

# Barriers to planning for retirement and later life

Literature review

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## 1. Introduction

- Planning and saving for retirement require individuals to make intertemporal decisions, the costs and benefits of which are distributed over a long time period and involves multiple trade-offs. These are therefore cognitively challenging decisions with significant long-term economic consequences.<sup>1</sup>
- Standard economic models assume that individuals can solve a complex optimisation problem to determine how much to save in each period to maximise some objective function. However, a number of behavioural biases have proven to affect not only individuals' ability to outline a reasonable retirement plan, but also their chances to have the necessary willpower to execute it.<sup>2</sup>
- Research has documented beneficial effects of planning on achieving goals. Specifically, there is a positive relation between retirement planning and pension wealth. In that regard, a causal effect has been established: a higher propensity to plan improves control over individuals' spending, and as a consequence their pension wealth.<sup>3</sup>
- Similarly, the sufficiency of retirement savings is the most important predictor of financial well-being at retirement, as the aim of these long-term savings is helping maintain individuals' pre-retirement standards of living in retirement.<sup>4</sup>
- Additionally, it has been reported that the welfare gains from modest improvements in retirement planning are significant. An increase in the planning horizon of just 5 years e.g. individuals start saving at age 55 rather than at age 60 can generate welfare gains of about 2% of aggregate consumption.<sup>5</sup>

## 2. Psychological barriers

### 2.1. Inertia and procrastination

- Previous research has documented a substantial gap between desire and action in

individuals' saving behaviour. Individuals tend to delay or fail to make decisions even when they recognise that those decisions are in their own best interest.<sup>6,7</sup>

- Procrastination has been identified as an extremely important factor in shaping individuals' decision-making processes on retirement planning and long-term savings.<sup>8</sup>
- This behaviour is problematic because it leads individuals to make the easiest decision – to maintain the status-quo – which does not necessarily coincide with the best decision. The consequence of this is that individuals' well-being at retirement suffers.<sup>8</sup>
- Although this phenomenon may be observed in a range of financial and non-financial decisions, it is particularly pernicious for retirement planning, because, as retirement only occurs once, individuals cannot learn from their mistakes or from repeated decision-making.<sup>9</sup>

#### 2.1.1. Potential causes:

##### Decision complexity

- Behaviours that are consistent with inertia and procrastination are likely to arise when individuals become overwhelmed by the complexity of the decision.<sup>6,9</sup>
- Literature has reported that facing many alternatives or receiving substantial amounts of information about each alternative reduces the likelihood of making an effective choice. It also reduces the reported satisfaction of decision-making because increased choice makes the process more challenging and ultimately frustrating.<sup>10,11</sup>
- When passive decisions (e.g., defaults) are not an option, individuals who cannot deal with complex decisions tend to use heuristics or follow simple decision rules. Although these strategies can be useful and can even lead to good decisions, they can also be subject of systematic biases. For example, it has been documented that in allocating pension investments individuals tend to follow the 1/N heuristic whereby investment

allocations are evenly distributed across available funds regardless of the composition of the underlying funds.<sup>2</sup>

#### Ostrich effect

- Another potential explanation for the inertia that prevents individuals from planning for retirement is the ‘ostrich effect’ or information aversion. This manifests in individuals tending to avoid receiving information that can be disappointing or cause psychological discomfort, even if such information could potentially provide knowledge that would improve their wellbeing.
- In the context of retirement planning, the ostrich effect predicts that, for example, people may avoid knowing how much they are saving and how much they need to save if they believe that there is large gap between these amounts, as they do not wish to experience the disappointment of knowing they are not saving enough.<sup>12,13</sup>

#### Regret aversion

- When uncertain about the best option, people often prefer inertia to avoid regret in the present, while at the same time, disregarding the possibility of regret at some point in the future due to inertia now.<sup>14</sup>
- Inertia as a form of regret avoidance is worse when people realize that they have missed a much better opportunity in the past, which leads to inaction. For example, people indicate less willingness to enrol in a retirement savings plan when they first read about a much better opportunity in the (distant) past than when they first read about an only slightly better opportunity in the (recent) past.<sup>15</sup>
- Regret aversion can also affect decision quality. For instance, it has been shown that anticipated disutility from regret can have a strong effect on the timing of investment choices in defined contribution pension plans, leading to lower quality decisions in more risk-averse investors.<sup>16</sup>

#### 2.1.2. Intertemporal inconsistency

Bounded self-control / Present bias:

- Successful retirement planning is a major challenge for one simple reason: when someone chooses not to save for retirement, she receives an immediate and tangible reward in cash. Adequate pension savings therefore requires sacrificing immediate gratification in pursuit of distant goals.<sup>17</sup>
- Saving for retirement, as well as many other behaviour modification programs such as dieting or quitting smoking are subject to similar obstacles; individuals will need high levels of self-control to succeed but they are often biased toward the present.<sup>18</sup> Individuals need not only the right intentions but also the determination to implement and maintain the behavioural changes.<sup>6</sup>
- The lack of self-control can be rationalised by individuals exhibiting high levels of time discounting. In other words, individuals place too much emphasis on today and would require a significant incentive to defer consumption to receive a benefit in the future.<sup>19</sup>
- Experimental work in various fields has also found high (although heterogeneous) discount rates amongst individuals, establishing impatience and an inability to defer consumption, as a common characteristic of individuals’ preferences.<sup>1</sup>
- In addition, it has been documented that individuals’ discount rates are typically inconsistent; they tend to apply higher discounts rates over the short-term and lower discount rates over the long-term.<sup>20</sup> This pattern of discount rates, known as ‘hyperbolic discounting’, implies that individuals will make choices today that their future self would prefer not to have made, despite knowing the same information. The consequences of this for retirement is straightforward: individuals will overconsume in the present and under-save for the future.<sup>6</sup>

#### Other discounted utility anomalies

- Prior literature has also pointed out other important anomalies of time discounting.<sup>1,20,21</sup>
- 1. The absolute magnitude effect. Large amounts of money suffer proportionally less discounting than small amounts of money.
- 2. The sign effect. There is a gain-loss asymmetry in which gains are discounted significantly more than losses. Empirical research has shown that the discount rate on gains may be up to three times higher. In some cases, losses can also exhibit negative discount rates as individuals would prefer an immediate loss rather than a delayed loss of the same amount.
- 3. Delay-speedup asymmetry. The amount required to compensate individuals for delaying the receiving of a benefit is up to four times greater than the amount individuals would sacrifice to accelerate consumption for the same time period.

#### 2.1.3. Perception of delayed benefits

##### Construal level theory

- One key difference between how people think about outcomes in the near versus distant future is their level of mental representation, which is known as construal level. More distant future outcomes (high-level construal) are more abstract as they are further removed from direct experience.<sup>22</sup>
- Individuals' natural level of construal for present and future outcomes impact their decisions to save. Under this cognitive process, the immediate consequences of saving tend to be concrete and tangible and are consequently weighted more heavily in decision-making relative to the more abstract long-term benefits. The result being suboptimal levels of saving.<sup>1</sup>

##### Disconnection with future selves

- Individuals tend to see retirement as an uncertain phase in a very distant future that they cannot even imagine, making it harder to psychologically connect individuals with their future, retired, selves.<sup>23</sup>

- If individuals do not perceive their future selves as an extension of their current selves, they will be less likely to engage in behaviours that benefit their future selves. If the future self feels like a stranger, it may seem rational not to save for her.<sup>1,4</sup>
- Experimental evidence shows that higher future self-continuity reduces discounting of future rewards.<sup>24</sup> Similarly, enabling people to envisage and interact with aged versions of themselves causes them to allocate more resources to the future.<sup>25</sup>

##### Money slack

- Individuals believe they will have more money at their disposal in the future than they do today. So, current spending is prioritised over long-term savings. Individuals feel less motivated to save now believing it will be easier in the future.
- Individuals believe they will have more money at their disposal in the future than they do today. This phenomenon has two effects on retirement planning. First, current spending is prioritised over long-term savings. Second, individuals feel less motivated to save now believing it will be easier in the future. These dynamic perceptions have detrimental effects on retirement savings.<sup>1</sup>
- Money slack can also help explain hyperbolic discounting. Specifically, if individuals expect money in the near future to be less than in the distant future, they will discount the delayed money at a different rate because of the differences in money slack gains.<sup>26</sup>

##### Time perception (the distance to retirement)

- Another factor contributing to reduced motivation to planning for retirement and later life is how temporally far into the future individuals perceive retirement is.<sup>1</sup>
- If individuals perceive retirement as being a very distant event, they place less weight on its consequences and so they are unlikely to start saving today, even when they may have the intent to save for retirement.<sup>26</sup>

- Additionally, the further retirement seems to be, the more uncertainty is perceived about the future, and as a consequence, individuals' pension savings decisions focus on current needs.<sup>23</sup>

### 3. Socioeconomic determinants of retirement planning

#### 3.1. Financial literacy

- There is a consensus in the empirical literature that financial literacy is a key factor in retirement planning; those who score higher on financial literacy questions are much more likely to plan for retirement.<sup>27</sup> It has also been established that the nexus of causality goes in that direction (from financial literacy to planning) rather than the other way around.<sup>28</sup>
- A strong and positive relationship between financial knowledge and retirement planning has been documented in several countries, including the US<sup>27</sup>, Netherlands<sup>28</sup>, Germany<sup>29</sup>, Switzerland<sup>30</sup>, Chile<sup>31</sup> and Finland<sup>32</sup>. However, some differences have been observed between countries. For example, in Finland, where the average financial literacy is comparatively high, retirement planning is associated with higher financial literacy but only when highly demanding measures of financial literacy are considered.<sup>32</sup>
- Additionally, this relationship is stronger for women<sup>32,33</sup> but it is also observed in people as young as undergraduate students.<sup>34</sup>
- Most of this research relies on surveys. The questions used to define retirement planning are not standardised and can greatly differ between studies. However, virtually all these studies use a common questionnaire to define financial literacy. It is composed of five short questions that measure individuals' understanding of compound interest rate, inflation, risk diversification, time value of money and money illusion.<sup>33</sup>

#### 3.2. Education and income level

- Conditional on a level of financial literacy, individuals with higher levels of formal education, as well as individuals earning a higher income, are more likely to plan for retirement and to succeed implementing their plans, compared to individuals with lower education or lower incomes.<sup>35-37</sup>
- Higher levels of education and income are associated with less risk averse individuals who are more likely to invest in long term financial products. This group is also generally more interested in collecting information about retirement saving products.<sup>38</sup>

#### 3.3. Age and gender

- A positive relationship between age and retirement planning has been consistently found in the literature; older people tend to plan or think more about planning for retirement.<sup>3,39,40</sup>
- The evidence regarding the relationship between gender and retirement planning is rather mixed. Although several studies report that men have a greater propensity to plan and to save for retirement<sup>35,37</sup>, there are other studies that attribute these differences to personal attitudes. For example, it has been argued that when variables that measure expectations and sense of confidence are included, gender is no longer a significant predictor.<sup>19,41</sup>

### 4. Attitudes influencing retirement planning

#### 4.1. Perceived financial literacy

- It has been shown that individuals' self-rated or perceived financial literacy tends to differ from their actual financial literacy, although these two measures are often correlated.<sup>27</sup>
- When perceived financial literacy, instead of actual financial literacy, is used to explain individuals' propensity to plan for retirement, those who rate themselves as rather well-

informed about financial matters are more likely to plan for retirement.<sup>42,43</sup>

- When both actual and perceived financial literacy are included, both measures appear to influence financial behaviours. Perceived financial literacy may therefore be as important as actual financial literacy.<sup>44</sup>
- Both forms of literacy are therefore relevant to improve planning. However, high financial confidence combined with a low financial competence are associated with mistaken beliefs about financial products and less willingness to accept financial advice.<sup>40</sup>

#### 4.2. Trust in financial institutions

- High levels of trust in private financial institutions can encourage long-term savings in those institutions. However, a high level of trust in the government can lead to lower pension savings, as individuals hope that the government ‘will not let them starve’.
- Recent evidence suggests that trust in financial institutions has a positive influence on the decision to enter a private pension scheme. However, this does not significantly impact the probability of being a planner once econometric models account for the fact that trust is correlated with retirement planning outcomes.<sup>35</sup>

#### 4.3. State Pension uncertainty and life expectancy

- In the same vein, a recent study in the UK<sup>41</sup> that explored the effect of different attitudes and expectations on retirement planning behaviour has found that:
  - Those who perceive their expected income from the State Pension and any means-tested benefits to be inadequate are more likely to have planned for their retirement.
  - Those who perceive more uncertainty around their State Pension income are less likely to have planned. Such knowledge could be considered a prerequisite to planning.

- Those who expect to live into their nineties are twice as likely to be planners compared to those who expect to only live into their seventies.

#### 4.4. Future time perspective and retirement goal clarity

- Conditional on demographic indicators such as age, gender, income, and financial literacy, goal clarity is an important factor to predict retirement planning; those who have clarity in their goals are more likely to plan and tend to save adequately for their retirement.<sup>36–38</sup>
- The literature has defined goal clarity as the act of thinking about, or setting goals for the future, in relation to quality of life in retirement.
- A positive relationship between goal clarity and income level has been found, but no relationship between goal clarity and age. It has also been posited that future time perspective, a personality trait that measures the extent to which individuals enjoy thinking about the future, precedes general retirement goal clarity.<sup>42</sup>

#### 4.5. Intra-household interactions

- Individuals are not always individual decision-makers. Individual’ decisions are influenced by the beliefs and preferences of other household members e.g. spouses or children.<sup>45</sup>
- It has long been documented that married couples often actively decide to coordinate their retirement dates. In such a case, retirement planning is not an individual activity.<sup>46</sup>
- Optimal decisions of multi-person households can therefore be different from optimal decisions of single person households. For example, the theoretical utility gain of buying life annuities is different for couples than for individuals because couples are able to pool longevity risk.<sup>47</sup>
- Within the household, members tend to specialise in certain types of decisions.

Specifically, women tend to exert more control over every day financial decisions e.g. those related to household bills, while men are more prone to dominate in decisions that involve high levels of risk and/or complexity e.g. retirement planning decisions.<sup>48</sup>

- Most researchers agree that couples' decision-making is a bargaining process, in which the preferences of the person with the highest relative negotiating power will be overrepresented in the household's decisions. Bargaining power depends on spouses' relative age, education and income.<sup>49</sup>
- The existence of a bargaining process has implications for retirement planning. Individuals can have a desire to save, but they may not be able to implement it if their partners have different preferences and a higher bargaining power. For instance, it has been found that actual households' consumption decreases at the time of the husband's retirement for married couples, while such a fall is not observed in single individuals. This effect is stronger when the expected length of the wife's widowhood increases. These findings may be explained by an underlying bargaining process whereby the retirement of the husband declines his relative bargaining power. Household consumption therefore decreases as the wife prefers to conserve resources in order to finance her future consumption, as she expects to live longer.<sup>50</sup>

## 5. Mechanisms to overcome the barriers

### 5.1. Commitment devices

- These refer to any device that individuals use to enact constraints in the present to promote desirable behaviours in the future.<sup>25</sup> They are useful to protect individuals from themselves and impose discipline, reducing self-control problems.<sup>6</sup>
- Several studies account for the effectiveness of devices by which individuals commit to start saving in the future and/or saving at an

increasing rate and the effectiveness of this is explained by individuals' behavioural issues:<sup>6,26</sup>

- Individuals significantly underestimate the impact of such future commitments (hyperbolic discounting).
- The costs of future saving are temporally distant, so they are weighted less than when people make saving decisions in the present (construal level theory)
- Individuals feel that they will have more financial slack in the future, and therefore they are more willing to save in the future than in the present (money slack).
- Once these devices are in place, individuals do not take active decisions to opt-out from their commitments (inertia).

### 5.2. Use of defaults

- Default options have proven to be extremely effective in shaping individuals' decision processes, as inertia and procrastination prevent individuals from making active choices and opting out.<sup>6,9</sup>
- Automatic enrolment into pension plans has considerably increased participation rates around the world.<sup>6</sup> However, it may not be enough to increase total savings if individuals also choose, by default, low contribution rates and conservative investment options.<sup>6,8,51</sup> It has been posited that in addition to automatic enrolment, a comprehensive plan to facilitate adequate saving for retirement must include automatic investment and automatic escalation of the saving rates ideally linked to pay rises to diminish the effects of loss aversion.<sup>51</sup>

### 5.3. Framing

- Understanding the behavioural barriers to retirement planning is crucial to improving communication with potential savers. Framing can be used to encourage retirement planning and long-term savings.

- For example, given the discounting anomalies discussed above, individuals will be more prone to save if:<sup>21</sup>
  - They are told about the pension pot they will accumulate and have when they reach retirement instead of the equivalent income stream they will receive at retirement (absolute magnitude effect).
  - The consequences of savings are focused on benefits; a future gain instead of a current loss (sign effect).
  - They are encouraged to save more to accelerate future pension benefits. For example, to retire early by meeting a specific relatively high savings goal (delay-speedup asymmetry).
- Similarly, based on the construal level theory, encouraging individuals to think about how they would spend their retirement money should increase savings by allowing them to more concretely represent future outcomes.<sup>1</sup>

#### 5.4. Short-term benefits

- A way to take advantage of individuals' present bias is by tying long-term savings with short-term benefits. In this case, the act of saving for retirement will produce immediate benefits.
- These benefits can consist of short-term monetary rewards from savings such as tax deferral or tax exemption, as well as short-term non-monetary rewards, e.g., gaining the approval of others for taking positive action.
- In this regard, it has been argued that the perception that others expect one to save, or the belief that one should imitate the behaviour of others, can influence saving behaviour. Therefore, communicating a global/national savings problem, that emphasises the extent to which people do not save can have a deterrent effect.<sup>52</sup>

#### 5.5. Educational interventions

- Empirical findings about the effects of financial education interventions on retirement savings are mixed; the form of

education seems to matter. Programs that rely on print media (newsletters, plan description, etc.) generally have no effect, while retirement seminars are effective in increasing long-term savings.<sup>53,54</sup>

- This effect is particularly large for those with lower education and those who save little. Also, by offering financial education, wealth can be increased sharply, and much more for families at the bottom of the income distribution and those with low education.<sup>53</sup>

## 6. Evidence on demographic effects outside pensions

- Outside of the context of pensions, demographic factors are explored rather than controlled for, albeit in a limited number of studies. For example, it has been shown that overconfidence leads to individuals trading excessively, and this consequently reduces investment returns. Crucially, this is greater for men than for women<sup>55</sup> but tends to decrease with age<sup>56</sup>.
- Risk taking may also be different as a function of people's circumstances. In several studies it has been shown that Chinese participants take more risks than American participants. This seems counterintuitive, as one might expect greater risk-taking in an entrepreneurial society that emphasises free markets (America), than a communist one with much greater centralised control and planning (China). However, these observed differences are explained as a function of the relative safety-net available in both countries, with welfare and social support being relatively better in China than America.<sup>57</sup>
- There are also other institutional and cultural factors at play. Chinese proverbs have been judged to advocate greater financial risk-taking compared to American proverbs. In such a setting, people may be less risk averse if they can rely on social support (a 'cushion'). China is often characterised as having a collectivistic culture, whereas America is viewed as one of the most individualistic.<sup>58</sup> If people in China can rely on more support if

something bad happens, then it makes sense for them to be more risk-taking.<sup>59</sup>

- Consistent with this 'cushion' hypothesis, in a subsequent study, Chinese participants were found to be both more willing to take risks and able to rely on a larger social 'cushion'. Crucially, once the size of the social safety-net available for financial support was accounted for, the cross-country differences disappeared. In other domains of risk outside of finance (medical/personal), there was no difference either in the willingness to take risks or the capacity to rely on social support.<sup>60</sup>
- Ethnicity and gender may also play a role in determining individuals' risk tolerances and consequently their financial decisions<sup>61</sup>. For example, prior research has reported a significant 'white male' effect (WME) on risk perceptions, whereby, white males tend to systematically perceive lower levels of risk from a wide range of hazards when compared to other race/gender groups.<sup>62,63</sup>
- The explanation of this phenomenon goes beyond race and ethnicity and has been linked to multiple socio-political factors such as power, status, alienation, and trust. In that

regard, it has been found that white males tend to place a high degree of trust in experts and authority figures, possess an above average level of education, identify with a conservative political perspectives, and promote individual achievement, initiative, and self-regulation.<sup>62</sup>

- However, it is still not clear whether the observed heterogeneity in risk perceptions among ethnic groups can be entirely attributed to socio-political factors. For instance, it has been found that, within the African-American community, those males presenting analogous characteristics and facing similar socio-political conditions as white males where the WME has been found, do not exhibit lower risk perceptions.<sup>64</sup>
- Overall, while these are non-pension studies, they point to a need to have a much better understanding of demographic factors, how these may impact individual decisions, and consequently what interventions are most effective for different cohorts.

## 7. References

1. Malkoc SA, Zauberma n G. Psychological analysis of consumer intertemporal decisions. *Consum Psychol Rev.* 2018;(October 2018):97-113. doi:10.1002/arcp.1048
2. Benartzi S, Thaler RH. Heuristics and biases in retirement savings behavior. *J Econ Perspect.* 2007;21(3):81-104. doi:10.1257/jep.21.3.81
3. Ameriks J, Caplin A, Leahy J. Wealth accumulation and the propensity to plan. *Q J Econ.* 2003;118(3):1007-1047. doi:10.1162/00335530360698487
4. Greenberg AE, Hershfield HE. Financial decision making. *Consum Psychol Rev.* 2018;(October 2018):17-29. doi:10.1002/arcp.1043
5. Caliendo FN, Findley TS. Time inconsistency and retirement planning. *Econ Lett.* 2013;121(1):30-34. doi:10.1016/j.econlet.2013.06.041
6. Mitchell OS, Utkus SP. Lessons from Behavioral Finance for Retirement Plan Design. In: *Pension Design and Structure.* Oxford University Press; 2004:3-42. doi:10.1093/0199273391.003.0001
7. Keane MP, Thorp S. Complex Decision Making: The Roles of Cognitive Limitations, Cognitive Decline, and Aging. In: Piggott J, Woodland A, eds. *Handbook of the Economics of Population Aging.* Vol 1. 1st ed. Amsterdam: Elsevier B.V.; 2016:661-709. doi:10.1016/bs.hespa.2016.09.001
8. Madrian BC, Shea DF. The power of suggestion: Inertia in 401(k) participation and savings behavior. *Q J Econ.* 2001;116(4):1149-1187. doi:10.1162/003355301753265543
9. Henriette P, Van Soest A. Pension Awareness , Pension Communication , and Choice Architecture. *MOPACT.* 2015;1(320333):1-45.
10. Iyengar SS, Lepper MR. When choice is demotivating: Can one desire too much of a good thing? *J Pers Soc Psychol.* 2000;79(6):995-1006. doi:10.1037/0022-3514.79.6.995
11. Korhonen PJ, Malo P, Pajala T, Ravaja N, Somervuori O, Wallenius J. Context matters: The impact of product type, emotional attachment and information overload on choice quality. *Eur J Oper Res.* 2018;264(1):270-279. doi:10.1016/j.ejor.2017.06.060
12. Karlsson N, Loewenstein G, Seppi D. The ostrich effect: Selective attention to information. *J Risk Uncertain.* 2009;38(2):95-115. doi:10.1007/s11166-009-9060-6
13. Andries M. Information Aversion Valentin Haddad. *J Polit Econ.* 2020;128(5).
14. Sautua SI. Does uncertainty cause inertia in decision making? An experimental study of the role of regret aversion and indecisiveness. *J Econ Behav Organ.* 2017;136:1-14. doi:10.1016/j.jebo.2017.02.003
15. Krijnen J, Angeles L, Zeelenberg M, Amsterdam VU, Breugelmans SM. Overcoming inertia in retirement saving. *Netspar Ind Ser.* 2016;46(September).
16. Muermann A, Mitchell OS, Volkman JM. Regret, portfolio choice, and guarantees in defined contribution schemes. *Insur Math Econ.* 2006;39(2):219-229. doi:10.1016/j.insmatheco.2006.02.006
17. Selnow GW. Motivating Retirement Planning: Problems and Solutions. In: *Pension Design and Structure.* Oxford University Press; 2004:43-52. doi:10.1093/0199273391.003.0002
18. Weber EU. Who's Afraid of a Poor Old Age? Risk Perception in Risk Management Decisions. In: *Pension Design and Structure.* Oxford University Press; 2004:53-66. doi:10.1093/0199273391.003.0003

19. Griffin B, Loe D, Hesketh B. Using Proactivity, Time Discounting, and the Theory of Planned Behavior to Identify Predictors of Retirement Planning. *Educ Gerontol.* 2012;38(12):877-889. doi:10.1080/03601277.2012.660857
20. Frederick S, Loewenstein G, O'Donoghue T. Time discounting and time preference: A critical review. *Time Decis Econ Psychol Perspect Intertemporal Choice.* 2003;40(2):13-86. doi:10.1257/002205102320161311
21. Loewenstein G, Prelec D. Anomalies in intertemporal choice: Evidence and an interpretation. *Q J Econ.* 1992;107(2):574-597. doi:10.2307/2118482
22. Trope Y, Liberman N. Construal Theory. *Psychol Rev.* 2010;117(2):440-463. doi:10.1037/a0018963.Construal-Level
23. James H, Price D, Buffel T. How do people think about later life when making workplace pension saving decisions? *J Aging Stud.* 2020;54(September 2019):100869. doi:10.1016/j.jaging.2020.100869
24. Ersner-Hershfield H, Garton MT, Ballard K, Samanez-Larkin GR, Knutson B. Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgm Decis Mak.* 2009;4(4):280-286.
25. Hershfield HE, Goldstein DG, Sharpe WF, et al. Increasing saving behavior through age-progressed renderings of the future self. *J Mark Res.* 2011;48(SPEC. ISSUE). doi:10.1509/jmkr.48.SPL.S23
26. Zauberman G, Kim BK. Time Perception and Retirement Saving: Lessons from Behavioral Decision Research. *Financ Lit Implic Retire Secur Financ Marketpl.* 2011;(2010). doi:10.1093/acprof:oso/9780199696819.003.0011
27. Lusardi A, Mitchell OS. Financial literacy and retirement planning in the United States. *J Pension Econ Financ.* 2011;10(4):509-525. doi:10.1017/S147474721100045X
28. Van Rooij MCJ, Lusardi A, Alessie RJM. Financial literacy and retirement planning in the Netherlands. *J Econ Psychol.* 2011;32(4):593-608. doi:10.1016/j.joep.2011.02.004
29. Bucher-Koenen T, Lusardi A. Financial Literacy and Retirement Planning in Germany. June 2011. doi:10.3386/w17110
30. Brown M, Graf R. Financial Literacy and Retirement Planning in Switzerland. *Numeracy.* 2013;6(2):335-362. doi:10.5038/1936-4660.6.2.6
31. Moure NG. Financial literacy and retirement planning in Chile. *J Pension Econ Financ.* 2016;15(2):203-223. doi:10.1017/S1474747215000049
32. Kalmi P, Ruuskanen OP. Financial literacy and retirement planning in Finland. *J Pension Econ Financ.* 2019;17(3):335-362. doi:10.1017/S1474747217000270
33. Lusardi A, Mitchell OS. Planning and financial literacy: How do women fare? *Am Econ Rev.* 2008;98(2):413-417. doi:10.1257/aer.98.2.413
34. Bongini P, Cucinelli D. University students and retirement planning: never too early. *Int J Bank Mark.* 2019;37(3):775-797. doi:10.1108/IJBM-03-2018-0066
35. Ricci O, Caratelli M. Financial literacy, trust and retirement planning. *J Pension Econ Financ.* 2017;16(1):43-64. doi:10.1017/S1474747215000177
36. Petkoska J, Earl JK. Understanding the Influence of Demographic and Psychological Variables on Retirement Planning. *Psychol Aging.* 2009;24(1):245-251. doi:10.1037/a0014096

37. Kumar S, Shukla GP, Sharma R. Analysis of key barriers in retirement planning: An approach based on interpretive structural modeling. *J Model Manag.* 2019;14(4):972-986. doi:10.1108/JM2-09-2018-0134
38. Rai K, Dua S. Determinants of Retirement Financial Planning: A Review of Literature. *J Gujarat Res Soc.* 2019;21(11):182-189.
39. Hira TK, Rock WL, Loibl C. Determinants of retirement planning behaviour and differences by age. *Int J Consum Stud.* 2009;33(3):293-301. doi:10.1111/j.1470-6431.2009.00742.x
40. Anderson A, Baker F, Robinson DT. Precautionary savings, retirement planning and misperceptions of financial literacy. *J financ econ.* 2017;126(2):383-398. doi:10.1016/j.jfineco.2017.07.008
41. Farrar S, Moizer J, Lean J, Hyde M. Gender, financial literacy, and preretirement planning in the UK. *J Women Aging.* 2019;31(4):319-339. doi:10.1080/08952841.2018.1510246
42. Hershey DA, Jacobs-Lawson JM, McArdle JJ, Hamagami F. Psychological foundations of financial planning for retirement. *J Adult Dev.* 2007;14(1-2):26-36. doi:10.1007/s10804-007-9028-1
43. Hershey DA, Mowen JC. Psychological determinants of financial preparedness for retirement. *Gerontologist.* 2000;40(6):687-697. doi:10.1093/geront/40.6.687
44. Allgood S, Walstad WB. The effects of perceived and actual financial literacy on financial behaviors. *Econ Inq.* 2016;54(1):675-697. doi:10.1111/ecin.12255
45. Kim J, Gutter MS, Spangler T. Review of family financial decision making: Suggestions for future research and implications for financial education. *J Financ Couns Plan.* 2017;28(2):253-267. doi:10.1891/1052-3073.28.2.253
46. Bloemen H, Hochguertel S, Zweerink J. The Effect of Incentive-Induced Retirement on Spousal Retirement Rates: Evidence from a Natural Experiment. *Econ Inq.* 2019;57(2):910-930. doi:10.1111/ecin.12747
47. Brown JR, Poterba JM. Joint Life Annuities and Annuity Demand by Married Couples. *J Risk Insur.* 2000;67(4):527-553. doi:10.2307/253849
48. Wood A, Downer K, Lees B, Toberman A. Household financial decision making: Qualitative research with couples. *Dep Work Pensions Res Rep.* 2012;(805):1-43.
49. Ward-Batts J. Out of the Wallet and into the Purse: Using Micro Data to Test Income Pooling. *J Hum Resour.* 2008;43(2):325-351. doi:10.3368/jhr.43.2.325
50. Lundberg S, Startz R, Stillman S. The retirement-consumption puzzle: A marital bargaining approach. *J Public Econ.* 2003;87(5-6):1199-1218. doi:10.1016/S0047-2727(01)00169-4
51. Benartzi S, Thaler RH. Behavioral economics and the retirement savings crisis. *Science (80- ).* 2013;339(6124):1152-1153. doi:10.1126/science.1231320
52. Wiener J, Doescher T. Josh Wiener and Tabitha Doescher. *Order A J Theory Ordered Sets Its Appl.* 2008;42(2):137-164.
53. Lusardi A. Saving and the Effectiveness of Financial Education. In: *Pension Design and Structure.* Oxford University Press; 2004:157-184. doi:10.1093/0199273391.003.0009
54. Collins JM, Urban C. the Role of Information on Retirement Planning: Evidence From a Field Study. *Econ Inq.* 2016;54(4):1860-1872. doi:10.1111/ecin.12349

55. Barber BM, Odean T. Boys will be Boys: Gender, Overconfidence, and Common Stock Investment. *Q J Econ.* 2001;116(1):261-292. doi:10.1162/003355301556400
56. Korniotis GM, Kumar A. Do older investor make better investment decisions? *Rev Econ Stat.* 2011;93(1):244-265. <https://www.jstor.org/stable/23015932>.
57. Weber EU, Hsee C. Cross-Cultural Differences in Risk Perception, but Cross-Cultural Similarities in Attitudes Towards Perceived Risk. *Manage Sci.* 1998;44(9):1205-1217. doi:10.1287/mnsc.44.9.1205
58. Hofstede G. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations.* 2nd ed. Thousand Oaks, CA: Sage Publications; 2001.
59. Weber EU, Hsee CK, Sokolowska J. What Folklore Tells Us about Risk and Risk Taking: Cross-Cultural Comparisons of American, German, and Chinese Proverbs. *Organ Behav Hum Decis Process.* 1998;75(2):170-186. doi:10.1006/obhd.1998.2788
60. Hsee CK, Weber EU. Cross-national differences in risk preference and lay predictions. *J Behav Decis Mak.* 1999;12(2):165-179. doi:10.1002/(SICI)1099-0771(199906)12:2<165::AID-BDM316>3.0.CO;2-N
61. Dickason Z, Ferreira S. The effect of gender and ethnicity on financial risk tolerance in South African. *Gend Behav.* 2018;16(1):10851-10862. doi:10.1177/1066480712456831
62. Finucane ML, Slovic P, Mertz CK, Flynn J, Satterfield TA. Gender, race, and perceived risk: The "white male" effect. *Heal Risk Soc.* 2000;2(2):159-172. doi:10.1080/713670162
63. Flynn J, Slovic P, Mertz CK. Gender, Race, and Perception of Environmental Health Risks. *Risk Anal.* 1994;14(6):1101-1108. doi:10.1111/j.1539-6924.1994.tb00082.x
64. Rivers L, Arvai J, Slovic P. Beyond a simple case of black and white: Searching for the white male effect in the African-American community. *Risk Anal.* 2010;30(1):65-77. doi:10.1111/j.1539-6924.2009.01313.x

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