

# The effect of tailoring pension information on navigation behaviour

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## Abstract

We conducted a randomised control experiment (RCE) amongst employees of several firms who got enrolled into a new workplace pension scheme. Participants were sent a generic invitation email to log in to the digital pension environment (DPE) and were subsequently randomly assigned tailored versions of digital pension information based on age. We analysed whether tailoring the general structure of pension information based on age affected the participants' navigation behaviour. The effect of tailoring on navigation behaviour has been analysed using the time spent in the DPE and clicking on relevant pension information. Tailoring of the DPE has been based on selected goals that were relevant for each age group. We found no tailoring effect for young participants regarding the goal about knowing how the participants' pension is arranged. Concerning the goal of knowing whether one is on track, tailoring the structure of the pension document was effective in distracting young participants from clicking on information not relevant to them and in motivating senior participants to click on relevant information. As for the goal of being aware of the choices available, we found that tailoring worked for senior participants as they clicked on relevant pension information.

Keywords: pension communication, pension information, retirement plans, tailoring, field experiment, financial decision making, navigation behaviour

JEL codes: C93, D83, D14, G4, J26, J32

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## 1. Introduction

During the past decades, the ease to access any type of information through computers, but also through tablets and mobile phones, has been increasing tremendously. Organizations that provide financial services face the challenge to become part of the actors providing information to their customers and at the same time to limit the costs that arise with it. Those organizations need to comply with legal requirements that ensure transparency and comprehensiveness of the information transmitted to their customers. Those obligations have been formalized in the Pension Information Act from 2015. In their study on comprehension of pension communication, Lentz, Nell and Pander Maat (2017) found that pension organisations (PO) considered the obligations imposed by the Pension Information Act as an impediment to effective pension communication. In the second chapter of her dissertation on how organisations deal with communication regulations, Nell (2017) identifies three strategies PO apply in response to the Pension Information Act. Firstly, PO complied with legislation without any additional actions; Secondly, PO focused on optimising the legally required media; Thirdly, PO optimised additional media. The majority of financial institutions and organisations find that mandatory documents such as the Annual Pension Statement and the website Pension 1-2-3<sup>1</sup> are not sufficient to inform their clients and subsequently, PO look for alternative ways to convey information to them. This leads to the circulation of more information through many different channels: mail, e-mails, texts on the website and videos that can be accessed on any smart device or— in the case of mail— on paper. In this paper, we will test the effectiveness of a pension document belonging to the class of additional media.

The need to analyse the effectiveness of pension communication is also intertwined with economic arguments. Individuals try to accumulate wealth during their working life in order to have sufficient means to sustain a certain living standard after they have retired. In order to achieve this goal, they need to make numerous informed financial decisions: buying a house or renting; managing current and savings accounts; exploring alternative investment opportunities as mutual funds or stocks and bonds; how much to consume and how much to save. Due to the financial crisis and the ongoing demographic change in the Netherlands (and other Western countries), individuals became the largest risk-bearers of financial decision-

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<sup>1</sup> Pension 1-2-3 is a website that provides layered information on the most important constituent parts of one's pension scheme.

making. Pension income has become more uncertain and the amount of state pension is not sufficient to smooth consumption over the life-cycle. Individuals are facing more substantial pension decisions which also involve an increasing freedom of choice. In this light, the introduction of the Pension Information Act from 2015 can be seen as a step towards assisting individuals in making informed decisions by legally obliging pension organisations to provide transparent and accurate pension information to their clients.

An unintended consequence of mandated disclosure is information overload hampering consumers in making optimal financial decisions (Iselin, 1988; Lee & Lee, 2004). See Eppler and Mengis (2004) for an overview of the literature on information overload from different domains like organisation science, marketing or accounting. A side-effect of being confronted with a large amount of information is that consumers are less motivated to process pension information as they feel that they are being swamped with complex information. This, in turn, makes it harder for people to realize that there is an urgency to take action as it comes to their pension situation as early as possible. An additional factor that complements information overload is the accumulation problem (Ben-Shahar & Schneider, 2011). In their rather extensive critique on mandated disclosure<sup>2</sup>, Ben-Shahar and Schneider argue that “in disclosees’ lives, each disclosure competes for their time and attention with other disclosures [...] and with everything they do besides collecting information and making decisions” (p. 689). This causes disclosees to surrender and not (proficiently) read all the disclosures. Consequently, the challenge for researchers and ultimately policy makers and pension organisations is to figure out how to rescue those drowning consumers and to motivate them to find their way through the ocean of (pension) information. In a review of the communication activities of pension organizations in a changed regulatory environment, Nell (2017) concludes that “the functions the [Dutch] government has established for pension communication are inaccurately formulated” which, in turn, results in information overload provided by communication designers (chapter 6, p.133). According to Nell (2017), communication designers generally prefer to “play it safe” (p. 168) and to provide more information than mandatory in order to make sure that they comply with the pension communication requirements by the Dutch government. Hence, information overload is already present in the pension sector and studying effective pension communication is indispensable.

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<sup>2</sup> According to Ben-Shahar and Schneider (2010), mandated disclosure is a regulatory technique that requires “the discloser” to provide “the disclosee” information which the latter can use to make informed decisions.

The importance of effective pension communication could also be motivated from a behavioural economics perspective. Individuals appear to have time-inconsistent preferences as it comes to retirement planning (O'Donoghue & Rabin, 1999) as they are faced with present costs and future benefits. Consequently, they procrastinate and postpone saving for retirement. Offering individuals effective pension communication could act as a commitment device in order to motivate them—irrespective in which stage of their life they are—to start or continue planning for retirement.

To understand the road to effective digital pension communication, we distinguish between three different phases that are at the heart of transmitting pension information: the trigger phase, the navigation phase and the content phase. In the trigger phase, the pension plan provider contacts their customers by (e)mail and provides information about the different tools and websites available in order to acquire more knowledge about one's pension situation. Alternative triggers could be brochures, short movies or even post cards. In a previous study (Dinkova, Elling, Kalwij, & Lentz, 2018), we have analysed the effect of tailoring in the trigger phase on pension information behaviour and we found the generic email invitation to be more effective than the tailored invitations. These results are also in line with Bauer, Eberhardt and Smeets (2017) who studied the impact of using social norms and financial incentives to trigger pension plan participants to inform themselves about their pension situation. They sent different versions of invitation letters to participants of a large Dutch pension fund that contained different frames of social norms. Note that whereas our study focusses on the effectiveness of tailoring pension information, Bauer et al. (2017) aimed at measuring the effect of applying different frames of social norms in pension information.

The navigation phase refers to the general structure of pension information and to the design and presentation of choices. In a review article on financial literacy and preparing for retirement, Prast and van Soest (2016) recognise that choice architecture plays a crucial role in improving consumers decision-making regarding their pension. Manipulation in this phase could concern the reorganisation of the content in order to give prominence to particular topics by changing the order and the rank (main or subordinate position within the information document) of the information provided. This study focusses on the effect of manipulating pension information in the navigation phase. The effect of tailoring pension information in the content phase has not been empirically researched yet.

Choosing the suitable moment to contact participants is crucial. In order to spare their clients from an unnecessarily high amount of emails or letters, a common practice for pension plan providers is to choose life-events as a convenient occasion. Luhman et al. (2012) define life-events as “time-discrete transitions that mark the beginning or the end of a specific status” (p. 594). Examples of such life-events are changes in marital status (like marriage or divorce), childbirth or change in employment status (transitions from and to unemployment or switching jobs). Blakstad, Brüggén and Post (2017) studied the use of life events for effective pension communication with the idea that life-changing events make people more open to behavioural change. Additionally, they provide an overview of the psychology literature on the effects of life events on retirement planning and subjective wellbeing. Blakstad et al. (2017) found that in particular the life event “starting a new job” triggered one out of four of the respondents to register or change pension contributions. The authors also identify challenges when using life-events to engage participants in their pension plans. Timing is important as communication should be sent right after the life-event. Of no less importance is assessing the (economic and non-economic) impact of a life-event on the participants and adapting the content of the communication item.

Following the call for more empirical evidence on the effectiveness of pension information, we conducted a randomised controlled experiment (RCE) in collaboration with a pension insurance company taking recent enrolment into a new pension scheme (due to change of jobs or organisational reasons) as the point of departure. In our experiment, we tailored the general structure of pension information based on age. Hershey, Jacobs-Lawson and Neukam (2002) found that there were age and gender differences in workers’ goals for retirement. This can partially be explained by differences in time preferences depending on which stage of the life-cycle people find themselves in. The propensity to plan is assumedly low for young people and increases by age. Eberhardt et al. (2016) have integrated demographics like age and gender into the conceptual model they developed in order to explain participants’ intention to learn more about their pension situation. Age as a key variable has been used before in research on tailoring information: see Lustria et al. (2009) for tailoring on health information needs or Etter (2005) and Cobb et al. (2005) on smoking cessation programs.

In cooperation with an insurance company, we changed the structure of a digital pension document introducing employees to their new workplace pension scheme. Being a new pension plan participant could mean two things: either an individual started a new job and automatically got enrolled into the new pension scheme or an individual was already working at the company

which entered into a new agreement with a pension plan provider (i.e. the insurance company that cooperated with us for this study). We differentiated consumers with respect to age and we manipulated the general structure of the pension document accordingly. We defined goals that should receive the highest prominence per age group and then designed different versions of pension documents implementing those goals and a generic version of the pension document containing basic information. Within each age group, we randomly assigned a pension document with a tailored or generic structure. With this experimental set-up we sought to answer the following research question: What is the effect of tailoring the structure of pension information on navigation behaviour? To measure whether participants delved into the information that was relevant to them, we focussed on who logged in to the pension environment and how much time they spent going through the pension document. We wanted to stimulate different age groups to spend more time on different sections of the pension document.

This paper is organised as follows: in section two, we describe the experimental design. Sections three and four deal with the estimation procedure and descriptive statistics respectively. The fifth section presents the estimation results and the last section concludes and discusses the results.

## **2. Experimental Design**

The research population consisted of employees of companies that have recently entered into a new workplace pension agreement with our insurance partner between January and May 2017. Employees, who recently enrolled into the workplace pension, received an email invitation to log in to the online environment of the insurer and to explore pension information that provided them with useful information about their pension situation. Following Dinkova et al. (2018), we defined three age categories: young participants (18-34 years old), middle-aged participants (35-54 years old) and senior participants (55 years and older) that differ in the sense of urgency to save for retirement. The youngest age group are at the beginning of their working career and are typically concerned with other personal investments than their pension. The middle group has more working experience and has already accumulated savings to settle down and to start saving for retirement more actively. The senior age category is a heterogenous group comprising individuals who still have several working years left— and with it, opportunities to save for retirement— and individuals who are about to retire.

We developed four different versions of the pension information document (three for each age category and a generic version). Each version consisted of several pages. Each page contained dropdown menus with short titles on each page that, if clicked on, revealed more detailed information on selected issues. A more detailed overview of the structure of the pension documents is contained in the Appendix (boxes A1 and A2). We randomly assigned half of the customers to tailored pension information and the other half to the generic one.

### *Goals per age category*

We identified different goals for different age categories. We formulated the goals together with pension communication experts from the insurance company. See table 1 for an overview of the goals per age group. The goals reflect what the insurer deemed most important for each age group. We do not claim applicability of those goals to the entire pension sector. Note that there is not necessarily only one goal per age group.

Table 1: Goals per type of pension information document

<b>Age category</b>			
<b>Young</b>	<b>Middle</b>	<b>Senior</b>	<b>Generic</b>
Know how their pension is arranged	To be aware of their pension situation and to know whether they are on track (relative to people in a similar situation)	To know exactly how much future pension income they (and possibly your partner) have accrued	Receive basic information on pension situation
Realizing that a pension scheme is an important working condition	Realizing what the possibilities are to enrich their portfolio if needed	To be aware of the (investment) choices that still can be made and to be able to make a decision	To be informed about the possible choices and when they should take action
	To know what to do considering different life events (such as divorce, occupational disability)	To convey the feeling of getting support by the insurer*	

Note that we did not specify goals for the generic version. The goal for the senior category marked with \* is an implicit goal that we did not explicitly measure.

Young participants should primarily realise that their pension scheme is an important employee benefit and also know how their pension is arranged. The goals for the middle age

category are threefold: Firstly, to be aware of their pension situation and most of all to know whether they are on track relative to people of the same age. Secondly, to realise what the possibilities are to enrich their portfolio if needed. And thirdly, to know what to do considering different life events such as divorce, occupational disability or even (anticipated) death. Senior participants, in their turn, should know how much future pension income they have accrued. Furthermore, it is important for them to be aware of the (investment) choices that still could be made: especially with regard to partner-pension and survivor's pension.

### *Operationalisation of the goals*

Having outlined the goals of pension information for each age group, we move on to creating a hierarchy for the goals across age groups. This hierarchy identifies which goal is measured in which way and, subsequently, helps to construct measures to evaluate the effectiveness of tailoring the navigation structure of the pension documents. We reduced the number of goals to three as not all goals could be implemented when tailoring the structure of the pension documents. This left us with the following goals for pension plan participants: 1) knowing how their pension is arranged, 2) knowing whether they are on track with saving for retirement and 3) being aware of the choices available within their pension arrangement. Table 2 provides an overview of the three main goals per pension document and the operationalization thereof in the respective pension information document. The most prominent goal for the young age group is to know how their pension is arranged. The most prominent goals for the middle age group are primarily knowing whether participants are on track with saving for retirement, accompanied by the goal to be aware of the choices available within the pension arrangement. For the senior age group, the aforementioned goals both are very important. For the middle age group, we changed the navigation structure in a subtler way than for the senior age group regarding the goals of *being aware of the choices available* and whether *one is on track* resulting in different levels of prominence of the goals for the middle age group (*medium*) and the senior age group (*high*).

We distinguished between tailoring at three levels – level 1 corresponding to a high prominence of the goals and level 3 - to a low prominence. Tailoring at level 1 implies that the goal is displayed as a page title, which stays visible at all times when going through the pension document. This way, the goal received a high prominence as the entire page of the document contains information that is dedicated to this goal. Tailoring at level 2 implies that the goal is being addressed in the title of the dropdown menus on each page of the pension document. This

information is only visible if participants are at the respective page of the pension document. At last, tailoring at level 3 implies that the goal receives a relatively low prominence on the final page of the pension document – participants are being redirected to online content with more specific information or other pension tools such as Pensioncheck and Pension 1-2-3. The Pensioncheck is an online tool that enables participants to check whether they have accrued enough pension income for their old age. As already mentioned in the introduction, Pension 1-2-3 is a document mandated by law including layered pension information.

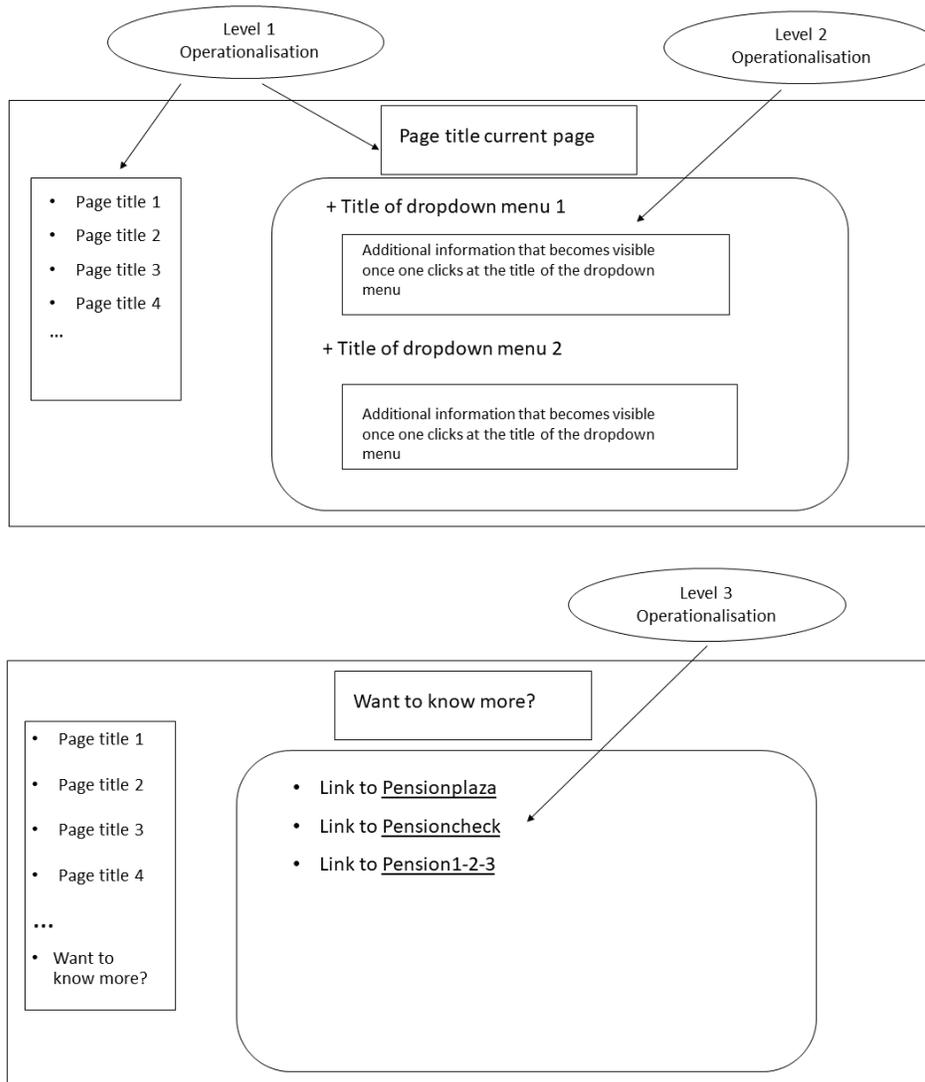
Table 2: Prominence of goals per type of pension information (scale: high, medium, low)

<b>Prominence (by age category)</b>				
<b>Goal</b>	<b>Young</b>	<b>Middle</b>	<b>Senior</b>	<b>Generic</b>
Know how their pension is arranged	high	low	low	medium
<i>Operationalisation</i>	<i>Level 1</i>	<i>Level 3</i>	<i>Level 3</i>	<i>Level 2</i>
Know whether on track with saving for retirement	low	medium	high	medium
<i>Operationalisation</i>	<i>Level 3</i>	<i>Level 2</i>	<i>Level 1</i>	<i>Level 2</i>
Be aware of the choices available within pension arrangement	medium	medium	high	medium
<i>Operationalisation</i>	<i>Level 2</i>	<i>Level 2</i>	<i>Level 1</i>	<i>Level 2</i>

*Notes:* Level 1 refers to page title (visible to all the time to the participants), level 2 refers to title of dropdown menus (only visible if at respective page) and level 3 refers to the final page where participants are redirected to content with more specific information/other pension tools.

Consider, for instance, the young group, whose most important goal is knowing how their pension is arranged. The pension document has an entire page dedicated to how their pension is arranged with additional information at level 1. Consider now the tailored version for the middle and senior age groups. Information about how the pension is arranged can be found on the final page of the pension document (level 3). For the generic version, knowing one’s pension arrangement is of medium importance at level 2 – by dedicating a part of a page (title and content of dropdown menu) to this goal. See figure 1 for a schematic illustration of the operationalisation of the levels.

Figure 1: Schematic overview of the operationalisation of the goals



Notes: The bottom of the figure describes the operationalisation at the third level in the very last page of the pension document, which carried the title "Want to know more?" in each version.

### 3. Estimation procedure

#### *Logging in*

First, we looked at the determinants of logging in to the online environment of the pension insurer using the Digital Identification (DigID). With the DigID, Dutch residents get access to Dutch government websites. They can then, for instance, file their income tax, apply for benefits and allowances, check their accrued pension online. Analysing login behavior serves more as a check as we did not tailor the trigger (the invitation) but the pension document that

they could access once they have logged in. We used a linear probability model to estimate the probability to log in – see equation (3.1).  $login_i$  is a binary dependent variable equal to 1 if an individual has logged in to the digital environment and 0 if otherwise. Let  $I(\cdot)$  be an indicator function being equal to 1 if individual  $i$  belonged to group  $j$  and 0 if otherwise. We have three age categories, age  $A \in \{young, middle, senior\}$ , and two types of versions  $T \in \{tailored, generic\}$  resulting in six groups.

$$login_i = \beta_0 + \sum_{j=1}^5 \beta_j I(AT_i = j) + \delta_i Z' + \varepsilon_i, \quad (3.1)$$

$\beta_j$  is the difference in the probability to log in between individuals  $i$  of a group  $j$  and those in the reference group (or base) which we set at middle-aged individuals who received a tailored pension document, once controlled for gender and marital status (included in  $Z'$ ).

#### *Explorative analysis and navigation behaviour*

The remainder of the empirical analysis focusses on the subsample of the participants who have logged in. To measure online activity of the participants and their navigation behaviour, we have selected a number of dependent variables, namely the time spent in the digital pension environment (DPE), the intensity of the overall activity in the DPE (clicks per minute) and the clicking activity relating to navigation behaviour or, in other words, whether participants clicked at goal-related content. The models that we estimated are summarised by equation (3.2) with  $NB_i$  being a catch-all term for the above mentioned dependent variables. Table 3 provides a detailed overview on how the three dependent variables measuring navigation behaviour are constructed.

$$NB_i = \beta_0 + \sum_{j=1}^5 \beta_j I(AT_i = j) + \delta_i Z' + \varepsilon_i, \quad (3.2)$$

For the first two specifications,  $\beta_j$  is the difference in the effect of tailoring on the time spent (or on activity) in the DPE relative to the reference group of middle-aged participants who were assigned a tailored version of the pension document. For the three dependent variables referring to navigation behaviour,  $\beta_j$  is the difference in the probability to click on goal-related content for individuals  $i$  of a group  $j$  and those in the reference group.  $Z'$  includes gender and marital status.

Table 3: Construction of the variables measuring navigation behaviour

<b>Dependent variable*</b>	<b>Measures what?</b>	<b>Constructed how?</b>
Arrangement	Whether participant clicked at content related to goal 1 from table 1 (most relevant for young group)	Binary; =1 if participant clicked on "How is your pension arranged" or on the link to Pension123; =0 if otherwise
On track	Whether participant clicked at content related to goal 3 from table 1 (most relevant for middle and senior groups)	Binary; =1 if participant clicked on "Are you on track for retirement?" or on the link to the Pensioncheck; =0 if otherwise
Choices	Whether participant clicked at content related to goal 2 from table 1 (most relevant for middle and senior groups)	Binary; =1 if participant clicked on "Which choices do you have?" or "Choices to make when you retire" or "Which additional choices do you have?"; =0 if otherwise

*Note:* \* NB is a placeholder for all dependent variables in equation (2). The text between the quotation marks is clickable content (page headings and titles of dropdown menus) in the different versions of the pension documents. For more details, refer to boxes A1 and A2 in the Appendix.

#### 4. Data description

8563 participants from 345 companies received an invitation to log in to the digital environment of their pension plan provider and to explore the information available about their pension situation. Those participants were exclusively employees who were recently enrolled into the workplace pension of the insurer. We collected data on gender, age, marital status and employer for every participant. Around 5% (447 participants from 133 companies) logged in to the digital pension environment (DPE). This is the group of participants whose navigation behaviour we analysed. In table 4 the login behaviour to the DPE is presented for each of the six segments. The distribution of participants who logged in is roughly the same across segments. This does not come as a surprise as we did not tailor the invitation to log in to the DPE. Furthermore, we observe that the middle segments are better represented in our sample relative to the young and senior segments. Comparing the sub-samples of who logged in and who did not across other known key characteristics such as gender and marital status can give us more information on whether the individuals who logged in are a selective sub-sample.

Table 4: Login behaviour to the Digital Pension Environment (DPE) across segments (percentage shares in parentheses)

Segment	Obs.	Logged in to DPE
Young generic	1,068	48 (4.49)
Young tailored	1,118	60 (5.37)
Middle generic	2,420	127 (5.25)
Middle tailored	2,566	132 (5.14)
Old generic	682	43 (6.30)
Old tailored	709	37 (5.22)
<b>Total</b>	<b>8,563</b>	<b>447 (5.22)</b>

##### *Demographics and Time spent behind the login*

In table 5, we present the means for the demographics (gender, age, marital status) and a few indicators of overall activity in the DPE. On average, participants were 43 years old and the share of men was 75% for participants who had logged in to the DPE (72% for those who did not login). Typically, participants who logged in were married or lived with a registered partner (55%) and on average, spent 15 minutes in the DPE during their longest session.

The means for age and gender did not significantly differ between the two sub-samples of participants who logged in and participants who did not log in. Nevertheless, we should be careful when interpreting the results from the experiment: from table 5, we do not have

convincing evidence that the sub-sample of participants who have logged in to the DPE is representative for the entire research population as unobserved heterogeneity (motivation that drove people to log in) cannot be accounted for.

Table 5: Mean values of demographics and time spent for subsamples of participants who have logged in to the Digital Pension Environment and participants who did not log in

Variable	Logged in?		
	Yes	No	$\Pr( T  >  t )^a$
Share of men (%)	75.17	72.20	0.172
Age of participants (in years)	43.30	43.02	0.593
Share of Singles (%)	36.91	44.44	0.002
Share of Married/registered partner (%)	54.59	50.25	0.074
Share of Cohabiting (%)	8.50	4.99	0.001
Share of Unknown (%)	0.00	0.32	0.231
Total time (in minutes, all sessions)	24.45		
Time spent behind login (in minutes, longest session)	15.00		
Total number of actions in pension document	14.16		
Ratio number of actions per minute	1.59		
Number of observations	447	8116	

Note: <sup>a</sup>  $\Pr(|T| > |t|)$  returns the p-value of a two-sided t-test comparing means testing the zero hypothesis  $H_0: \mu_{Yes} = \mu_{No}$  where  $\mu_{Yes}$  and  $\mu_{No}$  are the population means of the group that has logged in to the DPE and of the group that has not logged in respectively.

We could track the total time spent (in seconds) during each time participants visited the pension information. This includes the time they spent to go through the pension information, but also the time to follow the links to additional information and tools that were provided in the pension information document. To have a better understanding of the overall activity of participants during the experiment, we took the longest session into account. The majority of participants who logged in had no more than four sessions (90%) and on average two sessions. Note that even with multiple logins, participants were assigned the same version of the pension document. We can only speculate about the reasons behind multiple logins: it might be that respondents were distracted during the first session and wanted to take their time looking at the pension information provided.

Furthermore, we tracked which pages the participants visited, and also, which dropdown menus they clicked at. We have summed up this information as the total number of actions. To create a proxy for the intensity of activity, we computed the ratio of number of events per minute by dividing the total number of actions behind the login by the total time (in minutes)

spent behind the login: the higher the ratio, the higher the intensity of activity while being logged in.

## **5. Empirical Results**

### **5.1 Explorative analysis: navigation behaviour**

Table 6 provides an overview of navigation behaviour measured by the three dependent variables as described in the methodology section. The share of young participants clicking on goal-related content about their pension arrangement is the highest compared to the other age groups. As expected, young participants were the most active group concerning learning more about their pension arrangement. We could not detect significant differences, however, in clicking behaviour between young participants with the generic version and the tailored one. Additionally, we can observe that on average, the share of middle-aged participants with a generic version of the pension document clicking on content about their pension arrangement is higher than the share of middle-aged participants with a tailored one.

Concerning the second goal— being on track— we found significant differences in navigation behaviour between participants with a generic and those with a tailored version for the young and senior age group. For the young group, the share of goal-related clicks was significantly higher for participants with a generic version. For the senior group, the share of goal-related clicks was significantly higher for participants with a tailored version. These observations are in line with our intentions of designing the pension documents.

For the third goal— being aware of the choices available— we detected differences in navigation behaviour for the middle-aged and senior participants. Middle-aged participants with a generic version clicked more often at goal-related content than middle-aged participants with a tailored one— an activity we did not expect. As expected, the share of senior participants with a tailored version who clicked on goal-related content was significantly higher than the share of senior participants with a generic one.

Table 6: Navigation behaviour: percentage clicking on goal-related content per goal by age category

Age category	18-34 years			35-54 years			55+ years			Total		
	G	T	$H_0: \mu_G = \mu_T$ <sup>b</sup>	G	T	$H_0: \mu_G = \mu_T$	G	T	$H_0: \mu_G = \mu_T$	G	T	$H_0: \mu_G = \mu_T$
Version pension document												
Goals												
<i>How arranged (%)</i>	64.58	66.67	0.823	<b>59.06</b>	<b>47.73</b>	<b>0.068</b>	53.49	45.95	0.507	59.17	52.40	0.150
<i>On track (%)</i>	<b>54.17</b>	<b>20.00</b>	<b>0.000</b>	52.76	55.30	0.682	<b>62.79</b>	<b>91.89</b>	<b>0.002</b>	36.70	34.50	0.515
<i>Choices (%)</i>	45.83	35.00	0.257	<b>33.86</b>	<b>18.94</b>	<b>0.006</b>	<b>34.88</b>	<b>89.19</b>	<b>0.000</b>	55.05	51.97	0.628

Note: G and T refer to generic and tailored versions of the pension document respectively.

<sup>b</sup>The reported p-values correspond to testing this null hypothesis against a two-sided alternative, where  $\mu_G$  and  $\mu_T$  are the population means of the group with generic and tailored versions respectively. Statistically significant differences are in bold.

## 5.2 Estimation results of login, intensity and navigation behaviour

Estimation results are reported in table 7. The tailoring effects obtained in table 7 are summarised in table 8. Note that all results on the time spent and navigation behaviour in the DPE are conditional on having logged in. Essentially, the regression results confirm the correlation analysis conducted in table 6 about navigation behaviour.

### *Logging in*

The first column of table 7 presents the estimates of the probability to log in— this is the only specification that takes the gross sample into account. We did not find differences in login behaviour between participants of all age groups no matter which pension document version they were assigned. This is as expected, for the invitation to log in to access the insurer’s digital environment was identical for all age groups. Married and cohabiting participants were more likely to log in than single participants.

### *Time spent and ratio events/time*

Table 7 shows no evidence for a tailoring effect for the total time (measured in minutes) spent going through the assigned pension information. Married and cohabiting participants spent significantly more time (but less intensively) in the DPE than their single counterparts. Middle-aged participants with a tailored version were less active (0.45 events/minute) than middle-aged participants with a generic version. Being less active implies that the navigation structure was more efficient in the tailored version and participants could go through the pension information using less effort.

### *Navigation behaviour*

Table 8 shows that concerning the first goal of knowing how their pension is arranged, middle-aged participants with a generic version clicked more often on goal-related content than middle-aged participants with a tailored version. We estimated a negative coefficient of 12 percentage points. This result is in line with our expectations, as the pension document with the tailored structure was supposed to induce young participants to focus on how their pension is arranged and to induce middle-aged and senior participants to explore the choices available and whether they are on track. Contrary to our expectations, we do not find significant differences in clicking on information about pension arrangements for young participants with

a generic or tailored version. One explanation could be that young people do not realise the importance of having a pension and, therefore, do not look at how their pension is arranged.

For the second goal— knowing whether being on track with saving for retirement— we estimated a negative coefficient of 35 percentage points for young participants. This was as intended by our design of the pension document as we wanted to induce young participants to focus on how their pension was arranged rather than whether they are on track. For senior participants, we found a positive coefficient implying that they were 38 percentage points more likely to click on pension information about being on track if they received the pension document with the tailored structure relative to the generic version. This result is also according to our design intentions as being on track was considered a primary goal for the senior group.

As for the third goal on being aware of choices surrounding the pension plan of participants, we found middle-aged participants with a generic version to click more often (14 percentage points) on goal-related content than middle-aged participants with a tailored version. This is a result that raises concern— together with the results for the young participants—as tailoring did not have the desired effect on navigation behaviour. For senior participants, we found a large positive and significant tailoring effect as intended— the difference of clicking on information on pension choices for seniors with a tailored version relative to seniors with a generic version is 50 percentage points.

In the light of table 2, which presented the operationalisation of the goals in the navigation structure, we can explain the results regarding the second and third goal (Being on track and Choices available) by comparing the prominence of the tailored and generic versions. For the second and third goal, tailoring did not achieve the desired effect for the middle-aged participants as the prominence of information regarding knowing whether one is on track was *medium* for the tailored and the generic version<sup>3</sup>. For senior participants, we did achieve the desired tailoring effect as the prominence differed between the generic version (*medium*) and the tailored version (*high*). This explanation does not appear to be applicable to the results regarding the first goal (knowing how one's pension is arranged).

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<sup>3</sup> If the prominence of information regarding a particular goal is the same for the generic and tailored version, this does not imply that the navigation structure was identical. There are subtle differences within each operationalisation level, for instance in the order or the number of the dropdown texts. For an interested reader, the screenshots of all versions of the original digital pension documents (in Dutch) are available upon request from the corresponding author.

Table 7: Estimation results for logging in and navigation behaviour concerning goal-related content

VARIABLES	(1) Probability of logging in	(2) Log(time)	(3) Events per minute	(4) Probability of clicking on goal 1- information	(5) Probability of clicking on goal 2- information	(6) Probability of clicking on goal 3- information
Young generic	-0.002 (0.009)	0.069 (0.209)	0.065 (0.341)	0.076 (0.076)	0.027 (0.090)	0.119 (0.078)
Young tailored	0.006 (0.009)	-0.144 (0.229)	0.099 (0.339)	0.104 (0.084)	-0.322*** (0.071)	0.017 (0.071)
Middle tailored	-0.001 (0.005)	0.211 (0.164)	-0.452** (0.196)	-0.116* (0.062)	0.030 (0.066)	-0.142*** (0.046)
Senior generic	0.009 (0.012)	0.302 (0.190)	-0.395 (0.298)	-0.055 (0.086)	0.096 (0.095)	0.007 (0.077)
Senior tailored	-0.001 (0.010)	0.287 (0.245)	-0.351 (0.336)	-0.134 (0.091)	0.380*** (0.066)	0.558*** (0.064)
Share of men (%)	0.006 (0.006)	0.027 (0.131)	0.024 (0.190)	-0.011 (0.052)	0.025 (0.050)	-0.068 (0.047)
Married/registered partner (=1)	0.012* (0.006)	0.442*** (0.125)	-0.501*** (0.184)	0.087 (0.057)	0.015 (0.046)	0.025 (0.045)
Cohabiting (=1)	0.042** (0.019)	0.701*** (0.227)	-0.897*** (0.255)	0.111 (0.078)	-0.093 (0.077)	-0.009 (0.086)
Unknown marital status (=1)	-0.045*** (0.005)					
Observations	8,563	447	447	447	447	447
R-squared	0.003	0.059	0.054	0.030	0.117	0.149
Number of clusters	345	133	133	133	133	133
p-value F-test (married=cohabiting=unknown)	0.000	0.001	0.002	0.173	0.369	0.810
p-value F-test (young generic=young tailored)	0.327	0.382	0.930	0.744	0.000	0.226
p-value F-test (middle generic=middle tailored)	0.850	0.202	0.022	0.063	0.645	0.003
p-value F-test (senior generic=senior tailored)	0.435	0.956	0.877	0.473	0.003	0.000

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7 (continued)

Notes: Clustered standard errors in parentheses (at employer level). Goals 1,2 and 3 refer to Arrangement, On track and Choices respectively. Reference categories: middle age generic; single (marital status). The first F-test tests whether the marital status dummies are jointly significant. The next F-tests test for each age category, whether the coefficients of the tailored version are equal to the coefficients of the generic version (hence whether there is a tailoring effect). Effects are in percentage points when multiplied by 100, except for columns (2) and (3), which are measured in percentages (times 100) and clicks/minute respectively. In an additional specification, we tested whether age (in years) could mediate the effect of tailoring on navigation behaviour by interacting each segment with age. We did not find empirical evidence for such a mediating effect. A more flexible specification using age dummies instead of age in years leads to many empty cells which is due to our sample size. Hence, we are not in the position to test whether the effects we find are sensitive around the margins of the age categories we defined. Results are available upon request from the corresponding author.

Table 8: Tailoring effects per goal by age category

Age category	Goal: arrangement	According to expectations?	Goal: on track	According to expectations?	Goal: choices	According to expectations?
Young	0.028 0.084	No	-0.350*** 0.086	Yes	-0.103 0.084	Yes
Middle	-0.116* 0.062	Yes	0.030 0.066	No	-0.142*** 0.047	No
Senior	-0.078 0.109	Yes	0.284*** 0.092	Yes	0.551*** 0.086	Yes

Notes: Standard errors in parentheses; Significance levels: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Tailoring effects are computed by taking the difference between the estimated coefficients for the tailored and generic version for each age group using the *lincom* command with STATA. Effects are in percentage points when multiplied by 100. In the columns after the computed tailoring effects, we indicated whether the effects are according to our expectations when designing the structure of the pension information.

### *Sample selection and representativeness*

We conclude this section by discussing the issue of sample selection in our study. By randomly assigning a generic or tailored version to participants, we do not eliminate the selection bias from logging in to the DPE. We compared the distributions of the key variables between the sub-sample of the participants who have logged in and the total sample (table 5). Regarding gender and age, we did not find significant differences between the sub-sample and the total sample. At the bottom of table 7, we presented an F-test on all coefficients of the marital status variables: we found significant differences between the sub-sample and the total sample. Given those tests we cannot say with certainty that the sub-sample of participants who logged in to the DPE are representative of all participants of the experiment. Hence, it is more accurate to interpret the effects as causal *conditional* on having logged in to the DPE referring to the conditional independence assumption (CIA) which, according to Angrist and Pischke (2008), eliminates selection bias. A related issue is that only 5% of the research population participate in the experiment which means that we estimate a treatment effect on a small selected group of pension participants. Caution is advised when generalising the results to the whole research population.

## **6. Conclusions**

We conducted an experiment amongst employees who recently got enrolled into a new workplace pension scheme. We analysed whether tailoring the general structure of pension information based on age affected the participants' navigation behaviour through the digitally provided pension information. Participants were sent a generic invitation email to log in to the digital pension environment of their pension scheme provider and were subsequently randomly assigned tailored versions of the structure a pension information document. To obtain the effect of tailoring on navigation behaviour, we analysed clicking behaviour involving selected goals that were relevant for different age groups: Participants should know 1) how their pension is arranged, 2) whether they are on track with saving for retirement and 3) the choices available within the pension arrangement.

Concerning the first goal related to knowing how one's pension is arranged, we found that tailoring worked in such a way that it intentionally distracted the middle-aged from the goal that was not deemed relevant for them. For young participants, however, tailoring was not effective in inducing them to click on goal-related pension information. For the second goal, being on track, tailoring the structure of the pension documents was effective in distracting

young participants from clicking on information that was not relevant to them and in motivating senior participants to click on relevant information. Those results are in line with our expectations: being on track was not a prominent goal for the young age group, hence we did not expect young participants to be more active in the tailored version as we did not put information about being on track very prominently. Tailoring was effective for senior participants as they clicked on information that was considered to be relevant to them. The middle group however, contrary to our expectations, was not more active in the tailored pension document. We were expecting participants from the middle-aged group to be triggered by the tailored navigation structure to click on information regarding whether they are on track with saving for their pension. The lack of evidence for a tailoring effect might suggest otherwise. As for the third goal, being aware of the choices available, we found that tailoring worked for senior participants as they clicked on relevant pension information. Similar to our findings about the second goal, being on track, we had to conclude that tailoring was more effective in the generic version in motivating the middle-aged group to click on relevant pension information.

The resistance of the middle-group to tailoring pension information is in line with findings from tailoring in the trigger phase (Dinkova et al, 2018) where we found the generic invitation letter to be more effective than the tailored letter in inducing young and middle-aged participants to click through and log in to a DPE. If a tailored invitation letter did not trigger young and middle-aged participants to click through and log in to the DPE (Dinkova et al., 2018) and according to the present experiment, tailored digital pension document did not succeed to motivate participants to click at relevant information— what drove those participants and how can those participants be motivated to delve into their pension situation in the future?

From within the behavioural economics framework of individuals with time-inconsistent preferences about retirement planning (O'Donoghue & Rabin, 1999), we could argue that young and middle-aged participants have time-inconsistent preferences. They postpone planning for retirement by not looking at relevant pension information which could provide them with more guidance in order to make informed pension decisions. Similarly, senior participants— as the horizon of future benefits becomes shorter— appear to realise that they cannot postpone planning for retirement any longer as the urgency of taking (perhaps the last) steps to prepare for retirement is apparent.

A less theoretical explanation concerning the results for the middle group is that the middle-group is heterogenous and depending on the life-phase middle-aged individuals might be in, there could be an overlap in preferences across age groups. Although we tried to address this issue when estimating our results, we could not draw any conclusions about a possible overlap across age-categories due to the small number of observations. Field experiments on effective pension communication in the navigation phase with a higher number of active participants (ergo a more representative sub-sample of active participants) would enable researchers to estimate causal treatment effects and identify clearer interval borders of the age categories.

What has been already touched upon in previous sections is that the results should be treated with caution as the tailoring effects we found are based on a sub-sample of assumedly intrinsically motivated people who took the first hurdle of logging in (5% of our sample). The effects are causal but if and only if they are conditioned on having logged in. In order to be able to have a clearer view on who logged in in the first place and who clicked more actively on relevant information than others, one could analyse personal characteristics that go beyond simple demographics. Empirical evidence about attitudes towards pension information, need for cognition (in general and related to the pension domain), financial literacy and future time perspective (how individuals value present benefits relative to future benefits and present costs) can complete the picture of profiling individuals who typically are more likely to be actively interested in their pension situation. Directing future research at examining the role of future time perspective and financial literacy in improving the effectiveness of pension communication can be an example of how concepts that are rooted in economics can contribute to be a step further in overcoming challenges of societal relevance jointly with insights from communication science, linguistics and psychology.

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## Appendices

### A. Overview of structure of each version of the pension information document

Box A1: Structure for each version of the pension information document. Arabic numbers refer to pages (higher level) and bullets represent titles of the drop-down menus (lower level)

#### *Generiek*

0. Welkom scherm: plaatje met relatief jonge groep; Button: Ga verder
1. Welkom bij het Werknemers Pensioen
2. Goed om te weten
  - Hoe is je pensioen geregeld?
  - Lig je op koers met je pensioen?
  - Welke keuzes heb je?
  - Wanneer moet je in actie komen?
  - Wij communiceren digitaal
3. Meer weten? (Verwijs naar Pensioen plein, pensioen 1-2-3 en Pensioencheck en verwijs naar een adviseur en de helpdesk)

#### *Jong*

0. Welkom scherm: plaatje met relatief jonge groep; Button: Check het hier
1. Welkom bij het Werknemers Pensioen
2. Pensioen in vijf minuten
  - Hoe is je pensioen geregeld?
  - Wanneer moet je in actie komen?
  - Welke keuzes heb je?
3. Wil je meer weten? (Verwijs naar Pensioen plein, pensioen 1-2-3 en Pensioencheck en verwijs naar een adviseur en de helpdesk)

#### *Midden*

0. Welkom scherm: plaatje met een koppel (midden groep) in de keuken; Button: Check het hier
1. Welkom bij het Werknemers Pensioen
  - Lig je op koers met je pensioen?
  - Wat kun je doen om extra pensioen op te bouwen?
  - Wanneer moet je inactie komen?
  - Welke keuzes heb je?
2. Meer weten? (Verwijs naar Pensioen plein, pensioen 1-2-3 en Pensioencheck en verwijs naar een adviseur en de helpdesk)

#### *Senior*

0. Welkom scherm: plaatje met een senior man die aan het strand voetbalt; Button: Ga verder
1. Welkom bij het Werknemers Pensioen
2. Lig je op koers met je pensioen?
3. Keuzes als je met pensioen gaat
  - Wanneer wil je met pensioen?
  - Wil je eerst met deeltijd pensioen?
  - Wil je eerst een hoger pensioen en daarna een lager pensioen?
  - Wil je partnerpensioen ruilen voor extra ouderdompensioen?
4. Welke keuzes heb je nog meer?
5. Meer weten? (Verwijs naar Pensioen plein, pensioen 1-2-3 en Pensioencheck en verwijs naar een adviseur en de helpdesk)

Box A2: Structure for each version of the pension information document (English translation). Arabic numbers refer to pages (higher level) and bullets represent titles of the drop-down menus (lower level)

*Generic*

0. Homescreen: image of a relatively young group; Button: <Continue>
1. Welcome to the Workplace Pension
2. Good to know
  - How is your pension arranged?
  - Are you on track for retirement?
  - Which choices do you have?
  - When do you have to take action?
  - We communicate digitally
3. Know more? (Refer to Pensionplaza, pensioen 1-2-3 and Pensioncheck and refer to an advisor and the helpdesk)

*Young*

0. Homescreen: image of a relatively young group; Button: <Check it here>
1. Welcome to the Workplace Pension
2. Pension in five minutes
  - How is your pension arranged?
  - When do you have to take action?
  - Which choices do you have?
3. Would you like to know more? (Refer to Pensionplaza, pensioen 1-2-3 and Pensioncheck and refer to an advisor and the helpdesk)

*Middle*

0. Homescreen: image of a middle-aged couple in the kitchen; Button: <Check it here>
1. Welcome to the Workplace Pension
  - Are you on track for retirement?
  - What can you do to accrue more pension?
  - When do you have to take action?
  - Which choices do you have?
2. Know more? (Refer to Pensionplaza, pensioen 1-2-3 and Pensioncheck and refer to an advisor and the helpdesk)

*Senior*

0. Homescreen: image of a senior man playing football; Button: <Continue>
1. Welcome to the Workplace Pension
2. Are you on track for retirement?
3. Choices to make when you retire
  - When do you want to retire?
  - Do you first want to retire partially?
  - Do you first want to be paid out a higher pension amount and afterwards a lower pension amount?
  - Do you want to exchange partner's pension for additional retirement pension?
4. Which additional choices do you have?
5. Know more? (Refer to Pensionplaza, Pensioen 1-2-3 and Pensioncheck and refer to an advisor and the helpdesk)

*Additional notes:* Pensionplaza is a personal environment for customers of the insurer that allows access to pension information and consisted (until summer 2017) of several pension documents that relate to pensions.

Pensioen 1-2-3 is a website administered by the Dutch Pension Federation and the Dutch Association of Insurers and provides information on the most important constituent parts of your pension scheme. The information is organized in three layers: the first one provides a quick overview on your pension scheme, the second one builds on the information in the previous layer and the third layer presents more detailed information and could include official documents about your pension scheme.

The Pensioncheck is an online tool that enables participants to check whether they have accrued enough pension income for their old age.

## **B. Screenshots of front pages of all four versions of the pension document**

### **Version 1 (young)**



### Version 2 (middle group)



### Version 3 (senior)



### Version 4 (generic)

