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Framing the Annuity as Bequest Protection: An Experimental Test

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Abstract

Bequest motives are commonly cited as a barrier for annuitization. This paper tests how framing partial annuitization as a protection for an intended bequest against the risk of asset exhaustion due to unexpected longevity influences the desire to purchase an annuity among a sample of 2,160 participants. The results indicate that this framing argument does increase interest in purchasing an annuity. Regression results demonstrate that this framing has a larger positive effect for individuals with a greater bequest motive. The relationship between annuitization framing and bequest motive demonstrated by this experiment has important practical and theoretical implications. © 2021 Academy of Financial Services. All rights reserved.

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1. Introduction

Longevity risk is a risk that a person lives longer than expected and has insufficient wealth to support his or her planned consumption expenditures. A life annuity is an insurance instrument that converts wealth into a lifetime income stream. It can insure people against longevity risk and can serve as a valuable part of retirees' investment portfolios (Lockwood, 2012). However, relatively few people annuitize any of their wealth

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(Peijnenburg et al., 2016). Franco Modigliani (1986) referenced this "annuity puzzle" in his Nobel Prize acceptance speech and indicated that there are substantial reasons for people to annuitize at least part of their wealth.

Bequest motives are a common explanation for this annuity puzzle. Annuity benefits will end at the death of the annuitants; therefore, they are not bequeathable wealth. Economists and researchers indicate that this non-bequeathable characteristic may potentially reduce or even eliminate the desire for annuitization (Bernheim, 1991; Bütler & Teppa, 2007; Yaari, 1965). Bequest motives, or proxies for such, have been measured in a variety of ways such as the presence of children, bequest expectations, or the self-reported importance of leaving a bequest. Typically, researchers do find a negative association between a bequest motive and purchasing a life annuity (Bernheim, 1991; Bütler & Teppa, 2007; Yaari, 1965).

This paper examines the effects of framing an annuity as bequest protection on intentions to purchase an annuity and how these effects are impacted by the bequest motive. The estimations of regression models show that framing the annuity as an inheritance protection did increase interest in using an annuity. Further, it did so to a much stronger degree for people who first reported having a relatively higher bequest motive. This was true both when measured as the change in estimated numerical probability of using an annuity (multiple linear regression model) and when measuring the binary outcome of whether or not interest in an annuity increased (probit regression model). The increase in the interest in annuitization grew more strongly for those with a higher bequest motive, even when controlling for other factors such as the personal longevity estimations, education, income, age, and gender. A higher bequest motive leads to a greater impact from bequest protection framing of an annuity.

2. Literature review

2.1. The annuity puzzle

People face significant longevity risk in the United States (Lockwood, 2012) in part due to generally increasing life expectancy (Knell, 2018). According to data from the World Bank, the average U.S. life expectancy for males increased from 46.3 to 79 between 1900 and 2018 and the average life expectancy for females increased from 48.3 to 84 between 1900 and 2018 (The World Bank, 2019). About one-fifth of 65-years-olds will live to age 90 and beyond (Lockwood, 2018). Therefore, retirees should be increasingly concerned about the need to hedge longevity risk.

The economic literature provides theoretical and empirical evidence that life annuities bring substantial welfare improvements to retirees (Cox & Lin, 2007; Scott, 2008). An immediate annuity can bring a lifetime income stream for retirees and help them maximize retirement spending (Scott, 2008). Moreover, Scott (2008) suggests partial annuitization should be an optimal strategy for typical retirees and recommends that retirees convert 10-15% of wealth to a life annuity in the retirement period.

However, few retirees annuitize any of their wealth. Among people who are eligible for defined benefit pension plans, a form of an annuity, when the plans offer a lump-sum option, about 50% to 75% of these benefits are taken as a lump-sum (Banerjee, 2013). This is true

even if the lifetime benefit is the default option and retirees have to spend great time on complex paperwork to get the lump-sum distribution (Banerjee, 2013; Benartzi, Previtero, & Thaler, 2011; Mottola & Utkus, 2008). Williams and James (2019) found that only 4% of retirees were receiving income from a commercial annuity other than traditional pension plans. Thus, the propensity to annuitize is low in the United States (Peijnenburg et al., 2016). Unwillingness to annuitize is not a unique behavior for Americans. For example, an analysis using Japanese data also reports similarly low propensity to voluntarily annuitize wealth (Purcal & Piggott, 2008). This widespread resistance to annuitization is known as the "annuitization puzzle" (Modigliani, 1986). In other words, annuities are underutilized.

2.2. Bequest motives

Researchers have used various explanations for this annuitization puzzle. The low demand could result from the public pension system. Retirees may have sufficiently hedged the longevity risk with annuities provided by the public pension system, such as Social Security (Brown, 2001, 2003). Others argue that the annuity market is not actuarially fair (Brown & Poterba, 2000; Donnelly, 2015; Lockwood, 2012; Pecchenion & Pollard, 1997), and that rates are unattractive due to the issue of adverse selection (Abel, 1985; Finkelstein & Poterba, 2004; Mitchell & McCarthy, 2002). Still others argue that individuals self-insure using other assets or resources (Laferrère, 2012; Vidal-Meliá & Lejárraga-García, 2006).

However, the most common explanation for the annuitization puzzle is the bequest motive. Several authors conclude that the bequest motive could be a barrier that might reduce the demand for a life annuity (Bernheim, 1991; Friedman & Warshawsky, 1990; Lockwood, 2012, 2018; Purcal & Piggott, 2008; Yaari, 1965). This is because annuitized wealth is not bequeathable (Lockwood, 2018). Annuity benefits end at the death of the annuitant.

2.2.1. The economics of annuities as bequest protection

As Yaari (1965) pointed out, although a bequest motive might prevent annuitization of all assets, it should not prevent annuitization of any assets, that is, partial annuitization. Longevity risk can result in all assets being completely exhausted due to living expenses incurred during an exceptionally long life. This would result in the elimination of any intended bequest. Annuitization can protect against this risk. As Davidoff et al. (2005, 1589) explain, "partial annuitization can reduce the variation in the bequest." Thus, partial annuitization should be attractive to people who have a bequest motive (Davidoff et al., 2005). Those with a bequest motive should hold a portfolio which combines annuity wealth and bequeathable wealth to maximize the marginal utility of both bequests and consumption (Yaari, 1965).

Although theoretically sound, this concept may be sufficiently complex such as to require explanation for a lay audience. Financial advisors may be able to bridge this complexity gap between economic theory and practical advice by framing the annuity as a way to protect the heirs' inheritance.

2.2.2. Framing in behavioral finance

Frame dependence references circumstances in which people tend to make different choices as the result of changes in phrasing or comparison salience, even though the relevant objective facts remain the same (Baker & Nofsinger, 2010). In behavioral finance, examples of such effects include gain/loss framing (Kahneman, Knetsch, & Thaler, 1991), narrow/broad framing (Barberis, Huang, & Thaler, 2006), mental accounting (Thaler, 1985), and many others (Baker & Nofsinger, 2010). Past experiments have shown that framing can influence decisions in retirement planning in general (Choi et al., 2004) and annuity decisions in particular (Agnew et al., 2008; Salisbury & Nenkov, 2016). For example, Salisbury and Nenkov (2016) found that people were more interested in purchasing annuities described with life words than identical annuities described with "death" words. Agnew et al. (2008) found that annuities became more attractive when alternative investments were framed negatively. After reviewing evidence of the annuity puzzle, Brown (2007) recommends that future annuity research should focus more on such behavioral explanations.

2.2.3. The psychology of annuities as bequest protection

Another argument for the potential power of bequest protection framing for annuities comes from past research connecting annuities and personal mortality salience. Terror Management Theory, as well as a parallel utility maximization economic model (James, 2016), predict that personal mortality salience (such as that triggered by death reminders) will generate two responses: avoidance and pursuit of lasting social impact (a.k.a., symbolic immortality; Pyszczynski, Greenberg & Solomon, 1999). Salisbury and Nenkov (2016) identified that annuities, which can be thought of as a bet on one's own mortality timing, do indeed serve as a death reminder that triggers mortality salience.

The avoidance response will tend to reduce interest in annuities, simply because they are a death reminder. Fitting with this response, Salisbury and Nenkov (2016) found that people were more interested in purchasing annuities described as paying "if the annuity holder lives up to different ages" (life framing) than in purchasing annuities described as paying "depending on the age when the annuity holder dies" (death framing; Salisbury & Nenkov, 2016, p. 423).

However, the resistance to annuities goes beyond simple avoidance of a death reminder. The second response to mortality reminders predicted by theory is pursuit of lasting social impact (a.k.a., "symbolic immortality"). This is the idea that although a person will die, some part of them—their name, family, community, values, and so forth—will live on. A bequest motive can be the financial expression of this psychological desire. Thus, annuities serve as a death reminder, increasing the motivation to leave a bequest, but simultaneously offer a financial benefit that disappears at death.

Confirming this idea, Williams and James (2019) found that higher levels of personal mortality reminders generate a greater preference for an annuity paying lower income but with a bequest provision—a form of life insurance. Such product combinations (life annuity plus survivor bequest benefits) "solve" the desire for bequests. And indeed, Lockwood (2012) estimates that about three-fourths of commercial annuities owned by recent retirees have some provision that passes money to heirs after death.

However, these product combinations may not be optimal for financial outcomes. The need to protect against longer than expected life span (annuity benefits) need not be

accompanied by a need to protect against shorter than expected life span (life insurance benefits). The current experiment tests an alternative approach. Rather than coupling the annuity with financial products offering actual bequest benefits, partial annuitization is simply verbally framed as a form of bequest protection. If effective, this approach would provide the opportunity to communicate the benefits of a life annuity in a way that matches underlying psychological mechanisms, but without the need to combine it with other, potentially unnecessary, financial products.

2.3. Hypotheses

Hypothesis 1: Framing an annuity as a protection for bequest goals will increase individuals' interest in using an annuity in retirement.

Hypothesis 1A: Framing an annuity as a protection for bequest goals will increases individuals' interest in using an annuity in retirement to a relatively greater extent for those who were relatively more focused on leaving wealth to heirs (i.e., who had expressed a stronger bequest motive).

Hypothesis 1 predicts that framing partial annuitization as protecting an inheritance for heirs will increase interest in using an annuity in retirement. Hypothesis 1A predicts that the effect of this framing will be more powerful on those who have expressed a relatively greater bequest motive. Those who have expressed a relatively greater focus on leaving wealth to heirs should logically be particularly influenced by this framing. Finding this to be true would also lend support to the idea that increased interest resulting from framing the annuity as bequest protection was arising through the proposed mechanisms, rather than, for example, simply through generalized experimenter demand (Zizzo, 2010). In other words, the effect of the framing would not be due solely to respondents changing their response to match what they believe to be the answer desired by the experimenters, but would actually relate to the respondent's underlying bequest motive.

3. Data and results

3.1. Sample

Participants were recruited from adults in the United States via Amazon's Mechanical Turk (MTurk) platform with the headline description "University survey of opinions on retirement planning." Clicking on this generated the following description, "Survey of retirement planning opinions. We are conducting an academic survey about opinions on retirement planning options. This takes around 10 minutes (includes minimum timed responses and written text requirements) and it is intended to advance research about people and their retirement planning, so please make sure you can commit the time. At the end of the survey, you will receive a unique 'completion code' to paste into the box below to receive credit for taking our survey."

There were 2,206 respondents who participated in the survey on October 18, 2019 with 2,160 responding to all questions used in the following analyses. The study was approved by

Table 1 Key variables question text

Annuity chance (pre and post)	Imagine that you are 65 years old and beginning retirement. You have some retirement savings through your employer retirement plan and are deciding how to manage using that money in the coming years. You have the option to put your retirement savings into an annuity that will give you monthly payments each year you live. When you put your savings into an annuity, you pay a lump sum of money upfront. In return for that lump-sum investment, you receive a series of regular monthly payments each year you live. Please rate the percentage likelihood that you might consider purchasing an annuity as part of your retirement planning. Likelihood of purchasing an annuity: [0–100 slider bar]
Agree framing argument (yes = 1)	One benefit to annuities is that they can protect an inheritance for heirs. No matter how long you live, you will have lifetime income, so you won't be forced to spend away your other investments or assets just to have regular income. Does it make sense to you how having guaranteed lifetime income from an annuity can provide protection of an inheritance for your heirs? __ Yes, that makes sense __ No, that doesn't make sense __ I'm not really sure
Bequest motive	Preceding question: Suppose you were age 65 and had saved $1 million to use during retirement in addition to social security. Your investments will return an inflation-adjusted amount of 5% (e.g., $50,000 from $1 million) per year. Which of the following spending plans would you prefer? — (page break) — On a scale from 0 to 100, how much did you consider your desire to leave money to your heirs when making the spending choice on the last question? Considered leaving an inheritance: [0–100 slider bar]
Mortality salience	To what extent have you been thinking about death in the past several minutes? Never [1] Very Rarely [2] Rarely [3] Occasionally [4] Frequently [5] Very Frequently [6] Please rate your level of agreement with the following statement: The tasks in this survey reminded me of death. Very Strongly Agree [6] Strongly Agree [5] Agree [4] Disagree [3] Strongly Disagree [2] Very Strongly Disagree [1] To what extent did the tasks in this survey evoke thoughts of death? Never [1] Very Rarely [2] Rarely [3] Occasionally [4] Frequently [5] Very Frequently [6]
Chance live to 100	On a scale from 0% to 100%, what are the chances that you will live to age 100 or older? Probability of living to 100: [0–100 slider bar]

Table 2 Descriptive statistics

Variable	Mean (*SD*)	Min	Max
Age	44.973 (16.061)	19	85
Male	0.509 (0.500)	0	1
Income	54.912 (34.108)	10	150
Education years	15.525 (1.995)	9	19
Annuity chance (Pre-Framing)	49.635 (27.179)	0	100
Annuity chance (Post-Framing)	53.992 (27.685)	0	100
Annuity interest increased	0.493 (0.500)	0	1
Annuity interest decreased	0.231 (0.421)	0	1
Agree framing argument	0.789 (0.408)	0	1
Bequest motive	54.390 (34.571)	0	100
Chance live to 100	31.010 (29.007)	0	100
Mortality salience	11.460 (3.525)	3	18
n	2,160		

the institutional review board for human research protection program of the second author's affiliated institution.

3.2. Variables

Table 1 reports the question text used to generate the key variables used in the following analyses. Reports of education level were converted to number of years of education as follows, nine for "less than high school diploma," 12 for "high school diploma," 14 for "some college or associates' degree," 16 for "bachelor's degree," and 19 for "graduate degree." Categorical reports of income were converted to $10,000 (for less than $10,000 category), category midpoints of $15,000, $25,000, $35,000, $45,000, $55,000, $65,000, $75,000, $85,000, $95,000, and $125,000, and finally $150,000 for greater than $150,000.

In the following regressions, socio-demographic control variables were also included. More years of education may be associated with greater financial literacy (Van Rooij, Lusardi, & Alessie, 2011). This might increase the likelihood of understanding the bequest protection argument, but also increase the likelihood of having already considered the argument before the framing intervention. Alternatively, high education may be associated with disagreement with the framing claim resulting from acceptance of an alternative investment strategy, such as replacing annuities with mutual fund investments and protecting an inheritance by accumulating sufficient wealth to provide for any income needs (Pang & Warshawsky, 2010). Income is also associated with financial sophistication and may impact the acceptance of the framing argument (Van Rooij, Lusardi, & Alessie, 2011).

The longer one expects to live, the more relevant the bequest protection argument becomes. A standard annuity involves a bet on one's longevity. Thus, a simple measurement of subjectively anticipated longevity—the chance one will live to age 100—is included. Age is included as it has been associated with both financial literacy and the confidence in one's beliefs about financial products (such as annuities) and may impact the influence of a framing argument (Finke, Howe, & Huston, 2017). Gender is

Table 3 OLS regression with dependent variable: Annuity chance (Post-Framing)

Variable	Parameter estimate (*SE*)	*p*-Value
Intercept	10.793 (2.8989)	0.0002
Annuity chance (Pre-Framing)	1.0902 (0.0376)	<0.0001
Annuity chance (Pre-Framing) SQ	−0.0026 (0.0004)	<0.0001
Bequest motive	0.0560 (0.0090)	<0.0001
Mortality salience	0.1453 (0.0869)	0.0948
Male	−1.9764 (0.6082)	0.0012
Income	−0.0160 (0.0093)	0.0867
Education years	−0.2583 (0.1597)	0.1060
Age	−0.0432 (0.0192)	0.0241
Chance live to 100	0.0155 (0.0109)	0.1536

Note: n = 2,160; R^2 = 0.7505. OLS = ordinary least squares.

included as some research has found females to be more risk averse than males when they make financial decisions in general (Jianakoplos & Bernasek, 1998) and with regard to annuities in particular (Agnew et al., 2008). As such, females may respond more favorably to the framing of an annuity as a hedge against a risk of total bequest depletion.

Table 2 reports sample means, standard deviations, minimums, and maximums. The average respondent age was 45 with 51% of respondents being male. Average years of education was 15.5, and average income was $55,000 per year.

3.3. Hypothesis 1: Results

Table 1 indicates that the mean percentage likelihood of purchasing an annuity as part of retirement planning (Annuity Chance) increased following the bequest protection framing statement. A two-tailed paired *t* test finds that this difference is statistically significant at $p < .0001$. Additionally, the percentage likelihood of purchasing an annuity as part of retirement planning increased following the bequest protection framing statement for 49.3% of respondents but decreased for only 23.1% of respondents. Both findings support Hypothesis 1.

These two outcomes measure the change in likelihood of using an annuity in two different ways. The pre versus post comparison of probability changes measures the magnitude of the change. This is important but is also subject to the effects of outliers where very large changes take place. However, using a dummy variable for any increase in probability is not subject to these outlier effects, as all positive changes are measured as a "1" regardless of magnitude. Thus, it is useful to look at both forms of outcome measurements and this will be repeated in the following regression analyses.

3.4. Hypothesis 1A: Results

Table 3 reports results for an ordinary least squares regression where the dependent variable is the percentage likelihood of purchasing an annuity as part of retirement planning

Table 4 Probit analysis with dependent variable: Annuity chance increased

	Parameter estimate (*SE*)	Pr > χ^2
Intercept	0.0348 (0.2497)	0.8892
Bequest motive	0.0037 (0.0008)	<0.0001
Mortality salience	0.0109 (0.0079)	0.1654
Male	−0.1157 (0.0553)	0.0363
Income	−0.0008 (0.0009)	0.3208
Education years	−0.0012 (0.0145)	0.9316
Age	−0.0061 (0.0017)	0.0004
Chance live to 100	0.0006 (0.001)	0.5650

Note: n = 2,160.

following exposure to the bequest protection framing argument. The regression controls for the percentage likelihood reported before the bequest protection framing and reflects the change (pre vs. post) in this reported percentage likelihood. In addition, the regression controls for the square of the percentage likelihood reported before the bequest protection framing. This is included because the dependent variable, Annuity Chance (Post-Framing), is constrained to be between 0 and 100. As the initial percentage, a.k.a. Annuity Chance (Pre-Framing), increases, the possible magnitude of an increase resulting from the framing falls, suggesting a nonlinear relationship (e.g., if the likelihood of using an annuity was 99% before the framing, there is little opportunity for increasing this likelihood). The results confirm this nonlinear relationship as both the linear and squared term are highly significant.

The increase resulting from the bequest protection framing argument is greater for those who had expressed a greater bequest motive at $p < .0001$. This result supports the second hypothesis (1A). An additional possible relationship is that the bequest protection framing might be more powerful for those experiencing greater mortality salience. Terror management theory suggests that those experiencing greater mortality salience will have an increased interest in making a lasting social impact. Bequest protection framing should appeal to this increased interest by showing the potential benefits of partial annuitization for heirs. Contemplation of annuities has been found in past research to generate mortality salience (Salisbury & Nenkov, 2016), making this potential relationship particularly relevant for the current experiment. Additionally, bequest motive was measured before the annuity questions while mortality salience was measured after the annuity questions. Thus, the level of experienced mortality salience, controlling for bequest motive, would be sensitive to changes generated by the annuity questions themselves. Table 3 shows a weak positive relationship between mortality salience and the increase in annuity interest following the bequest protection framing intervention. However, this relationship is significant only at $p < .10$.

Table 4 reports results from a probit analysis measuring whether or not the probability of purchasing an annuity at retirement increased following the bequest protection framing argument. Unlike the analysis reported in Table 3 this analysis is not affected by large outliers, such as where the reported percentage changed from 0 to 100 or vice-versa. Nevertheless, the coefficient for bequest motive is still positive and significant at $p < .0001$. This confirms

Table 5 Probit analysis with dependent variable: Agree with framing argument

	Parameter estimate (standard error)	Pr > χ^2
Intercept	0.7593 (0.2819)	0.0071
Bequest motive	0.0038 (0.0009)	<0.0001
Mortality salience	0.0355 (0.0090)	<0.0001
Male	−0.0054 (0.0627)	0.9311
Income	−0.0001 (0.0009)	0.8822
Education years	−0.0262 (0.0163)	0.1085
Age	−0.0054 (0.0019)	0.0041
Chance live to 100	0.0036 (0.0011)	0.0014

Note: n = 2,160.

that the relationship identified in Table 3 is not driven only by large outliers but reflects a general tendency among the respondents. Thus, the likelihood that interest in an annuity will increase to some extent following the bequest protection framing also increases as bequest motive increases. This result further supports the second hypothesis (1A).

The direction and significance of the relationship with age and gender remains consistent with the results reported in Table 3. However, the relationship with mortality salience becomes nonsignificant (p = .1654).

The primary interest in this analysis was to explore the results from introducing a bequest protection framing argument on interest in purchasing an annuity as part of retirement planning. Bequest protection framing may fail to have an effect because respondents disagree with the bequest protection argument. However, it may also fail to have an effect even if respondents agree with the bequest protection argument. This could result from respondents having already considered such a justification before its introduction in the framing argument or because other unmeasured factors make such a justification irrelevant for the respondent. Thus, Table 5 reports results from an additional measurement of the effectiveness of this framing argument: whether respondents agree that the argument itself makes sense. This measurement of the power of the bequest protection framing argument also shows a positive association with bequest motive (p < .0001). Thus, those with a higher bequest motive are more likely to agree that the bequest protection framing argument makes sense.

One difference as compared with the previous outcome measurement is that mortality salience is a highly significant predictor (p < .0001) of agreeing with the bequest protection framing argument. This may be because the increased desire for making a lasting impact resulting from mortality salience may increase acceptance of the argument describing such an impact. Future investigation of this relationship may be critical as previous research shows contemplating annuity purchases increases mortality salience (Salisbury & Nenkov, 2016). Thus, a framing argument that works particularly well in the presence of mortality salience may be particularly effective in a real-world application. However, in the present experiment this relationship may arise because acceptance and understanding of the bequest protection argument actually generates mortality salience. Future experimental research may be able to disentangle this relationship more precisely.

4. Discussion

This research examines bequest motives and annuitization in a new way. It examines an intervention framing an annuity as a protection for inheritance goals from longevity risk. In the presence of other assets intended to be left as a bequest, annuitization can be viewed as protecting those assets against consumption due to a person's excessive longevity. Thus, in the absence of (partial) annuitization, these assets might be completely exhausted due to living expenses incurred during an exceptionally long life. This bequest protection frame presents the annuity as a downside protection for inheritance goals.

We hypothesized that this framing intervention would encourage interest in using annuities in retirement. The results are consistent with this hypotheses that framing matters. On average, introducing the bequest protection framing intervention increases interest in using an annuity in retirement. Additionally, regression models showed that a greater bequest motive leads to a more positive effect of the bequest protection framing intervention on the predicted likelihood of using an annuity in retirement. Thus, the impact of the intervention is likely not due exclusively to generalized experimenter demand effects. This result matches economic arguments for partial annuitization as benefitting heirs by reducing bequest volatility but suggests a necessary role for the advisors to explain this justification.

This bequest protection framing may represent an additional, practical approach to addressing the annuitization puzzle (Bernheim, 1991; Bütler & Teppa, 2007; Yaari, 1965). This preliminary evidence suggests a potential method to directly address previous findings of a negative association between bequest motives and annuitization (Bernheim, 1991; Bütler & Teppa, 2007; Yaari, 1965). Without special framing, this negative association is obvious. Annuity wealth is not bequeathable. Therefore, people who have a bequest motive may be less likely to purchase life annuities. However, bequest protection framing appears to most strongly influence those who have higher bequest motives.

Developing a method, such as that tested here, to address these bequest motive objections may be particularly important because the act of annuity contemplation may actually increase bequest motives. Past research has shown that annuity contemplation generates mortality salience (Salisbury & Nenkov, 2016) and also that mortality salience generates an increased desire for lasting social impact, a.k.a., pursuit of symbolic immortality (James, 2016; Pyszczynski, Greenberg, & Solomon, 1999). This results in the outcome, demonstrated by Williams and James (2019), that increasing mortality salience increases interest in annuities that pay less income but include bequest benefits relative to those that pay more income with no such bequest benefit. However, this outcome is unlikely to be an ideal financial planning choice. The current reframing approach offers the advantage that no product changes are needed to increase the acceptability of the annuity choice.

Of course, the present experiment measures responses to a hypothetical question about an annuity purchase decision to be made at age 65. It does not measure actual purchase behavior. Behavioral intentions can differ from actual behavior. However, because this analysis focuses on the *change* in behavioral intentions, the results can be instructive even in the presence of imprecise measurements or additional barriers between intentions and action.

4.1. Financial planning practice implications: Client conversations

Economic theory demonstrates that partial annuitization may be ideal even for those individuals with a strong bequest motive. Partial annuitization reduces the volatility of a bequest by providing protection against reduction or exhaustion of the bequest assets due to income needs resulting from longevity risk. The current results suggest that this argument, when presented in nontechnical terms, can be persuasive to the general public.

However, the argument is not uniformly attractive. It is more compelling for some people than others. In particular, the argument is more compelling for those who begin with a higher bequest motive. Additionally, this framing is more effective among women and those who are younger.

Determining bequest motive need not be a complicated task for the advisor. Some clients may bring up such concerns when annuities are discussed. In this study, bequest motives were measured by the response to the question, "how much did you consider your desire to leave money to your heirs when making the [retirement] spending choice on the last question?" Similarly simple questions may also elicit the relevant motivations from clients. Where such bequest motives exist, the bequest protection framing for annuities may be particularly effective.

4.2. Financial planning practice implications: Client annuity usage

The results presented here have two practical implications for client choice of annuity products. First, the results can be helpful where annuities are an appropriate financial option for clients. The results demonstrate the effectiveness (especially for certain people) of a bequest protection framing argument. Second, the results can be helpful where the typical form of annuities (annuities with survivor benefits) are less than optimal. Where Williams and James (2019) showed that annuities producing less income and greater bequest benefits become more attractive with increased mortality salience, this research shows that it is not necessarily required to change the product to include more bequest benefits, but it can work to simply change the product framing to highlight the otherwise unrealized bequest benefits.

4.3. Annuity advantages

Finding a cost-free way to encourage the use of annuities—without the addition of potentially unnecessary life-insurance-like bequest benefits—can be potentially beneficial for clients. The first reason is the risk. Compared with investing in the stock market, the risk of investing in annuities is relatively low and the annuity lifetime income or certain period income is guaranteed. For example, the sequence of returns risk, which could have a significant impact on retirees' portfolios, does not arise with annuities but does occur with investing in the stock market.

A Monte Carlo simulation shows the impact from this sequence of returns risk. The simulation assumes a retiree with an initial investment of $500,000 dollars, average returns for

stock market of 6% (annually), a standard deviation of return of 20%, a time horizon for investment of 20 years, and the amount added to the investment portfolio of $15,000 at the end of each year. In 10,000 iterations, the ending portfolio (mean $2,192,524; median $1,633,929; standard deviation $1,966,518) varies widely from the fifth percentile outcome of $465,544 to the 95th percentile outcome of $5,722,992. If the investors suffers a "bad time" at the beginning of the investment period, that is, negative returns at the beginning of the investment period (e.g., caused by an economic crisis or other global issues), the investors might suffer a huge initial loss with regard to the investment portfolio. If retirees have such a loss in their investments, their assets might be completely exhausted, and they may not have sufficient wealth for their retirement. However, the returns for annuity investments are stable and the annuity income is typically guaranteed. For example, in the above simulation, placing 10% ($50,000) of the initial investment into a fixed twenty-year guaranteed annuity with a lower (4%) return increases the fifth percentile outcome by 30% but decreases the 95th percentile outcome by only 3%.

Compared with the stock and mutual fund market, the bond market is a closer alternative to annuities for retirees. However, bond investors still have to face many risks, such as credit risk (bonds may not pay as expected), inflation risk (as the inflation rate increases, the coupon income values becomes less), reinvestment risk (investors may not be able to find a similar bond investment option after existing bonds mature), and liquidity risk (bonds may be unavailable to meet short-term financial goals). Thus, if retirees only invest in stock, mutual funds, and bonds, they have greater risk for meeting their short-term and long-term financial goals. Having an annuity could help retirees have lifetime income or certain period income, which could be a protection for their financial goals and reduce risk (including systematic risk from overall market returns and unsystematic risk from individual investment selection). Therefore, annuities could improve retirees' welfare and could be valuable for retirees' portfolios.

4.4. Annuity disadvantages

Despite the previous advantages, the reality of annuity pricing may reduce the advantages compared with theoretical potential.There is adverse selection with regard to the mortality risk in the annuity market (Blake, 1999). This is the risk that only individuals who think they will live longer than the average for the population based on their own medical and family histories will choose to purchase annuities. And also, conversely, those who know of a major mortality risk factor will not ever purchase an annuity (i.e., sick people do not buy annuities). However, insurance companies do not have the same access to this information with the same degree of reliability as do annuity purchasers (Blake, 1999). Therefore, there is asymmetric information between the annuity insurance company and prospective annuitants. Insurance companies may not be able to perfectly distinguish the prospective annuitants who have heavier mortality risk (insurance companies make money) from those who have lighter mortality risk (insurance companies lose money). However, companies realize that people who voluntarily purchase an annuity have a lighter mortality risk than the typical person of the same age. Thus, pricing for all prospective annuitants will reflect this reality, potentially making the annuity (in

practice) a poor investment choice for those with a typical life expectancy. Once this is combined with the need for paying commissions, advertising, and profits, the theoretically advantageous annuity may become practically less attractive.

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