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Preference Checklists: Selective and Effective Choice Architecture for Retirement Decisions

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Key Findings

- Considering the future first using a preference checklist composed of eight reasons to claim benefits later followed by eight reasons to claim benefits early encourages older Americans to delay Social Security retirement benefit claiming by roughly 18 months compared to a control condition and even by 10 months compared to a condition with a default set at the oldest claiming age.
- Considering the future first reduces the gap between when older Americans *should* claim Social Security retirement benefits (based on their expected longevity) and when they *actually prefer* to claim these benefits by 82% compared to a control condition.
- Choice architecture interventions (i.e., changes to the way decision information is presented) have a stronger and more significant effect on preferred Social Security retirement benefit claiming age than traditional economic factors, such as eligibility, education, wealth, perceived longevity risk, perceived health, job satisfaction, and job security.
- Despite the demonstrable impacts of choice architecture interventions, such as defaults and preference checklists, on preferred Social Security retirement benefit claiming age, participants report that they do not perceive any noticeable differences in their choice experience.
- A life expectancy calculator included as part of the claiming decision may function as an informal checklist that interacts with other choice architecture interventions. This underscores the importance of choice architecture: small changes to wording or ordering can have large effects on important decisions.

Executive Summary

Many of the over 30 million Americans projected to retire in the next decade have not saved sufficiently for their retirement. Compounding this problem, almost half of Americans claim Social Security retirement benefits at the earliest possible age, which reduces the amount of their monthly check and, for many, their overall lifetime benefits. Because the optimal claiming age varies depending on factors such as longevity, successful interventions need to be *effective* and *selective*: delaying claiming age for those who should delay, but not for those who should claim early. We investigate a recently developed choice architecture tool, a *preference checklist* (a list of choice-relevant factors that consumers might want to consider, but often do not).

In a study of 451 Americans, we compare a control condition (typical retirement benefits information), a default condition (information plus a default set at the oldest claiming age), an early-first checklist condition (information plus a checklist of reasons to claim benefits early followed by reasons to claim benefits later), and a later-first checklist condition (information plus a checklist of reasons to claim benefits later followed by reasons to claim benefits early). The later-first checklist significantly delays claiming—by roughly 18 months compared to the control and early-first conditions and even by 10 months compared to the default condition. Additionally, the later-first checklist reduces the average claiming "error" (i.e., the difference between when people *should* and *do* claim). Preference checklists are stronger *and* more selective than a standard intervention.

In a second study of 479 Americans, we include a short-form life expectancy calculator as part of the claiming decision. The calculator overwhelms the other interventions, suggesting that the calculator may function as an informal checklist. This finding highlights the importance of choice architecture: small changes to wording or ordering can have large effects on important decisions.

Introduction

Over the next decade, over 30 million Americans will retire (Reno & Lavery, 2009). Although Americans are living longer and retiring earlier (Burtless & Quinn, 2002; Wise, 1997), many do not save sufficiently for their retirement (NIA, 2007; Thaler & Benartzi, 2004). They are then faced with difficult financial decisions, both as they approach retirement and during retirement. The current research investigates how a recently developed intervention can help older Americans with one such decision: the decision about when to claim retirement benefits from Social Security (SS).

Claiming Retirement Benefits

Eligible Americans can claim SS retirement benefits beginning at age 62. However, the benefits are structured such that the longer an individual waits to claiming (up to age 70), the larger their monthly benefit. Despite this, the majority of Americans claim benefits early, with roughly half claiming benefits at the earliest possible age (Muldoon & Kopcke, 2008; Song & Manchester, 2007). For the average consumer, this is a financial mistake (Burtless & Quinn, 2002; Coile et al., 2002): It reduces the amount of their monthly check as well as the amount of their overall lifetime benefits. For example, the average monthly SS retirement benefit at age 62 is $1,098 (SSA, 2014a). If the individual waited until 66 to claim, the monthly benefit would be $1,464; if she waited until 70, it would be $1,932. To put this in perspective, the median level of retirement assets for this cohort is $150,000 (Topoleski, 2013), which produces a monthly income of $500, using standard consumption rates (Bengen, 1994). It is perhaps not surprising then, that for many Americans, SS retirement benefits make up the bulk of their retirement income (NIA, 2007; SSA, 2010). Thus, the benefit claiming decision is critically important for the financial security of many older Americans. It is also similar to decisions consumers face in the context of both defined benefit and defined contribution employer-sponsored programs (e.g., Burman, Coe, & Gale, 1999).

Choice Architecture Interventions

These troubling statistics about retirement financial decision making, along with the encouragement of the National Commission on Fiscal Responsibility and Reform (also known as the Simpson-Bowles Commission) to "consider behavioral economics approaches" (2010, p. 47) in improving SS retirement benefits information, have spurred recent research on the topic. There has been a surge of interest in how choice architecture (the way decision information is presented) and nudges (choice architecture interventions which can change behavior) may be able to help older Americans with these types of difficult decisions. Small differences in choice architecture have been shown to have large impacts on decisions about such diverse topics as organ donation (e.g., Johnson & Goldstein, 2003), healthy eating (e.g., Chandon & Wansink, 2007; Wansink, Painter, & North, 2005), healthcare (e.g., Johnson, Hassin, Baker, Bajger, & Treuer, 2013; Wood, Hanoch, Barnes, Cummings, & Rice, 2011), energy efficiency (e.g., Hardisty, Johnson, & Weber, 2010; Larrick, Soll, & Keeney, 2015), and retirement savings and planning (e.g., Madrian & Shea, 2001; Thaler & Benartzi, 2004).

Recent research confirms that the influence of choice architecture extends to the age at which people prefer to claim SS retirement benefits (Knoll, Appelt, Johnson, & Westfall, 2015; Brown, Kapteyn, & Mitchell, 2011; Liebman & Luttmer, 2009). For example, presenting people with their breakeven age (i.e., the unique age for each individual at which the sum of the increase in monthly benefits from delaying claiming offsets the sum of the monthly benefits forgone during the delay) encourages people to claim early (Brown et al., 2011; Liebman & Luttmer, 2009), whereas asking people to consider the future first (i.e., to think about claiming later before thinking about claiming early) encourages people to claim later (Knoll at al., 2015). More specifically, considering the future first via listing decision-relevant thoughts in a specified order (i.e., thoughts in favor of later claiming before thoughts in favor of early claiming) leads to average preferred claiming delays of roughly nine months (Knoll et al., 2015). Returning to our earlier example of the average 62-year-old SS retirement benefit claimant, delaying claiming for nine months after age 62 is equivalent to an extra $55 *per month* ($1,153, versus $1,098 at age 62). If the individual lives to age 85, which is the average life expectancy for this cohort, this adds up to $4,776 in additional benefits. If she lives to age 100, this grows to $14,658 in additional benefits. Because even seemingly modest changes in claiming age have a large impact on benefits received, helping people find their most economically beneficial claiming age, whether earlier or later, could substantially improve their financial security in retirement. This impact is magnified in aggregate, since over 40 million Americans receive SS retirement benefits each month (SSA, 2016).

Interventions like these offer hope that simple changes in the way decision information is presented can substantially and positively change older Americans' financial decision-making. However, at the same time, there is concern that nudges may be a blunt tool, affecting both people for whom a behavior change is beneficial *and* those for whom it is harmful. For example, the optimal retirement benefit claiming age depends upon many factors, especially expected longevity, current income and retirement savings, and job satisfaction and security. In other words, the optimal claiming age varies by individual, and not all individuals should delay claiming. Thus, successful interventions for the benefit claiming decision need to act selectively—delaying claiming age for those who should delay, but not delaying claiming for those who should claim early, such as those with a shorter life expectancy. More generally, interventions for complex decisions should strive to help people identify the choice option that is best for *them*, given their individual circumstances and preferences.

To date, research has not examined whether choice architecture interventions affect different people differently and, more importantly, whether they encourage individuals to claim at an age that is appropriate for them. The current research investigates whether a newly developed choice architecture intervention is effective *and* selective—successfully encouraging people to claim later if they should claim later, but not if they should claim early.

Considering the Future First

Query theory (Weber et al., 2007) suggests that people construct their preferences for a decision by considering the most salient or prominent option before considering other options. Due to output interference (i.e., the effect of earlier arguments suppressing individuals' ability to generate later conflicting arguments; Anderson, Bjork, & Bjork, 1994; Anderson & Spellman, 1995; Perfect et al., 2002; Veling & van Knippenberg, 2004), people generate more arguments in favor of the option they consider first and, therefore, tend to decide in its favor. In previous research (Knoll et al., 2015), we used this process to explain the general preference for early claiming: The claiming decision is an intertemporal choice between a smaller, sooner amount (i.e., early claiming) and a larger, later amount (i.e., later claiming), with an implicit focus on the smaller, sooner amount. So, decision-makers tend to approach the decision by first considering reasons to claim early and then considering reasons to claim later, with the result being that the majority of decision-makers prefer to claim early.

Query theory predicts that considering an alternative option first weakens and even eliminates the effect of the most salient option (Weber et al., 2007). This intervention has been successfully implemented in many contexts by asking people to sequentially list their thoughts about the decision in a given order (i.e., the typical order or the reverse order; Appelt, Hardisty, & Weber, 2011; Dinner, Johnson, Goldstein, & Liu, 2011; Hardisty, Johnson, & Weber, 2010; Johnson, Häubl, & Keinan, 2007; Weber et al., 2007). Considering the future first applies this insight to the claiming decision: Asking people to consider later claiming before early claiming (i.e., to consider the future first) reduces the prominence of the early-claiming option and encourages people to delay claiming (Knoll et al., 2015). As described earlier, in one study (Knoll et al., 2015), this intervention successfully delayed preferred claiming age by nine months on average. Although this implementation is unquestionably effective, it requires more time and effort than may be practical in many situations.

In response, we developed a new choice architecture tool: a *preference checklist* (Appelt, Knoll, Johnson, & Westfall, 2016). Preference checklists are lists of choice-relevant factors that consumers might want to consider when making a decision, but often do not due to various factors such as time pressure, lack of knowledge or information, or output interference. Rather than typing out and rating their own thoughts, people simply read and respond to lists of typical, choice-relevant thoughts generated based on common responses to the decision in previous studies. As suggested by query theory, checklist items are clustered into factors supporting one option (e.g., supporting early claiming) or another (e.g., supporting later claiming). To consider the future first, people are asked to read and respond to later-first checklists (i.e., items supporting later claiming followed by items supporting early claiming). Initial research suggests that considering the future first works equally effectively, whether it occurs via typing your own thoughts or via reading and responding to lists of typical, relevant thoughts. In fact, in one study, later-first checklists delayed claiming age by over 13 months as compared to the more typical process of considering early claiming first (i.e., a checklist of pro-early items followed by a checklist of pro-later items; Appelt et al., 2016).

Many standard choice interventions, such as setting a default (i.e., pre-selecting a choice option), benefit from disengagement—they work best when decision-makers are least involved in the decision. In contrast, preference checklists ask people to more fully consider their options, thinking about which factors are relevant to them. Because of this important distinction, we suspect this type of intervention may be more responsive to individuals' differing needs than more standard nudges. Thus, in Study 1, we compare preference checklists to a control condition as well as a standard nudge to test their relative efficacy *and* selectivity. In other words, we ask both how well preference checklists work on average and how well preference checklists respond to individuals' differing circumstances. In Study 2, we layer on an additional intervention: asking participants to complete a life expectancy calculator before the claiming decision.

Study 1

Previous research indicates that preference checklists are an effective intervention (Appelt et al., 2016). However, this research has focused on changes in means (i.e., the average impact) rather than variance (i.e., who is helped and by how much? who is harmed and by how much?). Thus, in Study 1, we investigate both the effectiveness of preference checklists *and* their selectivity.

Although the majority of Americans should delay claiming to maximize lifetime benefits (Burtless & Quinn, 2002; Coile, Diamond, Gruber, & Jousten, 2002), the optimal claiming age varies based on individual needs and preferences. Factors such as expected longevity, income, retirement savings, and job satisfaction and security have differing effects on optimal claiming age. For many of them, there is no consensus about if and how much they should affect claiming age; for example, exactly how dissatisfied with your current job should you be to retire early and claim reduced benefits? There is consensus, however, on the impact of one factor: life expectancy—the longer an individual is expected to live, the later she should claim benefits (up to the age of 70). Thus, we focus on the ideal claiming age based on expected longevity. In Study 1, we collect data from participants to estimate their ideal claiming age based on their life expectancy. We use this data to compare the efficacy and selectivity of preference checklists to both a control condition (i.e., retirement benefits information with no additional nudge) and a standard nudge—a default set at the oldest claiming age.

Methods

Studies 1 and 2 are *framed field studies*, a term coined by experimental economists Harrison and List (2004) to describe studies in which actual decision-makers make realistic decisions of high personal relevance using materials that are similar to the actual choice materials, but without experiencing the outcomes. Like true randomized control trials, framed field studies approximate the actual decision setting and sample from the relevant population. However, because they use hypothetical outcomes, framed field studies have additional advantages: numerous and novel conditions can be examined, results are obtained quickly, and detailed process data can be easily collected.

Similar methods are used in both studies. We explain the methodology in detail for Study 1 and then only describe differences in methodology for Study 2. Each study uses unique participants who have not participated in any of the other studies.

Participants

We use a web-based sample of Americans accessed via Amazon Mechanical Turk and compensated $1.50 for the 20-minute study. To ensure the benefit claiming decision is relevant to all participants, we screen potential participants based on age and benefit eligibility. Participants are invited to continue the study if they are: (1) between the ages of 45 years old and 65 years old, and (2) either already eligible or expecting to become eligible for SS retirement benefits.

Because Mechanical Turk is a convenience sample that tends to skew young, it is not surprising that only 17% of participants (N = 537) meet our screening criteria. Of these participants, 84% (N = 451) completed the study in good faith. This excludes 76 participants who did not complete the study and 10 participants who completed the study in less than two standard deviations from the mean completion time (i.e., spending under 9.5 minutes on a 20-minute study). The nature and magnitude of these exclusions are typical for online research. Excluding data from careless participants reduces noise but does not alter major trends or conclusions.

Procedure

Participants first complete the screening questionnaire that assesses their age and benefit eligibility. Then, after providing consent to participate, participants are asked to read typical SS retirement benefits information. They

are then randomly assigned to one of four conditions: a control condition (claiming decision), a default condition (claiming decision with a default set at the oldest claiming age), an early-first checklist condition (claiming decision is preceded by a checklist of eight reasons to claim benefits early and eight reasons to claim benefits later), and a later-first checklist condition (claiming decision is preceded by a checklist of eight reasons to claim benefits later and eight reasons to claim benefits early). After the claiming decision, participants complete a series of post-choice questionnaires to assess their choice experience and ascertain demographic information.

Retirement Benefits Information. In all conditions, participants are presented with a hypothetical SS retirement benefit claiming scenario developed as part of prior work (Knoll et al., 2015). The scenario asks participants to imagine that they are approaching retirement and are eligible for SS retirement benefits based on their previous years of work. Similar to information provided by the Social Security Administration, we use both text and a graph to explain how claiming benefits at different ages between 62 and 70 would affect the monthly benefit amount participants would receive for the rest of their lives. Benefits information is tailored to participants' cohort to reflect the increasing age at which beneficiaries receive full retirement benefits. This information is identical across all conditions. In the control and default conditions, participants read this scenario and then proceed directly to the claiming decision itself. In the two checklist conditions, participants complete the checklist task before proceeding to the claiming decision.

Preference Checklists. The preference checklists are constructed from the most frequently listed choice-relevant thoughts from prior work (Knoll et al., 2015; for a list of checklist items, see the Appendix). Participants are asked to read each checklist item and evaluate whether it is something they would consider when making the claiming decision. The checklist items are clustered into a group of eight reasons supporting claiming benefits early and a group of eight reasons supporting claiming benefits later. In the early-first checklist condition (i.e., the typical order in which people consider the decision), participants respond first to the eight reasons supporting claiming benefits early and then to the eight reasons supporting claiming benefits later. In the later-first checklist condition (i.e., the reverse or "consider the future first" order), participants respond first to the eight reasons supporting claiming benefits later and then to the eight reasons supporting claiming benefits early.

Hypothetical Claiming Decision. In all conditions, participants are asked to indicate at which age between 62 and 70 they would prefer to claim benefits. In the default condition, the oldest possible claiming age (i.e., age 70) is pre-selected. In the other three conditions, no option is pre-selected.

Post-Choice Questionnaires. In all conditions, participants complete a series of post-choice questionnaires. First, participants are asked to evaluate their choice experience: Participants rate how confident they are in their decision (1 = *not at all confident* to 7 = *very confident*), how difficult the decision was (1 = *very easy* to 7 = *very difficult*, reverse-scored), how much control they felt they had over the decision (1 = *no control* to 7 = *complete control*), how satisfied they would be with their choice if it became their actual claiming age (1 = *not at all satisfied* to 7 = *completely satisfied*), and how satisfied they were with the decision process (1 = *not at all satisfied* to 7 = *completely satisfied*).

Next participants complete an expanded set of demographics. This includes standard demographics, such as income and education, and additional measures, such as retirement savings, perceived longevity risk (i.e., the perceived risk of outliving retirement savings; 1 = *extremely unlikely* to 7 = *extremely likely*), perceived current health (1 = *poor* to 5 = *excellent*; adapted from the Health and Retirement Study (NIA, 2007)), job satisfaction (1 = *very dissatisfied* to 7 = *very satisfied*), and perceived job security (i.e., how much they worry about losing their job, getting demoted, or having their pay cut; 1 = *not at all* to 7 = *very much*). This section also includes the set of questions needed to estimate longevity using a short-form life expectancy calculator recommended for financial decision-making (Ungar & Foster, n.d.). The additional questions asked are gender, marital status, race, cigarette use, seatbelt use, annual car mileage, and exercise frequency. Finally, to estimate participants' own self-generated life expectancies, we use measures developed in prior research to assess subjective life expectancy (Payne, Sagara, Shu, Appelt, & Johnson, 2013); namely, participants are asked to report the chance that they will live to three ages – ages 75, 85, and 95 (e.g., "What do you think is the percent chance that you will live to be 75 or more?").

Results

Efficacy

Intervention Efficacy. We first compare the relative strength of the different interventions. As shown in Figure 1, participants in the later-first checklist condition (M = 67.78, SD = 2.41) prefer to claim later than participants in the control condition (M = 66.21, SD = 2.69). Replicating the default effect, participants in the default condition (M = 66.95, SD = 2.89) also prefer to claim later than participants in the control condition; importantly, however, they prefer to claim earlier than participants in the later-first checklist condition, indicating that the later-first checklist is a stronger intervention. Participants in the early-first checklist condition (M = 66.29, SD = 3.07) prefer to claim at roughly the same age as participants in the control condition, confirming that the early-first checklist procedure is analogous to the procedure decision-makers typically use when faced with this choice. A between-subjects ANOVA with four levels confirms that condition is a highly significant predictor of preferred claiming age, $F(3, 447) = 7.92$, $p < .001$, $\eta_p^2 = .05$. Pairwise comparisons confirm that participants in the later-first checklist condition prefer to claim significantly later than participants in the control, early-first checklist, and default conditions, $t(208.8) = 4.57$, $p < .001$; $t(232) = 4.13$, $p < .001$; and $t(218.5) = 2.38$, $p = .02$, respectively. Compared to typical decision information alone and compared to a popular nudge (i.e., a default), considering the future first is more effective at encouraging decision-makers to claim benefits later.

Interventions vs. Normative Predictors. We conduct a between-subjects ANCOVA with condition as a predictor and normative predictors as covariates. As shown in Table 1, condition remains a strong predictor of preferred claiming age, even compared to traditional economic factors, such as eligibility, education, wealth, perceived longevity risk, perceived health, job satisfaction, and job security. Replicating previous work, participants who are not yet eligible for benefits plan to claim benefits later than participants who are already eligible (Knoll et al., 2015). In line with economic theory, participants who are married, have higher current income, and are more satisfied with their job prefer to claim later as well.

Figure 1. Average Preferred Claiming Age, by condition, Study 1
Error bars represent one standard error.

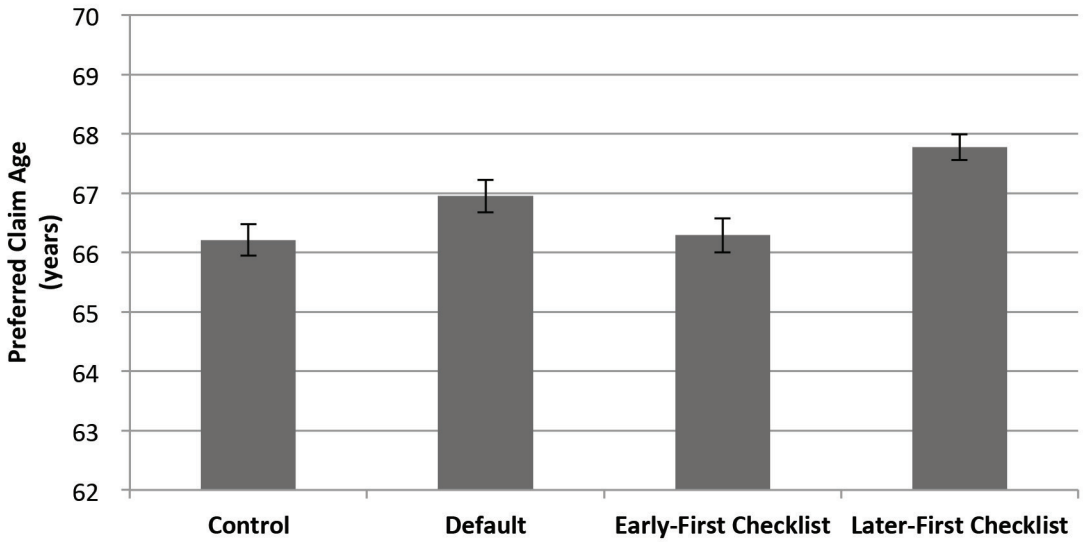


Table 1. Predictors of Preferred Claiming Age, Study 1

	Preferred claiming age[a]	
Predictor	**B[b]**	**SE[b]**
Constant	66.78***	0.38
Early-first checklist condition	0.14	0.37
Default condition	0.64 †	0.37
Later-first checklist condition	1.53***	0.37
Eligibility (dummy coded)	-0.84**	0.28
Female (dummy coded)	0.09	0.27
Married or living together (dummy coded)	-0.59*	0.27
Standardized education	0.07	0.14
Standardized household income	0.42**	0.16
Standardized retirement savings	-0.18	0.17
Standardized perceived longevity risk	0.25	0.16
Standardized perceived health	0.00	0.14
Standardized job satisfaction	0.40**	0.14
Standardized job security	-0.06	0.14

Note. The dependent variable is preferred claiming age (62-70).
[a] N = 451. [b] Parameter estimates from an ANCOVA
† p < .10, * p < .05, ** p < .01, *** p < .001

Selectivity

Intervention Selectivity. We next compare the interventions on selectivity—to what extent do they nudge individuals in the right direction for their circumstances? To look at this, we need to determine the age at which individuals should claim, which is influenced by person-specific factors such as expected longevity, income and savings, and job satisfaction and security. As discussed above, life expectancy is the only factor for which there is a consensus on how it should affect claiming age; we, therefore, focus our analyses on the ideal claiming age based on expected longevity.

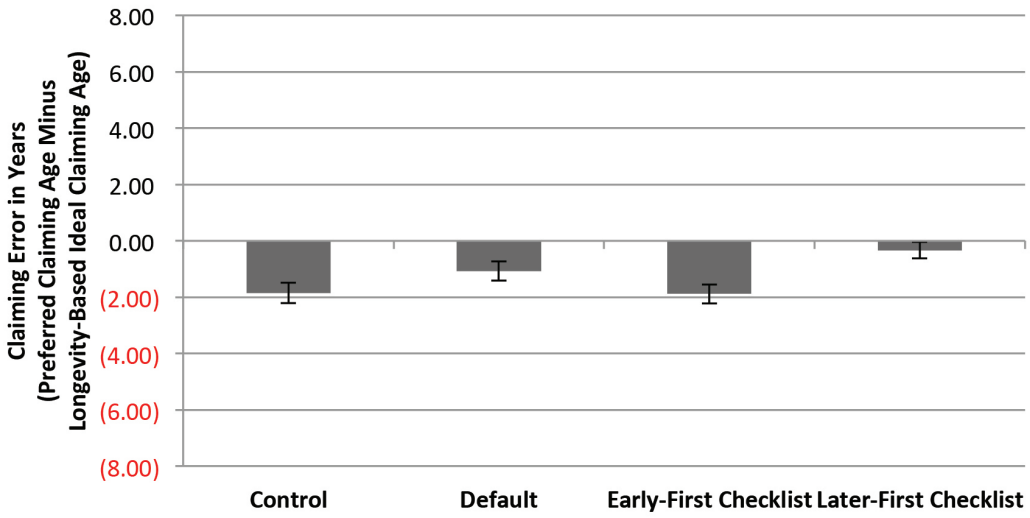
We calculate the longevity-based ideal claiming age for a given individual using the following information: (1) Full Retirement Age (FRA): We use participants' year of birth to determine their FRA (i.e., the age at which they would receive full benefits) and we round this to the nearest whole year of age (i.e., 66 or 67); (2) Benefit at FRA: We use the average expected full benefit at FRA for the cohort of Americans aged 45 to 65 years old who either are eligible or are projected to become eligible for SS retirement benefits (Smith et al., 2010); and (3) Life expectancy: We use participants' answers to a standard set of questions to calculate their estimated longevity using a short-form life expectancy calculator recommended for financial decision-making (Ungar & Foster, n.d.).

Based on the first two calculations and the standard SS rules for reducing benefits for claiming early (SSA, 2008) and increasing benefits for claiming late (SSA, n.d.), we calculate the monthly benefit participants would receive if they claimed at each age between 62 and 70. For example, a participant with FRA of 66 and full benefit at FRA of $1,744 would receive a monthly benefit of $1,308 if she claimed at age 62 and a monthly benefit of $2,302 if she claimed at age 70. Using the calculated longevity estimate, we calculate the lifetime benefit participants would receive if they claimed at each age between 62 and 70. For example, if the same participant has a life expectancy of 100, she would receive a lifetime benefit of $596,334 if she claimed at age 62 and a lifetime benefit of $828,590 if she claimed at age 70. We then identify the age associated with the maximum lifetime benefit (in this case, age 70) and set this to be the longevity-based ideal claiming age for the individual. Lastly, we subtract participants' longevity-based ideal claiming age

from their preferred claiming age to measure the size of their error. Using this measure, negative numbers indicate participants prefer to claim before the longevity-based ideal claiming age (i.e., earlier than optimal); positive numbers indicate participants prefer to claim after the longevity-based ideal claiming age (i.e., later than optimal).

We evaluate the selectivity of the different interventions by comparing the size of this error: If an intervention shows selectivity, more participants will prefer to claim closer to their longevity-based ideal claiming age and their errors will be smaller. First as shown in Figure 2, participants on average claim too early. However, participants in the later-first checklist condition (M = -0.33, SD = 3.15) prefer to claim closer to their longevity-based ideal claiming age than participants in the control condition (M = -1.85, SD = 3.69), the early-first checklist condition (M = -1.88, SD = 3.65), and the default condition (M = -1.07, SD = 3.57). A between-subjects ANOVA with four levels confirms that condition is a significant predictor of preferred claiming age, $F(3, 445) = 5.04$, $p = .002$, $\eta_p^2 = .03$. (Note that two participants are excluded from this analysis because the Unger and Foster's (n.d.) life expectancy calculator timed out and failed to estimate their expected longevity.) Pairwise comparisons confirm that participants in the later-first checklist condition produce a significantly smaller error than participants in the control and early-first checklist conditions and a non-significantly smaller error than participants in the default condition, $t(203.9) = 3.28$, $p = .001$; $t(220.2) = 3.45$, $p = .001$; and $t(222.0) = 1.67$, $p = .1$, respectively. Considering the future first tends to have a more selective effect—it minimizes the difference between when participants *should* claim benefits based on their life expectancy and when they *prefer* to claim benefits.

Figure 2. Average Claiming Error in Years, by condition, Study 1



Negative numbers indicate claiming before the longevity-based ideal claiming age (i.e., earlier than optimal); positive numbers indicate claiming after the longevity-based ideal claiming age (i.e., later than optimal). Error bars represent one standard error.

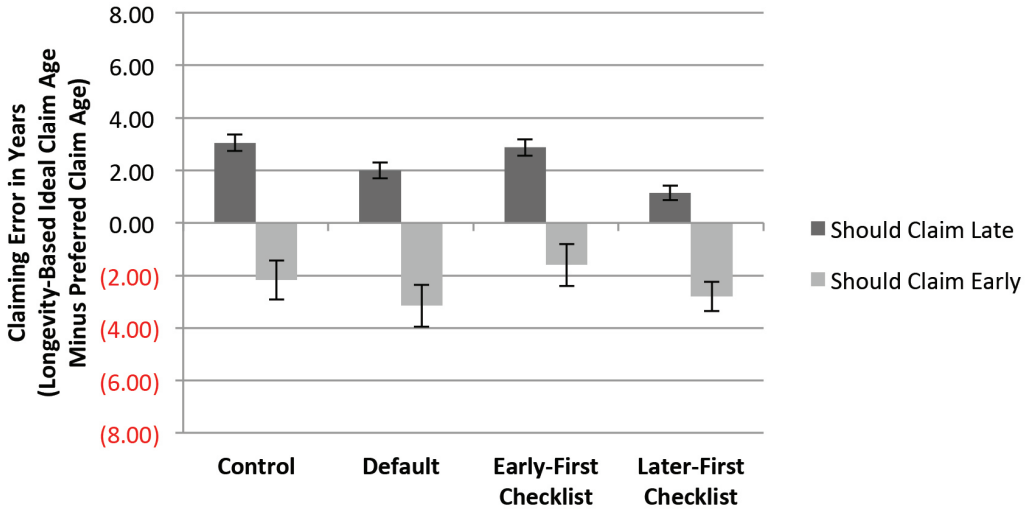
Intervention Selectivity in Different Sub-Groups. Across all participants, there is an indication that considering the future first works more selectively than other interventions. Another way to look at this question is to analyze separately individuals who would benefit from claiming late and individuals who would benefit from claiming early. In other words, according to their longevity-based ideal claiming age, some individuals should claim their benefits early (i.e., before reaching their full retirement age), whereas other individuals should claim their benefits later (i.e., after reaching their full retirement age). For people who should claim late, we expect a replication of the results for the overall sample. For people who should claim early, we expect the early-first checklist to be the most effective intervention; however, if the later-first checklist is more selective than a standard nudge, we expect the size of the error to be smaller for the later-first checklist condition than the default.

Among participants who should claim later (N = 355), participants in the later-first checklist condition (M = -1.15, SD = 2.70) prefer to claim closer to their longevity-based ideal claiming age than participants in the control condition (M = -3.05, SD = 2.74), the early-first checklist condition (M = -2.87, SD = 2.85), and the default condition (M = -1.99, SD = 2.85), as shown in Figure 3. A between-subjects ANOVA with four levels confirms that condition is a highly significant predictor of preferred claiming age, $F(3, 351) = 8.92$, $p < .001$, $\eta_p^2 = .07$. Pairwise comparisons confirm that participants in the later-first checklist condition produce smaller errors than participants in the control, early-first checklist, and default conditions, $t(167.6) = 4.62$, $p < .001$; $t(176.9) = 4.20$, $p < .001$; and $t(184.3) = 2.08$, $p = .04$, respectively.

Among participants who should claim early (N = 94), participants in the early-first checklist condition (M = 1.60, SD = 4.02) prefer to claim closest to their longevity-based ideal claiming age, even compared to participants in the control condition (M = 2.17, SD = 3.67). As expected, participants in the later-first checklist condition (M = 2.80, SD = 2.81) prefer to claim closer to their longevity-based ideal claiming age than participants in the default condition (M = 3.15, SD = 3.56). However, a between-subjects ANOVA with four levels finds that condition is not a significant predictor of preferred claiming age, $F(3, 90) = 0.87$, $p = .5$, $\eta_p^2 = .03$. It should be noted that participants who should claim early are a much smaller subgroup (N = 94, versus N = 355 for participants who should claim late) and the analysis likely lacks sufficient power.

These results indicate that considering the future first is not perfectly selective and it does nudge some people to claim later than they should. This is especially the case among people who should claim early due to a shorter life expectancy. However, it is worth noting that, even among this group, considering the future first is no worse than the default and may even produce a smaller error. Certainly providing the right checklist to the right person reduces errors: The two groups with the smallest errors are those who are matched to the correct checklist for their circumstances (i.e., participants who should claim early and are shown the early-first checklist and participants who should claim later and are shown the later-first checklist). Thus, preference checklists may be a more selective choice architecture intervention than a default.

Figure 3. Average Claiming Error in Years, by condition and by group, Study 1



Negative numbers indicate claiming before the longevity-based ideal claiming age (i.e., earlier than optimal); positive numbers indicate claiming after the longevity-based ideal claiming age (i.e., later than optimal). Error bars represent one standard error.

Perceived Impact

We investigate how the different interventions impact participants' choice experiences. We create a choice experience measure from the average of the standardized ratings of decision confidence, decision ease, perceived control, process satisfaction, and outcome satisfaction (Cronbach's $\alpha = .8$). Replicating work in other contexts, such as health insurance choice (Appelt, Gao, Johnson, & von Glahn, 2015), a between-subjects ANOVA shows no effect of condition, $F(3, 447) = 1.94$, $p = .1$, $\eta_p^2 = .01$. Participants do not report differences in their choice experience (i.e., how confident they feel about their decision, how easy they feel the decision is, how much control they feel they have over the decision, and how satisfied they feel with the decision process and outcome) based on condition, even though there are measurable differences in the decision outcomes.

Life Expectancy

As outlined above, life expectancy is one of the most important determinants of when people should claim their benefits. Unfortunately, life expectancy is also extremely difficult to calculate with any certainty. In Study 1, we do not provide participants with an estimate of how long they might expect to live (i.e., they are not given the calculated estimates of life expectancy from Ungar and Foster's (n.d.) short-form life expectancy calculator). Instead, we explore participants' own self-generated estimates of how long they expect to live. Specifically, we investigate whether participants consider how long they expect to live when deciding when to claim benefits and the accuracy of these self-generated estimates.

For these analyses, we create a single comprehensive measure of self-generated life expectancy for each participant using a Weibull estimation procedure. Specifically, for each participant, we estimate a set of Weibull parameters based on the participant's current age and their responses to the subjective life expectancy questions; we then estimate a mean self-generated life expectancy estimate for each participant that represents the age at which the participant believes they have a 50% chance of being alive (for a detailed description of the Weibull procedure, see Payne et al., 2013).

As expected, participants incorporate their self-generated life expectancy estimates in their claiming decision, but do not incorporate the calculated life expectancy estimates (which they do not see). Adding these estimates as covariates to the ANCOVA in Table 1, self-generated life expectancy

estimates are a highly significant predictor of claiming age, whereas calculated life expectancy estimates are not significant, $B = .05$, $SE = .01$, $p < .001$, and $B = .00$, $SE = .04$, $p = 1.0$, respectively.

Unfortunately, evidence about participants' ability to accurately estimate their life expectancy is mixed. Although the self-generated estimates match up well with the calculated estimates on average ($M_{\text{self-generated life expectancy}} = 83.52$ vs. $M_{\text{calculated life expectancy}} = 83.44$), the self-generated estimates show an implausibly wide range ($Range_{\text{self-generated life expectancy}} = 53$ to 121 vs. $Range_{\text{calculated life expectancy}} = 73$ to 94). They are also only modestly correlated with the calculated life expectancy estimates ($r = .19$, $p < .001$). Of course, the accuracy of life expectancy estimates can only be determined definitively after the fact (i.e., once the person is deceased). It is plausible that some participants have relevant private information (e.g., current health, family history, etc.) that may improve the accuracy of their self-generated life expectancy estimates over those of a short calculator that does not exhaustively query personal history. However, given the implausible range of ages in the self-generated estimates, it seems likely that many participants, whether or not they have relevant private information, produce inaccurate estimates of their life expectancy. Combining these results, Study 1 suggests that many participants may produce flawed estimates of how long they expect to live and then use this faulty information when considering the claiming decision.

Discussion

A preference checklist intervention successfully influences retirement benefit claiming preferences. We ask participants to consider the future first by perusing a checklist composed of reasons to claim benefits later followed by reasons to claim benefits early. This later-first checklist encourages older Americans to delay preferred Social Security retirement benefit claiming by roughly 18 months compared to a control condition, and even by 10 months compared to a condition with a default set at the oldest claiming age. It also reduces the gap between when older Americans *should* claim Social Security retirement benefits (based on their expected longevity) and when they *actually prefer* to claim these benefits, by 82% compared to a control condition and by 70% compared to the default condition. Thus, compared to a standard nudge, the later-first checklist is both more effective (has a larger average effect) and more selective (responds more to individual circumstances). Additionally, the different choice architecture interventions have a stronger and more significant effect on preferred benefit claiming age than traditional economic factors, such as eligibility, education, wealth, perceived longevity risk, perceived health, job satisfaction, and job security. Interestingly, yet not uncommonly, participants do not perceive any noticeable differences in their choice experience, despite the measurable impacts of the choice architecture interventions on claiming age. Finally, even in the absence of a calculated life expectancy estimate, some participants attempt to consider life expectancy making their claiming decision. However, these self-generated estimates are often inaccurate and may, therefore, bias the claiming decision. In Study 2, we provide participants with the calculated life expectancy estimate and encourage them to consider it as part of the claiming decision.

Study 2

In Study 1, we do not provide calculated life expectancy estimates for participants considering when to claim SS retirement benefits. Participants either make the claiming decision without considering this key piece of information or with their own self-generated estimates, which are often unreliable. In Study 2, we ask participants to complete Ungar and Foster's (n.d.) short-form life expectancy calculator prior to the claiming decision. In three conditions, we provide participants with their calculated life expectancy estimate and encourage them to use this information when considering the age at which they prefer to claim benefits. To explore how this information affects the claiming decision, we compare a control condition, a default condition, a calculated estimate condition, and two checklist plus calculated estimate conditions.

Methods

Participants

Participants are recruited from the same online panel and meet the same and benefit eligibility requirements as in Study 1. Similar to Study 1, 16% of participants (N = 598) meet the screening criteria. Of these participants, 80% (N = 479) completed the study in good faith. This excludes 107 participants who did not complete the study and 12 participants who completed the study in less than two standard deviations from the mean completion time (i.e., spending under 6.5 minutes on a 15-minute study). As in Study 1, the nature and magnitude of these exclusions are

typical for online research; excluding data from careless participants reduces noise but does not alter major trends or conclusions.

Procedure

The procedure is the same as in Study 1, except that: (1) the short-form life expectancy calculator precedes the typical SS retirement benefits information (rather than being included in the expanded demographics questionnaire at the end of the study); (2) after reading the typical SS retirement benefits information, participants are randomly assigned to one of *five* conditions: a control condition (unaltered from Study 1), a life expectancy condition (new to Study 2), a default condition (unaltered from Study 1), an early-first checklist plus life expectancy condition (early-first checklist condition from Study 1 modified to include the calculated life expectancy estimate), and a later-first checklist plus life expectancy condition (later-first checklist condition from Study 1 modified to include the calculated life expectancy estimate); and (3) the post-choice questionnaires are modified to exclude the short-form life expectancy calculator.

Life expectancy. In the life expectancy condition, early-first checklist plus life expectancy condition, and later-first checklist plus life expectancy condition, we use the short-form life expectancy calculator (Ungar & Foster, n.d.) described in Study 1 to estimate the 50th percentile age (i.e., the age at which participants have a 50% chance of being alive or deceased).

In the life expectancy condition, after reading the retirement benefits information, participants read that, "There is a 50% chance that you will live past age {calculated 50th percentile age}. (Note: The life expectancy calculator produced this personalized estimate based on your age, gender, race, marital status, and smoking, exercise, and driving habits.)". They then proceed to the claiming decision.

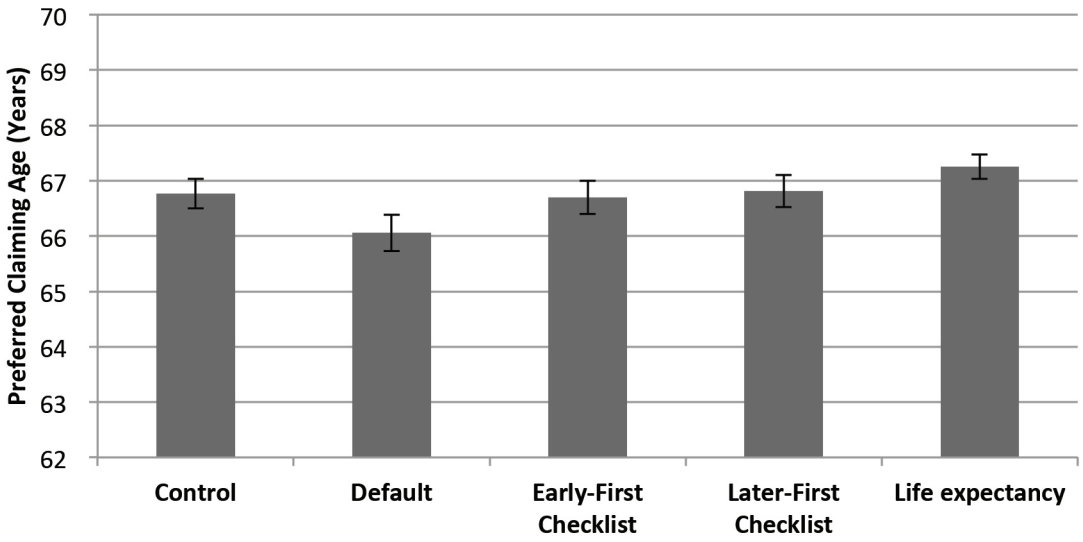
In the checklist conditions, after reading the SS retirement benefits information, participants proceed to the preference checklists, as in Study 1. However, in Study 2, the first checklist item is about their life expectancy (for a list of checklist items, see the Appendix). Previous research indicates that life expectancy is a constructed (rather than stored) belief and is, therefore, susceptible to framing (Payne et al., 2013); specifically, "live to" framing leads to longer life expectancies than "die by" framing. Capitalizing on this research, we use different frames in the two checklist conditions to make the life expectancy information consistent with each checklist: Because "die by" frames are associated with shorter life expectancies, we use this frame ("There is a 50% chance that I will die by age {calculated 50th percentile age}. (Note: The life expectancy calculator produced this personalized estimate based on your age, gender, race, marital status, and smoking, exercise, and driving habits.)") in the early-first checklist as part of the set of reasons supporting claiming benefits early. Complementarily, because "live to" frames are associated with longer life expectancies, we use this frame ("There is a 50% chance that I will live past age {calculated 50th percentile age}. (Note: The life expectancy calculator produced this personalized estimate based on your age, gender, race, marital status, and smoking, exercise, and driving habits.)") in the later-first checklist as part of the set of reasons supporting claiming benefits later. The remaining checklist items are unchanged and, after responding to the checklists, participants in these conditions proceed to the claiming decision.

Results

Efficacy

We first compare the relative strength of the different interventions. As shown in Figure 4, participants in the later-first checklist condition (M = 66.81, SD = 2.91) prefer to claim later than participants in the control condition (M = 66.77, SD = 2.67), the default condition (M = 66.06, SD = 3.00), and the early-first checklist condition (M = 66.70, SD = 2.86). Participants in the life expectancy condition prefer to claim latest (M = 67.25, SD = 2.36). However, a between-subjects ANOVA with five levels indicates that condition is not a significant predictor of preferred claiming age, $F(4, 474) = 16.89$, $p > .05$, $\eta_p^2 = .02$.

Figure 4. Average Preferred Claiming Age, by condition, Study 2
Error bars represent one standard error.



It is important to note that participants are presented with their calculated life expectancy estimate in only three conditions: the life expectancy condition, the early-first checklist plus life expectancy condition, and the later-first checklist plus life expectancy condition. However, in all five conditions, participants complete the life expectancy calculator questions immediately prior to reading the retirement benefits information and considering the claiming decision. Thus, in all conditions, participants are cued to consider life expectancy and this seems to impact their claiming decision. In fact, the life expectancy calculator questions may function as an informal checklist (albeit one that emphasizes the importance of longevity to the exclusion of other relevant concerns) and this may have the unintended consequence of nullifying the effects of the other interventions.

As shown in Table 2, a between-subjects ANCOVA with condition as a predictor and normative predictors as covariates indicates that traditional economic factors are significant predictors of preferred claiming age. This indicates that, although the interventions are not significant, participants completed the claiming decision in good faith. Replicating Study 1 and previous work, participants who are not yet eligible for benefits plan to claim benefits later than participants who are already eligible (Knoll et al., 2015). In line with economic theory, participants who have higher current income, higher education, better health, and greater job security prefer to claim later as well. Interestingly, participants with higher retirement savings prefer to claim earlier.

Table 2. Predictors of Preferred Claiming Age, Study 2

	Preferred claiming age[a]	
Predictor	**B[b]**	**SE[b]**
Constant	66.80***	0.39
Early-first checklist condition	-0.61	0.40
Default condition	-0.05	0.40
Later-first checklist condition	-0.03	0.38
Life expectancy condition	0.47	0.37
Eligibility (dummy coded)	-0.65*	0.27
Female (dummy coded)	0.31	0.26
Married or living together (dummy coded)	-0.06	0.27
Standardized education	0.26†	0.13
Standardized household income	0.57***	0.15
Standardized retirement savings	-0.42*	0.17
Standardized perceived longevity risk	0.27	0.15
Standardized perceived health	0.23†	0.13
Standardized job satisfaction	0.10	0.13
Standardized job security	-0.30*	0.13

Note. The dependent variable is preferred claiming age (62-70).
[a] N = 479. [b] Parameter estimates from an ANCOVA
† p < .10, * p < .05, ** p < .01, *** p < .001

Selectivity

As in Study 1, we next compare the interventions on selectivity using the longevity-based ideal claiming age to measure the size of participants' error. Not surprising given the minimal differences in claiming age by condition, the effects of condition are not significant. A between-subjects ANOVA with five levels confirms that condition is not a significant predictor of preferred claiming age, $F(4, 474) = 1.51$, $p > .05$, $\eta_p^2 = .01$.

Perceived Impact

Next we investigate how the different interventions impact participants' choice experiences. As in Study 1, we create a choice experience measure from the average of the standardized ratings of decision confidence, decision ease, perceived control, process satisfaction, and outcome satisfaction (Cronbach's $\alpha = .8$). A between-subjects ANOVA shows no effect of condition, $F(4, 474) = 0.38$, $p > .05$, $\eta_p^2 = .01$. Participants do not report differences in their choice experience (i.e., how confident they feel about their decision, how easy they feel the decision is, how much control they feel they have over the decision, and how satisfied they feel with the decision process and outcome) based on condition. This is less surprising in this study where the interventions do not significantly impact choice.

Life Expectancy

Unexpectedly, participants do not seem to use either their self-generated life expectancy estimates or the calculated life expectancy estimates in their claiming decision. Adding these estimates as covariates to an ANCOVA like the model in Table 1, neither self-generated life expectancy estimates nor calculated life expectancy estimates are significant, *p*s > .05.

Once again, evidence about the accuracy of the self-generated life expectancy estimates is mixed. Although the self-generated estimates match up well with the calculated estimates on average ($M_{\text{self-generated life expectancy}} = 84.64$ vs. $M_{\text{calculated life expectancy}} = 83.27$), the self-generated estimates show an implausibly wide range ($Range_{\text{self-generated life expectancy}} =$ 55 to 120 vs. $Range_{\text{calculated life expectancy}} = 74$ to 95). They are moderately correlated with the calculated life expectancy

estimates (r = .25, p < .001). Importantly, there is a difference by condition: in the conditions where participants are given the calculated estimate of their life expectancy (i.e., the life expectancy condition, the early-first checklist plus life expectancy condition, and the later-first checklist plus life expectancy condition), their later self-generated estimates are more strongly correlated with the calculated estimate (r = .35, p < .001) than in the conditions where participants are not given the calculated estimate (i.e., the control condition and the default condition) (r = .09, p > .05). This indicates that participants are using the calculated estimates when producing their self-generated estimates. This also provides further support for the claim that life expectancy estimates are constructed rather than stored (Payne et al., 2013) and underscores the importance of helping participants with difficult calculations and decisions.

Discussion

In Study 2, including a life expectancy calculator immediately preceding the claiming decision overwhelms other interventions that have previously been successful in Study 1 and prior research (Appelt et al., 2016; Knoll et al., 2015). We speculate that the life expectancy calculator questions may function as an informal checklist and this may obscure the effects of the other interventions. This finding underscores the importance of choice architecture and the need for additional research investigating the impact of measuring life expectancy and revealing calculated life expectancy estimates.

General Discussion

There is growing evidence that behavioral economics approaches can substantially improve financial outcomes for important decisions, like Social Security retirement benefit claiming (e.g., Knoll et al., 2015; Brown et al., 2011; Liebman & Luttmer, 2009). However, there is also concern that these approaches may ignore individual circumstances and preferences and nudge everyone in the same direction. This is an especially valid concern for retirement benefit claiming, where person-specific factors such as life expectancy mean that some individuals should claim late, but other individuals should claim early. The current research offers hope that not all choice architecture interventions are blunt tools. Compared to defaults, preference checklists may work as a more selective tool that has the biggest impact on those who would benefit most.

However, this research also shows that preference checklists are not perfectly selective: Among people who should claim early, the later-first checklist encourages some people to claim later than they should (although not significantly later than they would claim if presented with typical SS-provided retirement benefits information). This suggests that a further improvement would be the development of a "smart," dynamic tool that responds to individuals' circumstances to provide a tailored nudge. For example, someone with a shorter life expectancy might complete the assessment and be presented with the early-first checklist to guide them toward an appropriate early claiming age, whereas someone with a longer life expectancy might complete the assessment and be presented with the later-first checklist to guide them toward an appropriate later claiming age. Although this tool might initially focus on life expectancy due to its clear and measurable effect on the financially optimal claiming age, it could also incorporate additional considerations, such as income, retirement savings, job satisfaction, and job security.

This research also highlights the impact of choice architecture; small changes to wording or ordering can have large effects because, even for important decisions, preferences are often constructed and malleable rather than stored and stable. Additional research is needed to further investigate the impact of measuring life expectancy (before and after important choices) and revealing calculated life expectancy estimates (before and after important choices). This research will be particularly important given the plethora of online life expectancy calculators and the tendency to couple them with retirement decision tools, such as retirement benefits information. Although life expectancy calculators are generally provided with the intention of helping consumers make more informed decisions, these calculators may have unintended consequences, such as interacting with and even overwhelming carefully designed interventions.

Given the importance of SS retirement benefits to most Americans' retirement portfolios, guiding individuals toward the claiming age that best fits their needs would have a significant impact on the financial security of the millions of Americans retiring over the next decade. More generally, the techniques underlying customizable choice architecture (i.e., developing a "smart," dynamic architecture that adapts to individuals' needs and guides them toward the most appropriate choice, rather than a one-size-fits-all answer) could easily be applied to other contexts where consumers struggle to make the right choice, such as saving for retirement, allocating a limited budget, choosing a health insurance plan, et cetera.

Appendix

Preference Checklist Items, Study 1

Items supporting claiming benefits early	Items supporting claiming benefits later
I want to collect benefits as soon as possible because Social Security may run out of money soon.	Since people usually need more money to spend on medical bills as they get older, I'll delay claiming as long as possible—that way I'll have more money when I'll probably need it most.
I don't want to have to work until I'm old—I want to enjoy some non-work time with friends and family.	I will probably work part-time as the years go on—that way I can put off collecting my benefits.
My family does not have a history of living long, so I don't expect to live a long time either.	My family has a history of living long, so I expect to live a long time too—I wouldn't want to run out of money when I'm old.
I don't like my job anymore, so claiming benefits now would let me leave that bad situation.	I want to work as long as I physically can—only health problems would stop me from working.
Instead of waiting until 70 years old to get the highest benefits, it is best to claim early and invest the money.	As long as I am doing something I really like, I want to keep working past my full retirement age.
Waiting to claim benefits does not increase the check that much, so it's not worth waiting.	Social Security is the best annuity out there, and waiting longer to collect gets you more money and makes it even better.
A lot of my friends and peers have already retired and claimed benefits.	I've been paying into Social Security my whole life, and now I want to get as much money back as possible.
Due to the economy and scarcity of jobs, I might be forced to start collecting early.	I am comfortable with my current income level, so I can afford to delay claiming as long as possible.

Preference Checklist Items, Study 2

Items supporting claiming benefits early	Items supporting claiming benefits later
There is a 50% chance that I will die by age {LifeExpResult50}. (Note: The life expectancy calculator produced this personalized estimate based on your age, gender, race, marital status, and smoking, exercise, and driving habits.)*	There is a 50% chance that I will live past age {LifeExpResult50}. (Note: The life expectancy calculator produced this personalized estimate based on your age, gender, race, marital status, and smoking, exercise, and driving habits.)*
I want to collect benefits as soon as possible because Social Security may run out of money soon.	Since people usually need more money to spend on medical bills as they get older, I'll delay claiming as long as possible—that way I'll have more money when I'll probably need it most.
I don't want to have to work until I'm old—I want to enjoy some non-work time with friends and family.	I will probably work part-time as the years go on—that way I can put off collecting my benefits.
My family does not have a history of living long, so I don't expect to live a long time either.	My family has a history of living long, so I expect to live a long time too—I wouldn't want to run out of money when I'm old.
I don't like my job anymore, so claiming benefits now would let me leave that bad situation.	I want to work as long as I physically can—only health problems would stop me from working.
Instead of waiting until 70 years old to get the highest benefits, it is best to claim early and invest the money.	As long as I am doing something I really like, I want to keep working past my full retirement age.
Waiting to claim benefits does not increase the check that much, so it's not worth waiting.	Social Security is the best annuity out there, and waiting longer to collect gets you more money and makes it even better.
A lot of my friends and peers have already retired and claimed benefits.	I've been paying into Social Security my whole life, and now I want to get as much money back as possible.
Due to the economy and scarcity of jobs, I might be forced to start collecting early.	I am comfortable with my current income level, so I can afford to delay claiming as long as possible.

*Note: The "die by" item appeared only in the early-first checklist condition, whereas the "live to" item appeared only in the later-first checklist condition. All other items are the same as in Study 1.

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