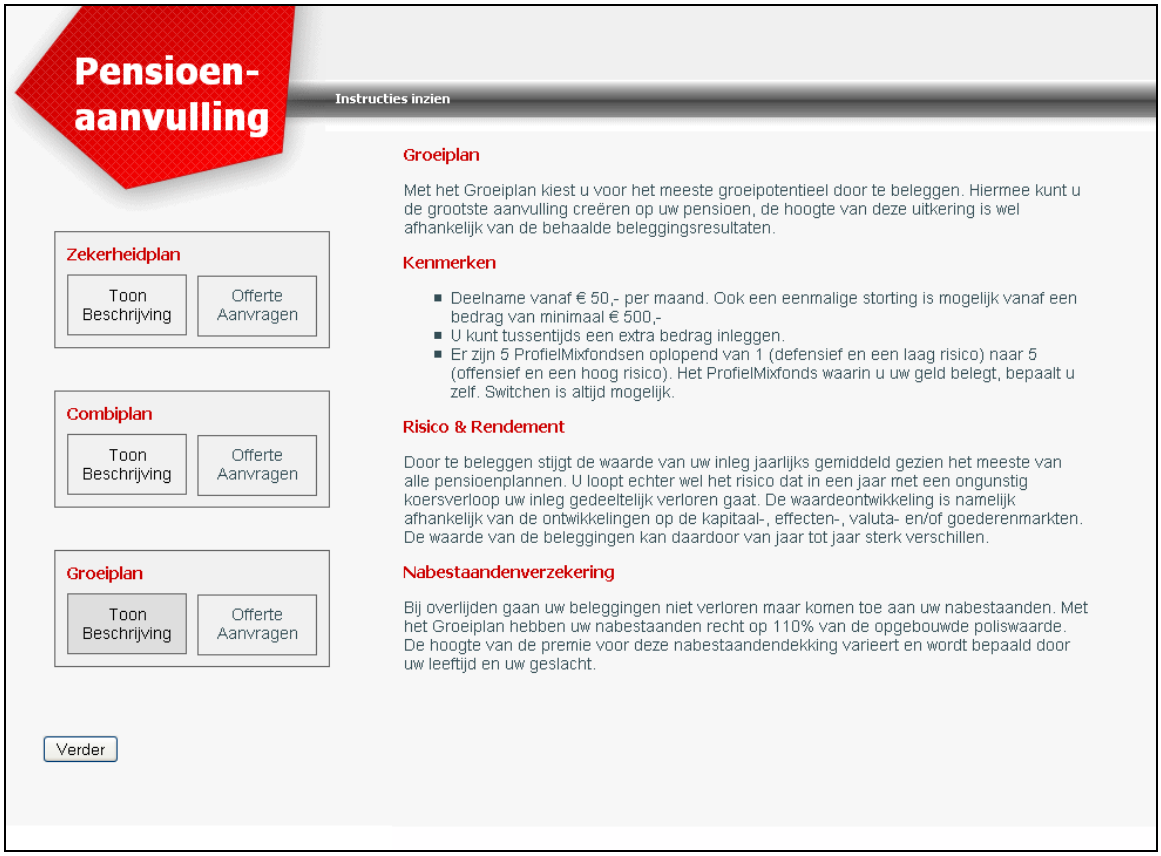

Figure 5: Website

On the website participants had to choose one of three pension plans by looking at the provided information. To see the information of a specific pension plan participants had to hover the mouse over the 'Toon Beschrijving' button of that particular plan. This was done so that the amount of time spent looking at the three options could be monitored. Choosing a pension plan is done by clicking on the 'Offerte Aanvragen' button belonging to that plan. Once a selection was made and the participant indicated being ready they proceeded to the questionnaire. After filling this out they were thanked for their participation and subsequently paid.

4 Results

4.1 Constructs

Several factors are constructed with factor analysis, which summarize the answers to two or more questions of the questionnaire. These factors were validated by calculating Cronbach's Alpha. A value of .6 or higher is generally considered to be reliable. All of the constructed factors are found to be reliable. Table 3 below shows the factors that are created, what they represent, the amount of questions the factor consists of, which questions this relates to (found in Appendix I) and its Cronbach's alpha.

Table 3: validity of constructs

Factor	Meaning	N of Items	Question Numbers	Cronbach's Alpha
Worrying	How much a participant worries about retirement	2	Instruction 1,2	.861
Behavioral intention	Intention to supplement retirement income	2	1,2	.658
Financial knowledge	Self-perceived knowledge of financial affairs	3	3,4,5	.789
Resource slack	Amount of resources available for saving	2	6,7	.789
Experienced difficulty	Experienced difficulty in choosing a pension plan	2	8,9	.804
Risk preference	Personal characteristic, also called risk tolerance	3	Risk 1,2,3	.628

4.2 Participants

A total of 217 participants took part in the experiment. The average age was 47.2 with a standard deviation of 7.78 years, thereby assuring that we have a sufficient amount of spread to analyse the effect of age. The average age is high enough to ensure that a retirement saving scenario is self-relevant to the participants.
Men constitute a slight majority of the participants, comprising 55% of all participants. Most participants are married (61%), whereas 29% are unmarried, the remaining 10% are either divorced or widowed. Only 20% of the participants live alone. 87% have completed an education beyond the high-school level, resulting in an MBO (22%), HBO (44%) or WO (21%) diploma. All these personal characteristics and the potential effects these have on risk-taking and behavioral intention are examined in the following sections.

Of all participants the majority chose the least risky option (60.9%). The option with medium risk was chosen by 29% of the participants and the remaining 10.1% chose the most risky option.

4.3 Behavioral intention

H1 and H3 predicted differences in behavioral intention. Intention was measured by two questions which in a factor analysis were loaded on one construct (Cronbach's Alpha = .658). An ANOVA tested the effect of frame and level of construal on behavioral intention which is shown in Table 4. We expected that participants in the high-level construal condition (H1) and those in the loss-frame condition (H3) have a higher behavioral intention. Financial knowledge was added as a covariate in the model because we expected this factor to affect intention. The model has an R^2 value of .05.

Table 4: ANOVA behavioral intention

Predictor	Sum of Squares	Mean Square	F
Intercept	.002	.002	.002
Level of construal (high)	4.814 *	4.814	4.954
Frame (gain)	.077	.077	.079
Level of construal * Frame	1.787	1.787	1.838
Financial knowledge	3.853 *	3.853	3.965
Error	206.029	.972	
Total	216.000		

Note: + p<.10, * p < .05, ** p < .01, *** p < .001

In accordance with H1 we observe that level of construal has a significant effect on behavioral intention with higher intentions reported in the high-level condition.
Against the prediction of H3, we found no significant effect of frame on behavioral intention.
The interaction between level of construal and frame was not significant. We did however find in an LSD (Least Significant Difference) post-hoc test that the average intention differed significantly in the loss-frame between the low level construal condition and high level construal condition (p=.02). In other words the effect of level of construal is more pronounced in the loss frame as can be observed in Figure 6. The effect in the gain frame is smaller, to the point of not attaining significance with p=.52.

Financial knowledge also has a significant effect on intention with decreased behavioral intention for higher financial knowledge.

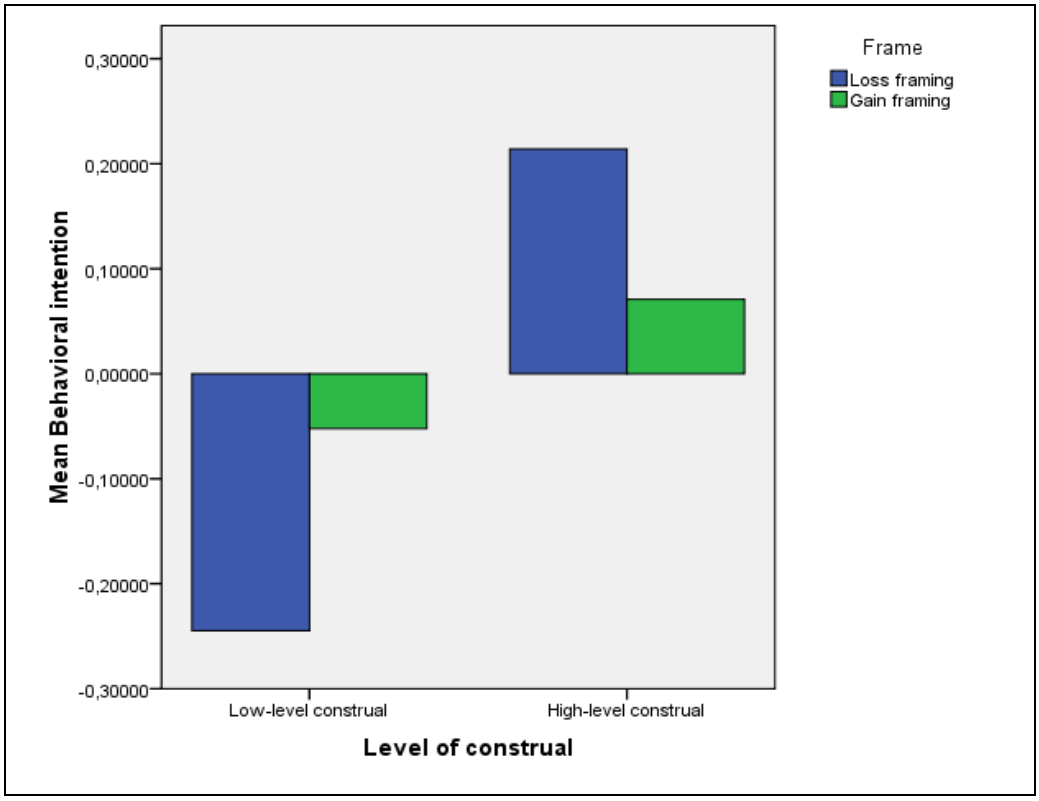

Figure 6: Behavioral intention predicted by level of construal and frame

Participants' age had no significant effects on their intention to buy third pillar retirement products (p=.23). No significant order effects were found on behavioral intention (p=.29). Also, none of the other independent variables had a significant effect on behavioral intention so they were not included in the model.

4.4 Risk-taking

To test H2, H4 and H5 we look at risk-taking. Risk-taking is revealed by the choice the participant makes for either the safe option or one of the more risky options. Risk-taking is coded as a dichotomy because the most risky option was only chosen in 10.1% of the cases. We thus end up with two groups, the non-risky group comprising 60.9% of the participants and the risky group consisting of the remaining 39.1% that chose either the medium or high risk plan. The results of these analyses did not differ substantially when risk-taking was examined with 3 levels.

A logistic regression was performed to asses the effects of framing and level of construal on risk-taking, see Table 5. We expected to find a higher amount of risk-taking in the high-level construal condition (H2) and also in the loss frame condition (H4). Furthermore a significant interaction was predicted with a larger effect of level of construal in the loss frame condition (H5). We included risk preference and resource slack as covariates because we expected these factors to affect risk-taking in general, the model has an R^2 value of .387.

Table 5: Logistic regression risk-taking

Predictor	B	S.E.	Exp(B)
Constant	-,291	,336	,747
Level of construal (high)	-,968 *	,473	,380
Frame (gain)	,005	,470	1,005
Level of construal * Frame	,499	,677	1,648
Risk preference	1,305 ***	,226	3,688
Resource slack	,422 *	,181	1,525
Resource slack * Risk preference	,426 *	,204	1,532

Note: + p<.10, * p < .05, ** p < .01, *** p < .001

Against the prediction of H4, frame did not have a significant effect on risk-taking. This is surprising given the amount of previous research establishing a strong relation between the framing of a risky task and the amount of risk taken. Given that neither behavioral intention nor risk-taking is affected by framing, combined with the fact that in both cases the effects are well-grounded in earlier research, some doubts are raised as to the adequacy of the manipulation in this experiment.

Opposite to H2 we find that level of construal has a main effect on risk-taking where more risk is taken in the low-level condition. This is interesting because we predicted that more risk would be taken in the high-level condition instead of in the low-level condition.

We find no supportive evidence for H5, the interaction between level of construal and frame is not significant as can also readily be observed in Figure 7. Once more, given these results it is possible that the gain-loss frame manipulation has been unsuccessful.

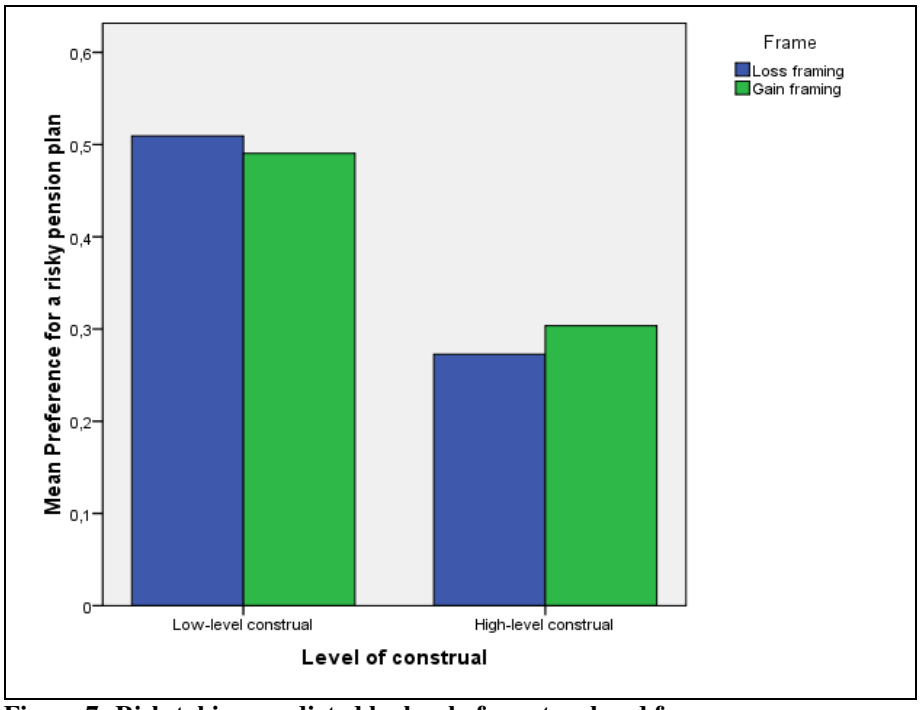

Figure 7: Risk-taking predicted by level of construal and frame

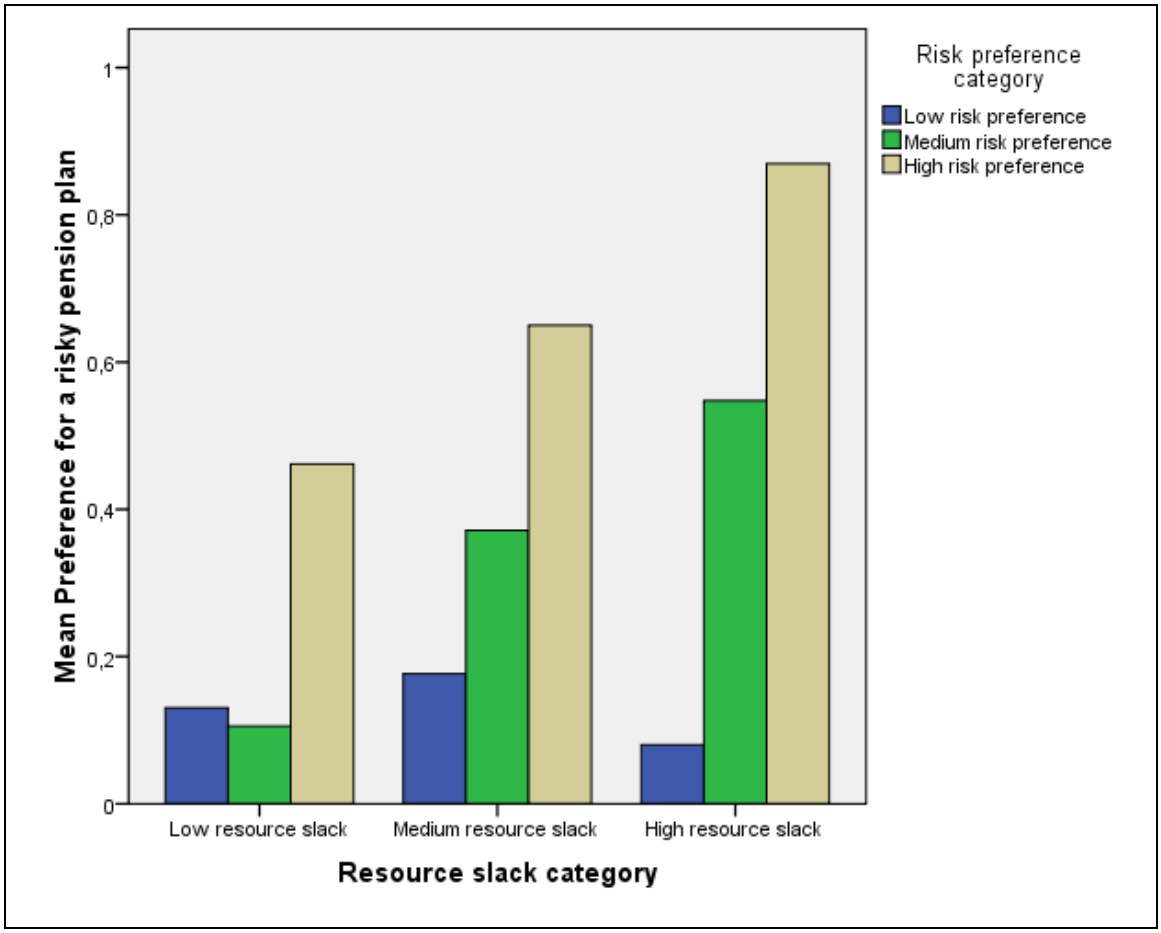

Figure 8: Interaction between resource slack and risk preference

Risk preference and resource slack interact significantly as depicted in Figure 8. Risk preference is the dominant determinant for choosing risky alternatives, however low resource slack prevents people with a high risk preference from choosing the riskier alternative. On the other hand people who report having a large amount of resource slack but have a low risk preference simply do not choose risky alternatives even though they can afford to take some risks. They simply are risk-averse, and as these findings indicate no amount of money can easily change that.

The participants' age had no significant effects on amount of risk-taking (p=.67).No order effects were found on risk-taking (p=.26), therefore both order and age were not included in the model. Furthermore, none of the other covariates had a significant effect on risk-taking when added to the model.

4.5 Path model

A lot of the independent variables do not have a direct effect on risk-taking when they are added to the model presented earlier in this chapter. However a large number of these variables are found to be tightly interrelated. Both risk preference and resource slack can be predicted by financial knowledge, and financial knowledge itself is influenced by living situation (together or alone) and gender. Additionally, resource slack can also be predicted by education (MBO, HBO, WO). To test these relations and to test whether personal characteristics have a direct or indirect effect on risk-taking we performed a path analysis using Mplus 6 (Muthén & Muthén). The path model is shown in Figure 9.

It should be noted that the model uses only 184 out of 217 participants because only three levels of education are included. The other five groups were too small to include separately and too diverse to combine.

Several measures of model fit are calculated and evaluated using the cutoff criteria from Yu (2002). The RMSEA (Root Mean Square Error of Approximation) is .03 which is below the required .05, thereby indicating a good fit. The CFI (Comparative Fit Index) is .97, which is above .90 and is therefore also indicative of a good fit. The chi-square test of model fit is $\chi^2(11, N = 184) = 13.7$, $p=.25$ which is well above .05 and therefore we cannot reject the null hypothesis stating that the path model fits the data. Additionally, the model has an R^2 value for risk-taking of .47.

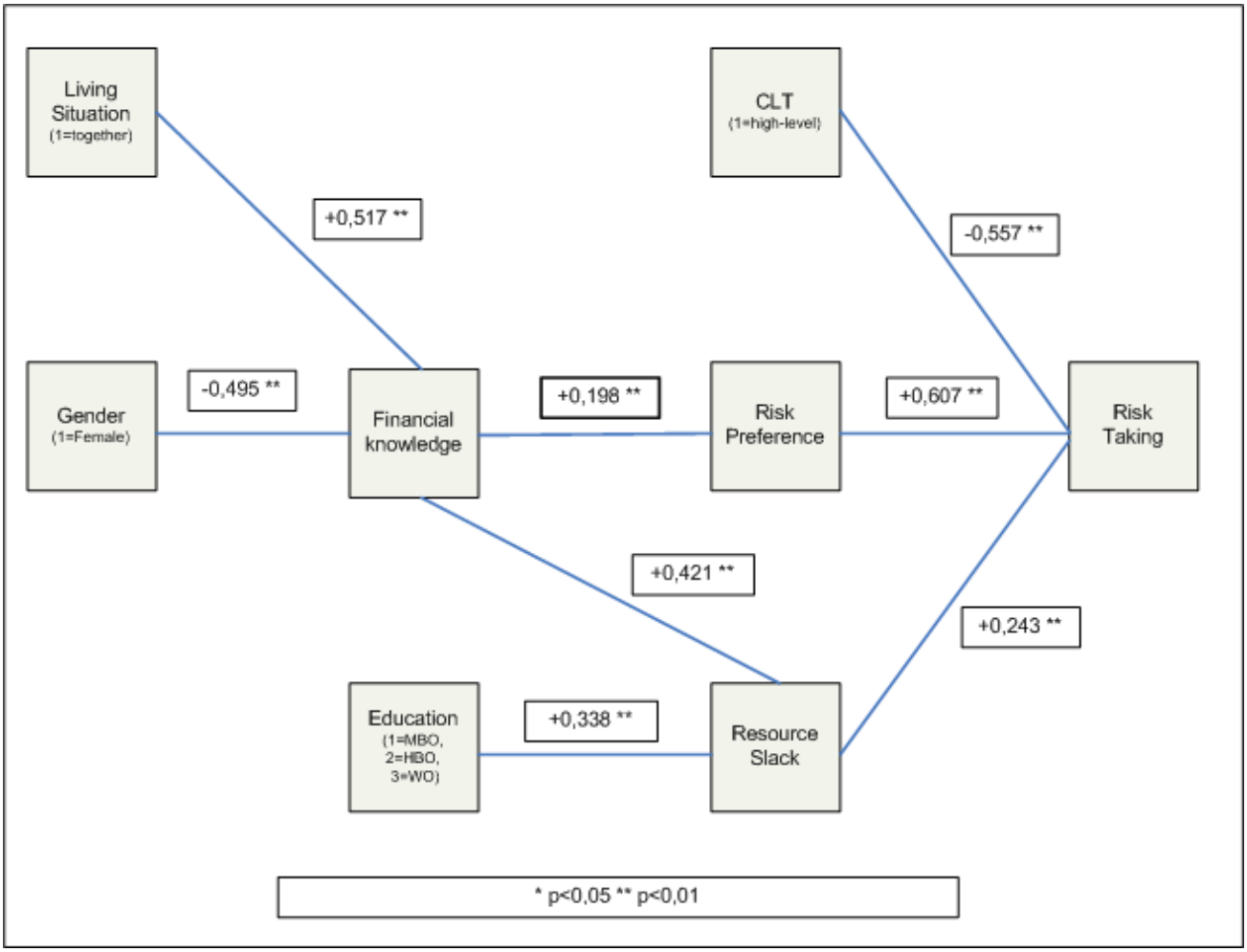

Figure 9: Path model risk seeking

Both gender and living situation have an impact on financial knowledge with males and people living together (as opposed to living alone) reporting higher levels of financial knowledge. Financial knowledge in turn affects risk preference and resource slack with higher levels of risk preference and resource slack for those who report having a higher level of financial knowledge. Risk preference subsequently strongly influences the amount of risk that is taken in the choice for a pension plan, with a higher proportion of participants choosing one of the riskier options for those with higher risk preference.

Education affects the amount of resource slack reported, where those with a higher level of education have an increased amount of resource slack. Resource slack in turn affects risk-taking; those with less resource slack choose the safe option more often.

Living situation, gender and education have no direct effects on risk-taking. Financial knowledge does have a significant effect in isolation but this effect is mediated in the path model by both risk preference and resource slack.

Most importantly, CLT affects risk-taking with high-level pension plan information lowering the amount of risk taken. The fact that this effect is independent of all the personal factors implies that changing the level of construal is a good manipulation to directly affect risk-taking behavior.

4.6 Decision making difficulty

We also investigated whether level of construal and frame influence decision making difficulty. This was measured in two different ways. First we logged the amount of time spent looking at pension plan information; from this we are able to get an objective indication of decision difficulty. Second we posed two questions, after participants had chosen a plan, which are indicative of experienced difficulty. The first question asks if it was hard to choose a pension plan and the second if it was hard to weigh pros and cons of the three plans. These two questions were summarized in a single factor (Cronbach's Alpha = .80). An ANOVA tested the effect of level of construal and frame on experienced difficulty, this analysis is shown in Table 6.

Table 6: ANOVA decision difficulty

Predictor	Sum of Squares	Mean Square	F
Intercept	.002	.002	.002
Level of construal	3.324 +	3.324	3.339
Frame	.606	.606	.609
Level of construal * Frame	.010	.010	.010
Error	212.051	.996	
Total	216.000		

Note: + p<.10, * p < .05, ** p < .01, *** p < .001

Level of construal is the only factor which approaches significance (p=.07). Higher levels of difficulty are reported for the low-level condition.

Another ANOVA tested the effects of level of construal and frame on the amount of time spent looking at pension plan information. No significant effects were found (all p's well above .05). Thus, although the participants do report a higher amount of experienced difficulty, this is not reflected in the amount of time spent looking at the pension plan information.

5 Discussion

5.1 Summary of findings

The findings as presented in the results section are summarized below in Table 7.

Table 7: Summary of findings

Hypothesis	Expectations	Findings
H1	Higher behavioral intention in high-level condition	Supported
H2	Higher level of risk-taking in high-level condition	Opposite effect
H3:	Higher behavioral intention in loss-frame condition	Not supported
H4	Higher level of risk-taking in loss-frame condition	Not supported
H5:	Interaction between level of construal and frame for risk-taking	Not supported

We will proceed to discuss these findings in depth. First behavioral intention will be discussed (H1 and H3) and subsequently risk-taking (H2, H4 and H5).

5.2 Behavioral intention

Level of construal (H1)

A higher level of behavioral intention was found when providing high-level descriptions of pension plans. People think about retirement in a high-level (abstract) way. This is because it is far away in the distant future and a lot of uncertainty is involved. Matching the message to the construal (or cognitive style) has been shown to improve processing fluency and persuasion (Lee et al., 2009; Urban et al., 2009; Higgins, 2000). Thus providing people with a high-level description may be more convincing since this matches the construal that people have beforehand.

High-level descriptions may also lead to a more abstract view of costs and (future) effort, thereby increasing the inclination to take action with regard to supplementing retirement income. This is because people are generally more likely to take action when the action does not include large concrete costs (O'Donoghue & Rabin, 1999). This presents an alternative explanation for our findings.

An additional explanation why higher levels of behavioral intention are found in the high-level condition is because this information is less difficult (although only marginally significant). If the information is less difficult, it is likely that the perception of the difficulty of the retirement saving process as a whole is also lower. The lower amount of perceived difficulty may result in a higher level of behavioral intention.

Gain-loss framing (H3)

Frame does not have a significant effect on behavioral intention, likely because the framing manipulation has not succeeded. One piece of evidence that supports this is that there is actually a higher amount of worrying reported on average in the gain-frame condition (M=3.23) compared to the loss-frame condition (M=2.93), this difference is

significant with t=2.33, p=.02. Perhaps the framing effect was too weak given that the instructions are only read once beforehand. Also, the framing was applied only to the instructions in order to affect the goal participants have. Framing is not applied to the actual pension plan descriptions which are used to make a choice, whereas in the original literature the task itself is often framed. This may have lead to the framing message being 'forgotten' in the time between reading the framing and choosing a pension plan.
Furthermore, the type of framing which we employed, which is called 'goal framing', is known to be relatively weak compared to other types of gain-loss framing (Kühberger, 1998; Levin, Schneider, & Gaeth, 1998). When framing the task itself instead of the goal, greater effect sizes are found. In the setup of our experiment however this was not possible because the pension plan descriptions would then have had to be framed in 4 different ways which makes it very hard to disentangle the effects of the gain-loss framing and level of construal framing.
Another reason why the framing effect may have failed is that the negative consequences of not supplementing retirement income are not very severe. This is because, we instructed participants to assume that AOW and employment pension were in order. Generally speaking this means that approximately 70% of the average/last earned wage is provided as retirement income. Therefore the loss-frame, which focuses on preventing this not-severe loss, may be perceived as less convincing (compared to when the loss is severe). If the loss-frame is less convincing this may well lead to similar levels of risk-taking in both frames.

5.3 Risk-taking

Level of construal (H2)

Level of construal does affect risk-taking, but interestingly a high-level construal lowers risk-taking whereas we expected to find the opposite relation. A possible explanation as to why we did not find what we expected is because our expectations were based upon research by Sagristano, Trope and Liberman (2002). They presented a large number of gambles differing in probability and pay-off. Half the participants were told that the gambles took place at the end of the experimental session and the other half were told that the gambles took place in two months. They found that in the distant future risky gambles were preferred over safe gambles and in the near future safe gambles were preferred. Since the relationship between level of construal and temporal distance is over-generalized, with high-level corresponding to distant-future and low-level corresponding to near-future, we expected that the risky pension plans were preferred in the high-level condition (more distant-future frame of mind) and the safe pension plan in the low-level condition (more near-future frame of mind). However all end results of pension plans reside in the distant future! Providing low-level descriptions of pension plans may influence the perceived temporal distance somewhat but the results suggest that it is unlikely that this effect results in two clear distinct groups which can be classified as near and distant future. In both level of construal conditions retirement takes place in the distant future and thus the findings from Sagristano et al. might not apply to our experiment.

How then do we explain that there is less risk-taking in the high-level condition? One possible explanation could be that in the high-level condition people employ an abstract construal of retirement saving, emphasizing primary attributes, where they focus on achieving end results (Liberman & Trope, 1998; Fujita, Eyal, Chaiken, Trope, & Liberman, 2008). All plans are essentially equally desirable from a utilitarian perspective, because extra risk is offset with extra financial gain. The 'problem' is that with supplemental pension plans every addition to your regular pension may already be called desirable. The descriptions also did not focus heavily on outcomes. Therefore the risk (or probability of ending up with a desirable result) becomes the primary attribute of a pension plan. The plan with the least risk is thus chosen most because this plan guarantees achieving a desirable result.
In the low-level condition the participants employ a more concrete construal of retirement saving which therefore emphasizes not only primary attributes but also secondary attributes, and more attention is given as to how (best) to reach the end result from this point in time (now) (Liberman & Trope, 1998; Fujita et al., 2008). This leads to a relatively higher focus on secondary attributes such as the amount of potential financial gains. Participants are thus better able to make a good trade-off between risk and potential financial gains which results in more risk-taking compared to the high-level condition where decisions are based relatively more on risk.
Additionally in the low-level condition participants may also focus more on the amount of financial gain because numbers and percentages were presented in the descriptions. These numbers did not directly describe the outcome itself, but the mere inclusion of these numbers may direct focus towards amounts in general.

Another explanation could be that construing pension plan information in a high-level way brings about shallow processing and heuristic decision making. This could potentially lead to a form of certainty effect, where the certain financial gain would be the preferred option. This should ostensibly be reflected in the total amount of time spent looking at the three pension plans, whereby the high-level condition should have a lower total amount of time spent looking at pension plan information. Because the high-level descriptions consist of less text than the low-level descriptions (2929 chars vs. 3384 chars) we first corrected for the amount of characters by dividing the amount of time spent looking at pension plan information by the amount of characters the pension plan information consists of. A T-test subsequently showed that the difference was not significant $t(213) = -.33$, $p=.74$. Moreover even a T-test on the uncorrected amount of time spent looking at pension plan information is not significant $t(213) = 1.11$, $p=.27$. We are therefore unable to accept this explanation.

If level of construal affects the amount of perceived risk of the pension plans this could also explain differing levels of risk-taking. However, risk perception of the chosen alternative was also included in the questionnaire and these did not (systematically) differ between the two level of construal groups (see Table 8).

Table 8: Risk perception of chosen plan compared accross level of construal

Chosen plan	Average risk perception		Results T-test
	Low-level condition	*High-level condition*	
Certainty plan	1.51	1.41	t(130) = 1.06 p=.29
Combi-plan	2.02	2.10	t(61) = -.80 p=.43
Growth plan	2.64	2.18	t(20) = 2.3 p=.03

The last group does seem to significantly differ, however given that the total number of participants selecting the 'growth plan' is only 11 in both the high- and low-level condition, the power of this finding is not very high. Moreover, the risk-perception is higher for the low-level condition which would imply less risk seeking in this condition, whereas we find the opposite relationship. This leads us to believe that perceived risk is not a likely explanation for the different levels of risk-taking in the low- and high-level conditions.

We thus have only one alternative explanation which we are not able to refute (see Table 9). This is therefore also the most likely explanation for our findings.

Table 9: Alternative explanations for the effect of level of construal on risk-taking

Alternative explanation	Applies	Objections
Higher risk-taking in future	X	Does not apply, all end results are in the distant future
Primary / secondary	V	-
Shallow processing	X	Similar amount of effort is found across conditions
Risk perception	X	Similar amount of perceived risk found across conditions

Gain-loss framing (H3& H5)

We have found that in our experiment frame does not influence risk-taking in a direct manner. Also the interaction between frame and level of construal was not significant. We believe that this is due to the fact that the framing effect was not strong enough. The reasons for this belief are discussed in the discussion about intention.

6 Conclusions and recommendations

6.1 conclusions

Our findings indicate that providing a high-level description of pension plans leads to a higher intention to act on supplementing retirement income but also a lower amount of risk-taking. A high-level, abstract construal fits with the natural mode of thinking about retirement, as it is in the distant future and undeniably shrouded in various degrees of uncertainty. Abstraction is the main tool which mankind employs to make sense of the future which, by default, cannot at the moment be precisely understood. Primary aspects of situations and products are thus thereby extracted and in the case of retirement decision making we believe risk is a primary factor, given that none of the pension plans available to the chooser is inherently more desirable than the others. Risk, or our aversion thereof, thus drives choices towards safe alternatives provided that choosers believe that these alternatives will not drive them into a state of relative poverty.

Which level of construal is recommended for use on a particular website is thus dependent on the importance which is placed on behavioral intention versus the amount of risk taken. A low-level approach increases risk-taking but a high-level approach increases behavioral intention. In other words, if a company focuses on selling safe retirement products it may be beneficial to use a high-level approach, whereas if a company sells mainly risky retirement products a low-level may be more appropriate.

The gain-loss frame manipulation did not have any significant effects despite a large amount of research that demonstrates these effects occurring in comparable decision making situations. We thus believe the manipulation to have been too weak, perhaps due to the fact the manipulation was separated from the choice-task or the low amount of time participants were exposed to the manipulation itself.

6.2 Directions for future research

No research familiar to us has examined the manipulation of level of construal by message framing in a risky-choice setting similar to ours. It is necessary to find out if the results we obtained are replicable before we can generalize our findings to any practical extent.

We have firm beliefs as to why the different levels of risk-taking and behavioral intention arise between the two level of construal conditions, as put forward in the discussion section, but no direct evidence that this is what in fact is happening within the minds of our participants. Further examination of the decision making process itself should be done to uncover whether our beliefs are correct or that these differences arise due to some other unforeseen reason. A likely way to investigate the decision making process more fully is to use eye-tracking equipment, in this way selective attention to specific details of pension plans can be measured (such as attention to information about risks or financial gains). A careful design of pension plan descriptions could then help to clarify the decision making process.

The conclusions of our results are furthermore limited by their applicability only to the current pension system used within the Netherlands. We believe it is likely that, in any pension system where the entire amount of pension funds are accumulated depending on the choices of future retirees, decisions will be much more laden and driven by fear of loss. Furthermore, given the current failings of the pension system, a system where everyone saves only for themselves (and possibly their spouse) is not entirely unlikely. Future research should thus also focus on pension plan choice without the guaranteed provision of AOW and employment pension.

From a theoretical standpoint we have found that in the distant future a high-level construal leads to a lower amount of risk-taking than a low-level construal. Sagristano et al. (2002) show us that when given a concrete gamble more risk is taken in the distant future than in the near future. Construal level theory states that the relationship between level of construal and temporal distance is over generalized to the point that manipulation of one is virtually the same as manipulation of the other. Thus a manipulation of level of construal would have to have the same effect as a manipulation of temporal distance. What we find however is that although manipulating only level of construal leads to less risk-taking in the high-level condition, Sagristano et al find that when only manipulating temporal distance more risk is taken in the distant future. This finding would thus seem to contradict the theory, which states that the effects between low- and high-level should be the same as those between near- and distant-future. It would thus be very interesting to see an experiment which includes a manipulation of both level of construal and temporal distance. This way you could see whether the theory is correct and if the deviation we find is merely due to the dissimilar experimental designs (between our experiment and that of Sagristano et al.) or that perhaps some sort of interaction occurs.

Lastly, due to the failed gain-loss framing manipulation in our experiment, another attempt could also be made to examine this effect. One way to do this is to provide pension plan descriptions which themselves are framed in terms of gains or losses. In this way the framing effect will be stronger and could thus be investigated further.

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Appendices

I Questionnaires

Before making a choice for a pension plan, participants received instructions which were written in either a gain- or a loss-frame. In addition two (also framed) statements were presented and participants were asked to what degree they agree/disagree with these statements. One neutral statement was also provided which measures the effectiveness of the framing manipulation. English translations are provided for each question.

Question	Dutch	English
Gain 1	Ik heb er vertrouwen in dat ik na mijn pensionering voldoende inkomen zal hebben.	I have Faith that I will have sufficient income during retirement.
Loss 1	Ik maak me zorgen dat ik na mijn pensionering te weinig inkomen zal hebben.	I worry that I will have insufficient income during retirement.
Gain 2	Wanneer ik denk aan mijn pensioen zijn mijn gedachten overwegend positief.	When I think about my retirement my thoughts are mainly positive.
Loss 2	Wanneer ik denk aan mijn pensioen zijn mijn gedachten overwegend negatief.	When I think about my retirement my thoughts are mainly negative.
Neutral 3	Ik denk dat ik meer zou moeten doen voor mijn pensioen.	I think I should do more for my retirement.

After the participants selected a pension plan they were asked to describe briefly why they had selected this pension plan. After that they were once again asked to what degree they agree/disagree with the following nine statements.

Question	Dutch	English
1	Zou ik deze offerte daadwerkelijk ontvangen, dan zou ik zeker actie ondernemen wat betreft mijn aanvullende pensioenverzekering.	If I were to receive the proposal of my choice, I would certainly take action with regard to supplementing my retirement income.
2	Ik ben van plan om in de komende 12 maanden maatregelen te nemen om mijn inkomen na pensionering aan te vullen.	I have plans to take measures to supplement my retirement income within the coming 12 months.
3	Ik weet veel van financiële zaken.	I know a lot about financial affairs.
4	Wanneer ik financiële diensten nodig heb, dan weet ik precies waar ik de juiste informatie vandaan kan halen.	When I need financial services, I know exactly where I can get the proper information.
5	Ik ben zeker van mezelf wanneer ik financiële beslissingen moet nemen.	I am sure of myself when I have to make financial decisions.
6	Ik heb voldoende inkomen om extra te sparen voor mijn pensioen.	I have sufficient income to save more for my retirement.

Question	Dutch	English
7	Ik kan mijn uitgaven aanpassen zodat ik (meer) kan sparen voor mijn pensioen.	I can adjust my expenses so that I can save (more) for my retirement.
8	Ik vond het moeilijk om een aanvullend pensioenplan te kiezen.	I found it hard to select a supplemental pension plan.
9	Ik had moeite met het afwegen van de voor- en nadelen van de verschillende pensioenplannen.	I had trouble weighing the pros and cons of the different retirement plans.

.Lastly participant were asked to answer the following four questions about risk.

Question	Dutch	English
1	Welke van de volgende stellingen past het beste bij u? - Ik vind voornamelijk het (voorkomen van) verliezen van waarde van investeringen belangrijk. - Ik vind zowel het verliezen van waarde van investeringen als het toenemen van waarde van investeringen belangrijk. - Ik vind voornamelijk het toenemen van waarde van investeringen belangrijk.	Which of the following statements best suits you? - I am most concerned about my investments losing value - I am equally concerned about my investments losing value and gaining value - I am most concerned about my investments gaining value
2	Stel dat uw investeringen in 3 maanden 25% van hun waarde verliezen, wat zou u doen? - Al uw investeringen terug halen - Een gedeelte van de investeringen terug halen - Niks doen - Meer investeren	Imagine that in three months your investments lose 25% of their value, what would you do? - Sell all of my shares - Sell some of my shares - Do nothing - Buy more shares
3	Als ik zou investeren dan zou ik: - Conservatief/terughoudend investeren - Redelijk conservatief/terughoudend investeren - Redelijk assertief investeren - Assertief investeren	If I were to invest I would invest: - Conservatively - Moderately Conservative - Moderately Aggressive - Aggressively
4	Het door mij gekozen pensioenplan vond ik: - Risicoloos - Beperkt risicovol - Redelijk risicovol - Zeer risicovol	I found the pension plan I chose to be: - Riskless - Slightly risky - Fairly risky - Very risky

II Gain-loss framing

The gain-loss framing is included below; participants received one of these instructions before choosing a pension plan in order to frame their retirement goals.

Gain frame
Pensioenaanvulling is erg belangrijk. Met een goede pensioenaanvulling bent u ervan verzekerd dat er voldoende geld beschikbaar is om te besteden aan reizen, hobby's of gewoon een gezellig dagje weg met de kleinkinderen. Ook kunt u hiermee garanderen dat u kunt blijven wonen in uw huidige woning. Een geschikt aanvullend pensioenplan kan u daarbij helpen. Het is belangrijk om te bekijken of een bepaald pensioenplan u kan voorzien in uw financiële behoeften.

Houd bij uw keuze tussen aanvullende pensioenplannen dus rekening met het zo goed mogelijk aanvullen van uw pensioen zodat u later van het gepensioneerde leven kunt gaan genieten.

Loss frame
Pensioenaanvulling is erg belangrijk. Zonder (voldoende) pensioenaanvulling bent u er niet van verzekerd dat voldoende geld beschikbaar is voor reizen, hobby's of gewoon een gezellig dagje weg met de kleinkinderen. Ook bestaat het risico dat u niet langer in uw huidige woning kunt blijven wonen. Een geschikt aanvullend pensioenplan kan u helpen dit te voorkomen. Het is belangrijk om te bekijken of een bepaald pensioenplan een financieel tekort kan voorkomen

Houd bij uw keuze tussen aanvullende pensioenplannen dus rekening met het zo goed mogelijk voorkomen van een tekort aan pensioen.

III Pension plan descriptions

Included below are the (Dutch) descriptions of the three different pension plans. The high-level description is given first, followed by the low-level description of the same plan.

Zekerheidplan (high-level)

Wilt u zeker weten hoeveel u na de looptijd heeft gespaard, kiest u dan voor het Zekerheidplan met vaste rente. U ontvangt dan een vaste rente gedurende de gehele looptijd. In uw offerte staat exact aangegeven welk bedrag aan het einde van de looptijd wordt gegarandeerd. Hiermee verzekert u een voor u juiste hoeveelheid aanvulling op het pensioen. Hier staat wel een relatief lage rente tegenover.

Risico & Rendement

De financiële bijsluiter geeft aan dat het risico van dit product zeer klein is. Op de einddatum van de verzekering wordt een gegarandeerd bedrag uitgekeerd. Het gegarandeerde eindrendement is echter niet zo hoog als het gemiddelde eindrendement wanneer u zou beleggen.

Nabestaandenverzekering

Als u vóór de einddatum overlijdt, dan komt er met de optionele nabestaandenverzekering een bedrag voor uw nabestaanden beschikbaar. Het verzekerde bedrag wordt dan gebruikt voor aankoop van een periodieke uitkering voor uw nabestaanden. U kiest hiermee voor maximale zekerheid voor uw nabestaanden.

Zekerheidplan (low-level)

Het Zekerheidplan is erg geschikt om een gegarandeerde aanvulling op het pensioen te hebben. U ontvangt gedurende de gehele looptijd een vaste rente. Hier staat wel tegenover dat deze rente relatief laag is.

Kenmerken

- U kunt periodiek (per maand, kwartaal of (half)jaar) premie inleggen of eenmalig.
- Deelname vanaf € 50,- per maand. Voor een eenmalige inleg geldt een minimum van € 500, -.
- Tussentijds is het mogelijk om uw premie te verhogen of verlagen.
- U kunt tussentijds stoppen met inleggen.

Risico & Rendement

Uw gespaarde geld groeit ieder jaar gestaag met een vaste rente. Met het Zekerheidplan weet u dan ook op ieder moment welk bedrag u hebt gespaard. Het gegarandeerde jaarlijkse rendement is echter niet zo hoog als het gemiddelde jaarlijkse rendement wanneer u zou beleggen.

Nabestaandenverzekering

Er zijn twee mogelijkheden:

- De verzekering keert 100% van de inleg uit, plus 15% van het gegarandeerde eindbedrag waarmee de nabestaanden een lijfrente moeten aankopen. Bij een inleg vanaf € 40.000,- is een gezondheidsverklaring nodig.
- U kunt ook kiezen voor geen uitkering bij overlijden. De nabestaanden ontvangen dan niets bij uw overlijden, maar dit garandeert wel het hoogste eindbedrag van deze twee mogelijkheden.

Combiplan (high-level)

Met het Combiplan heeft u meerdere mogelijkheden om zelf een aanvulling op uw pensioen te verzorgen. U laat uw geld doorgroeien met zekerheid en daarbij kunt u gedeeltelijk kiezen voor beleggen waarmee u een hoger rendement haalt maar met meer risico. Uw geld kan dan sneller groeien dan door alleen te sparen

Risico & Rendement

De financiële bijsluiter geeft aan dat het risico van dit product vrij groot is. Op de einddatum van de verzekering biedt het gedeelte dat u hebt laten doorgroeien met zekerheid een gegarandeerd bedrag. Het gedeelte dat is belegd wordt verkocht tegen de op de einddatum geldende koers. Hierdoor kunt u een hoger eindrendement halen dan bij sparen maar kan het eindrendement wel tegenvallen bij een ongunstig koersverloop.

Nabestaandenverzekering

Als u hebt gekozen voor het Combiplan, dan komt bij overlijden het saldo van deze rekening vrij. Hiervoor moeten de nabestaanden een nabestaandenlijfrente aankopen die periodiek uitkeert. Realiseert u zich dat het opgebouwde saldo niet altijd voldoende hoeft te zijn voor de kosten van levensonderhoud voor uw nabestaanden.

Combiplan (low-level)

Met het Combiplan kunt u sparen en beleggen tegelijkertijd, u bent daarmee verzekert van een gegarandeerde aanvulling, met de potentie om deze sneller te laten groeien dan door alleen te sparen.

Kenmerken

- U kunt maandelijks of jaarlijks een bedrag inleggen. Ook een eenmalige inleg is mogelijk. Er is geen beperking op de hoogte van de inleg.
- Tussentijds is het mogelijk om uw premie te verhogen of verlagen.
- De rekening is op ieder moment op te zeggen. Het gespaarde bedrag moet dan wel omgezet worden in een pensioen of worden overgeheveld naar een andere lijfrenterekening of een lijfrenteverzekering.

Risico & Rendement

Het gedeelte dat u spaart groeit ieder jaar gestaag met een vaste rente. De waardeontwikkeling van het gedeelte dat u belegt, is echter afhankelijk van de ontwikkelingen op de kapitaal-, effecten-, valuta- en/of goederenmarkten. Afhankelijk van het koersverloop van de beleggingen kan de waarde hiervan daarom per jaar sterk verschillen. Hierdoor haalt u gemiddeld een hoger jaarrendement dan bij sparen maar kan bij een ongunstig koersverloop het jaarlijkse rendement tegenvallen.

Nabestaandenverzekering

Als u hebt gekozen voor het Combiplan, dan komt bij overlijden het saldo van deze rekening vrij. Hiervoor moeten de nabestaanden een nabestaandenlijfrente aankopen die periodiek uitkeert.

Groeiplan (high-level)

Uw geld wordt bij het Groeiplan naar uw keuze belegd in een van de ProfielMixfondsen. Met deze verzekering profiteert u van het meeste groeipotentieel.
Er zijn 5 beleggersprofielen, oplopend van 1 (defensief en een laag risico) naar 5 (offensief en een hoog risico). Zo hebt u altijd een juiste mix van rendement en risico. Op basis van het klantprofiel adviseren wij u een van de ProfielMixfondsen. U bent niet verplicht dit advies op te volgen. Als u meer of minder risico wilt nemen, dan kan dat altijd. De hoogte van de uitkering is afhankelijk van de behaalde beleggingsresultaten.

Risico & Rendement

De financiële bijsluiter geeft aan dat het risico van dit product zeer groot is. Op de einddatum van de verzekering worden uw participaties verkocht tegen de dan geldende koers. Door te beleggen kunt u gemiddeld een hoger eindrendement halen dan bij andere pensioenplannen. Echter bij een ongunstig koersverloop kan uw inleg gedeeltelijk verloren gaan en uw eindrendement te laag uitvallen.

Nabestaandenverzekering

Wat gebeurt er met uw beleggingen als u overlijdt? Die gaan niet verloren maar komen toe aan uw nabestaanden. Met het Groeiplan hebben uw nabestaanden recht op 110% van de opgebouwde poliswaarde. Hiermee kopen de nabestaanden een periodieke uitkering aan.

Groeiplan (low-level)

Met het Groeiplan kiest u voor het meeste groeipotentieel door te beleggen. Hiermee kunt u de grootste aanvulling creëren op uw pensioen, de hoogte van deze uitkering is wel afhankelijk van de behaalde beleggingsresultaten.

Kenmerken

- Deelname vanaf € 50,- per maand. Ook een eenmalige storting is mogelijk vanaf een bedrag van minimaal € 500,-
- U kunt tussentijds een extra bedrag inleggen.
- Er zijn 5 ProfielMixfondsen oplopend van 1 (defensief en een laag risico) naar 5 (offensief en een hoog risico). Het ProfielMixfonds waarin u uw geld belegt, bepaalt u zelf. Switchen is altijd mogelijk.

Risico & Rendement

Door te beleggen stijgt de waarde van uw inleg jaarlijks gemiddeld gezien het meeste van alle pensioenplannen. U loopt echter wel het risico dat in een jaar met een ongunstig koersverloop uw inleg gedeeltelijk verloren gaat. De waardeontwikkeling is namelijk afhankelijk van de ontwikkelingen op de kapitaal-, effecten-, valuta- en/of goederenmarkten. De waarde van de beleggingen kan daardoor van jaar tot jaar sterk verschillen.

Nabestaandenverzekering

Bij overlijden gaan uw beleggingen niet verloren maar komen toe aan uw nabestaanden. Met het Groeiplan hebben uw nabestaanden recht op 110% van de opgebouwde poliswaarde. De hoogte van de premie voor deze nabestaandendekking varieert en wordt bepaald door uw leeftijd en uw geslacht.