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ARTICLE

Information and legitimacy: results from an experimental survey on attitudes to the 2017 pension reform in Finland

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Abstract
The legitimacy of a pension system or any social security program depends on its credibility and perceived fairness. In order to gauge this legitimacy, we need to understand the relation between people's knowledge and attitudes. This experimental survey into the role of knowledge and perceptions divided respondents into two groups: the 'treatment' group received an information letter about a forthcoming pension reform before they were interviewed, while the control group was interviewed without receiving this 'treatment'. Comparisons of the responses from the two groups allow us to assess how the level of knowledge and the provision of information affect people's opinions on policy reform. We also consider the patterns of covariation between background factors, people's concerns, and attitudes toward pension reform. The results show that the information letter had a significant impact on subjective but not on the objective level of knowledge. Receiving the information letter improved acceptance and perceptions of the fairness of the reform.

Key words: Information; legitimacy; pension reform

JEL classification: G22; D83

1. Introduction

Public attitudes are central to the legitimacy of political processes and democratic decision-making around social security systems. Politicians may be reluctant to propose and legislate social security reforms, for instance, if public sentiment is against them. But if public opinion is in favor and the proposed reforms are thought to be fair, then they have a better chance of making it through the political process of legislative amendment (see e.g., Svallfors, 2004; Brooks and Manza, 2006; Pierson, 2006; Fernández and Jaime-Castillo, 2013; Hemerijck, 2013; Chung *et al.*, 2018).

In order to have legitimacy, a social security program needs to be seen as credible and fair. Credibility depends on public perceptions of the long-term sustainability of the system, under the given economic and demographic challenges, and on the perceived adequacy of the protection provided by the system. Perceptions of fairness, then, depend on how people feel they and others are treated under the social security program.

An informed opinion on the credibility and fairness of a social security program requires, first of all, an understanding of how the system works. This requires knowledge about the system itself and the challenges facing the system. People need to know what benefits are available through the system, but they must also have a sound factual basis on which to form their opinions (Chan and Stevens, 2004, 2008).

Population aging and other socio-economic trends are putting pension systems under growing pressure in most OECD countries. These challenges call for reform and restructuring (see e.g., OECD, 2019). However, popular support for existing pension schemes is strong, and any hint of change tends to be met with resistance – especially if the reform involves cuts to pension benefits (see e.g., Myles and Pierson, 2001). How, then, to overcome this resistance to change; how to win over people?

People's opinions and attitudes toward reform depend crucially on their knowledge and understanding of the system concerned – in the case of pension systems, knowledge of the benefits available, the financing of the system, its sustainability, etc. One way of promoting public approval of social security reform is therefore to inform and educate. In this paper, we ask whether and to what extent information really works. Does informing the public increase their level of knowledge; and if so, does their increased knowledge affect the legitimacy of the reform?

To answer these questions, we look at how people's knowledge influenced their perceptions of the fairness of the 2017 pension reform in Finland. To this end, we conducted an experimental survey.

Compared to other OECD (2017 and 2019) nations, Finland has a high pension contribution rate, a low old age poverty rate, and a low retirement age. The most important objectives of the 2017 pension reform were to raise the retirement age and to link it to life expectancy. The reform also introduced new types of pensions, gave people greater freedom and flexibility in retirement timing, and harmonized accrual rates. Ultimately, the purpose was to consolidate the financial sustainability of the pension system and to raise the effective retirement age, but also to achieve a fairer generational balance between payments and benefits (see, e.g., Reipas and Sankala, 2015).

The 2017 reform presented an excellent opportunity to study the relation between knowledge and legitimacy. Our experiment was conducted in the context of the Finnish pension reform before it was put into effect. The respondents were divided into two groups: the first group received 'treatment' in the form of a mailed information letter[1] about the 2017 pension reform, while the second group was interviewed without receiving this 'treatment'. Comparisons of the responses of these two groups allowed us to assess how the level of knowledge and the provision of additional information affected people's opinions on this substantial policy reform.

Our first research question in this study is whether people's knowledge about pension reform can be increased by sending out an information letter. A follow-up question to this is whether the level of knowledge is associated with the perceived fairness of the pension reform. Furthermore, we are interested to know how people's concerns about the adequacy of their pensions, a higher retirement age, and the sustainability of the pension system affect their views about the fairness of the reform and how these factors are interwoven and affect perceptions. The research questions are elaborated in the sections below.

Our research has practical implications as well. Public authorities are constantly running information campaigns on a variety of issues. Increasing information may have an impact on public opinion and individual attitudes and enhance the perceived fairness and legitimacy of reforms that otherwise might be hard to put forward. In this study, our main focus is on the legitimacy of the reform: on perceptions of the fairness of the reform and on how far opinions differ between the groups that received and did not receive the information letter.

In the next section, we summarize the results of previous studies and set out our research questions. The empirical part is divided into two sections: first, we assess the role of the information letter and the respondents' level of knowledge; and second, we assess the legitimacy of the pension reform. In addition to this empirical analysis, our analytical summary provides a more sophisticated structural equation modeling (SEM) of the multidimensional relations between the independent variables and their associations with the dependent variables.

[1]https://www.etk.fi/wp-content/uploads/pension-reform-2017-booklet.pdf

2. Previous research

2.1 Knowledge, concerns, and legitimacy

People tend to have quite limited knowledge about pensions. Rather than hard facts, their thinking is typically based on beliefs and opinions. These *de facto* 'false' opinions have factual consequences in terms of the choices people make. Previous studies have shown that pensions are not very well understood and that people have difficulty knowing how much they will be receiving in pension (see e.g., Boeri and Tabellini, 2012; Abid and O'Donoghue, 2014; Nivalainen and Tenhunen, 2018). People also have low estimations of their own level of knowledge. In the UK, only one-third of respondents rated their knowledge about state pensions as reasonable, and two-thirds felt that pension issues were too complicated (MacLeod *et al.*, 2012; see also Takala, 2015).

There are different ways to assess people's knowledge about social policy systems. Survey questions can either address objective issues or measure respondents' subjective assessments of their knowledge. Previous results on the relation between objective and subjective knowledge are not entirely consistent: sometimes the subjective and objective measurements are well aligned, but in some cases, they differ significantly (see e.g., Agnew and Szykman, 2005; Lusardi and Mitchell, 2009; van Rooij *et al.*, 2011). Fairly often, people overestimate how much they know (Lusardi and Mitchell, 2014). For the above-mentioned reasons, we decided to use both subjective and objective measures of knowledge and to compare the overlap between the level of 'objective' knowledge based on factual questions with 'subjective' knowledge. Our first research question is as follows:

- Does provision of information to the public (by way of a letter) about the central features of the reform actually contribute to increase the public's objective knowledge and/or subjective feeling of having knowledge about the reform?

When it comes to public confidence in the pension system, reforms may work in two directions. On the one hand, reform will normally be seen as being geared to maintaining the sustainability of the system, which should work to boost people's confidence. On the other hand, reform may be seen as an attempt to water down benefits and will therefore attract criticism and opposition. Information and knowledge about the motivations behind the reform are thus essential for the legitimacy of the reform. For instance, Boeri and Tabellini (2012) found that people who were better informed about pension schemes took a more positive attitude toward changes. Finseraas and Jakobsson in Norway (2014*a*, 2014*b*), Takala in Finland (2015), and Gouveia in Portugal (2017) have reported similar results.

Popular acceptance of pension reform is most likely affected by two factors: (1) the extent to which pensions are expected to guarantee an adequate income, and (2) the long-term sustainability of the pension system under the given economic and demographic challenges. While the first factor is closely related to people's personal concerns about their pensions, the second has to do with the macroeconomic sustainability of pensions. Concerns about the sustainability of the pension system and support for a pension reform do not necessarily go hand in hand (see e.g., Jacobs and Shapiro, 1998; Boeri *et al.*, 2001; Hicks, 2001; Bay and Pedersen, 2004). Rather, people's concerns about the adequacy or sustainability of a pension system can either increase or decrease the legitimacy of a reform. This brings us to our second research question:

- How do concerns about the adequacy of pensions, the higher retirement age, and the sustainability of the pension system affect opinions on the fairness of the reform? Are there differences between the treatment group and the control group?

Comparative studies have indicated that people are more concerned about their future pensions in countries where income disparities are high and where the population is aging rapidly. Hershey *et al.* (2010) found differences in levels of public concern between countries that had taken action

to address the effects of population aging on the system's sustainability and those that had not taken such action. Finland is an interesting case in this regard as it has a rapidly aging population and is constantly working to change and adjust its pension system (see e.g., Kangas *et al.*, 2010), and also has a low level of income inequality. People in Finland seem to have greater faith in their pension system than most other Europeans (Naumann, 2018). Kahma and Takala (2012) found that a substantial percentage of Finns think that constant reforms will erode trust in the pension system, but public acceptance of reforms increased when they were considered necessary for restoring the financial sustainability of the system. Based on these findings, our third research question is:

- Does provision of information to the public (by way of a letter) about the central features of the reform make the public more inclined to express a positive assessment of its fairness and legitimacy?

2.2 Improving level of knowledge

Findings from previous studies on the effect of providing information on the pension system are more or less consistent: information clearly matters. People who received information had a higher labor force participation rate (Liebman and Luttmer, 2015), a higher level of knowledge (Mastrobuoni, 2011), and a higher level of confidence in the social security system (Cook *et al.*, 2010).

Opinions, of course, are not constant. People seem to adapt their opinions over time, as new challenges emerge (see e.g., Naumann, 2014, 2017). This process of adaptation varies, but it is known that the strength and even the direction of changes in opinion are affected by knowledge and political ideology. The dynamic nature of opinion formation underscores the importance of the source, framing, and timing of information campaigns (Chong and Druckman, 2007, 2010). Frequently, individuals seem to place the greatest weight on the most recent information they have received. Similarly, Finseraas *et al.* (2017) found that the knowledge-increasing effect of receiving pension reform information evaporates over time.

Cook *et al.* (2010) assessed the impact of an information letter sent by the Social Security Administration to all eligible Americans. The letter included data on past pension contributions and calculated future pensions. Their results suggested that both the distribution of information and a higher level of knowledge had a positive impact on the recipients' confidence in the pension system. The impact of the information campaign was stronger when the recipients read the letter and remembered its message. Just receiving the letter did not have a significant effect on recipients' knowledge. However, when the authors controlled for actually reading the letter, this indirect effect on confidence became apparent.

Finseraas and Jakobsson (2014*a*, 2014*b*) studied the Norwegian 2009 pension reform. They, like us, sent an information letter to a part of the respondents, while a control group received no extra information. The data were collected via an Internet panel recruited online and included all respondents over 40 years of age. The information group thought more often than the control group that the reform made the pension system more comprehensible (Finseraas and Jakobsson, 2014*a*, 2014*b*).

In Italy, Boeri and Tabellini (2012) sent an information letter on the Italian pension system to a part of their respondents and then conducted interviews. They found that those who received the letter had a better understanding of the pension system and took a more positive attitude towards the reform.

Previous results from Finland are slightly different. In a survey more than three decades ago, Forss and Jääskeläinen (1986) created an experimental setup to examine whether the cognitive design of a letter affected the assimilation of pension information. They reported that the information letter had only a very limited impact on people's knowledge of pension issues. More recently, Jääskeläinen (2000) found that knowledge about the pension scheme impacted opinions on its legitimacy. This impact varied between socio-economic groups and by education level, gender, and age.

Given these contradictory findings, it was not easy to know what to expect in the Finnish experiment. Based on recent studies, we assumed that (a) respondents receiving the information letter have a

higher level of knowledge about the pension system than those who not receiving the letter, and (b) the level of knowledge is associated with the perceptions of the fairness and hence the legitimacy of the reform.

Compared to the studies discussed above, the data in our experimental setup are unique and representative and cover a wide age range of Finnish people of working age. Our analysis also extends the previous literature by investigating both the direct and indirect effects of information on people's attitudes to the fairness of the pension reform.

3. Data and methods

Our dataset consisted of 1,835 persons aged 25–62 who were interviewed in November 2015, about 1 year before the pension reform, by the private market research company Taloustutkimus. Prior to the telephone interview, the intended treatment group (intend to treat, ITT) received a letter with information explaining the main features of the Finnish pension system and the 2017 pension reform. The letter did not mention the subsequent telephone interview, which took place 2 weeks later.

The letter was mailed to 939 persons. In the interviews, 192 persons said they had not received the letter[2], while 80 respondents said they either did not know (37) or could not remember (43) whether they had received the letter. All these respondents were included in the ITT group. However, they were excluded from the effective treatment group (i.e., treatment on treated, ToT). The ToT group thus comprised 667 persons who certainly received the 'treatment'.

The control group (CG) comprised 896 respondents who did not receive the information letter, but who were interviewed using identical questions – except for questions that specifically dealt with the information letter, that is, whether the respondents had received the letter and how carefully they had read it. The ITT and CG groups did not differ significantly in terms of background variables (see Appendix Table A1), with just one exception: the metropolitan Helsinki area was slightly overrepresented (χ^2 p-value = 0.032) in the ITT group. Demographic characteristics were similar for both the ToT and ITT groups (not presented in Appendix Table A1).

3.1 Variables

Our survey used both an objective (asking respondents about specific aspects of the reform) and a subjective measure of knowledge (asking respondents to assess their own level of knowledge). The 'objective' variable is the number of correct answers to the following three questions: (1) what are the effects of postponing retirement, (2) how will increasing life expectancy affect retirement age, and (3) how will increasing life expectancy affect the adequacy of pension income? Thus, the additive indicator of 'objective knowledge' varies from 0 (all answers were wrong) to 3 (all answers were correct).

The 'subjective' variable is based on responses to the question: 'How well do you know about the 2017 pension reform?' There were five preset response options: (1) Not at all, (2) Poorly, (3) Rather poorly, (4) Rather well, (5) Well.

Concerns about the pension system were assessed by asking the respondents how worried they were about (1) the increasing retirement age, (2) the adequacy of their pension, and (3) the sustainability of the pension system. Responses were measured on a continuous scale from 0 ('not worried at all') to 10 ('very worried').

The legitimacy of the reform was gauged based on respondents' assessments of the fairness of two separate aspects of the pension reform (increased retirement age and changes in accrual rates). In addition, respondents were asked to give their assessment of the overall fairness of the reform. Respondents indicated their agreement or disagreement with statements on a five-point Likert-scale.

[2]A postal strike was underway at the time that the letters were mailed, and only 85% of them were delivered on time.

3.2 Statistical methods

Data analyses began with descriptive cross-tabulation, while statistical significances were estimated with a χ^2 test. Since our experiment had a compliance problem (some of those to whom the information letter was sent either did not receive it or did not remember if they had received it), we applied an instrumental variable (IV) approach (cf. Angrist and Pischke, 2009: 161–166; Cameron and Trivedi, 2010: 183–201).

To consider the effective impact of the information letter, we used the *ivregress* procedure in Stata. The instrument variable comprises all persons who were randomly assigned to get the treatment (i.e., the ITT group), while the ToT group comprises all persons who certainly received the letter.

Due to randomization, background variables such as gender, age, education, sector of employment, or self-assessed health status should not have a major impact on the coefficient for the information letter. However, in order to check if the coefficient is affected by controlling demographic and other factors that may be associated with the level of knowledge, we included them in the second step of our instrumental variables (2SLS) regression models.

Finally, in the ultimate section, we summarize our findings using SEM, which reveals the complex relations between the various background variables and their effects. SEM is a useful heuristic tool to elaborate descriptive associations between variables. For example, because of their multicollinearity, it is usually not possible to introduce education, income, and socio-economic status simultaneously into linear regression models. However, SEM allows us to model causal loops from education to status and income, and from status to income. We mainly use SEM to produce path diagrams and to evaluate the goodness of fit of models. For clarity, we only report the root mean square error of approximation (RMSEA), which is a commonly used indicator for goodness of fit.

4. Results

4.1 Information and level of knowledge

Our first research question concerned the strength of association between subjective and objective knowledge about pension reform in the two research groups. Based on the objective measure, the respondents seemed to be quite knowledgeable about the general principles of the reform. About 70% were aware that rising life expectancy will reduce pensions as a result of the life expectancy coefficient, and almost 90% knew that it will increase the retirement age. The respondents were least knowledgeable about how postponing retirement would affect their pensions (56.6%). The respondents had very similar views on the effects of increased life expectancy on retirement age and on the adequacy of pensions regardless of whether they had received the information letter.

While the objective questions indicated that the respondents had at least a satisfactory level of knowledge about the reform, the subjective measure painted a rather different picture. Almost 80% of the respondents said that they did not know very much about the reform. The difference between objective and subjective knowledge was statistically significant (χ^2 p-value = 0.013). Those who are knowledgeable are not always aware of their knowledge, while those who are not knowledgeable are not always aware of their ignorance.

Our results show that people in Finland know much more than they think they do. This is in line with previous findings on the partial inconsistency between objective and subjective dimensions of knowledge (Agnew and Szykman, 2005; Lusardi and Mitchell, 2009; van Rooij *et al.*, 2011), but on the other hand, it conflicts with the findings of Lusardi and Mitchell (2014).

Given that the two measures of knowledge are inconsistent, they are treated as separate indicators in the subsequent analyses.

Receiving treatment, that is, the information letter, had a significant impact on the respondents' subjective assessment of how well they knew about the reform. The share of respondents who said they knew the reform well was significantly higher (all χ^2 p-values $\leqslant$0.001) in the ITT group (23.1%), the ToT group (37.4%), and among those who said they had read the information letter (= *de facto* received the treatment; 48.7%) than in the CG (16.2%) (see Appendix Table A2).

Interestingly, those who had received the information letter in the ToT group but who said they had not read it showed the lowest level of subjective knowledge (11.1%).

The results from IV regressions are shown in Table 1. In Model 1, we introduce the impact of the information letter, and in Model 2, we control for pre-treatment demographic variables to check the robustness of the results. Table 1 demonstrates the significant impact of the letter on subjective knowledge. The coefficient for treatment remains significant even when socio-demographic variables are introduced. Age (older respondents knew more) and sector of employment (those employed in the public sector knew more) are also significant, while the other explanatory variables are not.

The picture is quite different when we look at the determinants of objective knowledge. Interestingly, the information letter had no impact whatsoever on objective knowledge: as shown in Models 3 and 4, there are no significant differences between the ToT group and the CG with regard to their level of objective knowledge. As we can see in Model 4, age and education played a role as older respondents and people with higher educational attainment gave more correct answers. The only variable that is significant in both regressions is age. Older respondents had a higher level of knowledge about pensions than younger respondents. It is reasonable to assume that generally speaking, they are also more interested in pension issues.

In sum, our results show that the information provided substantially increased the respondents' level of subjective knowledge, but it had no significant impact on objective knowledge about the pension reform.

4.2 Knowledge and concerns about the pension system

Our second research question was intended to gauge how people's concerns about the adequacy of their pension, the increased retirement age, and the sustainability of the pension system affected their views on the fairness of the pension reform. Concerns about pension issues were measured on a continuous scale from 0 (not at all worried) to 10 (very worried). Values 8–10 were chosen to indicate people who were concerned about the pension system. Based on this measure, 36% of the respondents were concerned about the adequacy of their pension, 44% were concerned about the increasing retirement age, and 44% were concerned about the sustainability of the system (Appendix Table A2).

While the level of concern may be related to knowledge about pensions, it is possible that factors underlying the individual's concerns do not originate from the level of knowledge alone. It is likely that information about future changes in the pension system will not immediately affect personal concerns. As it turned out, there were no major differences between ITT, ToT, and CG in the severity of concerns about any of these three issues. Therefore, we only consider to what extent the information letter and level of knowledge are linked to people's concerns about changes in the pension system.

Table 2 shows the results from IV regressions on concerns about the increasing retirement age, the adequacy of pensions, and the sustainability of the pension system. In addition to demographic variables, we also introduce objective and subjective knowledge into the models (Models 3, 6 and 9).

In all the models, the impact of the information letter is negligible with varying signs, whereas gender and health are very significant factors in all models. Men are less concerned than women, and people with health problems are most concerned about the future of their pensions. Educational attainment is significant in all models except for those dealing with concerns about the sustainability of the pension system. Respondents with higher education attainment tend to be the least concerned about the increase in retirement age or the adequacy of pensions. Sector of employment and age are to some extent relevant to concerns about retirement age (Models 2 and 3).

Level of subjective knowledge has some impact in reducing concerns about pension adequacy (Model 6) and sustainability (Models 8 and 9). Coefficients for objective knowledge are only significant in relation to concerns about the sustainability of the pension system (Model 9). Meanwhile, the impact of knowledge reveals an interesting contradiction: whereas the higher level of objective knowledge tends to increase people's concerns about the sustainability of the system, the higher level of

Table 1. Coefficients from instrumental variables regressions (2SLS) on subjective and objective knowledge and information letter (standard errors in parentheses)

	Subjective knowledge		Objective knowledge	
	Model 1	Model 2	Model 3	Model 4
Constant	2.519*** (0.030)	1.321*** (0.204)	2.582*** (0.033)	2.104**(0.187)
Letter	0.381*** (0.072)	0.363*** (0.072)	−0.052 (0.065)	−0.094 (0.066)
Gender	–	0.069 (0.054)	–	−0.084 (0.050)
Age	–	0.029*** (0.003)	–	0.009*** (0.002)
Education	–	0.027 (0.018)	–	0.074*** (0.017)
Sector	–	−0.147** (0.056)	–	0.020 (0.051)
Health	–	−0.014 (0.029)	–	−0.009 (0.026)
R^2	0.061	0.142	0.001	0.023

*statistically significant at 5% level; **significant at 1% level; ***significant at 0.1% level; ns = not significant; – = not included in model.

subjective knowledge has the opposite effect (Model 9). However, concerns about the pension system are most strongly related to gender and health, while the information letter had no significant impact and the role of knowledge remained limited.

4.3 Treatment, knowledge, concerns, and legitimacy of the reform

Our third research question concerned the level of acceptance and perceptions of the fairness and legitimacy of the pension reform. For the most part, people seemed to be in favor of the 2017 pension reform (Appendix Table A2). Linking increases in retirement age to increasing life expectancy and harmonizing pension accrual rates were generally considered fair (51.3% and 68.8% of the respondents regarded the pension reform fair or completely fair, respectively). But interestingly, while there was no major difference between the ITT or ToT group and the CG in terms of how they perceived the fairness of the changes in retirement age or the harmonization of accrual rates, opinions on the overall fairness of the reform did differ significantly (ITT vs. CG $p = 0.000$ and ToT vs. CG $p = 0.000$). While 28.8% of respondents in the ITT group and 32.7% in the ToT group thought the reform was fair, this was only true for 20.2% of the CG.[3] The highest percentage (37.5%) was recorded for those in the ToT group who had read the information letter. Furthermore, ToT respondents who said they had received the letter but not read it reported higher overall support (21.6%) for the reform than those in the CG.

The bivariate analyses in Appendix Table A2 and the analyses above in Table 2 indicate that the information letter did not have a significant impact on concerns about the pension system or on the perceptions of the fairness of changes in retirement age and in accrual rates. However, the bivariate results suggest that the information letter did have a significant impact on the perceptions of the overall fairness of the reform (Appendix Table A2).

Next, we analyze in more detail the possible effects of treatment on the perceptions of the fairness of different aspects of the reform. The pure treatment-on-treated effect without any other controls is analyzed in Models 1, 5 and 9, separately for each aspect of fairness. Demographic controls are added to Models 2, 6 and 10. We also analyze the role of knowledge (Models 3, 7 and 11) and the impact of concerns about pension adequacy, retirement age, and sustainability of the system (Models 4, 8 and 12). Results from IV regressions are shown in Table 3.

The information letter had no major impact on opinions on the fairness of the increased retirement age or changes in accrual rates (Models 1–8 in Table 3). Receiving the letter (ToT) – regardless of

[3]Based on the large number of 'don't know' answers, respondents had difficulty answering this question. If we omit these uncertain respondents, 43.4% in the TG and 37.0% in the CG felt that the reform in general was fair (χ^2 p-value = 0.001). The subsequent analyses of general fairness were conducted using separate models where the 'don't know' answers were coded in the middle of the index and where they were omitted. The coding did not significantly affect the results. The coefficient for the information letter was very significant in both cases.

Table 2. Impact of treatment, knowledge and control variables on people's worries about the increasing retirement age, the adequacy of pensions and the sustainability of the pension system, instrumental variables regressions (2SLS), standard errors in parentheses

	Worry about pension age			Worry about pension adequacy			Worry about sustainability		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	6.070*** (0.113)	13.408 ***(0.602)	13.160*** (0.628)	5.954*** (0.1071)	9.727*** (0.556)	9.716*** (0.581)	0.6.692*** (0.089)	8.913*** (0.501)	8.702*** (0.522)
Letter	−0.124 (0.222)	−0.197 (0.212)	−0.167 (0.220)	0.112 (198)	0.166 (0.196)	0.245 (0.203)	−0.055 (0.174)	−0.002 (0.176)	0.098 (0.182)
Gender	–	−1.009 ***(0.160)	−1.027*** (0.160)	–	−1.091*** (0.148)	−1.079*** (0.148)	–	−0.736*** (0.133)	−0.714*** (0.133)
Age	–	−0.012 (0.007)	−0.014*** (0.007)	–	0.006 (0.006)	0.010 (0.007)	–	−0.007 (0.006)	−0.004 (0.006)
Education	–	−0.273*** (0.054)	−0.290*** (0.055)	–	−0.172*** (0.050)	−181*** (0.050)	–	−0.056 (0.045)	−0.062 (0.045)
Sector	–	−0.347* (0.165)	−0.356* (0.165)	–	0.186 (152)	0.145 (0.152)	–	0.182 (0.137)	0.165 (0.137)
Health	–	−1.252*** (0.084)	−1.252*** (0.084)	–	−0.730** (0.078)	−0.720*** (0.078)	–	−0.304*** (0.070)	−0.309*** (0.070)
Subjective knowledge	–	–	0.024 (0.075)	–	–	−0.182** (0.069)	–	–	−0.183** (0.062)
Objective knowledge	–	–	0.151 (079)	–	–	0.139 (0.073)	–	–	0.205** (0.066)
R^2	0.0001	0.163	0.166	0.0001	0.090	0.095	0.0002	0.029	0.040

*statistically significant at 5% level; **significant at 1% level; ***significant at 0.1% level; ns = not significant; – = not included in model.

Table 3. Legitimacy of reforms in pension system, instrumental variables regressions (2SLS), standard errors in parentheses

	Fairness of increasing retirement age				Fairness of accrual rate				Overall fairness of reform			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Constant	3.158*** (0.042)	0.612*** (0.227)	0.339 (0.136)	1.836*** (0.237)	3.655*** (0.035)	3.722*** (0.111)	3.828*** (0.210)	3.701*** (0.243)	2.792*** (0.059)	1.878*** (0.169)	2.014*** (0.176)	2.964*** (0.198)
Letter	0.059 (0.082)	0.011 (0.080)	0.014 (0.083)	−0.015 (0.078)	0.143* (0.068)	0.011 (0.053)	0.109 (0.074)	0.116 (0.074)	0.194*** (0.057)	0.179*** (0.059)	0.192** (0.062)	0.185** (0.060)
Gender	–	0.225*** (0.060)	0.242*** (0.060)	0.129* (0.057)	–	0.002 (0.002)	0.012 (0.053)	0.018 (0.054)	–	0.085 (0.045)	0.083 (0.045)	0.003 (0.044)
Age	–	0.006* (0.003)	0.005 (0.003)	0.003 (0.003)	–	−0.030 (0.018)	0.003 (0.002)	0.004 (0.002)	–	−0.002 (0.002)	−0.001 (0.002)	−0.001 (0.002)
Education	–	0.143*** (0.020)	0.147*** (0.020)	0.110*** (0.019)	–	0.036 (0.055)	−0.025 (0.018)	−0.022 (0.018)	–	0.040** (0.015)	0.046** (0.014)	0.025 (0.015)
Sector	–	0.161** (0.062)	0.162** (0.062)	0.106* (0.083)	–	−0.040 (0.028)	0.033 (0.055)	0.042 (0.055)	–	0.114* (0.048)	0.114* (0.046)	0.093* (0.045)
Health	–	0.283*** (0.032)	0.384*** (0.032)	0.225*** (0.032)	–	–	−0.041 (0.028)	−0.027 (0.030)	–	0.196*** (0.024)	0.192*** (0.024)	0.103*** (0.024)
Subjective knowledge	–	–	−0.002 (0.020)	−0.008 (0.028)	–	–	−0.011 (0.025)	−0.013 (0.025)	–	–	−0.045* (0.021)	−0.045* (0.020)
Objective knowledge	–	–	0.114*** (0.030)	0.128*** (0.028)	–	–	−0.048 (0.026)	−0.050 (0.026)	–	–	−0.042 (0.029)	−0.031 (0.021)
Worry about pension age	–	–	–	−0.141*** (0.010)	–	–	–	0.019* (0.009)	–	–	–	−0.064*** (0.008)
Worry about adequacy	–	–	–	0.011 (0.011)	–	–	–	−0.013 (0.010)	–	–	–	−0.018* (0.008)
Worry about sustainability	–	–	–	0.028* (0.011)	–	–	–	0.001 (0.011)	–	–	–	0.008 (0.009)
R^2	0.001	0.136	0.114	0.233	0.001	0.007	0.009	0.011	0.006	0.064	0.069	0.128

*statistically significant at 5% level; **significant at 1% level; ***significant at 0.1% level; ns = not significant; – = not included in model.

whether it was read – increased the perception of the overall fairness of the reform, even after controlling for all other background variables (Models 9–12). The results indicate that the perceived fairness of the increasing retirement age decreases with concerns over retirement age, whereas good health, being male, having a higher education, and higher objective knowledge increase this perception.

Perceived fairness of changes in accrual rates is not strongly associated with any of our background variables, be they pre-treatment demographic variables or post-treatment attitudinal variables.

Perceptions of the overall fairness of the pension reform are positively linked to the information letter, education level, good health, and being employed in the private sector. Somewhat surprisingly, the level of objective knowledge is not significantly associated with opinions on the overall fairness of the reform. Subjective level of knowledge is negatively associated with the perceptions of overall fairness.

5. Summary analysis with a heuristic model

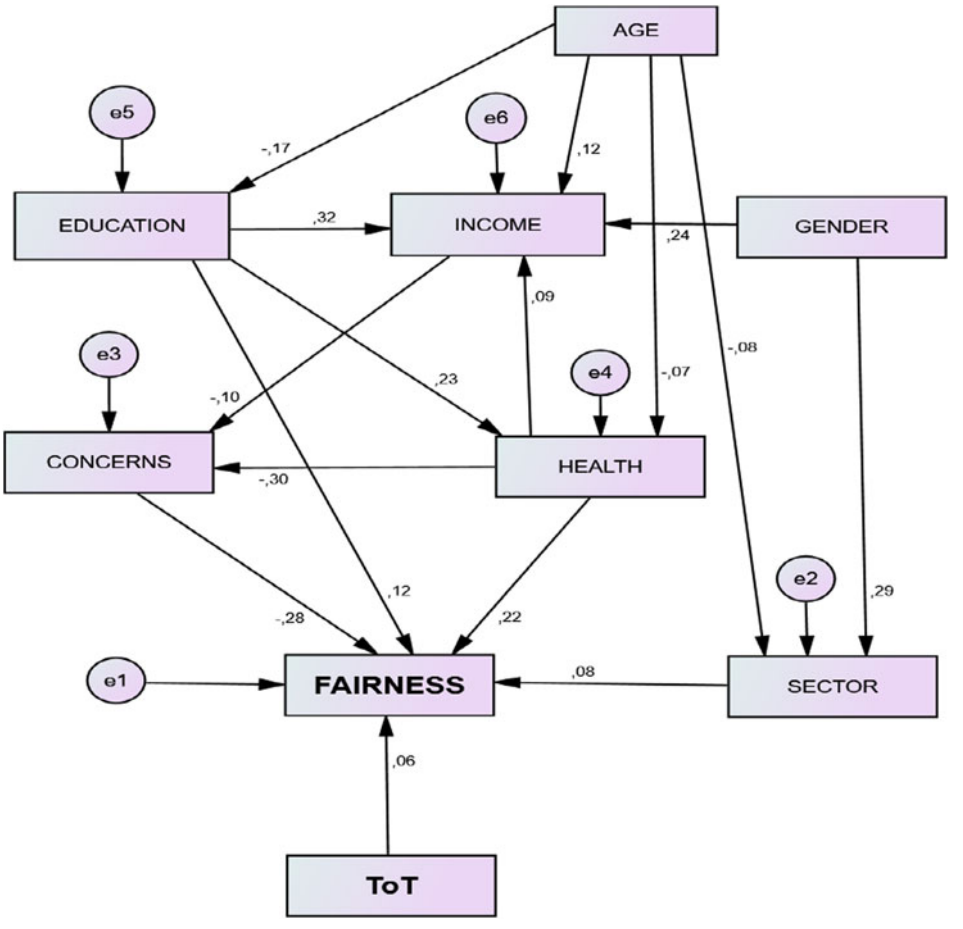
Additive regression models often overlook the multidimensionality of relations between phenomena. In order to shed light on the multidimensional relations between perceptions of the fairness of the 2017 pension reform and the background variables analyzed in previous sections, we make use of SEM. The arrows in the resulting graph represent hypothetical causal loops, and the numbers attached to the arrows are standardized regression coefficients. This graph allows us not only to evaluate direct loops but also to study the possible indirect impacts of various factors.

According to our initial factor analyses (not shown here), opinions on accrual rates constituted their own dimension, while opinions on the general fairness of the reform and the increase in retirement age loaded strongly (factor loadings were the same, i.e., 0.821 for both of the variables). The loading for changes in accrual rates was −0.001. Therefore, we only included the first two questions in the index pertaining to the general fairness of the reform. The three 'concern' variables were merged as well. In the factor analyses, they formed a single factor with the loadings of 0.818 for adequacy, 0.786 for retirement age, and 0.734 for sustainability. When composing the additive 'Concern' variable, the three questions were weighted by their factor loadings.

The overall fit of an SEM can be assessed by the RMSEA that ranges from 0 to 1; smaller values indicate a better fit. A value of 0.05 or less indicates a good fit, values from 0.06 to 0.08 indicate a reasonable fit, values below 0.10 are mediocre and values greater than 0.10 indicate a poorly fitting model (Byrne, 2010: 80; Stata, 2011). Despite its complexity, our heuristic model (Graph 1) fits the data satisfactorily (RMSEA = 0.072). Only statistically significant variables are included and depicted in Graph 1. Variables measuring objective and subjective knowledge, for instance, have been omitted from the total model as they were not significantly linked to the outcome variable, that is, people's perception of the fairness of the reform.

Somewhat surprisingly, only a few direct loops lead to the perceived overall fairness of the reform. Specifically, the five significant direct loops come from the following: (1) education (the higher the level of educational attainment, the more positive the perception of fairness); (2) sector of employment (private sector workers felt that the reform was fairer); (3) concerns (respondents with greater concerns felt that the reform was less fair); (4) health (better health improved respondents' perceptions of fairness); and finally, (5) respondents who received the information letter (ToT) perceived the reform to be fairer than those who did not receive the letter.

As can be seen, gender – which in the regression model in Table 2 was significantly associated with all kinds of concerns – is not directly linked to concerns in the SEM. Instead, the effect of gender appears indirectly via income (and further via concerns) and sector of employment. Age, meanwhile, which was not significant for perceptions of the overall fairness of the reform (Table 3, Models 10–12), has a number of indirect loops (via education and income (and further via concerns), sector of employment, and health) that lead to the perceived fairness of the reform. As regards the information letter (ToT), the SEM corroborates the results presented in the tables above: receiving the information letter, *per se*, increased respondents' acceptance of the reform when all other background variables are controlled for.



Graph 1. Multidimensional relations between perceived fairness of the 2017 pension reform and background variables, SEM.

6. Discussion

Knowledge, the old saying goes, increases pain. This was the inspiration for our initial research questions. We wanted to know whether knowledge about the pension system was connected with the acceptance of the pension reform, and whether people with a higher level of knowledge were less concerned about coming changes than those who knew less.

Our results present an interesting disparity. On the one hand, our respondents were well aware of the essence of the reform. The objective knowledge questions showed that people in Finland had a reasonably good understanding of the main principles of the reform. In this respect, our results partly contradict previous findings, which indicate that people have a somewhat limited understanding of pension issues. On the other hand, 'subjective' assessments of knowledge about the 2017 pension reform suggest a different conclusion. Almost 80% of the respondents felt they did not know enough about the reform. The correlation between objective and subjective knowledge is only mediocre, indicating that when discussing the role of knowledge, it is important to clearly specify what 'knowledge' we are talking about.

The relation between the level of knowledge and the acceptance of the pension reform was not unambiguous. As a result, the explanatory power of objective and subjective knowledge was rather limited. In the SEM, there were no significant links between the level of knowledge and respondents' perception of the fairness of the reform.

Concerns about sustainability, the adequacy of pension levels, and retirement age tended to have a negative impact on the acceptance of the reform. In addition, gender played a role (men were less concerned than women), as did education (the higher the education level, the less concerned people were) and health (those in better health were less concerned).

Our first hypothesis concerned the role of the additional information that was provided through an information letter sent to the treatment group. The results from the regression models using an instrument variable approach indicated that treatment had a significant impact on subjective but not on the objective level of knowledge. Treatment did not reduce people's concerns about the future of their pensions, but it did improve the acceptance of the reform. Overall, then, our results on the role of the information letter in increasing knowledge level are quite ambiguous. Our findings lend support to the results of Cook *et al.* (2010: 409), who concluded that sending out well-presented information has a direct impact on people's confidence.

Our answer to the hypothesis regarding the positive effect of the information letter on the acceptability and legitimacy of the pension reform is thus in the affirmative. However, it was the letter itself rather than the increased knowledge that contributed to increase the legitimacy of the reform. The positive attitudes seen in the treatment group (the ITT group in general and the ToT group in particular) are interesting and perhaps linked to what Margalit (1998) says: in a decent society people are not treated as numbers, but rather it is in the interest of the state to try to enhance their dignity and self-respect. In the same vein, Honneth and Frazer (2003) emphasize the importance of recognition. In the case of social policy, recognition means that the institution in question – in our case, the pension system – acknowledges clients as autonomous agents and takes their claims seriously. The information letter was an indication of 'respectful behavior', or 'recognition', that is, an indication that the system cares about people and wants to keep them informed about future changes to their social rights.

With increasing life expectancy and sluggish economic growth putting pension systems under considerable pressure in all advanced industrial countries, governments are looking for ways to reform those systems. At the same time, they are taking steps to increase the labor supply among older people in an attempt to reduce the detrimental impact of demographic and economic change on their public budgets. In this situation, it is essential not only to make sure that the incentives are in place for working-age people to remain in the workforce for longer, but also to make sure that they know and understand what these incentives are. Furthermore, for the sake of legitimacy, it is important that the information reaches everyone concerned. Ideally, a well-executed information campaign can increase overall awareness of how the pension system works and create solidarity across socio-economic groups and generations. Such an information campaign also displays the government's commitment to 'respectful behavior' and so helps to strengthen a sense of fairness and confidence in the general public. This perceived fairness and confidence, in turn, is the very foundation of successful policy adjustment and change.

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References

Abid Y and O'Donoghue C (2014) Irish citizens' attitudes to pension reform and redistribution. *Social Policy and Society* **13**, 203–220.

Agnew JR and Szykman LR (2005) Asset allocation and information overload: the influence of information display, asset choice and investor experience. *Journal of Behavioral Finance* **6**, 54–70.

Angrist JD and Pischke J-S (2009) *Mostly Harmless Econometrics. An Empiricist's Companion*. Princeton and Oxford: Princeton University Press.

Bay AH and Pedersen AW (2004) National pension systems and mass opinion: a case study of confidence, satisfaction and political attitudes in Norway. *International Journal of Social Welfare* **13**, 112–123.

Boeri T and Tabellini G (2012) Does information increase political support for pension reform? *Public Choice* **150**, 327–362.

Boeri T, Börsch-Supan A, Tabellini G, Moene KO and Lockwood B (2001) Would you like to shrink the welfare state? A survey of European citizens. *Economic Policy* **16**, 8–50.
Brooks C and Manza J (2006) Why do welfare states persist? *Journal of Politics* **68**, 816–827.
Byrne B (2010) *Structural Equation Modeling with AMOS*. London: Routledge.
Cameron AC and Trivedi PK (2010) *Microeconometrics Using Stata*. College Station Texas: Stata Press.
Chan S and Stevens AH (2004) Do changes in pension incentives affect retirement? *Journal of Public Economics* **88**, 1307–1333.
Chan S and Stevens AH (2008) What you don't know can't help you: pension knowledge and retirement decision-making. *The Review of Economics and Statistics* **90**, 253–266.
Chong D and Druckman J (2007) Framing public opinion in competitive democracies. *American Political Science Review* **101**, 637–655.
Chong D and Druckman J (2010) Dynamic public opinion: communication effects over time. *American Political Science Review* **104**, 663–680.
Chung H, Taylor-Gooby P and Leruth B (2018) Political legitimacy and welfare state futures. *Social Policy & Administration* **52**, 835–846.
Cook F, Jacobs L and Kim D (2010) Trusting what you know: information, knowledge, and confidence in social security. *The Journal of Politics* **72**, 397–412.
Fernández JJ and Jaime-Castillo AM (2013) Positive or negative policy feedbacks? Explaining popular attitudes towards pragmatic pension policy reforms. *European Sociological Review* **29**, 803–815.
Finseraas H and Jakobsson N (2014*a*) Does a simple information intervention change the perception of a reform? *Applied Economics Letters* **21**, 1266–1268.
Finseraas H and Jakobsson N (2014*b*) Does information about the pension system affect knowledge and retirement plans? *Journal of Pension Economics and Finance* **13**, 250–271.
Finseraas H, Jakobsson N and Svensson M (2017) Do knowledge gains from public information campaigns persist over time? Results from a survey experiment on the Norwegian pension reform. *Journal of Pension Economics and Finance* **16**, 108–117.
Forss S and Jääskeläinen P (1986) Viesti, väline ja vaikutus: Tutkimus esitemuotoisen työeläketiedotuksen perillemenosta ja siihen vaikuttavista tekijöistä [Message, means and impact]. Eläketurvakeskuksen tutkimuksia 3/1986.
Gouveia AF (2017) Political support for reforms of the pension system: two experiments. *Journal of Pension Economics and Finance* **16**, 371–394.
Hemerijck A (2013) *Changing Welfare States*. Oxford: Oxford University Press.
Hershey DA, Henkens K and van Dalen HP (2010) What drives retirement income worries in Europe? A multilevel analysis. *European Journal of Aging* **7**, 301–311.
Hicks P (2001) Public support for retirement income reform. Labour Market and Social Policy – Occasional Papers No. 55, Directorate for Education, Employment, Labour and Social Affairs. Employment, Labour and Social Affairs Committee.
Honneth A and Frazer N (2003) *Redistribution or Recognition? A Political-Philosophical Exchange*. London: Verso.
Jääskeläinen P (2000) Tiedolla ja taidolla kansalaisten tietoyhteiskuntaan [Moving towards citizens' knowledge society by information and knowhow]. *Eläketurvakeskuksen tutkimuksia* 2000:1.
Jacobs LR and Shapiro RY (1998) Myths and misunderstandings about public opinion toward social security: knowledge, support and reformism. In Arnold RD, Graetz MJ and Munnel AH (eds), *Framing the Social Security Debate: Values, Politics, and Economics*. Washington, DC: Brookings Institution Press, pp. 355–388.
Kahma N and Takala M (2012) Luottamus eläketurvaan [Trust in pension security]. *Eläketurvakeskuksen raportteja* 01/2012.
Kangas O, Lundberg U and Ploug N (2010) Three routes to pension reform: politics and institutions in reforming pensions in Denmark, Finland and Sweden. *Social Policy and Administration* **44**, 265–284.
Liebman JB and Luttmer EFP (2015) Would people behave differently if they better understood social security? Evidence from a field experiment. *American Economic Journal: Economic Policy* **7**, 275–299.
Lusardi A and Mitchell OS (2009) How ordinary consumers make complex economic decisions: financial literacy and retirement readiness. NBER Working Paper 15350.
Lusardi A and Mitchell OS (2014) The economic importance of financial literacy: theory and evidence. *Journal of Economic Literature* **52**, 5–44.
MacLeod P, Fitzpatrick A, Hamlyn B, Jones A, Kinver A and Page L (2012) Attitudes to pensions: the 2012 survey. Department of Work and Pensions Research Report No 813: London.
Margalit A (1998) *The Decent Society*. Cambridge, Massachusetts and London: Harvard University Press.
Mastrobuoni G (2011) The role of information for retirement behavior: evidence based on the stepwise introduction of the social security statement. *Journal of Public Economics* **95**, 913–925.
Myles J and Pierson P (2001) The comparative political economy of pension reform. In Pierson P (ed.), *The New Politics of the Welfare State*. Oxford: Oxford University Press, pp. 305–333.
Naumann E (2014) Raising the retirement age: retrenchment, feedback and attitudes. In Kumlin S and Stadelmann-Steffen I (eds), *How Welfare States Shape the Democratic Public*. Cheltenham: Edward Elgar Publishing, pp. 223–243.

Naumann E (2017) Do increasing reform pressures change welfare state attitudes? An experimental study on population aging, pension reform preferences, political knowledge and ideology. *Aging and Society* **37**, 266–294.

Naumann E (2018) Trust in ageing societies: confidence in pensions across Europe. In Ebbinghaus B and Naumann E (eds), *Welfare State Reforms Seen from Below*. London: Palgrave/MacMillan, pp. 187–209.

Nivalainen S and Tenhunen S (2018) Pension knowledge, impact of economic incentives and retirement intentions. Finnish Centre for Pensions Studies 01/2018. (Study in Finnish, summary available in English.).

OECD (2017) *Pensions at a Glance 2017: OECD and G20 Indicators*. Paris: OECD Publishing.

OECD (2019) *Pensions at a Glance 2019: OECD and G20 Indicators*. Paris: OECD Publishing.

Pierson C (2006) *Beyond the Welfare State. The New Political Economy of Welfare*. Cambridge: Cambridge Polity Press.

Reipas K and Sankala M (2015) Effects of the 2017 earnings-related pension reform – projections based on the government bill. *Finnish Centre for Pensions reports* 08/2015.

Stata (2011) *Structural Equation Modeling, Release 12*. College Station Texas: A Stata Press Corporation.

Svallfors S (2004) Class, attitudes and the welfare state: Sweden in comparative perspective. *Social Policy and Administration* **38**, 119–138.

Takala M (2015) Luottamus eläketurvaan vuosina 2011 ja 2014 [Trust in pension security in 2011 and 2014]. Eläketurvakeskuksen raportteja 2015.

van Rooij MCJ, Lusardi A and Alessie R (2011) Financial literacy and stock market participation. *Journal of Financial Economics* **101**, 449–472.

Appendix

Table A1. Main characteristics of intention to treat and control groups (percent)

	Intention to treat group	Control group
Gender ($\chi^2 = 0.218$)		
Female	50.6	49.5
Male	49.4	50.5
Age (sig = 0.985)		
Mean/St. deviation	45.5/10.7	45.5/10.8
Education ($\chi^2 = 0.070$)		
Basic	7.9	9.2
College	5.2	7.3
Vocational	33.7	33.6
Lower polytechnic	15.1	17.1
Polytechnic	17.1	13.1
University	21.1	19.7
Socio-economic status ($\chi^2 = 0.794$)		
Worker	48.5	49.5
Self-employed	15.0	14.3
Lower white-collar	12.8	11.2
Upper white-collar	29.9	20.6
Leading position	3.8	4.4
Household annual income ($\chi^2 = 0.848$)		
<10,000€	6.8	7.0
10,001–20,000€	15.1	14.5
20,001–35,000€	37.4	36.1
35,001–50,000€	28.1	28.2
50,001–70,000€	10.0	10.5
70,000+€	2.6	3.7
Sector of employment ($\chi^2 = 0.517$)		
Public	37.8	39.4
Private	62.2	60.6
Residence: hometown ($\chi^2 = 0.032$)		
Capital area	19.7	16.0
100,000+ inhabitants	12.9	17.6
50,000–100,000	16.0	15.4
10,000–50,000	31.0	31.6
Less than 10,000		
Health status ($\chi^2 = 0.206$)		
Poor	11.7	10.9
Quite poor	15.0	13.9
Quite good	45.5	50.7
Good	27.8	24.1
n =	939	896

Table A2. Bivariate table on opinions (%) about pension reform in different groups of the experiment

	Knowledge		Worries about			Fairness		
	Subjective	Objective	Pension age	Adequacy	Sustainability	Pension age	Accrual rate	Overall fairness
ITT	23.1	54.2	43.5	35.4	43.9	51.8	70.8	28.8
ToT	37.4	56.0	42.5	35.3	43.9	51.4	71.7	32.7
Read	48.7	54.0	42.1	33.2	43.0	51.5	73.2	37.5
Not read	11.1	54.3	43.2	40.2	46.2	51.3	68.3	21.6
Controls	16.2	56.5	44.5	35.5	44.3	50.7	66.7	20.2
All	23.0	55.5	44.0	35.4	44.1	51.3	68.8	24.7

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