

In fairness to future generations: The role of egocentrism, uncertainty, power, and stewardship in judgments of intergenerational allocations [☆]

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Abstract

In this paper, we found that fairness judgments in intergenerational allocation decisions depend on (1) individuals' position in the intergenerational sequence (i.e., whether they are in the preceding or succeeding generation), (2) the amount of uncertainty about the effect of the preceding generation's decisions on the succeeding one, and (3) whether the preceding generation is primed with power. We found that both power priming and greater levels of uncertainty about the future consequences of present decisions can elicit stewardship attitudes, which may temper self-interested behavior on the part of the preceding generation. Our data also indicate that the *nature* of the uncertainty is important; it is not just a matter of how much future generations will be affected, but also whether or not they will be affected at all by the decisions of earlier generations. Our findings help to explain (1) how intergenerational inequities can occur even when people are explicitly focused on achieving fair allocations of resources between generations, and (2) how social responsibility concerns can motivate intergenerational beneficence in the face of intergenerational conflict.

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Introduction

Some of the most important issues in society today affect multiple generations of people. One of the most crucial aspects of intergenerational relations is the fact that the interests of present and future generations are not always aligned. For example, consumers today may enjoy the benefits of ever-increasing economic growth and consumption of non-replenishable resources, and experience minimal

burdens associated with these actions while contributing to long-term environmental degradation. Yet future generations of people may endure much of the burden from major global-scale changes in the environment involving delayed effects (such as ozone depletion, species extinction, and global warming) while gaining minimal benefits from and contributing little (or not at all) to the creation of such problems. In situations where consumption of resources is rewarding to the present generation and harmful to future generations, the present generation is faced with decisions involving tradeoffs between its own interests and those of future generations. In such cases, allocations of resources have the potential for an imbalance between the cost-bearers and the beneficiaries and, thus, considerations of justice and equity become relevant and necessary.

In most societies, there is a presumption of a moral obligation toward future generations. People generally value the outcomes to future generations (Kempton, Boster, &

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Hartley, 1995) and tend to agree that fairness in the distribution of resources across generations should be upheld to some degree if societies are to persist and flourish over time. The goal in our research is to explore some of the psychological barriers to implementing well intended fairness to future generations. We identify factors that can help explain why intergenerational inequities may still occur even when people are explicitly focused on making fair allocations of resources among generations. We also learn how some of these same factors may promote attitudes that can benefit future generations.

We begin our investigation with the proposition that, despite good intentions, individuals' judgments about what is fair for one generation to leave for the next depends on both (1) their position in the intergenerational sequence and (2) the uncertainty about how the behavior of the preceding generation affects the succeeding generation. We suggest that these factors (position and uncertainty) can invoke egocentric biases that influence fairness judgments in intergenerational allocation decisions. Further, we uncover new insights regarding the nature and role of uncertainty in intergenerational decisions, including how it may elicit social responsibility concerns in situations with extreme power asymmetry. Our findings across three experiments lead us to a broader discussion of intergenerational allocation behavior and its implications for both egocentric tendencies and stewardship attitudes.

Egocentric interpretations of fairness

There is a consensus among theorists and a convergence of empirical evidence that fairness judgments are typically biased in a self-serving manner, even though such subjective perceptions can appear objective and unbiased to moral reasoners themselves (e.g., Diekmann, Samuels, Ross, & Bazerman, 1997; Epley & Caruso, 2004; Messick & Sentis, 1979, 1983; Ross & Sicoly, 1979; Walster, Walster, & Berscheid, 1978). Individuals are motivated by self-interest to obtain benefits for and avoid burdens to themselves. They are also concerned with issues of justice and like to believe that they have contributed their fair share to others and the common good. Self-serving interpretations of fairness provide a convenient reconciliation of these two apparently conflicting goals: Individuals can have what they want *and* believe their actions are fair.

Research has confirmed the role of egocentric biases in resource allocation contexts including negotiations (e.g., Babcock, Loewenstein, Issacharoff, & Camerer, 1995; Bazerman & Neale, 1982; Neale & Bazerman, 1983) and social dilemmas (Wade-Benzoni, Tenbrunsel, & Bazerman, 1996). The bias manifests itself as a strong tendency for people to justify allocating more of a limited resource to themselves relative to others on the basis of fairness. Further, this effect has been found to generalize across different cultures (Wade-Benzoni et al., 2002) highlighting the pervasiveness of the phenomenon. In this paper, we propose that self-serving biases in fairness judgments play a strong and

important role in the intergenerational domain. Specifically, we predict that people will believe it is fair for the preceding generation to leave fewer benefits for the succeeding one if they are in the preceding generation.

Pilot study

In order to demonstrate that fairness judgments would indeed differ by perspective in the intergenerational domain, we conducted a short pilot study. One-hundred and eight randomly selected travelers at an international airport read a short vignette based on the real-life crisis in the northeastern fishery (and fisheries around the world) where stocks of many species of fish are near collapse and there is much concern as to how a sustainable level of harvesting can be maintained.

Participants were either in the role of the preceding generation (generation x) ($N = 59$) or the succeeding one (generation $x + 1$) ($N = 49$). They were told that they were in the commercial fishing business, and had been informed by the National Marine Fisheries Service (NMFS) about a problem of over-exploitation of the fish resource. (The NMFS is an actual organization whose responsibilities may include attempts to persuade fishers to reduce their harvests voluntarily.) The preceding generation had been asked by the NMFS to reduce their harvest by 50% in order to enable the species to sustain its existence into the future for the benefit of future generations of fishers. Participants rated the fairness of the request from the NMFS on a four-point scale, with "1" labeled as "very unfair" and "4" as "very fair."

The results confirmed that people think the request from the NMFS is fairer when they are in the generation that benefits from the request than when they are the ones who would decide whether or not to respond to the request. The difference in the means by condition for the ratings of fairness of the NMFS request was significant in the predicted direction (generation x condition: $M = 2.85$, $SD = .83$; generation $x + 1$ condition: $M = 3.12$, $SD = .53$; $F(1, 106) = 4.06$, $p = .047$).

Uncertainty in intergenerational decisions

A second factor that we posit will fundamentally influence intergenerational fairness judgments is uncertainty about how future generations will be affected by the actions of present generations. Decisions regarding the future inevitably involve uncertainty partly due to the actual number of possible events that can happen over time to prevent the occurrence of expected consequences, and partly due to our limited knowledge about the future (Jungermann & Fleischer, 1988). Future consequences of intergenerationally relevant decisions are often not well-determined and or even knowable. It may be uncertain whether a negative consequence will ever occur, or whether future technology for decreasing or mitigating the impact of the consequences will be available if they really should occur (Svenson,

1991). Consider, for example, the emission of greenhouse gases. The consequences of an enhanced greenhouse effect range from severe global warming to hardly any changes to a cooling down of parts of the globe (Hillerbrand, Forthcoming).

Because of the inherent uncertainty regarding whether an event will actually occur at a future point in time, people are tempted to put off “bad things” with the hope that they will just go away and similarly, they are tempted to consume “good things” immediately for fear that they will not be available in the future due to unforeseeable circumstances. Stemming from this tendency, uncertainty gives earlier generations an excuse to choose outcomes that favor themselves because they can reason that events may turn out better than predicted (Weinsten, 1980). They are able to maintain optimistic biases about how the world will be in the future because there is not yet any data available to disconfirm their beliefs. Research in fact shows that the farther removed from the time an event is to occur, the easier it is to be optimistic about its outcome (Gilovich, Kerr, & Medvec, 1993). A related effect has been found in social dilemmas with resource uncertainty in which people judge desirable outcomes to be more likely than undesirable ones and thus, are overly optimistic about the effects of their personally beneficial allocations (e.g., Budescu, Rapoport, & Suleiman, 1990; Gustafsson, Biel, & Gärling, 1999, 2000). In light of these findings, we would expect that greater uncertainty about how the behavior of the preceding generation affects the succeeding generation may promote more self-serving judgments of fairness in intergenerational allocations.

In this paper, however, we also posit that uncertainty may not promote as much self-interested behavior in the preceding generation as we might expect based on theories of egocentrism. Intergenerational contexts are characterized by power asymmetry that may cause people to think more seriously about the moral implications of their actions. While high uncertainty can help people to justify allocating more resources to themselves, it also allows for greater potential impact on subsequent generations. The intergenerational context may elicit stewardship concerns in the preceding generation since they are responsible for the outcomes to powerless others. Thus, a concern for the welfare of future generations who will be affected by the present generation’s decisions may counter-balance natural self-interest tendencies, and be reinforced when the consequences to future generations are more uncertain.

Overview of experimental paradigm

The intergenerational dilemmas that we consider here differ critically from classic social dilemmas in that the decision makers exit the social exchange situation after they make their decisions and, thus, they do not benefit or suffer from the consequences of their own decisions. In contrast, in the classic social dilemma the tradeoff is between the individual and the collective (e.g., Brewer & Kramer,

1986; Dawes, 1980). After the individuals involved make their decisions, they remain part of the collective and experience the group level consequences that result from the combination of individual decisions.

Prior work on intergenerational dilemmas has highlighted psychological distance between decision makers and the future consequences of their decisions as a central barrier to intergenerational beneficence (Hernandez, Chen, & Wade-Benzoni, 2006; Wade-Benzoni, 1999, 2002, 2003, 2006, 2007). Long-term intergenerational implications of decisions are both temporally and personally removed, and research confirms that as temporal and interpersonal distance between decisions and consequences increases beneficence toward future generations decreases (Wade-Benzoni, 2007).

The long time horizons implicit in intergenerational contexts present a methodological challenge when investigating the psychology of intergenerational decisions in a laboratory setting. Indeed, one of the limitations shared by much of the previous experimental investigations of intertemporal choice is that findings are restricted to responses given to hypothetical questions and consequences (Benzion, Rapoport, & Yagil, 1989). In this paper, we follow an experimental approach that facilitates the empirical study of intergenerational decisions by enabling us to link participants’ decisions to actual (rather than imagined) consequences and to simulate features that emanate from the combined intertemporal and interpersonal aspects of intergenerational contexts including: (1) Power asymmetry (i.e., present generation has complete unilateral decision-making power and future generations have no voice); (2) Absence of generation-to-generation interaction and contact; (3) Absence of direct reciprocity between generations (i.e., there is no opportunity for future generations to reciprocate the good or bad given to them by prior generations).

The simultaneous presence of these features contributes to the creation of an intergenerational psychology, while enabling us to hold intertemporal and interpersonal distance constant so that we may focus our investigation on other variables (i.e., position, uncertainty, fairness). These conditions help differentiate our research from other prior work examining the egocentric bias in other resource allocation contexts—such as negotiations and social dilemmas—where other affected parties have input into determining the outcomes. They also help us to identify social psychologically motivated factors (as opposed to economically or materially motivated ones) that promote intergenerational beneficence since, with these conditions in place, beneficence to future generations can not be explained in terms of potential future economic or material benefits to the current decision maker (i.e., reciprocation, future quality of generalized social exchange environment, etc.).

Finally, one of the reasons there is so much at stake in intergenerational decisions is that the consequences of decisions, either positive or negative, can increase as resources are transferred from one generation to the next. In the case

of long-term investments, for example, future generations are expected to experience greater monetary benefits relative to those foregone by earlier generations. Similarly, future generations can experience more serious negative consequences as a result of the present generation leaving burdens for them (such as toxic waste that is buried and consequently poisons drinking water decades later) than would be experienced by the present generation had they handled the burdens themselves. This feature adds complexity to intergenerational decisions, elevates the dilemma that people face when allocating resources between themselves and others, and captures an important aspect of intertemporal phenomena. When people choose to benefit themselves at the expense of greater benefit to future others, they are “discounting” the value of that future benefit.

Experiment 1

The purpose of our first full experiment was to introduce the experimental paradigm we describe above, and to test empirically the role of position and uncertainty on fairness judgments.

Methods

Participants and design

Our participant sample was composed of 73 individuals on the administrative staff of a university. Participants were each paid \$5 to participate in the experiment, plus they were paid up to \$7 extra depending on their assigned condition and their decisions. The experiment had a 2 (role: preceding versus succeeding) by 2 (uncertainty: low versus high) between-participants design. The central dependent measure was judgments about fair allocations between generations.

Procedures and manipulations

All allocation decisions were required to be in \$1 increments.¹ In order to make it very clear to participants that they were making decisions with real consequences (as opposed to merely role play), the experimenter stated that the decision involved real money as the participants read written instructions emphasizing this point as well. In addition, cash was used in the allocation procedures (as described below) and was handled by participants during the experiment.

All decisions were made privately (i.e., the experimenter left the room while the participants made the allocation decision). Identities and decisions were kept confidential, and were essentially anonymous since the experimenters

only used participant numbers (rather than names) to record decisions. Further, it was clearly explained to all participants that their consent forms and experimental materials were turned in separately and so we would have no way to link their name with their responses, and thus their confidentiality was ensured.

Preceding generation (generation x). Participants in the generation x role were told that they would be deciding what they believe to be a fair allocation of money between themselves and another person who would be participating in the research after them. They were given \$7 and asked to decide how much was fair to keep for themselves and how much was fair to leave for the next person. They were then given an envelope with \$7 and asked to take the amount that they believed to be fair to keep for themselves and leave in the envelope the amount they believed to be fair to give to the next person.

Succeeding generation (generation $x + 1$). Participants in the generation $x + 1$ role were told that they would be deciding what they believe to be a fair allocation of money between themselves and another person who participated in the research before them. They were told that the preceding person was given \$7 and asked to decide how much was fair to keep and how much was fair to leave for the next person (who, in this condition, would be the participant). They were then asked to indicate how much they believed to be a fair allocation of the \$7 between the previous person and themselves (without yet knowing what the previous person left). After making their fairness judgment, they were told that as a result of the decision of the previous person, they would be receiving \$4 (including any increase per uncertainty manipulation—see below).²

Uncertainty manipulation. In the low uncertainty conditions, participants were told that the amount of money left by the preceding generation for the succeeding generation was increased by 100%, such that generation $x + 1$ received twice as much as generation x left in the envelope. In the high uncertainty conditions, participants were told that the amount of money left by the preceding generation for the succeeding generation was increased by between 0% and 200%, such that generation $x + 1$ received something between the same amount generation x left in the envelope and three times as much. Note that the expected value in both conditions would be the same. For example, in the low uncertainty condition, if generation x left \$3, then it would increase by \$3—leaving generation $x + 1$ with \$6. In the high uncertainty condition, if generation x left \$3, then generation $x + 1$ would get between \$3 (\$3 left plus increase of zero) and \$9 (\$3 left plus increase of \$6 (200% of \$3)).

¹ The reason for this restriction was twofold. First, it enabled a manageable degree of administrative complexity in running the experiments. Second, pre-testing indicated that if participants were able to split the money evenly, the strength of the pervasive equality norm overwhelmed our ability to obtain enough variance to investigate other potential mechanisms in the decision process.

² Note that this allocation to the succeeding generation was not central to our investigation and was implemented primarily for the purpose of follow through for the benefit of participants.

Manipulation checks and post-decision questions

Participants were asked by how much (in percentage) they thought the money left in the envelope increased. To check the effectiveness of the uncertainty manipulation, participants were then asked how confident they were of their answer about the increase from 0% to 100% confident. In addition, they were asked to indicate on a 6-point scale (1 = not at all, 6 = very much so) the extent to which they agreed with the following statement: “How [the next person will/I would] be affected by [my decision/the decision of the previous person] was uncertain.”

Results

The manipulation checks indicated that the uncertainty manipulation was effective. Participants in the low uncertainty condition were significantly more confident in their increase estimates than those in the high uncertainty conditions. In addition, participants perceived significantly more uncertainty regarding how the decisions of generation x would affect generation $x + 1$ in the high uncertainty conditions (Table 1).

The amount of money participants judged as fair for the first generation to keep was submitted to a 2 (role: preceding versus succeeding) by 2 (uncertainty: low versus high) between-participants ANOVA (Table 2). Our results indicated that there was a main effect for role ($F(1, 69) = 10.69, p = .002$), but not for uncertainty ($F(1, 69) = 1.90, p = .173$), and no interaction between the two ($F(1, 69) = .424, p = .517$). The mean fairness judgments (i.e., what is fair for generation x to keep) were significantly lower for the succeeding generation ($M = 3.57, SD = .76$) than for the preceding generation ($M = 4.24, SD = .98$) as predicted.

Discussion

The main effect for role indicated evidence of egocentric interpretations of fairness in intergenerational allocation decisions as we expected. We were surprised, however, that our uncertainty manipulation did not have more of an effect on allocation fairness judgments—especially in light of the fact that our manipulation checks for uncertainty clearly indicated that we successfully manipulated perceptions of uncertainty. We surmised

Table 1
Uncertainty manipulation checks—Experiment 1

	Mean	SD
Confidence % ($F(1, 70) = 53.53, p = .000$)		
Low uncertainty	96.03	13.22
High uncertainty	52.57	33.48
Perceptions of uncertainty ($F(1, 62) = 7.66, p = .007$)		
Low uncertainty	2.45	1.72
High uncertainty	3.61	1.63

Table 2
Fairness judgments—Experiment 1

Condition	Mean	SD	N
Generation x , low uncertainty	4.32	.946	19
Generation $x + 1$, low uncertainty	3.78	.790	18
Generation x , high uncertainty	4.17	1.04	18
Generation $x + 1$, high uncertainty	3.36	.682	18
$F(3, 69) = 4.35, p = .007$			

All means indicate what the participant thought was fair for generation x to keep.

that the *nature* of the uncertainty may be quite a critical distinction. Specifically, in our first experiment, if generation x left anything (as little as \$1), the future generation would still benefit—it was just a matter of how much. In real world intergenerational decisions, it is not just a matter of how much the future generation will benefit, but *whether or not they will benefit at all* as a result of the sacrifices of present generations.

We believe that people generally understand that there is always some uncertainty regarding future consequences and thus they may be relatively unaffected by a manipulation that merely captures degree of uncertainty of future consequences—such as in this first experiment. However, when such a stark possibility of the future generation receiving nothing at all as a result of the decisions of the prior generation is introduced, people are compelled to think more seriously about the implications of the actions of the preceding generation.

In real life intergenerational decisions—especially those involving resource allocations—a key aspect of intergenerational justice is preserving options and possibilities for future generations. In cases involving renewable resources, such as the fisheries example we use in our pilot test, the resource has the possibility of replenishing itself as long as the species is not wiped out completely. It is thus the possibility of completely eliminating the access to a resource that is critical in the psychology of intergenerational justice. The possibility that the future generation could get nothing is captured by the manipulation in the two following experiments.

Experiment 2

Experiment 2 was similar to Experiment 1 in that we explore both the effects of role and uncertainty in intergenerational fairness judgments. We changed our manipulation of uncertainty, however, such that in high uncertainty conditions, it was possible that generation $x + 1$ could receive no benefit regardless of how much generation x left them. We believe this captures more accurately the essence of how uncertainty typically affects intergenerational decisions. We describe this manipulation in more detail below.

In addition, while Experiment 1 enabled us to demonstrate that fairness judgments differ according to position

in the intergenerational sequence, and judgments appear to be biased in a self-serving direction, we were not able to determine which role was the source of egocentrism, or if both roles partially contributed to it. We thus added to our next experiment control conditions that enabled us to determine a baseline fairness standard as judged by a third party outside of the intergenerational sequence. These participants had no vested interest in the outcome of the allocation and helped us to determine an objective evaluation of a fair allocation between the preceding and succeeding generations. We explain the details of this condition in more depth below.

Methods

Participants and design

Our participant sample for this experiment was composed of 187 undergraduate students at a major university who were paid \$8 to participate in the experiment.³ In addition, they were paid up to \$7 extra depending on their assigned condition and their decisions. Our second experiment was run in two parts. The first part had a 2 (role: preceding versus succeeding) by 2 (uncertainty: low versus high) between-participants design; 150 participants were randomly assigned to one of these four conditions. In order to obtain a baseline standard of fairness, we later added control conditions in which people were not in either the role of preceding or succeeding generation. These 37 participants were randomly assigned to either low or high uncertainty control conditions.

Procedures and manipulations

All procedures, materials, measures, and manipulation checks were the same as for Experiment 1, with exceptions described below.

Uncertainty manipulation

In the low uncertainty conditions, participants were told that the amount of money left by the preceding generation for the succeeding generation was increased by 50%, such that generation $x + 1$ received one and a half times as much as generation x left in the envelope. In the high uncertainty conditions, participants were told that the amount of money left by the preceding generation for the succeeding generation was increased by between -100% and 200% , such that generation $x + 1$ received something between zero and three times as much as generation x left in the

envelope. Note that the expected value in both conditions would be the same. For example, in the low uncertainty condition, if generation x left \$6, then it would increase by \$3, leaving generation $x + 1$ with \$9. In the high uncertainty condition, if generation x left \$6, then it would leave generation $x + 1$ with anywhere from zero (-100%) to \$18 ($\$6 + 200\%$ increase of \$12).

Control conditions

In the control conditions, participants were told that they would be deciding what they believed to be a fair allocation of \$7 between two other people who would also be participating in the research. The preceding generation was described as “Person 1” who would be given the money allocated to them immediately, and the succeeding generation was described as “Person 2” who would be given the money allocated to them later.

Measures

Those in the role of the preceding generation were first asked to write down the amount that they believed to be a fair allocation of the \$7 between themselves and the next person. Next, they were given the envelope with the money and asked to take the amount that they believed was fair to keep for themselves and leave in the envelope the amount they believed was fair to give to the next person.

Those in the role of the succeeding generation were asked to write down the amount they believed to be a fair allocation of the money between the previous person and themselves. Next, they found out that they would be receiving \$3 as a result of the decision of the previous person.⁴

Participants outside the intergenerational sequence (i.e., those in the control conditions) were asked to write down the amount they believed to be a fair allocation of \$7 between Persons 1 and 2. Next, they were given two envelopes, one labeled “Person 1” and the other labeled “Person 2”, and asked to allocate what they believed was fair to give to each person by placing the money in the envelopes as they saw fit.

We included the same three post-decision questions as with Experiment 1, and added an open-ended question asking participants to describe how they made their decisions.

³ This difference in participant compensation rate as compared to our first experiment reflects an increase in the university rates for paying people for participating in research. Thus, to ensure we were able to recruit participants by following the current norms, we used the updated standard rate of compensation. We do not believe this difference had any bearing on the results since it was constant across conditions within each experiment. Critically, we kept the allocation amount (\$7) the same for all experiments.

⁴ This amount is different from that of Experiment 1 due to the change in the uncertainty manipulation. Specifically, in the low uncertainty condition in Experiment 1 the money left for the succeeding generation increased by 100%. Thus, if the preceding generation left \$2 in the envelope, the succeeding generation would get \$4. In the low uncertainty condition in Experiment 2 the money left for the succeeding generation increased by 50%. So, if the preceding generation left \$2 in the envelope, the succeeding generation would get \$3. Thus, for both experiments, the final amount the succeeding generation received reflected that the preceding generation left \$2 in the low uncertainty conditions.

Results

Our manipulation checks indicated that the uncertainty manipulation was effective. Relative to the high uncertainty conditions, participants in the low uncertainty conditions were significantly more confident in their estimates of the expected increase in money left for generation $x + 1$, and they perceived significantly less uncertainty regarding how the decisions of generation x would affect generation $x + 1$ (Table 3).

The amount of money participants judged as fair for the first generation to keep was submitted to a 2 (role: preceding versus succeeding) by 2 (uncertainty: low versus high) between-participants ANOVA (Table 4), ($F(3, 146) = 10.29$, $p = .000$). There was a main effect for role ($F(1, 146) = 24.79$, $p = .000$), a main effect for uncertainty ($F(1, 146) = 6.30$, $p = .013$), and no interaction between the two ($F(1, 146) = .484$, $p = .488$). As expected, analyses comparing fairness judgments for the preceding ($M = 4.69$, $SD = 1.06$) to the succeeding ($M = 3.73$, $SD = 1.35$) generation (i.e., collapsing across uncertainty conditions) indicated that they differed from each other in the predicted direction ($t = -4.85$, $p = .000$). That is, people thought it was fair to allocate fewer resources to the succeeding generation when they were in the role of the preceding generation rather than in the role of the succeeding one.

In order to gauge how these ratings compare to an objective standard, we compared them to the fairness judgments of participants in the control conditions (collapsed across levels of uncertainty). The results show that the fairness judgments in the control conditions ($M = 4.02$, $SD = .51$) were greater than those for the succeeding generation ($M = 3.73$, $SD = 1.35$) and less than those for the preceding generation ($M = 4.69$, $SD = 1.06$). Contrast analyses between fairness ratings in the control conditions and the preceding generation ($t = -4.61$, $p = .000$), and between the control conditions and the succeeding generation ($t = 1.58$, $p = .117$) indicates the presence of egocentrism in the preceding generation but not the succeeding

Table 4
Fairness judgments—Experiment 2

	Mean	SD	N
Gen. x and Gen. $x + 1$ conditions			
Generation x , low uncertainty	4.86	1.12	38
Generation $x + 1$, low uncertainty	4.04	1.00	36
Generation x , high uncertainty	4.52	.974	41
Generation $x + 1$, high uncertainty	3.41	1.59	35
$(F(3, 146) = 10.29, p = .000)$			
Control conditions			
Control, low uncertainty	4.22	.348	19
Control, high uncertainty	3.81	.572	18
$(F(1, 35) = 7.02, p = .012)$			

All means indicate what the participant thought was fair for generation x to keep.

generation. Note that significant differences as compared to the objective fairness judgment indicates evidence of egocentrism.

Further, our data indicated that when uncertainty about the consequences to the second generation was high, people judged that it was fair for the first generation to keep less as compared to when uncertainty was low. This result was consistent across preceding and succeeding generations (high uncertainty: $M = 4.01$, $SD = 1.40$; low uncertainty: $M = 4.46$, $SD = 1.14$; $F(1, 149) = 4.76$, $p = .031$) and in the control conditions (high uncertainty: $M = 3.81$, $SD = .572$; low uncertainty: $M = 4.22$, $SD = .348$; $F(1, 36) = 7.02$, $p = .012$).

Finally, we coded participants' responses to the open-ended question asking them to describe how they made their fairness decision in order to get a sense of which fairness rules they used, if any. There were two fairness rules that were mentioned in their open-ended responses, including: (1) An attempt to equally split the final amount, taking into account the increase for generation $x + 1$; and (2) An attempt to split the money such that each generation had equal starting amounts. No participants cited an attempt to equally split the initial amount of \$7. Overall, 92% of all participants who noted the use of a fairness rule

Table 3
Uncertainty manipulation checks—Experiment 2

	Mean	SD
Confidence % for Gen. x and Gen. $x + 1$ conditions ($F(1, 148) = 30.88$, $p = .000$)		
Low uncertainty	74.14	29.20
High uncertainty	46.95	30.67
Confidence % for control conditions ($F(1, 35) = 18.79$, $p = .000$)		
Low uncertainty	88.42	27.54
High uncertainty	49.44	27.13
Perceptions of uncertainty for Gen. x and Gen. $x + 1$ conditions ($F(1, 148) = 12.07$, $p = .001$)		
Low uncertainty	2.62	1.51
High uncertainty	3.53	1.67
Perceptions of uncertainty for control conditions ($F(1, 35) = 4.51$, $p = .041$)		
Low uncertainty	3.05	1.75
High uncertainty	4.22	1.59

attempted to equally split the final amount. We did not find any differences between generations or conditions in the fairness rules cited.

Discussion

Our results confirmed the presence of egocentrism in the fairness judgments of the preceding generation. In addition, uncertainty led people in both roles to believe it was fair to leave more resources for the succeeding generation. It is notable that uncertainty did not promote more self-serving judgments in the preceding generation who held all the power over resource allocation—especially in light of the confirmed presence of egocentrism in this role. In our next experiment we explore further the mechanisms underlying this apparent tempered self-interest.

Experiment 3

In our third experiment, we posit that how people respond to power is key to gaining insight into the psychology of intergenerational decisions. Intergenerational justice theory has highlighted power asymmetry between generations as a prominent characteristic of intergenerational contexts (Wade-Benzoni, 2002, 2003, 2006). In many cases, earlier generations have most or all of the control over how resources will be allocated to subsequent generations. This feature goes hand-in-hand with the fact that later generations do not always have the opportunity to directly reciprocate the behavior or deeds of previous generations. These structural elements can cause intergenerational decisions to be more morally serious than other resource allocation situations such as inter-temporal choice involving only oneself (decisions do not affect others), negotiations (other actors have a voice), and ultimatum games (other relevant actors have some power).

Accordingly, the present generation holds great responsibility for the outcomes to future others and has great potential impact on their well-being. This is especially the case when consequences can increase over time—a feature we capture in our experiments. In such cases, decisions and behaviors of actors in the present can translate into more serious positive or negative effects for future actors. Since the parties who have control over the decision process (present generation) are not the parties with the most at stake (future generations), the dependency of future generations on the present generation is intensified.

Some scholars have argued that such a power imbalance induces feelings of social responsibility (Greenberg, 1978), which in turn heightens people's motivations to help others (Berkowitz, 1972). In these situations, people may be willing to sacrifice their own outcomes to help others who are in a powerless position (Handgraaf, Van Dijk, Vermunt, Wilke, & De Dreu, 2007). In support of this perspective, evidence suggests that whether or not those in power are generous to others depends on feelings of responsibility (Chen, Lee-Chai, & Bargh, 2001; Overbeck & Park, 2001); specifically,

when power increases unilaterally, powerful parties feel responsible for and act in ways to assist those others.

In further support of this notion, research on dictator decisions, which share the feature of unilateral power with the intergenerational contexts we examine here, has shown that a social responsibility norm can emerge when the recipient is completely powerless. According to Suleiman (1996), if an allocator is confronted with a weak recipient, the allocator will assess the decision as strategic and competitive, and is more likely to act in an aggressive way towards the recipient (Baumeister, Smart, & Boden, 1996; De Dreu & van Knippenberg, 2005). In contrast, if the recipient is completely powerless and therefore cannot retaliate in any way, prosocial rather than self-serving considerations become paramount in the decision making process (Handgraaf et al., 2007).

In Experiment 3, we explore the relationships among power, uncertainty, and fairness judgments. In addition, we look at how these variables relate to the notion of stewardship, defined as attitudes and behaviors that place the long-term best interests of others ahead of personal goals that serve an individual's self-interests (Davis, Schoorman, & Donaldson, 1997; Donaldson & Preston, 1995; Hernandez, forthcoming). Based on the data in our first two experiments, and our theorizing above, we expect that both power and uncertainty will elicit stewardship concerns.

Methods

We used the same procedures, materials, measures, uncertainty manipulation and checks as in Experiment 2, with exceptions noted. Different from Experiments 1 and 2, in Experiment 3 we focused exclusively on the preceding generation role since this is the generation whose behavior we need to better understand. In addition, we added a power prime manipulation, as we explain below.

Participants and design

Our participant sample for this experiment was composed of 84 undergraduate students at a major university who were paid \$8 to participate in the experiment. In addition, they were paid up to \$7 extra depending on their decisions. Our third experiment had a 2 (power: primed versus control) by 2 (uncertainty: low versus high) between-participants design.

Power manipulation

Power was subliminally primed using a word completion task adapted from Bargh, Raymond, Pryor, and Strack (1995) and Chen et al. (2001). In this task, participants were instructed to complete sixteen words. Participants randomly assigned to the power prime condition had the following six power-related words embedded in the list: authority, boss, control, executive, influence, and rich. The other ten words were unrelated to power (e.g., board,

building, chalk, clock, coffee, house). For participants in the control condition, the list of sixteen words only included words unrelated to power.

Measures

The post-decision questionnaire included a stewardship scale (Cronbach's $\alpha = .87$), which consisted of five items that were other-directed: "The outcome to the other person was important to my decision", "I was more concerned about myself than the other person" (reversed scored), "The impact of my decision on the other person was important in my decision", "My goal was to look after the interests of the other person", and "Considerations of social responsibility were important in my decision." This operationalization is consistent with past work on stewardship, which highlights the notion of stewardship attitudes as fundamentally other-oriented and emphasizes the importance of social responsibility concerns in stewardship behavior (Block, 1993; Hernandez, forthcoming; Senge, 1990).

Results

The manipulation checks indicated that the uncertainty manipulation was effective. Participants in the low uncertainty condition were significantly more confident in their increase estimates than those in the high uncertainty conditions. Participants also perceived marginally more uncertainty regarding how the decisions of generation x would affect generation $x + 1$ in the high uncertainty conditions (Table 5).

The amount of money participants judged as fair for them to keep was submitted to a 2 (power: primed versus control) by 2 (uncertainty: low versus high) between-participants ANOVA (Table 6). Our results indicated that there was a main effect for power ($F(1, 80) = 4.35, p = .04$), but not for uncertainty ($F(1, 80) = .057, p = .81$), and no significant interaction between the two ($F(1, 80) = .330, p = .567$). Specifically, when primed to feel a sense of power, people judged that it was fair to keep significantly less for themselves ($M = 4.51, SD = .98$) than when they were not primed ($M = 5.05, SD = 1.38$).

We also tested the effects of power and uncertainty on stewardship attitudes. The results showed both a main effect for power ($F(1, 80) = 4.03, p = .048$) and uncertainty

Table 5
Uncertainty manipulation checks—Experiment 3

	Mean	SD
Confidence % ($F(1, 82) = 17.27, p = .000$)		
Low uncertainty	82.32	29.60
High uncertainty	54.74	31.14
Perceptions of uncertainty ($F(1, 82) = 3.03, p = .086$)		
Low uncertainty	3.00	1.60
High uncertainty	3.63	1.71

Table 6
Fairness judgments—Experiment 3

Condition	Mean	SD	N
Control, low uncertainty	5.16	1.33	17
Control, high uncertainty	4.95	1.44	19
Power prime, low uncertainty	4.47	.816	24
Power prime, high uncertainty	4.55	1.14	24
Main effect of power ($F(1, 80) = 4.35, p = .04$)			

All means indicate what the participant thought was fair to keep.

($F(1, 80) = 5.35, p = .023$) on stewardship. These main effects were qualified by a significant interaction between power and uncertainty ($F(1, 80) = 4.19, p = .044$) such that uncertainty had an impact on stewardship only when people were not primed with power. See Table 7, and Figs. 1 and 2. Further, mediation analyses indicated that stewardship indeed mediated the relationship between power and fairness judgments. Following the Baron and Kenny (1986) method and as shown in Table 8, mediation analyses ($F(2, 81) = 17.99, p = .000$) show that stewardship ($\beta = -.517, p = .000$) accounts for the effect of power ($\beta = -.123, ns$) on fairness judgments.

Discussion

Our interpretation of this pattern of results is that high uncertainty about future consequences of present decisions instills people with a feeling of power—just as with the power prime. This feeling of power leads people to look outward to recognize the powerlessness of the future generation, and thus they become more focused on how others are affected by their decisions. This sense of power motivates feelings of social responsibility, which is captured by our stewardship measure.

This finding underscores that people's concerns about justice are not inevitably driven by self-interest motives (e.g., Lerner, 1977; Lerner & Miller, 1978; Holmes, Miller, & Lerner, 2002. Lerner (2001, 2003) proposes that being placed in a position of power may lead people to consider the moral implications of their actions through an intuitive-based process based on an immediate sense of right and wrong rather than through a conventional application of normative rules that favor self-interest. In fact, in situations in which people are confronted with matters of serious consequence and they face actual or even merely threatened injustice, they will act upon an intuitive sense of justice with neither the need for reasoned justification

Table 7
Stewardship attitudes—Experiment 3

Condition	Mean	SD	N
Control, low uncertainty	2.27	1.14	17
Control, high uncertainty	3.37	1.08	19
Power prime, low uncertainty	3.29	1.10	24
Power prime, high uncertainty	3.36	1.23	24
$F(3, 80) = 3.97, p = .011$			

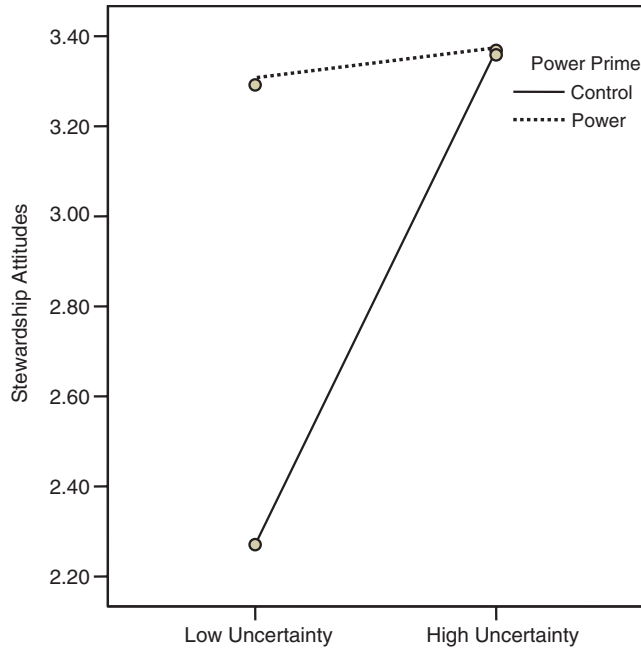


Fig. 1. Power by uncertainty interaction on stewardship attitudes.

Finally, we note that the notion of stewardship is especially appropriate in the context of intergenerational decisions given the relevance of the concept to real world intergenerational issues—such as global warming and the depletion of natural resources. Feelings of stewardship influence people’s intergenerational fairness judgments such that they are more generous in their allocations to future generations. We note that while uncertainty had an effect on stewardship in the control conditions, when power was primed uncertainty did not make a difference because, according to our thesis, people were already in a socially responsible mindset due to the power prime.

General discussion

In a pilot study and two experiments, we found that people judged greater allocations to the preceding generation as fair when they were members of the preceding generation as compared to when they were in the succeeding generation. In comparison to judgments made by a third party unaffected by the outcome, our data indicated that the preceding generation was egocentric in their judgments while the succeeding generation was not. Consistent with prior research on other resource allocation contexts, such as negotiations and social dilemmas, egocentric interpretations of fairness are deeply rooted and clearly evident in intergenerational contexts as well. We believe that it is especially important to know and confirm the presence of egocentrism in intergenerational decisions since its effects may be even farther reaching in intergenerational contexts as compared to other resource allocation situations.

Prior research on intergenerational decisions revealed that the perceived generosity of prior generations affects the beneficence of the present generation toward future generations—a phenomenon called “intergenerational reciprocity” (Wade-Benzoni, 2002). Our interpretations of the past and translations to the future are, however, likely to be subject to self-serving biases. Thus, egocentrism may lead us to interpret the behavior of prior generations in such a way that enables us to justify on the basis of fairness more self-serving behavior with respect to future generations. Indeed, the succeeding generation thought it was fair to get more from the prior generation than the prior generation would be likely to give based on our results. If we consider this finding in conjunction with previous research on intergenerational reciprocity, we can expect the succeeding generation to feel unfairly treated by prior generations and thus reciprocate forward to future generations by allocating fewer resources to them. Exploring how egocentrism and notions of reciprocity across generations interact would be a potential direction for future research.

Our research also highlights the role of uncertainty in intergenerational fairness judgments. Our data indicate that greater uncertainty regarding the effect of the decision of the preceding generation on the succeeding one leads people to judge that it is fair to allocate more resources to the succeeding generation. Significantly, our results

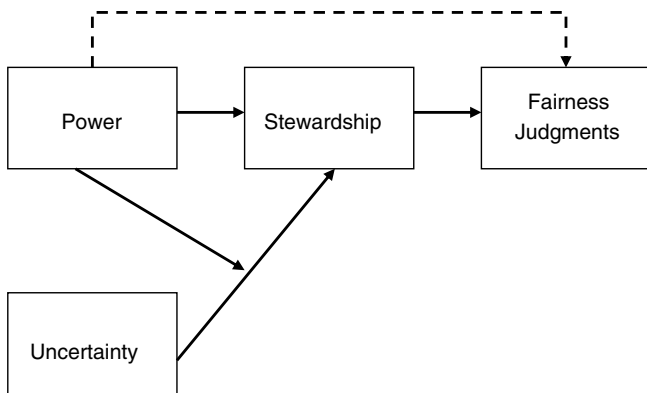


Fig. 2. Experiment 3.

Table 8
Mediation analyses for fairness judgments—Experiment 3

Variable	Step 1 <i>B</i>	Step 2 <i>B</i>	Step 3 <i>B</i>	Sobel test statistic
Power	-.225*		-.123	-1.77+
Stewardship		-.541***	-.517***	
<i>R</i> ²	.050	.293	.308	

Dependent variable: Amount participant believes it is fair to keep *N* = 84; +*p* = .08, **p* < .01, ****p* < .001.

nor consideration of resultant detrimental personal consequences (Lerner, 2003). Lerner’s argument for intuitive-based notions of justice is consistent with the stewardship processes tested here.

suggest that the *nature* of the uncertainty is critical in intergenerational judgments. Beyond the magnitude of the consequences to future generations, it is important if it is uncertain whether or not the future generation will benefit at all from the sacrifices of the present generation. We believe this nuance, captured in Experiments 2 and 3, is critical to the psychology of intergenerational decisions. When there is a possibility that future generations will not have any access to a benefit, people are more conservative in their preservation of the resource for the future. We can see this phenomenon coming into play in real life intergenerationally relevant circumstances when a species we care about becomes endangered. Only when the real possibility that it might not be there at all for future generations is introduced do we tend to take the action necessary to prevent extinction altogether—a form of human stewardship that fortunately we seem able to invoke when the situation is urgent.

Previous research suggests that uncertainty about the consequences of decisions and behaviors enables people to rationalize engaging in more self-interested behavior as opposed to behavior that is more normatively or ethically justifiable (Ferris, Russ, & Fandt, 1989; Hsee, 1995; Loewenstein, 1995; Mannix & Loewenstein, 1993; Ralston, 1985; Tenbrunsel, 1998). We might thus expect greater uncertainty to presumably enable the preceding generation to justify keeping more resources for themselves than we observed in our experiments. Our results suggest, however, that there may be limits to this effect—other factors come into play and it is a more complex story when allocations involve future generations. Specifically, uncertainty may add non-trivially to moral reasoning when intergenerational allocation decisions are made; the power asymmetry that characterizes intergenerational decisions can elicit responsibility concerns that counter-balance self-interest. Indeed our data show that instilling feelings of power led to greater stewardship attitudes, which in turn influenced fairness judgments in a direction that benefited future generations.

Conclusion

As people strive to make fair allocations to future generations, they may try to follow Rawls' (1971) principal of justice—under the veil of ignorance when they do not know their role, what would they do? People prefer to believe that they behave in a way that reflects what they would like the previous generation to have done for them. In the face of egocentrism, however, it is difficult—maybe impossible—for people to succeed in getting under that veil.

On a brighter note, our results also represent some hopeful implications with respect to intergenerational behavior. In light of the inherent psychological distance in intergenerational contexts due to the fact that consequences are both temporally and personally removed from the decision maker, combined with egocentrism, we might

expect the prospects for future generations to be quite grim. Our findings, however, suggest that people may act more generously than expected partly due to responsibility and stewardship concerns that the context elicits. Contrary to what might be expected based on traditional economic models of human behavior, people in the preceding generation generally left something for the future others despite the fact that their own identity and the identity of the next person were not known, and there was no possibility of reciprocation on the part of the recipient; thus, there was no material or monetary incentive to leave anything for others. People in the role of the preceding generation are in a position to determine outcomes to powerless and voiceless others. Such a position can cause them to consider the moral implications of their actions more seriously.

We do qualify our optimism, however, by noting that many real world intergenerational dilemmas are confounded by intragenerational social dilemmas (Wade-Benzoni, 2003), which would make intergenerational beneficence more difficult than would be the case modeled in our experiments. A decision maker in the present generation might want to act on the behalf of future generations, but the potential impact of his or her actions might depend on others within the same generation also making decisions on the behalf of future generations. In such situations, the cooperation of many actors in the present generation is needed in order to benefit future generations.

Nonetheless, despite the substantial barriers to acting on the behalf of future generations, we take heart from our results highlighting the important role that stewardship can play in counter-balancing these obstacles and indeed promoting intergenerational beneficence. Prior theory and research on power and uncertainty would lead us to predict greater levels of self-interest than we observed. Counter-intuitively, power and uncertainty can instead temper self-interest in the intergenerational context thus suggesting that the unique combination of features that characterize intergenerational decisions can generate its own set of psychological dynamics.

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