

Nudging freelance professionals to increase their retirement pension fund contributions

Enrico Rubaltelli* Lorella Lotto†

Abstract

People do not save enough for retirement and this can have serious repercussions on their well-being. We tested an intervention in a large field study (N = 20,507) with the goal of nudging a population of freelance workers to save more for the future. First, we changed the default from the earlier contribution rate of 10% to a contribution rate of 20%, but left people free to choose how much they wanted to contribute. Second, those who reduced their contribution were reminded that they would receive a lower pension as a result. Third, we informed people about how much tax they would save as a result of their contribution. This nudging intervention proved to be a cost-effective, yet powerful way to remind people about the long-term implications of their savings decisions. It was also successful at counteracting the temptation to keep as much money as possible for present consumption while losing out on the long run. Overall, we were able to increase cash flow to the fund by more than eight million Euros (in addition to the roughly 50 million collected in the previous year), with an almost seven-fold increase in the number of people who chose to contribute more than the minimum.

Keywords: nudging, savings, decision-making, retirement

1 Introduction

Even when people are obliged by statewide regulation to participate in a professional retirement saving plan, this plan may not be enough to ensure that they accrue sufficient resources to have an adequate level of wealth once they are retired (Dolls, Doerrenberg,

*First author. Department of Developmental Psychology and Socialization, University of Padova. Email: enrico.rubaltelli@unipd.it. ORCID: 0000-0002-7521-755X.

†Department of Developmental Psychology and Socialization, University of Padova, ORCID: 0000-0002-0303-3014.

We would like to thank ENPAP for their invaluable help, and in particular, president Felice Torricelli and vice-president Federico Zanon for their wise decision to ask us to apply the intervention described in this paper to the superannuation fund they manage. We would also like to thank them for giving us the freedom to develop the specific nudge intervention used and for access to the anonymous data of the people who contributed at t1 and t2. We also thank Andrea Pittarello and Kai Ruggeri for their valuable comments on earlier drafts of this paper.

Peichl & Stichnoth, 2018; Leimgruber, 2012). Here, we report a large field study with the entire population of freelance psychologists in Italy. In the study, we developed a nudging intervention to increase freelance workers' contributions to a retirement saving plan, beyond the minimum mandatory percentage and without compromising freedom of choice.

How to increase retirement savings is one of the main challenges in the field of economic decision-making. Indeed, saving for the future is not an attractive option compared to spending money for current consumption. As a result, nudge interventions to increase retirement savings have become increasingly relevant because many people believe that saving for retirement is important but still do not save as much as they should. In fact, despite the considerable future benefit that people can enjoy by saving money in the present, so as to ensure they have enough resources later in life, many of them fail to do so because of psychological processes like procrastination, inertia, and a tendency to prefer present over future consumption (Choi, 2015; O'Donoghue & Rabin, 2015).

One of the main mechanisms that have been described in the literature on retirement savings is the change of default in regard to how people enroll to a pension fund. Prior research has shown that switching from a voluntary enrollment (opt-in default) scheme to an automatic enrollment one (opt-out default) substantially increases people's participation in retirement pension funds (Choi, 2015; Madrian & Shea, 2001). Specifically, Choi, Laibson, Madrian & Metrick (2004) showed that the opt-in default produced a rate of enrollment of about 35% after three months and 66% after thirty six months. After switching to an opt-out default, enrollment rates increased immediately to 90% and reached more than 95% after thirty six months.

Other approaches, such as active decisions, have also been tested in the field and showed promising results, although the default is still considered one of the most powerful ways to increase participation to a pension fund without forcing workers to enroll in a mandatory way (Carroll, Choi, Laibson, et al., 2009). Carroll and colleagues showed that switching from an opt-in default to an active decision scheme, participation increased by 28% and the saving distribution after three months was comparable to what is normally achieved after thirty months.

Despite the effectiveness of the opt-out scheme in increasing the number of people who enroll into a pension fund, some issues remain when the opt-out scheme has been in effect. The main one concerns the percentage that workers contribute to the fund. In the fund we discuss shortly, people tended to leave the percentage unchanged in the years following enrollment. As a result, they were unlikely to increase the contribution to the fund even when their salary is raised and were also unlikely to maximize the match from their company. To solve this issue in general, Thaler and Benartzi (2004) proposed the Save More Tomorrow program in which employees are asked to pre-commit to increasing their contribution rate by a fixed percentage (e.g., 3%) every time that they get a pay raise. The strength of this program is that committing to a future increase in the contribution rate makes it feel less costly when the commitment is made and reduces the impulse to keep the

money once the time of the increase arrives (Thaler & Benartzi, 2004).

In Italy, freelance workers do not have access to the public pension system and must contribute to a superannuation fund managed by their professional association. Although the contribution is mandatory, the minimum percentage of after-tax income¹ that must be devolved to the fund is sometimes too low to allow people to accrue enough resources once they retire. This is especially true for people who do not have a particularly high income, although there are mechanisms that allow to contribute even less than the minimum mandatory percentage when the salary is particularly low (and the mandatory contribution would constrain current expenses).

Here, we report data from the fund managed by the Ente Nazionale di Previdenza ed Assistenza per gli Psicologi (ENPAP)². When they contacted us, only 3.34% of people were contributing more than the minimum. The aim was to increase contributions to the fund³ without imposing a mandatory rise in the percentage of income that people must pay in. This posed us with the significant challenge of coming up with an intervention that was so effective that it could counteract the *de-facto* presence of a minimum default contribution. Indeed, we were not introducing an intervention aimed at increasing the number of new freelance psychologists enrolled in the program. Rather, we had to actually change the behavior of a group of people who were already used to a set of previous rules that allowed for a lower contribution than the one we were aiming for. As a result, we had to develop an intervention that was different from most of those described in the literature that are usually applied to new workers, who have no previous contribution history (Choi, 2015).

To reach our goal, we drew on choice architecture, or nudging, a term coined by Thaler and Sunstein (2008) suggesting that the way choices are presented influences people's decisions. Examples of this approach include presenting options in a specific order, framing of attributes, and preselection of options (Benartzi & Thaler, 2013; Moore, 1999; Tversky & Kahneman, 1981). Previous work has shown that specific features of the decision's context influence people's decisions, as well (Thaler & Sunstein, 2008). A fundamental feature of nudging is that interventions should be transparent and easy to avoid, should promote desirable behavior and should increase people's wellbeing (Benartzi, Beshears, Milkman, Sunstein, et al., 2017). Crucially, nudging differs from other approaches to policy in that it

¹After-tax income is an individual's income for a specific fiscal year, minus the expenses related to professional activity incurred in that year. It is the value used to compute the amount of money corresponding to the percentage contribution selected.

²ENPAP stands for Ente Nazionale di Previdenza ed Assistenza per gli Psicologi (National Agency for Pension and Assistance for Psychologists). Its mission is to provide retirement protection in favor of freelance psychologists in Italy. Its activity is regulated in accordance with Italian law n. 56/89 and the subsequent decree n. 103/96.

³According to actuarial studies commissioned by the management of the ENPAP fund a 10% contribution to the fund would correspond to replacement rates of about 20% of the income once in retirement, whereas a contribution of 22% (higher than the target of the nudge intervention) would accrue to roughly a 50% replacement rate once retired. As such, assuming a reasonable goal for retired people could be to reduce their expenses to 75% of their working income, the nudge intervention is a step forward towards this goal, although even a contribution rate of 20% may not be enough to cover for the whole savings required.

preserves freedom of choice.

We tested the nudging intervention using the ENPAP web platform people access to report their contribution for the previous fiscal year. This allowed us to test the intervention on the whole population of Italian freelance psychologist, avoiding problems of selection bias or the need to scale up the intervention if it was found to be effective.

Unlike many previous interventions aiming at increasing people's retirement savings (Benartzi & Thaler, 2013; Madrian & Shea, 2001), we were not interested in increasing the number of people enrolling in the fund, since the contribution was already mandatory; rather, our goal was to increase the percentage of income people contributed. Although Benartzi and Thaler solution of asking workers to pre-commit to future increases in the contribution rate had a similar goal, it was not applicable to our specific case. Since we were interested in the contribution rates made by freelance people, we could not ask them to pre-commit to increase their contributions at each pay raise. By definition, this type of workers does not have a fixed salary, thus their income can vary from year to year. To our knowledge a similar application of the default effect has been applied only to other domains such as contributions to a charitable cause (Goswami & Urminsky, 2016). However, charitable giving is a domain quite different from the one we were studying. Indeed, retirement saving contributions have an impact on the future economic condition of the person who makes the contribution, whereas charitable giving goes to benefit other people. Thus, we believe that our study also helps generalize the findings from one domain (charitable giving) to another (retirement savings).

In addition, we contribute to the extant literature because our intervention was applied to a sample of people who were already contributing and had already experienced the prior system. As a result, compared to previous nudging interventions in this domain, this one was exposed to a higher risk that people may have been motivated to avoid it and reinstate the familiar, old conditions (i.e., contribute less to the fund). Consistent, previous work showed that if people perceive the cost as too high or have strong preferences, this could be enough to ensure that the default would not stick (Sunstein, 2017). Indeed, in support to a reasoning suggesting that increasing contribution rates should be harder than simply increasing enrollment into the fund, in many similar circumstances in Italy the decision was to raise the mandatory contribution rate *tout court* without giving workers any flexibility. For instance, the professional pension fund for freelance physicians made mandatory increases in the contribution rates several time in the recent past (in a few years contribution rate rose from 14.50% to 17.50%).

In our intervention we made three changes to the ENPAP web platform and expected that their combined effect would increase people contribution to the retirement fund. First, we changed the default contribution from 10% to 20%. Previously, people saw only the compulsory minimum percentage (10%) and had to use a drop-down menu to change it. In the new version of the platform, they saw eleven radio buttons, starting with 20% on the left (the pre-selected default) and ending with 10% on the right (Figure 1). This change

increased the transparency of the site, in accordance with the nudging approach, and made it easier for people to see all the contribution rates that they could select. We also added to the platform a pop-up message to remind people that reducing their contribution would result in a lower pension. We decided to include this additional information since prior work has shown that contributions to retirement saving plans increase when people are made aware of the fact that they will receive a lower amount of money than they thought (Dolls et al., 2018). Finally, the platform was modified in order to highlight the immediate benefit people could achieve in the form of the amount of taxes they could save as a result of their chosen contribution. The platform made it clear that the sum contributed to the fund would be subtracted from the overall income to which the taxes are applied. This means that people's contributions are partially covered by the amount of money they do not have to pay in taxes. Importantly, the amount of the contribution and that of the tax-break were presented in the same webpage, thus making as simple as possible to compare them (differently, in the past people had to compute the tax rate in a different website and this made the procedure clumsy and could hamper their willingness to take this information into consideration). These two further modifications of the platform were crucial to counteract people's perception that they were incurring a cost now (a higher contribution) to receive a benefit in the distant future (a higher pension). This perception would have been consistent with the literature on present bias showing that people attach a lower subjective value to future consumption (O'Donoghue & Rabin, 2015).

To sum up, we changed the default contribution percentage. We added a pop-up informing the users that lowering their contribution would yield a lower pension compared to the pre-selected option. Finally, we informed people about how much they would save in taxes as a result of their contribution. As with the previous version of the online platform, the system showed users the exact amount of money they had to pay once they had decided on their contribution. If people deemed this amount too high, they could modify their choice in a few clicks and receive updated information. Therefore, the platform made it rather simple for people to compare the cost of different contribution rates and decide whether to make a change.

Based on previous work on retirement saving nudges (Baldwin, 2014; Choi, 2015; Clark, Maki & Morrill, 2014; Madrian & Shea, 2001; Sunstein, 2014), we expected that the combination of a higher, costlier default contribution rate and information about future (pop-up) and present benefits (tax break) would increase people's willingness to contribute more than in the past. Specifically, we hypothesized that:

Hypothesis 1: After the intervention (vs. before), a larger number of people should choose to contribute more than the minimum (11-20% vs. 10%).

Hypothesis 2: Among those who contribute more than the minimum percentage, after the intervention (vs. before), more people should choose the highest contribution (20%) than any of the others (11-19%) combined.

A further goal was to assess whether our nudge intervention had a differential impact

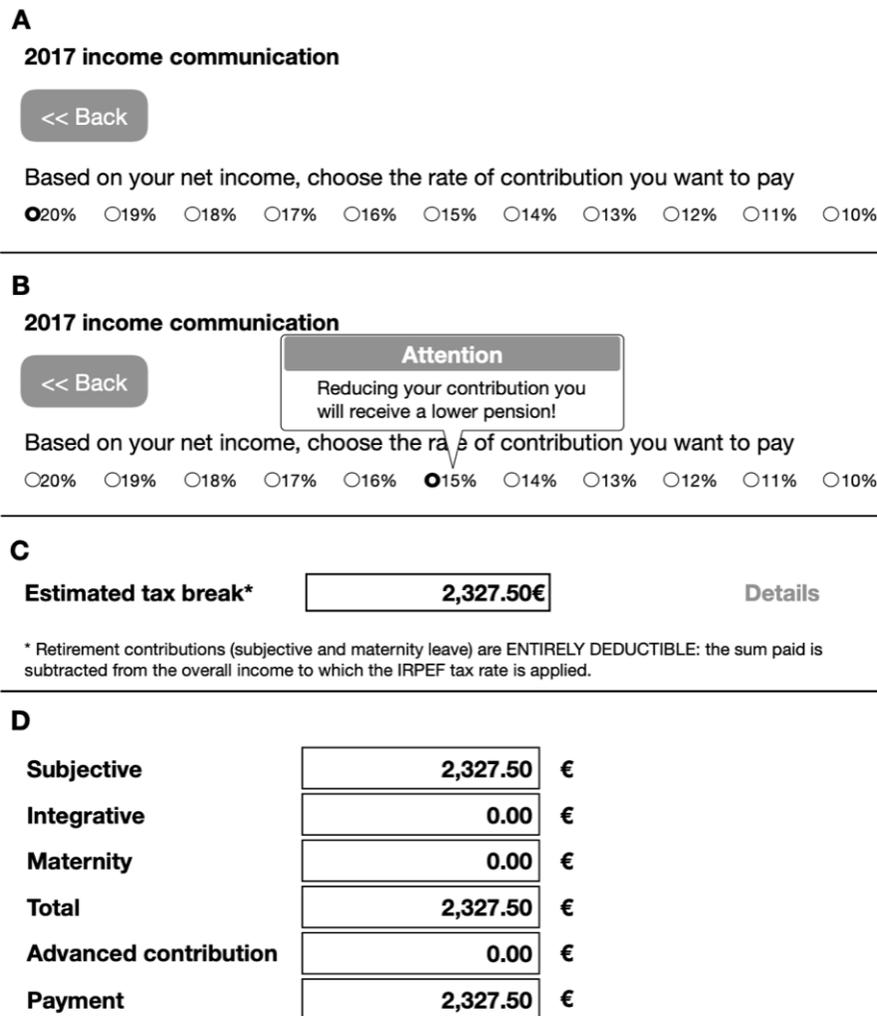


FIGURE 1: Nudging intervention used to increase people's contributions to their retirement fund. (A) First, we presented eleven different contribution rates (in decreasing order from left to right), with the highest rate (20%) pre-selected. Users were aware that they could change the contribution rate as many times as they wished before saving their decisions. (B) When users modified the default contribution, a pop-up message appeared, informing them that lower contributions would result in a lower pension in the future. (C) Users were also shown the amount of tax they would save as a result of their chosen contribution. This information was immediately updated whenever they changed their contribution. (D) Finally, users received information about their subjective contribution, other contributions they have to add to it (integration and maternity), the total amount, the amount of their advanced contribution (if any), and the payment due to the fund.

depending on demographic information: income, gender, location, and birth year. We were particularly interested in assessing how the intervention effect would change depending on people's income since the contribution is closely related to this variable (it is an inherently

economic decision). For instance, people who do not have a particularly high income may prefer to stick with the minimum contribution and use their money for present consumption or to pay off a debt (e.g., a loan). Thus:

Hypothesis 3: Among people who contribute more than the minimum percentage, the change in the contribution after the intervention (vs. before) should be larger for people with high income than for those with low income.

2 Experimental study

We conducted a field study investigating the contributions freelance psychologists in Italy made to their superannuation fund. We compared contributions for fiscal year 2016 (t1, before the nudge intervention) with contributions for fiscal year 2017 (t2, after the nudge intervention).

2.1 Method

Participants. Our sample comprised the whole population of Italian freelance psychologists who were active in the years 2016 and 2017, as contribution to the superannuation fund is mandatory. It comprised 53,217 people at t1 and 53,162 at t2 (Table A1). Everyone is obliged to contribute at least 10% of their after-tax income, or a minimum amount of €780.00, to the pension fund. However, some are allowed to take advantage of a reduction and contributed a fixed amount (see Appendix). As a result, these people could not freely choose the percentage they wanted to contribute since they were constrained to give a specific amount regardless from their (low) income. This means that the three cues could not be applied to everyone who made a contribution. Because of this (and other reasons, e.g., retirement), the number of people that could be included in the analyses was different in the two years. As a result, we decided to keep only those individuals who were free to choose their contribution at both t1 and t2 in order to compare the behavior of the same people before and after the nudge intervention. Thus, the final sample included $N = 20,507$.

Materials and procedure. ENPAP requires all freelance psychologists to access their private section of the website twice each year. In March, they are required to provide information about their income from two years previous, as a proxy for their income one year previous, and pay a first down payment. In October, they are required to report their gross and after-tax income for the previous year. At this point, they are asked to choose the percentage of the after-tax income they wish to contribute to the fund (between a minimum of 10% and a maximum of 20%). Based on these data, the platform automatically informed the contributor about the tax break he or she would receive for the previous fiscal year, and contributors who opted to reduce their percentage contribution from the default of 20% were shown a pop-up warning that this action would reduce their future pension entitlement.

In addition to the changes in the platform, ENPAP engaged in a communication campaign in advance of the time in which freelance psychologists were asked to make their contribution so as to make them aware of the changes. Specifically, two emails were sent to all freelance psychologists and the same information was posted repeatedly through social media. Finally, on the online platform, close to the radio buttons used to select the contribution rate, a message made clear to people that they were free to modify their contribution rate.

For the purposes of this study, ENPAP provided us with individual-level data on contributions before (t1) and after the intervention (t2). The intervention involved modifying the layout of the online platform and the information provided to users. These changes were made between t1 and t2, allowing us to compare the behavior of people in two different years. ENPAP provided two full data files for both years of interest, covering all people who had accessed the platform. The data were anonymous, but included demographic information (gender, birth year, region), gross and after-tax income, the percentage contribution selected, the corresponding amount of money, and the category of the contributor (i.e., eligible for reduction; see Appendix).

2.2 Results

We tested our first prediction by comparing contribution rates before the intervention (t1) with those recorded after the intervention (t2). At t1, 653 people chose to contribute between 11% and 20% of their income, whereas 19,854 chose the minimum contribution rate (10%). Instead, at t2, 4,486 people chose a contribution rate between 11% and 20%, whereas 16,021 chose to contribute 10%. The difference in contribution rates between t1 and t2 was significant $\chi^2 = 3268.43$, $P < 0.0001$; Table 1). As a result, at t2, there was an almost seven-fold increase in the number of people who decided to pay more than the minimum percentage contribution. Crucially, this remarkable change in people's saving behavior corresponded to an increased flow to the fund of more than eight million euros (in addition to the 50 million collected the year before). This result supports Hypothesis 1.

The previous findings supported the hypothesis that our intervention would increase the number of freelance workers who contribute more than the minimum to the fund. Then, we focused on the highest contribution (20%) and tested whether it was selected more than the others (11 to 19%) or not. Results revealed that, at t2, a higher number of people chose the 20% contribution (2,852) compared to those who chose one of the other contributions combined (1,634), while the opposite was true at t1 (177 vs. 476; $\chi^2 = 313.28$, $P < 0.001$). Therefore, among people who contributed more than the minimum, those choosing to contribute 20% of their income increased more than sixteen times between t1 and t2. This finding supports Hypothesis 2.

To test Hypothesis 3⁴, we performed a series of regressions testing one predictor at

⁴Unfortunately, the data relative to the before- and after-tax income that we received from the fund management were at times incomplete or incorrect (e.g., extreme outliers and unreasonably large changes in income amount between t1 and t2). Thus, first we computed, at both t1 and t2, a secondary measure of

TABLE 1: Descriptive statistics at t1 and t2. The top panel shows data for people who decided to contribute the minimum amount (10%), and the bottom panel shows data for people who chose to contribute more than 10%.

Contribution=10%								
	N	Contribution	Contribution	After-tax	Birth	Gender	Region	
		(Mean%)	(Mean €)	(Total €)	(Mean €)	(Mean)	(% Female)	(%North)
					income	year		
t1	19,854	10.00	2,313	47,497,554	23,128	1973	80.64	59.66
t2	16,021	10.00	2,465	37,421,287	24,648	1973	80.06	60.06
Diff	-3,833	0.00		-10,076,267				
Contribution=11-20%								
	N	Contribution	Contribution	After-tax	Birth	Gender	Region	
		(Mean%)	(Mean €)	(Total €)	(Mean €)	(Mean)	(% Female)	(%North)
					income	year		
t1	653	15.24	4,037	2,446,588	26,421	1970	71.82	65.54
t2	4,486	17.71	3,839	16,466,630	23,332	1972	81.43	59.07
Diff	3,833	2.47		14,020,042				

the time (Table 2). This choice was made to avoid common issues that arise from multiple regression models in which predictors can influence each other and make difficult to understand their relationship with the dependent variable. In addition, for each of these predictors, we run two separate models: in the first model we included only the main effects, whereas in the second model we added the interaction between time and the predictor of interest. Since we were interested in understanding which characteristics of the participants contributing more than 10% were affected by the nudge intervention, we excluded from these analyses the participants who contributed the minimum percentage.

Thus, we assessed separately the relationship of four different variables (after-tax income, gender, year of birth, and location) with the percentage of contribution to the fund. In the first step, all models showed a significant effect of each specific variable (see Table

after-tax income based on each participant percentage of contribution and amount contributed to the fund. We then compared each of these new values with the after-tax income originally reported in the dataset; we eliminated all values that were $\pm 5\text{€}$ different from those we computed (smaller difference being likely due to rounding of the participant's contribution to the fund). Second, for each participant, we looked at the difference in the secondary measure of after-tax income at t1 and t2 and eliminated those who had a difference above or below 2 standard deviations. The data analysis reported in the text used these new slightly smaller sample. When all subjects are included in the analysis the results do not change.

2). In the second step, three out of four variables of interest (after-tax income, gender, and year of birth) interacted significantly with time.

Slope analyses showed that at t2 the percentage of contribution was higher for people with a lower after-tax income ($B = -0.00004$, $SE = 0.000004$, $t = -10.09$, $p < .0001$), whereas no significant effect emerged at t1 ($B = 0.000006$, $SE = 0.000009$, $t = 0.74$, $p = 0.46$). Similarly, a significant effect of gender emerged at t2 ($B = 0.49$, $SE = 0.13$, $t = 3.82$, $p = 0.0001$), with female making higher contributions than men, but not at t1 ($B = -0.39$, $SE = 0.29$, $t = -1.31$, $p = 0.19$). Finally, younger people made higher contributions than older ones at both t1 and t2, but this difference, albeit still significant, was smaller after the introduction of the nudge intervention ($B = -0.05$, $SE = 0.01$, $t = -3.96$, $p < 0.0001$ at t1 vs. $B = -0.02$, $SE = 0.006$, $t = -3.88$, $p = 0.0001$ at t2).

TABLE 2: Regression analyses testing the relationships between after-tax income, gender, year of birth, and location on the changes in contributions to the fund between t1 and t2.

		After-tax income (ATI)				
		<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% <i>CI</i>
Step 1	Time (t1=0; t2=1)	2.36	0.14	16.82	<0.0001	[2.08, 2.63]
	ATI	-0.00003	0.000004	-8.87	<0.0001	[-0.000039, -0.000024]
Step 2	Time x ATI	-0.00005	0.00001	-4.82	<0.0001	[-0.00006, -0.00003]
		Gender				
		<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% <i>CI</i>
Step 1	Time (t1=0; t2=1)	2.45	0.14	17.42	<0.0001	[2.18, 2.73]
	Gender	-0.35	0.12	-2.97	0.003	[-0.58, -0.12]
Step 2	Time x Gender	0.88	0.32	2.74	0.006	[0.25, 1.51]
		Year of birth (YOB)				
		<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% <i>CI</i>
Step 1	Time (t1=0; t2=1)	2.54	0.14	18.08	<0.0001	[2.27, 2.82]
	YOB	-0.03	0.005	-5.11	<0.0001	[-0.04, -0.02]
Step 2	Time x YOB	-0.03	0.01	2.16	0.03	[0.003, 0.059]
		Location				
		<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% <i>CI</i>
Step 1	Time (t1=0; t2=1)	2.47	0.14	17.56	<0.0001	[2.19, 2.74]
	Location	-0.32	0.10	-3.42	0.0006	[-0.51, -0.14]
Step 2	Time x Location	-0.19	0.29	-0.65	0.52	[-0.76, 0.38]

3 General discussion

Our results showed that a few simple changes to the online platform people access to set their contribution to the fund increased the percentage of income invested. Indeed, after the intervention (vs. before), a much larger number of people chose to contribute more than the minimum rate of 10%. Among these people, 63.58% of them did not move from the pre-selected, highest contribution (20%). To achieve this goal, our intervention relied on the combined effect of three different cues: a change of the default contribution rate (from 10% to 20%); a pop-up informing people that their pension would be lower when they reduced their contribution; an information about how large a tax-break they could achieve depending on the chosen contribution rate. Our nudge intervention was able to boost the mean percentage contributed by individuals as well as increase more than sixteen times the number of people choosing the 20% contribution.

Despite being consistent with previous work (Choi, 2015; Thaler & Benartzi, 2004), our results extend the literature on nudging and retirement savings in several ways. For instance, in the United States, participation in the 401(k) pension plan has been increased significantly by automatically enrolling workers in the program. While in the past people had to act in order to join the 401(k) program, now they have to make an explicit choice to leave it. In both cases, workers tended to maintain the status quo, and, because of inertia, a larger number saved for retirement when the enrollment was automatic (86% rate of participation) rather than voluntary (37% rate of participation; Madrian & Shea, 2001). Our intervention differs significantly from the aforementioned literature. Indeed, in our intervention the goal was not to increase the number of people enrolled in the program, since participation was already mandatory. Rather, the goal was to increase the contribution rate chosen by workers, as the minimum mandatory amount was deemed insufficient to accrue enough funds for retirement. Furthermore, our intervention was not targeted at new workers, who have no previous contribution history. Thus, we had to change the behavior of a group of people who were already used to a lower contribution than the one we were aiming for.

We can only speculate about whether the results we found depended mainly on one of the three cues we employed or a combination of two of them or all three together. For instance, some people made the active choice of moving downwards from the default and chose a contribution rate between 19% and 11%. The decision made by these people cannot be accounted for by the default effect but can be explained by anchoring. Since the anchor was now the 20% contribution, people who chose to reduce it ended up contributing more than 10% anyway. This result is still evidence of the effectiveness of our intervention and shows that is possible to obtain a series of primary (highest contribution) and secondary (11–19% contributions) goals. In this regard, we exploited a possibility that is not available for auto-enrollment interventions. In those cases, people are faced with a dichotomous choice (enroll or not) and those who do not accept the default end up not participating at all. In our case, working on the contribution rate, there were several levels that could be chosen and, on some cases, even if people did not adhere to the default, they could still end

up contributing more than they did in the past (therefore achieving the goal even though not to the same extent that it was hoped for). This finding is relevant considering that even in auto-enrollment programs not everyone sticks to the default option. Therefore, when possible, it may be important to provide other intermediate alternatives so that people have a higher range of solutions that can still offer them with some benefits and avoid the risk of an all-or-nothing decision. As a result, in situations like the one we have studied it is possible to offer people even more decision freedom by letting them able to select any contribution level between the new default and the old one.

The other two cues constituted an extension of the previous literature on the application of choice architecture to retirement savings decisions and a unique contribution of the present work. For instance, previous studies introduced a delay in the perception of the costs of saving (Benartzi & Thaler 2013; Thaler & Benartzi, 2004); in addition to the automatic enrollment, these programs allowed people to decide to start saving money in advance of the time at which the actual payment would start. In contrast, instead of delaying the time of payment, a solution that was not applicable in our case, we presented information that would make it easier for people to find the increased contribution rate valuable. Since the new pre-selected contribution rate was now twice as high as in the past, we needed a way to highlight the consequences of moving away from the default, a decision that was likely since it entailed a much higher cost (Beshears, Choi, Laibson & Madrian, 2010; Sunstein, 2017). The information about the pension amount and saving on taxes corresponding to a lower contribution rate made it easier for people to evaluate the benefit (both present and future) of sticking with the default. By leaving the pre-selected contribution rate unchanged (10% instead of 20%), most people would have passively kept it and would have never realized the positive implications entailed by increasing the contribution rate. Indeed, the year before the intervention, only 3.18% of people made a contribution higher than the minimum mandatory rate of 10% (vs. 21.88% after the intervention).

A further result that is worth noting is that the number of individuals choosing to contribute more than 10% was driven by people who did not have a particularly high income. At a first glance, this result may seem counterintuitive; indeed, this is in the opposite direction to what we expected (Hypothesis 3). Several reasons could explain this result and why we do not find the opposite relation (e.g., older, wealthier people contributing more to the fund). First of all, people who are closer to retirement may have alternative investments available to them, especially if they are wealthier, and they may not be interested in increasing the contribution in a pension fund that by definition needs a long time to yield a significant gain.

On the other side, since contributions to their professional pension fund is mandatory for freelance psychologists, those with a lower income could find convenient to maximize it if they wish to save more for retirement (rather than looking into any alternative investment). In addition, it is possible that these people could have been influenced by the fact that the platform was now showing them the size of the tax break corresponding to each level of

contribution, making it more salient. As a result, maximizing the contribution to the fund could have been an especially attractive thing to do once they were informed about the tax break because it allowed them to avoid paying the entire amount of money corresponding to an increased contribution (e.g., 20% vs. 10%). In other words, thanks to the tax break part of the additional contribution is paid by through the money saved on taxes. This behavior could also stem from a silver lining effect produced by the fact that the gain (tax break) was separated from the loss (contribution to the fund; Thaler, 1985). In this regard, it is important to remember that people could see both amounts of money in the same webpage and could compare them. As a result, they could easily realize that, despite helping pay out some of the contribution, the tax break was lower than the amount of money going to the fund. Therefore, it is unlikely that they were simply thinking that the gain could cancel out the loss, although future research should establish this in a conclusive way (as well as showing that people were not accepting the default because of inattention).

It should also be noted that the rules are made in such a way that people with extremely low incomes are eligible for a reduction in the amount of money that they contribute, thus reducing the risk that people with scarce economic resources may be negatively affected by a high contribution. Accordingly, these people who are not actually free to choose their contribution rate were excluded from the analyses and could not have impacted the results regarding the relationship between the after-tax income and contribution rates before and after the intervention. Despite the fact that extremely low incomes were not affected by the nudge intervention, it must be acknowledged that the population of free-lance psychologists is quite heterogeneous in terms of their incomes and large differences exist. As a result, it is conceivable that an intervention that is going to benefit a large part of the people involved could harm some of them. Future work should assess how much people are aware of alternative forms of savings that could yield a better outcome than a higher contribution to the fund as well as investigating ways to ensure that people are choosing the contribution rate that is most convenient to them. In this regard, we could consider our nudge intervention as a useful step towards improving the savings rate at the level of the general population of free-lance psychologists in Italy. Future intervention should try to tailor the benefits at the individual level, maybe through communication strategies that can inform and educate people about how to maximize their savings in the long term.

Despite the implications of this study for social policy, some limits should be considered and addressed in the future. For instance, to understand the role played by the economic conditions of people who contribute to the fund, future work should employ other experimental manipulations. For instance, different conditions could be tested, such as one in which the highest contribution percentage (20%) is preselected and another in which the preselected contribution is the lowest (10%). Alternatively, a study could compare a condition in which the potential tax break associated with the contribution is made salient and clear, in comparison with a condition in which this information is not reported. Furthermore, it would be important to keep track of the effectiveness of the intervention in future years in order

to assess whether the behavioral change persists or fades once people become used to it. Finally, another limitation is that, despite the large sample tested in this study, it included only one professional category (freelance psychologists). It would be important to apply the same intervention to funds pertaining to different professional categories. By doing this, it could be possible to generalize the present findings to other samples with different wealth and somewhat different demographic characteristics (e.g., freelance physicians).

Notwithstanding these limitations, the present study has some clear strengths and adds to the nudge literature in multiple ways. First of all, it was not run in the USA, therefore extending the use of nudges applied to saving behavior to a different country and pension system. In addition, since we tested the whole population of Italian freelance psychologist, we were able to avoid any problem of selection bias or the need to scale up the intervention. Furthermore, we reached a sample size much higher than previous nudge field studies, that averaged a N of 3,000.06 people (Szasz, Palinkas, Palfi, Szollosi & Aczel, 2018).

To conclude, saving for retirement is, possibly, the worst combination of outcomes (sacrificing money today to get more of them in the future). Although there are several ways in which people's freedom of choice can be preserved, the nudge intervention reported in this work proved to be an effective way to achieve this goal and increase retirement savings. This is an example of how insights from behavioral science can inform decision-making and have applied policy implications.

References

- Baldwin, R. (2014). From regulation to behavior change: Giving nudge the third degree. *Modern Law Review*, 77, 831–857.
- Benartzi, S., & Thaler, R. H. (2013). Behavioral economics and the retirement savings crisis. *Science*, 339, 1152–1153.
- Benartzi, S., Beshears, J., Milkman, K. L., Sunstein, C. R., Thaler, R. H., Shankar, M., Tucker-Ray, W., Congdon, W. J., Galing, S. (2017). Should government invest more in nudging? *Psychological Science*, 28, 1041–1055.
- Beshears, J., Choi, J., Laibson, D., & Madrian, B. (2010). The limitations of defaults. *National Bureau of Economic Research*, No. onb10-02.
- Carroll, G. D., Choi, J. J., Laibson, D., Madrian, B. C., & Metrick, A. (2009). Optimal defaults and active choices. *Quarterly Journal of Economics*, 124, 1639–1674.
- Choi, J. J. (2015). Contributions to defined contribution pension plans. *Annual Review of Financial Economics*, 7, 161–178.
- Choi, J. J., Laibson, D., Madrian, B. C., & Metrick, A. (2004). For better or for worse: Default effects and 401(k) savings behavior. In D. A. Wise (ed.), *Perspectives on the Economics of Aging*. Chicago: The University of Chicago Press.
- Clark, R. L., Maki, J. A., & Morrill, M. S. (2014). Can simple informational nudges increase employee participation in a 401(k) plan? *Southern Economic Journal*, 80, 677–701.

- Dolls, M., Doerrenberg, P., Peichl, A., & Stichnoth, H. (2018). Do retirement savings increase in response to information about retirement and expected pensions? *Journal of Public Economics*, *158*, 168–179.
- Goswami, I., & Urminsky, O. (2016). When should the ask be a nudge? The effect of default amounts on charitable donations. *Journal of Marketing Research*, *53*, 829–846.
- Leimgruber, M. (2021). The historical roots of the diffusion process: The three-pillar doctrine and European pension debates (1972–1994). *Global Social Policy*, *12*, 24–44.
- Madrian, B. C., & Shea, D. F. (2001). The power of suggestion: Inertia in 401(k) participation and savings behavior. *Quarterly Journal of Economics*, *116*, 1149–1187.
- Moore, D. A. (1999). Order effect in preference judgments: Evidence for context dependence in the generation of preference. *Organizational Behavior and Human Decision Processes*, *78*, 146–165.
- O’Donoghue, T., & Rabin, M. (2015). Present bias: Lessons learned and to be learned. *American Economic Review*, *105*, 273–279.
- Sunstein, C. R. (2014). Nudging: A very short guide. *Journal of Consumer Policy*, *37*, 583–588.
- Sunstein, C. R. (2017). Nudges that fail. *Behavioral Public Policy*, *1*, 4–25.
- Szaszi, B., Palinkas, A., Palfi, B., Szollosi, A., & Aczel, B. (2018). A systematic scoping review of the choice architecture movement: Toward understanding when and why nudges work. *Journal of Behavioral Decision Making*, *31*, 355–366.
- Thaler, R. (1985). Mental accounting and consumer choice. *Marketing Science*, *4*, 199–214.
- Thaler, R. H., & Benartzi, S. (2004). Save More TomorrowTM: Using behavioral economics to increase employee saving. *Journal of Political Economics*, *112*, S164–S187.
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge. Improving Decisions About Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*, 453–458.