RISK PREFERENCES IN SURROGATE FINANCIAL DECISION

MAKING

by

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ABSTRACT OF THE THESIS

Risk Preferences in Surrogate Financial Decision Making

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This research examined the effect of information asymmetries on risk preferences in surrogate financial decision making. Beneficiaries of decisions made by real-life financial surrogates rarely have as much information about the decision options as the surrogates making the choice. In two studies from the point of view of the surrogate we found that such information asymmetries lead surrogates to make less risky choices for a beneficiary than they would for themselves. An additional study from the perspective of the beneficiary provided support for the hypothesis that beneficiaries weigh outcome information differently under different information conditions, and suggested surrogates may be choosing less risky options than beneficiaries would prefer in an attempt to shield themselves from negative evaluation by the beneficiaries.

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Risk Preferences in Surrogate Financial Decision Making

Introduction

Many real world decisions are made on behalf of someone else. For example, physicians recommend treatments to their patients, real estate agents recommend houses to their clients, and parents select schools and sometimes even spouses for their children. Many of these surrogate decisions are risky financial choices. For example, brokers buy and sell investments on behalf of their clients, managers make business decisions on behalf of stock holders, and parents start college funds on behalf of their children. Although such surrogate financial decisions are sometimes made by experts, they are frequently made by lay people, such as adult children handling the finances of their elderly parents.

There has been surprisingly little research on how individuals make risky decisions on behalf of others given the relatively common occurrence of this in the real world. Extant studies have had mixed results, with individuals' risk preferences for others being quite different in different domains. Research in the realm of decision making about romantic relationships has found individuals to be more risk seeking when deciding in a surrogate capacity than when deciding for themselves (Beisswanger, Stone, Hupp, & Allgaeir, 2003; Wray & Stone, 2005). Hsee and Weber (1997) investigated not exactly how individuals would make risky monetary decisions for others, but how individuals predict that others would choose for themselves. They found that when the other whose choices were being predicted was a member of an abstract group ("most other students in the U.S." or "most other students on this campus") subjects predicted riskier choices than they made for themselves. When the other was a specific other

student however, such as the student in the next chair, Hsee and Weber found no difference between individuals' decisions and their predictions for the other student. Krishnamurthy and Kumar (2002) also found that subjects predicted others to be more risk seeking than themselves when subjects were given choices between gambles involving risks of higher waiting times instead of monetary gambles.

This would suggest that in the domain of financial decision making, people make risky choices the same way for themselves as they would do for another person, as long as that person is a specific individual, and not generalized or abstract. Research by Stone, Yates, and Caruthers (2002) also supports this view. They found that subjects made equally risky choices for themselves in private, with a friend watching, and for a friend. The result occurred both with hypothetical scenarios and while making decisions for real other students in the lab.

In a study of professional financial advisers, Roszkowski and Snelbecker (1990) found quite different results. The investment professionals were asked to make risky choices using either their own or a client's money. Roszkowski and Grable found that the financial professionals were significantly more risk seeking when investing their own money than when investing for their client.

In the studies of surrogate decision making involving lay people, an important component of real surrogate financial situations was missing. In the Hsee and Weber study, participants were making predictions for other students who were in the same location engaging in generally the same activity as they were. In the Stone, Yates, and Caruthers studies, subjects were either deciding for another subject who was actually there, participating in the same experiment, or were making hypothetical decisions for a

friend based on a scenario about being at a fair with the friend also present. In all of these studies, the others for whom the subjects were making predictions or decisions could generally be inferred to have complete information about the decision the subject was making. That is to say the beneficiaries had all of the information the subjects themselves had. In some cases the beneficiaries for whom the subjects were deciding were in fact right there being participants in the study themselves. Roszkowski and Snelbecker used financial professionals as surrogates, who were used to making investment choices on behalf of their clients. In a professional financial advice situation the adviser generally does not provide all of the information to the client about each of the various options considered. Therefore, it is likely that the financial professionals who participated in the study assumed their clients would only know a small subset of the information that they had been provided.

The Roszkowski and Snelbecker study had more realistic information conditions than the studies involving lay surrogates as decision makers. Beneficiaries of financial surrogacy outside of laboratory settings very rarely have the same information as the decision makers themselves. To a point, doing so would defeat the purpose of surrogacy. Individuals have financial surrogates when they are unable or unwilling due to lack of time, resources, or for some other reason, to make the decision for themselves. When a financial planner recommends a stock to invest in, she does not generally share with her client all of the multitude of possible stocks that she looked at to whittle the choice down to the few she is presenting. When an adult child invests in bonds for a healthy but cognitively impaired elderly parent, it would be unreasonable to assume that he would tell the parent all of the possible options he considered, or to go through all the various

literature he reviewed. Instead, financial surrogates generally make decisions so that the information load required of the beneficiary is nonexistent or significantly reduced.

When a beneficiary has the same information as the surrogate who is making the decision, the beneficiary can evaluate the decision maker's choice both on the outcome of the decision, such as whether the gamble paid out or not, and on the decision itself. Although evaluating a decision based on its outcome is a bias when complete information about the decision process is known (Baron & Hershey, 1988), using decision outcomes as a way to evaluate a decision process is appropriate if complete information about the decision process is not available (Hershey & Baron, 1992). Imagine a surrogate who decides to accept a gamble with a 99% probability of paying out 1 million dollars, and a 1% probability of paying out nothing, instead of taking a certain $100. This decision may well be considered an excellent choice by the beneficiary even if it did not pay out, if the beneficiary knows the stakes and the odds available. If all she knows, however, is that she won nothing, she may not evaluate the decision maker in such a favorable light. In a reduced information situation, the beneficiary may have to put more weight on the outcome of the decision when evaluating the decision maker, as this is the majority of the information available. If surrogates know this, and are making risky choices with the beneficiary's opinion of their decision making in mind, what is an acceptable risk level in a situation of full information may be seen as too likely to lead to a poor outcome in a situation where the outcome is all the beneficiary will see.

The main thrust of results in research on risky financial decision making for others has been that, as long as the other is a specific, nonabstract individual, people have the same risk preferences when choosing for others as they do when choosing for

themselves. The current research was undertaken to investigate if this finding still holds when the amount of information that the beneficiary of the decision has is reduced to a more realistic level. The first study examines risk preferences in investment decision making in a hypothetical context where the beneficiaries are unlikely to ever find out how the decision was made. The second experiment explicitly manipulates the amount of information that the beneficiary of the decision has about the options under consideration by the decision maker. The third study looks at how the outcomes of risky choices are perceived by the beneficiaries of the decisions under different information conditions. Our research suggests that the information the beneficiary of the decision will have about the decision plays an important role in determining the risk preferences of the surrogate decision maker.

Experiment 1

The purpose of Experiment 1 was to test the hypothesis that decision makers will be less risk seeking when making financial decisions on behalf of someone else than when making decisions for themselves if that other individual is unlikely to receive full information about the decision. Using a scenario in which subjects had to invest an inheritance either for themselves or for another family member, we examined risk preferences for investment options. We provided subjects with a set of pairwise investment choices to be made either for themselves or in a surrogate capacity. Each pair of investment options contained a high-risk, high mean-yield investment and a low-risk, low mean-yield investment.

The beneficiaries of the hypothetical investment decision were not immediately present, and would not be expected to have complete information about the decision options. Because of this, we hypothesized that subjects choosing for themselves would prefer to invest in the riskier fund, that had the possibility of a higher reward, but that subjects in the role of surrogate would prefer the lower-risk investment, that had a strong likelihood of a low-return but no risk of loss. We used two surrogate conditions – with beneficiaries of grandmother and half-sister – in order to examine the effect of age of beneficiary. In the real world, surrogates often differ in age from the beneficiary (e.g., an adult child deciding on behalf of an elderly parent), and risk preferences may legitimately vary with age.

Methods

Participants

The participants were 191 Rutgers University undergraduates who received credit towards a research participation requirement for an introductory-level psychology class.

Design

We looked at risk preferences in surrogate decision making by using three between-subject conditions in a hypothetical scenario, with 12 binary investment choices. In the scenarios, the subjects were told that that they, their half-sister, or their grandmother had received an inheritance of $30,000, and that they now needed to invest it on behalf of themselves or the other person. The scenarios given to subjects involved the beneficiary of the decision being clearly distanced from the information either physically or cognitively, making them appear unlikely to receive full information about the decision from the surrogate. Subjects investing for their half-sister were told she was in Africa working for the Peace Corps, and had left the subject as her financial surrogate during her absence. (The fact that she was a half-sister explained why she had received an inheritance but the subject had not.) Subjects investing for their grandmother were told that she had Alzheimer's disease, and was therefore unable to manage her finances herself, and had left the subject as her surrogate.

After reading the scenarios, subjects were shown 12 pairs of investments and chose one investment in each pair into which to put the entirety of the inheritance. Each pair contained a low variance, low mean return (low risk) option and a high variance, high mean return (high risk) option. Investment options were displayed as bar graphs of annual percentage returns for the previous 10 years, with lowest, highest, and mean annual percentage return information also provided (see Figure 1). As shown in Table 1,

we used 3 mean return percentage differences (3, 4, and 5) and 4 variance differences

(18, 21, 29, and 32) for a total of 12 distinct investment pair options.

It is important to note that in the low mean difference condition the high risk

option was shown as having a small negative return in two of the ten years for which the

historical returns were shown, while the low risk option did not have any negative annual

returns. Thus, 4 of the 12 pairwise choices entailed a choice between an investment with

a possible negative return and an investment with no possibility of a negative return.

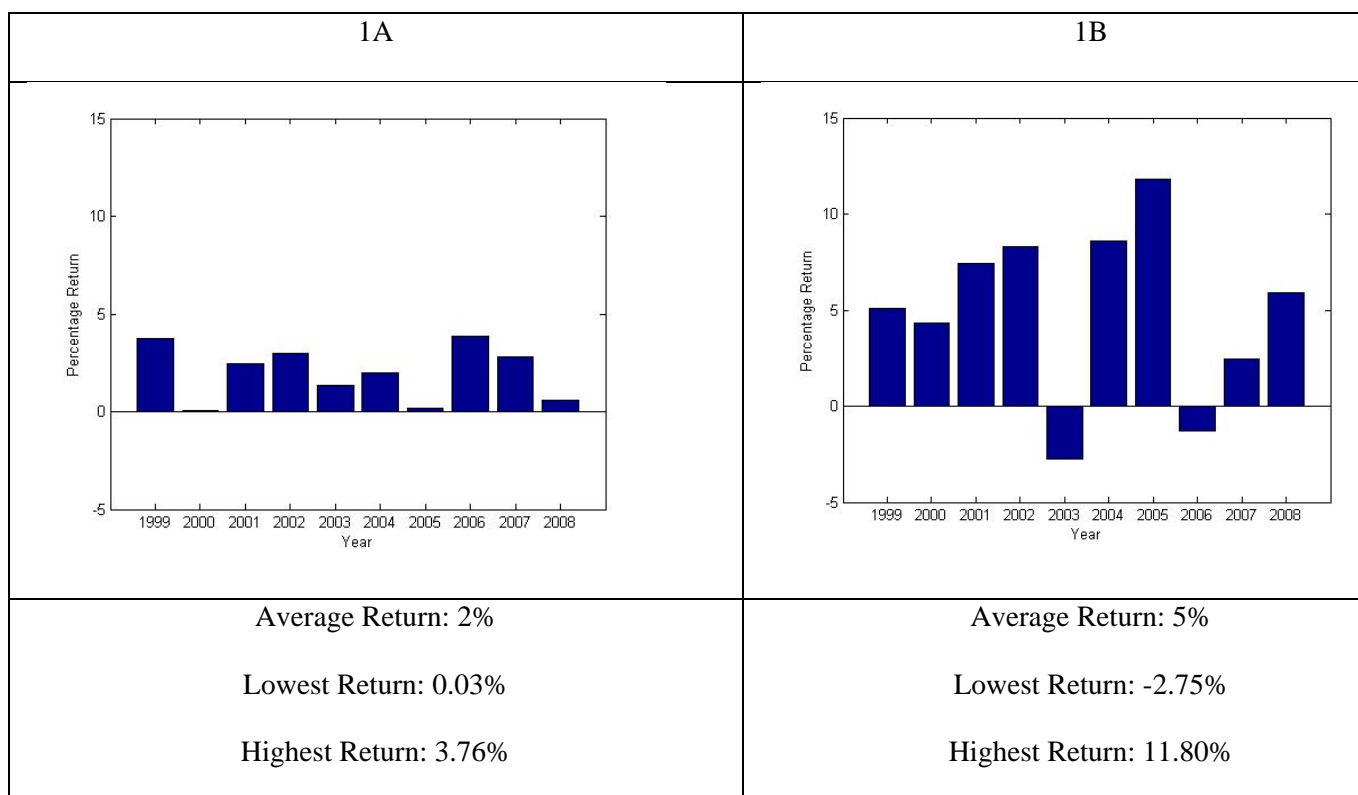**Figure 1 (a) and (b). Example of an investment option pair.**

1A	1B
Average Return: 2%	Average Return: 5%
Lowest Return: 0.03%	Lowest Return: -2.75%
Highest Return: 3.76%	Highest Return: 11.80%

Table 1. Investment option choices design

		Low Risk		High Risk	
Variance Difference	Mean Value	Mean Annual Return	Variance in Annual Return	Mean Annual Return	Variance in Annual Return
	Low	2%	2	5%	20
18	Medium	4%	2	7%	20
	High	6%	2	9%	20
	Low	3%	4	7%	25
21	Medium	5%	4	9%	25
	High	7%	4	11%	25
	Low	1%	4	5%	30
29	Medium	4%	4	8%	30
	High	7%	4	11%	30
	Low	2%	3	7%	32
32	Medium	5%	3	10%	32
	High	8%	3	13%	32

Materials

Participants completed this study on their own computers via the internet. Instructions were provided, then the scenario was shown. Subjects were randomly assigned to one of the three between-subjects conditions. After reading the scenario, subjects were shown one pair of investment choices at a time. Both the order of the investment pairs, and the left-right arrangement of the options were randomized for each subject. Subjects indicated their choice of investment option by clicking an onscreen button under the preferred investment.

Results

Consistent with our hypothesis, subjects were significantly more likely to choose the high-risk option when choosing for themselves than when choosing in a surrogate capacity. We conducted a mixed model logistic regression with choice of the high-risk or low-risk investment as the dependent variable. The three independent variables were beneficiary (self, half-sister, or grandmother), mean return percentage difference (3%, 4%, or 5%), and variance difference (18, 21, 29, or 32). The first of these manipulations was between-subjects and the latter two were within-subject. Results are shown in Figure 2 and Table 2.

Table 2. Logistic regression results

Factor	df	χ^2	P
Beneficiary (B)	2	6.46	.04
Mean return percentage difference (M)	2	32.07	.0001
Variance difference (V)	3	9.64	.02
BxM	4	11.90	.02
BxV	6	6.15	.41
MxV	6	34.39	.0001
BxMxV	12	13.12	.36

Figure 2. Percent of subjects choosing the risky investment option by difference in mean annual return.
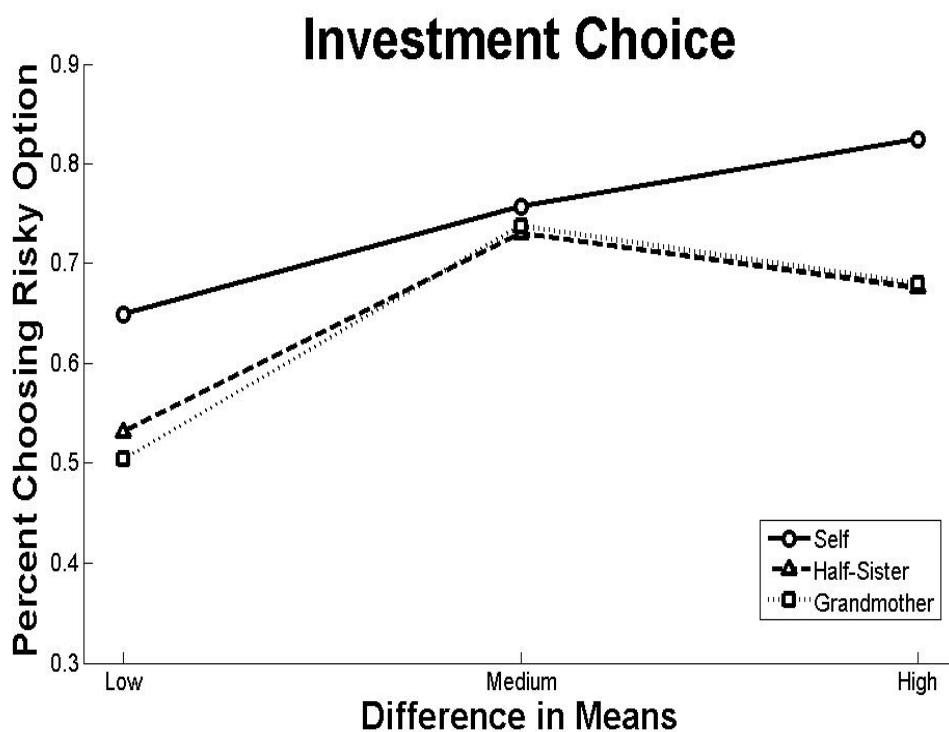
We found a main effect of beneficiary, but we did not find a significant difference in risk preference between the half-sister and grandmother conditions. When we repeated the logistic regression excluding the self condition, there was no longer a main effect of beneficiary (χ^2 (1, N=124) = 0.01, p=0.91). Thus, the main effect of beneficiary indicates that decision makers are more risk seeking when choosing for the self than when choosing for the other, but risk preferences do not vary with the age of the beneficiary. In addition, there was a main effect of mean return, such that participants were particularly risk averse in the low mean condition, where the high risk option could have negative returns. An interaction between beneficiary and mean return indicated that participants were especially likely to be more risk averse when deciding as a surrogate in

the low mean condition (where the high risk option could have negative returns) and in the high mean condition (where even the low risk option had returns that may have met aspiration levels), relative to the medium mean condition. Of lesser interest, there was a main effect of variance difference indicating that subjects were significantly more likely to choose the risky investment option when the difference in variance was higher and an interaction between variance difference and mean difference indicating that subjects were more influenced by the difference in variance in the high mean and low mean difference conditions than in the medium mean difference conditions.

Discussion

Consistent with our hypothesis, subjects were more risk averse when choosing investments in a surrogate capacity than when choosing for themselves when the beneficiary was unlikely to have full information about the decision. Because the grandmother and half-sister were likely to learn only the original amount of the inheritance, and the outcome of the investment choice, the outcome information would necessarily be highly weighted when evaluating the performance of the surrogate. This may have contributed to the especially high unwillingness of surrogates to choose the high-risk option when doing so could lead to a loss.

An additional interesting finding of this study was that subjects seemed only to differentiate between choosing for themselves and choosing for an other; they did not differentiate between choices for their half-sister and choices for their grandmother. Normative theories of investment would generally suggest that investment time horizon is one of the most important factors when considering investment risk. Since it is

reasonable to assume that one's half-sister has approximately the same time horizon of investment as oneself, investment decision should be based upon similar risk preferences. One's grandmother, however, could be reasonably assumed to have a much shorter investment horizon, and therefore should invest in less risky investment vehicles. Interestingly, this was not the case here. Because this was a between subjects design, subjects did not have to consider whether they would be more or less risk-seeking for their half-sister than their grandmother. Possibly in a within-subjects design participants would demonstrate more risk-aversion when investing for their grandmother than their half sister, more consistent with what normative theory would dictate.

Experiment 2

The purpose of Experiment 2 was to replicate and extend the results of

Experiment 1, by explicitly manipulating the information beneficiaries had about the

decision options the surrogate faced. In Experiment 1 we did not explicitly specify what

the beneficiary would find out about the investment choice the surrogate made. In the

current experiment we hypothesized that the surrogates' risk preferences when choosing

for the beneficiary would be affected by the amount of information the beneficiary had

about the decision, with the surrogate choosing a lower risk option when the beneficiary

had incomplete information. That is, the more information the beneficiary has, the more

that the surrogate makes decisions that are similar to the (risk seeking) ones that she

would make for herself.

Previous research has demonstrated that evaluation of decision outcomes is

influenced not just by the objective value of the outcome but also by counterfactual

comparisons (Mellers, 2000). Thus, a decision maker will feel disappointment if the

outcome she receives is less than an outcome she could have received. Disappointment,

however, is reduced if the decision maker knows that the counterfactual outcome had a

low probability. A beneficiary with complete information, knowing all the counterfactual

outcomes and their probabilities, will likely experience disappointment to the same extent

as the surrogate anticipated when making the decision. This congruence would serve to

make surrogates decide similarly to the way they would choose for themselves. In

contrast, beneficiaries with only partial information will only know about some

counterfactuals. Surrogates may anticipate how this would affect beneficiaries'

disappointment and adjust their choices accordingly. For example, if a beneficiary

receives a low outcome and knows that a higher outcome was possible, but does not know its probability, he may experience more disappointment than a full-information beneficiary would. Anticipating this, surrogates may select the risk-averse option for beneficiaries with partial information so as to avoid such a scenario.

Methods

Participants

The participants were 521 individuals who received either credit towards a research participation requirement for an introductory-level psychology class or an entry into a drawing to receive a $10 gift card.

Design

Each subject was presented with the 10 binary choices shown in Table 3. Each choice was between receiving a small positive amount with certainty, and a chance of receiving a larger positive amount. There was one between-subjects manipulation with four variations. In the four variations, subjects made the choices for: (1) themselves, (2) a friend who would know nothing unless money was won, (3) a friend who knew a choice was being made but not the specific options, and (4) a friend who knew a choice was being made and all the possible options.

Table 3 Monetary gambles used in Experiment 2

Choice	Certain Outcome	Gamble		
		Probability	Payout	Expected Value
1	$54	2%	$1000	$20.00
2	$62	73%	$170	$124.10
3	$66	72%	$160	$115.20
4	$82	82%	$150	$123.00
5	$108	84%	$160	$134.40
6	$110	73%	$150	$109.50
7	$134	60%	$150	$90.00
8	$138	65%	$170	$110.50
9	$156	49%	$160	$78.40
10	$160	54%	$170	$91.80

Materials

Participants completed this study on their own computers via the internet. Each participant was randomly assigned to one of the four conditions. Participants were presented with instructions, and a scenario to read. The scenario remained at the top of the screen throughout the study. The ten total pairs of choices were presented one at a time in a randomized order.

The scenarios given to participants all began:

> Imagine that you and your friend Chris are at a carnival. You and Chris are the same age and gender, you have similar interests, and you generally like the same things.
> Both of you buy some raffle tickets to support a local organization. Chris has to go home before the raffle winner is drawn, so you take all the tickets. The two of you agree that if one of your tickets is a winner, you will get the prize, and if one of Chris's tickets is a winner, Chris will get the prize.

Next, subjects in the "self" condition were told that their ticket had been chosen, and that they had to make a choice between two prize options. They were then asked to make the binary choices shown in Table 3. Subjects in the "other" condition were told that Chris' ticket had been chosen, and that they had called Chris' cell phone, but had gotten only voicemail. There were three "other" conditions: no information, some information, and complete information. In the no information condition, subjects were told that they hung up before leaving a message, and decided to tell Chris only if Chris won a prize. In the some information condition, subjects were told that they left Chris a message, saying that Chris' ticket had been chosen, and that they now had to make a decision on Chris' behalf, without providing any information in the message about what the various options were. In the complete information condition subjects were told they left a message saying Chris' ticket had been chosen, and specifying all the available options they were now going to choose between.

Results

Each subject made a total of 10 forced binary choices between a smaller certain amount and a larger risky amount. The total number of risky choices each subject made was computed, giving each subject a total between 0 (all certain choices) and 10 (all risky choices). Means for each condition are shown in Figure 3. A one-way ANOVA with a four-level between-groups factor (self, other no-information, other some-information, and other all-information) was performed. Number of risky options chosen differed significantly across the four groups, $F (3, 517) = 5.04$, $\eta^2 = 0.03$, p=.002. Planned contrasts revealed significantly more risky choice in the self than in the other some-

information condition, $F(1, 277)=4.81$, $\eta^2 = 0.008$, p=.029. Differences between the self

condition and the other all-information $F(1, 253)=1.24$, $\eta^2 = 0.002$, p=.27 and self other

no-information conditions were not significant, although there was a marginal trend

toward fewer risky choices in the self condition than in the other no-information

condition, $F(1, 253)=2.62$, $\eta^2 = 0.004$, p=.1.

Figure 3. Mean number of risky lottery choices by beneficiary and information

condition.
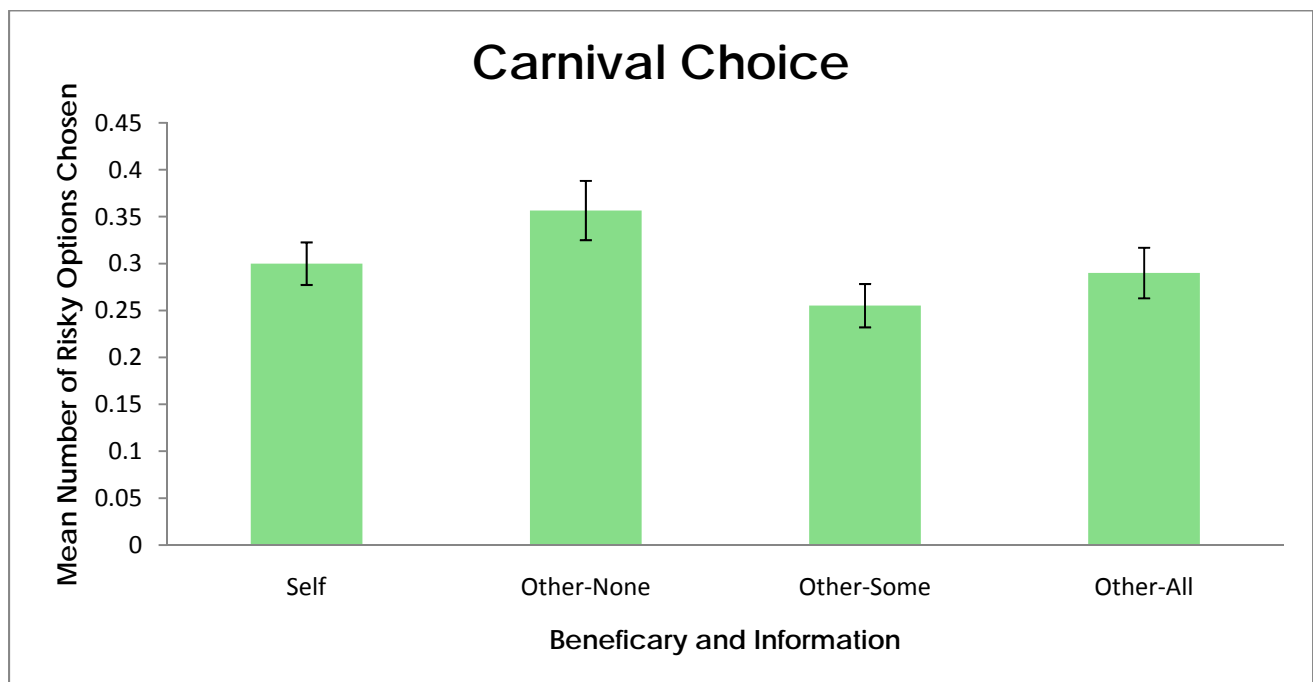
Discussion

This experiment supported our hypothesis that beneficiary information about the

decision would significantly impact surrogate risk preferences. In the no information

condition, Chris was not going to find out that his or her ticket had been chosen unless

the second lottery was also won. In this case surrogates were slightly, though non-significantly, more likely to choose the risky option than participants who chose for themselves. In this condition, Chris would only evaluate the decision making skills of the surrogate if a positive outcome occurred. Because there was no possibility of disappointment or a negative evaluation by Chris, decision makers were not under pressure to ensure a positive payoff.   In the some-information condition, Chris was given the opportunity to evaluate the decision making of the surrogate whether or not a positive outcome occurred. Chris did not, however, receive information about what decision options were available. The information he or she would use to assess the surrogate was the outcome of the decision. Making a decision in which a positive outcome was assured (choosing the certain option) was therefore much more appealing to the surrogate. If the surrogate selected the risky option and the obtained outcome was $0, Chris would presumably experience disappointment, and that disappointment would be more intense than if Chris had known the probability and value of the counterfactual outcome. The results of the full information condition were consistent with previous risk preference research when the beneficiary was a specific, and not abstract individual. When the beneficiary has full information, the surrogate decides the same as she would for herself. This further supports the suggestion that the similarity of risk preferences between choices for self and others in previous research reflects an implicit understanding by the participants that the beneficiaries had substantial information about the decision options.

Experiment 3

Whereas Experiments 1 and 2 examined decisions made by the surrogate, Experiment 3 examined the evaluation of such decisions by the beneficiary. This experiment was designed to investigate the reaction of participants to various outcomes occurring after someone has made a financial decision on their behalf. We were interested in how the amount of information provided about the decision would affect participants' satisfaction with the outcome, and with the decision maker. This experiment used the same basic stimuli as Experiment 1. We hypothesized that, if the surrogates were correct and beneficiaries evaluated their performance using information about both the outcome and the decision itself, if available, both the outcome of the investment and the investment chosen would affect participant's evaluations of the decision and the decision maker.

Specifically, when information about the decision process (i.e. which investment the surrogate had selected) is unavailable, beneficiaries will base their evaluation on the only information they have – the decision outcome. As a result, we expect that beneficiaries with full information will be primarily influenced by the decision process (investment selected) and look very similar to decision makers who decided for themselves. In contrast, beneficiaries with partial information will be influenced by the decision outcome (i.e. current investment value), but only if they have a counterfactual outcome or reference point to use as a comparison (i.e., the original investment value). Beneficiaries in the no-information condition who know only the current investment value, with nothing to compare it to, will be equally happy with any positive investment value.

We are not able to examine whether beneficiaries have different risk preferences in the no- and some-information condition than they do in the full-information condition. That is because, by definition, beneficiaries in the no- and some-information conditions do not receive information on the investment options. Thus, we cannot ask whether beneficiaries in these conditions prefer the risky or safe investment. We can, however, ask whether beneficiaries are happier if they are given no, some, or full information. If a surrogate wanted to maximize beneficiary happiness, how much information should he reveal about the decision process and counterfactuals?

Methods

Participants

The participants were 303 individuals recruited at the Rutgers University student center to participate in this study. Subjects were given a small candy bar as a thank you for participating.

Design

Participants read a hypothetical scenario in which they had received an inheritance and either they themselves had invested it, or their half-brother had invested it on their behalf. The scenario described an investment choice that had been made previously and the outcome of that investment. They were asked to rate how happy they were with this outcome. The main design of this study used a 3 (current value) x 2 (decision maker) x 2 (riskiness) design. Current value of the investment had three levels, a small loss (outcome value $28,933), a small gain (outcome value $30,716), and a large

gain (outcome value $33,542) relative to the original $30,000 inheritance. The decision

maker was either the half-brother, or the self. That is, half the participants evaluated a

decision that, according to the scenario, they themselves had made, while the remaining

participants evaluated a decision that a surrogate had made on their behalf. The final

manipulated factor was the investment that the decision maker had previously chosen.

The riskiness of the investment chosen was either high-risk high mean return or low-risk

low mean return. To further explore the impact of information on participant satisfaction,

six additional conditions were included, all specifying the half-brother as the surrogate

decision maker. In the no-information conditions no information was provided except

the current value of the investment (run with all three levels of current value). That is,

participants in these conditions were not told the original value of the inheritance or what

investment options the decision maker faced. They were simply told the current value of

the investment. In the some-information condition, the original amount of the inheritance

was provided, but without information about the investment options (also run at all three

levels of current value). Thus, participants in these conditions knew the original amount

of the inheritance and the current value of the investment, but they did not know what

investment options the decision maker had faced. Thus there were 3 x 2 x 2 + 6 = 18
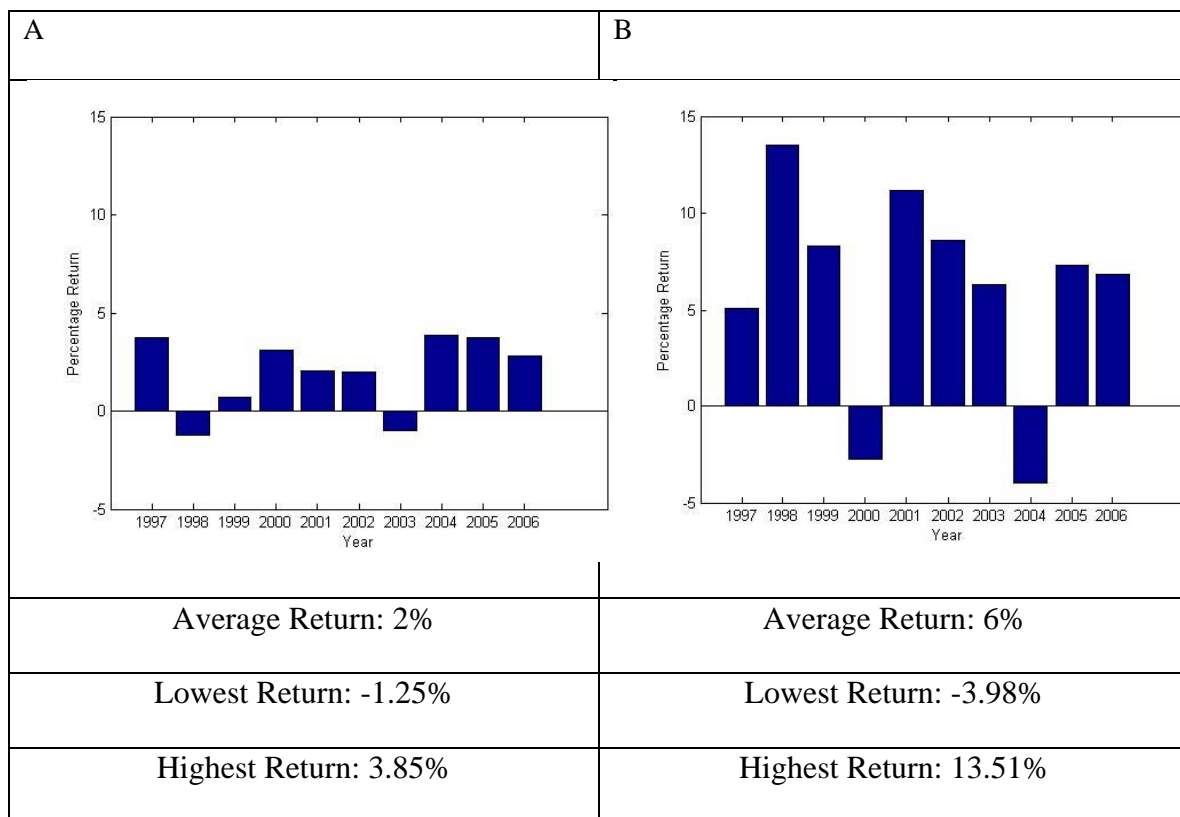
experimental conditions.

Materials

This study was given as a single sheet paper-and-pencil study. The study was

designed to mimic Experiment 1 but investigate the outcome from the beneficiary's

viewpoint. The graphs provided to subjects in the full information conditions were similar to those in Experiment 1.

Subjects were told that they had inherited $30,000 from their great uncle, and that the money had been invested. They were then given the outcome of the investment and asked to rate their happiness with the fund that the money was invested in and their satisfaction with the management of their inheritance. Both were rated on a 7 point scale ranging from 0 (extremely unhappy or extremely dissatisfied) to 7 (extremely happy or extremely satisfied).

In the full-information conditions, subjects were shown a graph of annual returns for the previous ten years along with highest, lowest, and mean annual returns for two different investment options. As in Experiment 1, one of these was a low-risk, low return investment, and the other was a high-risk, high return investment. Both investment options used in this experiment had negative annual returns in two of the previous ten years to better reflect realistic stock portfolio outcomes. There were twelve conditions under full information: self-chosen low risk, self-chosen high risk, other-chosen low risk, and other-chosen high risk, each with three possible current value levels.

Figure 4. Investment options shown in full information conditions of Experiment 3.

A	B
Average Return: 2%	Average Return: 6%
Lowest Return: -1.25%	Lowest Return: -3.98%
Highest Return: 3.85%	Highest Return: 13.51%

Results

     The results supported our hypothesis that beneficiaries rate decisions and decision makers both on the basis of the outcome of the decision and on the decision itself when such information is available. Because the happiness and satisfaction ratings were highly correlated ($r=0.72$, N=303, $p<.0001$) and showed the same pattern across conditions, they were averaged into a single score for analysis and presentation in Figure 6. We first conducted an analysis of the 12 full-information conditions using a 3(value) x 2(decision maker) x 2(investment choice) ANOVA. The results are shown in Table 4. Unsurprisingly there was a main effect of investment value, with subjects reporting greater happiness with higher valued investment outcomes. This supports decision

outcome as a fundamental part of decision and decision maker evaluation by beneficiaries.

Subjects also showed that the decision itself was an important aspect of evaluation, when that information was available. Ratings differed significantly by investment choice, with subjects preferring the high-risk option. Importantly, the investment choice explained more variance than the decision outcome. Although subjects tended to rate decisions they were told they had made for themselves somewhat higher than on both happiness and satisfaction than those made by a surrogate, the difference by decision maker was not significant. Also importantly, decision maker did not interact with either investment choice or with investment value. Subjects gave higher ratings when the risky investment had been selected, both when a surrogate had chosen it for them, and when they were told they had chosen the investment for themselves. This indicates that full-information beneficiaries look very similar to decision makers who had decided for themselves. Interestingly, there was a strong preference for the riskier investment – under full information subjects preferred the risky option regardless of the outcome of the choice. Even when the choice of the high-risk investment had resulted in a loss, subjects were still more satisfied with the management of their inheritance, and happier with the fund that was chosen for the investment. That is, there was no interaction between value and investment choice. Happiness with the investment chosen showed a marginal interaction between choice and decision maker $F(11,174)=3.61$, $\eta^2 = 0.02$ $p=.059$ (suggesting that the preference for the high-risk investment was weaker when a surrogate made the decision), although satisfaction with the management of the

inheritance showed no such interaction. The combined rating score showed only a

marginal interaction (*p*=.08, see Table 4).

Table 4. ANOVA results for the full information conditions in Experiment 3.

Factor	df	F	η^2	p
Current value (CV)	2,174	6.68	.06	.002
Decision Maker (DM)	1, 174	0.44	.002	.51
Investment Choice (IC)	1,174	39.58	.17	.0001
DV x DM	2,174	0.15	.001	.86
CV x IC	2,174	1.82	.02	.16
DM x IC	1,174	3.09	.01	.08
CV x DM x IC	2,174	1.94	.02	.14

We next examined the six no- and partial information conditions in a 2

(information level) x 3 (value) ANOVA. The dependent variable was the average of the

happiness and satisfaction ratings. As in the analysis of the full-information condition,

there was a main effect of current value (F(2,111)=3.58, η^2=0.06, p=0.03), but this was

qualified by an interaction (F(2,111)=4.00, η^2=0.11, p=0.02) indicating that subjects

were happier with higher return outcomes of the investment but only when given

information about the original amount of the inheritance. When no information about the

original amount of the inheritance was provided subjects were equally happy with any

outcome.

We next addressed the question of whether beneficiaries were happiest with no,

some, or full information. For this analysis we excluded the 'self' conditions. We

conducted a 3(information: none, some, full) x 3(current value: small loss, small gain, large gain) ANOVA using the average of happiness and satisfaction as the dependent variables. We ran this ANOVA twice – once with the full-information condition in which the surrogate had chosen the low risk investment, and again with the full-information condition in which the surrogate had chosen the high risk investment. The first such ANOVA (low risk) showed a main effect of information, $F(2,156)=8.14$, $\eta^2=0.09$, $p=0.0004$, a marginal effect of investment value, $F(2,156)=2.96$, $\eta^2=0.03$, $p=0.055$, and an interaction, $(4,156)=2.66$, $\eta^2=0.06$, $p=0.035$. Beneficiaries were happiest with no information, and this was especially true if the investment value was a small loss relative to the original inheritance (effect of information level for the loss condition $F(2,56)=4.62$, $\eta^2=0.14$, $p=0.01$).

The second such ANOVA (high risk) showed no main effect of information, $F(2,153)=0.27$, $\eta^2=0.003$, $p=0.77$, but a main effect of investment value, $F(2,153)=5.78$, $\eta^2=0.07$, $p=0.004$, and a marginal interaction, $F(4,157)=2.27$, $\eta^2=0.05$, $p=0.06$. When the investment value was a small loss relative to the original inheritance, there was a slight tendency for beneficiaries to be happier with no information than with some or full information ($F(2,54)=3.06$, $\eta^2=0.10$, $p=0.055$. With higher investment values, however, information level had no effect (ps >0.39).

These analyses indicate that beneficiaries are just as happy, and in some cases even happier, if they receive no information about the investment options and original inheritance value than if they receive full information. Even the more realistic some-information condition (with information about the original inheritance value but not about the investment selected), makes beneficiaries just as happy as the full information

condition – and even happier if the surrogate had chosen the less-preferred less-risky investment. The results of Experiments 1 and 2 in fact indicate that if the beneficiary has only partial information, the surrogate will have a tendency to choose the less risky investment. This results is an interesting pattern whereby partial information for the beneficiary triggers the surrogate to select the low-risk investment. This is the investment option that the beneficiary would not prefer under full information. However, given that the beneficiary receives partial information, she is perfectly happy with the outcome – just as happy as she would have been had she had full information and the high-risk investment.

Figure 5. Mean evaluation. Happiness and satisfaction ratings were averaged to create a single evaluation score for each subject.
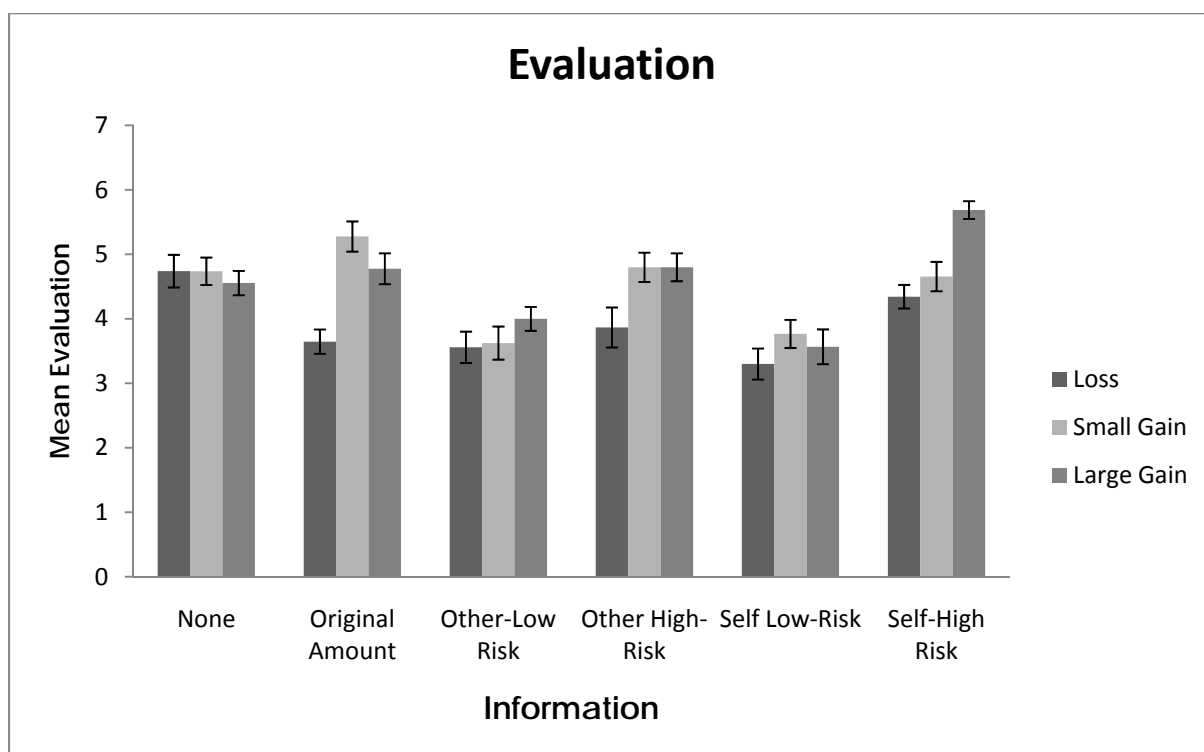
Discussion

    This experiment supports the use of both decision outcome and decision choice information by beneficiaries to evaluate surrogate decisions. It also suggests that beneficiaries and surrogates might have different risk preferences under conditions of partial information. If beneficiaries and surrogates have risk preferences that align only under full information circumstances, then it is likely that surrogates are choosing less risky options than beneficiaries would prefer under partial information. The surrogate is attracted to these lower risk options to insure against a negative outcome that would lead to a poor evaluation of the decision maker. And, somewhat ironically, beneficiaries are just as happy (and in some cases even happier) under partial information as with full

information. This has important implications for real world surrogate financial decision making, as most surrogate decision are made under partial information. Therefore, real world surrogates may be highly likely to choose less risky options than their beneficiaries would actually prefer. Giving the beneficiaries only partial information, however, may be a good strategy to ensure beneficiary satisfaction.

General Discussion

Making a decision on behalf of another person can be challenging and fraught with concern over how to achieve the best outcome for them. Making financial decisions on behalf of another, especially when that other person is a close friend or family member, can be especially nerve racking. Previous research has suggested that when making a financial decision for a specific beneficiary, individuals make equally risky choices when choosing for themselves and in a surrogate capacity. The current research suggests that this outcome may only occur when the beneficiary is assumed to have the same information about the decision as the decision maker. In situations of incomplete information surrogates make less risky choices for their beneficiary that they would for themselves.

This difference in risk preferences under full versus incomplete information can be explained by the way beneficiaries evaluate the decisions made on their behalf and how they evaluate the decision makers themselves. At one extreme, when information about the decision options is fully available, beneficiaries can evaluate both the wisdom of the decision that was made, and the outcome of that choice. They have information about possible counterfactuals available, but also information about the probabilities of the counterfactual outcomes. Under such circumstances, low-probability better outcomes are unlikely to engender disappointment. In situations of partial information, when a small amount of information is available about the decision options, such as the possible outcomes but not the relevant probabilities, beneficiaries must heavily weight the final outcome of the decision. A loss outcome will likely elicit disappointment, with no information about the probability distribution to mute it. At the other extreme, if no

information is provided except the final outcome, beneficiaries do not even have a reference point to compare the outcome to, and therefore cannot consider counterfactual outcomes and will never be disappointed. These effects of information on evaluation of the decision by the beneficiary are likely anticipated by surrogate decision makers, leading surrogates to place a high value on avoiding negative outcomes in situations where a reference point and the final outcome are the only information available to beneficiaries.

Different motivations may drive the surrogate and the beneficiary. Situations in which the beneficiary has only incomplete information about the available options and few specific details of the situation occur frequently in a variety of relationships. The principal-agent problem has been studied extensively in a variety of business decision making contexts (Haubrich, 1994; Dittmann & Maug, 2007;).

The payoff functions for the principal and the agent in many decision making situations are quite different. For example, an employee of a sandwich shop may get a small negative amount of utility for every sandwich he makes, whereas the owner of the sandwich shop receives profit, and hence positive utility, from every sandwich sold. The employee has a motivation to take many breaks, close early, and make sandwiches slowly, so long as doing so does not affect his employment status or pay rate. Resolving these disparate payoffs has been the focus of many studies on optimal contracting (Grossman & Hart, 1983, Garen, 1994; Bond & Gomes, 2009.)

In lay surrogate financial decision making, the surrogate and the beneficiary may also have different payoff functions. While the beneficiary gains or looses utility as a function of the outcome of the investment or financial choice made on his behalf, the

surrogate may have other motivations that factor in. The surrogate may have a payoff

function that includes not only the outcome of the decision but is strongly influenced by

the feedback she expects to receive from the beneficiary. It is easy to imagine a decision

maker who would receive an enormous amount of negative utility from having her

grandmother be disappointed in the management of the financial decision and who would

factor this in, explicitly or implicitly, when making a risky choice.   Reductions in

information asymmetries have been found to reduce the magnitude of principal-agent

differences in business contexts (Sobel, 1993). In the current research, providing full

information to the beneficiary may have reduced surrogate concern that his decision

making skills would be negatively evaluated by the beneficiary, thus reducing the

possibility of anger or disappointment towards the surrogate as a factor in the surrogate's

payoff function.

　　　　All of the current experiments were conducted with scenarios and hypothetical

outcomes. Further research into whether this effect is replicated with real individuals and

their actual financial surrogates would be instructive. It would also be interesting to

determine whether this effect occurs in professional financial surrogates, such as

investment specialists.

　　　　A better understanding of what can affect risk preferences in surrogate financial

decision making has a variety of real-world benefits. As the population lives longer,

increasing numbers of elderly individuals are living with cognitive decline that can make

financial decision making difficult or impossible. It is only reasonable to expect these

trends to continue as the baby boomers begin to enter old age, and more and more family

members may be called upon to act as financial surrogates. The current research suggests

that these new financial surrogates may be overly risk-averse, losing out on a potentially huge amount of income over many years as money sits in low-risk, low-yield investments. Better understanding of what affects risk preferences in surrogate decision making could lead to a greater alignment of the risk preferences of individuals and their surrogates.

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