Maple Trees and Weeping Willows: The Role of Time, Uncertainty, and Affinity in Intergenerational Decisions

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Abstract

Some of the most important issues in business and society today involve a conflict of interest between present and future generations. In this article, I explore how resources are allocated across generations, articulate the role of psychological distance in intergenerational decisions, and develop the construct of intergenerational discounting. Intergenerational discounting is defined as the preference for smaller, highly probable benefits for oneself in the present to relatively larger but less certain benefits for others in the future. In three studies, I explore the role of three variables in intergenerational decisions, including time delay between decisions and their consequences, uncertainty about the future, and affinity with future generations.

> …the Tree of Immediate Gratification, otherwise known as the weeping willow. For a long time, this was my idea of a tree: something you could pick up for $29.99 at the nursery, stuff in the rear of a hatchback, jam into any old hole, and then virtually watch the thing grow. It took less than 3 years for my hatchback-sized willows to blow themselves up to the size of hot-air balloons…Not to take anything away from my willows, but they do lack a certain…gravitas.
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> …A single great tree can make a kind of garden, an entirely new place on the land, and in my mind I was already visiting the place my maple made, resting in its shade. I knew it

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> wouldn't happen overnight, probably not even in my lifetime, but wasn't that precisely the point? To embark on a project that would outlast me, to plant a tree whose crown would never shade me but my children, or more likely, the children of strangers? Tree planting is always a utopian enterprise, it seems to me, a wager on a future the planter doesn't necessarily expect to witness.
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> Just thinking about it in these terms was starting to make me feel rather virtuous, I have to admit. And as I drove to the nursery early one October morning, I began to form large conclusions about Our Age based on the fact that no one planted great trees anymore. Gardeners in this country once planted trees with the kind of enthusiasm we bring to the planting of perennials today. What tree planting we do usually consists of marooning a few small ornamental specimens in a sea of lawn. True, we have less space to work in, and we move every 7 years or so, but I can't help thinking some cultural pathology must be at work here, too, some failure of imagination as regards the future…
>
> [The nursery manager] showed me his stock [of maples]…they were frankly not all that impressive; spindly poles, really, topped by a few forked twigs. Squaring my utopian picture with these glorified dowels wasn't going to be easy. Probably sensing my disappointment, [the nursery manager] rested his hand on one of the trees at shoulder height and said: "But these Norways are some quick growers. Ten years you could have a respectable little tree; twenty, maybe even see a bit of shade."
>
> A "bit" of shade [in twenty years]?! Suddenly I was beginning to feel discouraged about the whole enterprise. …Maybe I'd be better off with an apple tree, or another willow…

In this excerpt from *Second Nature: A Gardener's Education*, the author, Michael Pollan (1991), is struggling with an intergenerational decision. The willow offers certain benefits for himself that he can enjoy and experience relatively soon, versus the maple that represents uncertain benefits in the future mostly to children of strangers. This tree planting decision shares common psychological dynamics with some of the most important intergenerational decisions that we face in business and society today. Competitive pressures on organizations to perform well and survive over time require managers worldwide to take into account long-term consequences of business decisions as well as short-term profit and stock prices. Similarly, decisions made by our leaders in society today have profoundly far reaching effects as they determine how events will unfold in such domains as global level environmental change, social insurance systems, and national financing plans. A challenge that decision makers face when long time horizons are involved is that the actors who are affected by such decisions change over time as new generations of organizational members or societal cohorts eventually take over the roles previously held by earlier generations and inherit the consequences of the actions of prior generations.

Intergenerational Dilemmas

One of the most critical aspects of intergenerational decisions is that the interests of present and future generations are not always aligned. Intergenerational issues are the

most dilemmatic when the present generation is faced with difficult trade-offs between their own well-being and that of future generations. In this article, I consider a class of problems termed ''intergenerational dilemmas'' in which the present generation is faced with a choice of whether or not to incur costs themselves in the present for the benefit of others in the future.

Classic social dilemmas focus on trade-offs between the individual and the collective (e.g., Brewer & Kramer, 1986; Dawes, 1980). Generally, after the individuals make their decisions, they remain part of the collective and experience the group level consequences that result from the combination of individual decisions. Social dilemmas can involve situations in which short- and long-term interests are at odds. In *social delayed traps* behavior with immediate positive consequences for oneself result in long-term negative consequences for oneself and others (e.g., using water during a shortage); with *social delayed fences* immediate effort is required to obtain a long-term collective goal (e.g., investing effort to develop a neighborhood park) (Messick & Brewer, 1983). In contrast to social dilemmas, in the intergenerational contexts I consider here the decision makers exit the social exchange situation over time, and thus do not benefit or suffer from consequences of prior decisions. The removal of the decision-making actors from the collective following their decision is a critical distinguishing feature between intergenerational and classic social dilemmas (including delayed traps and fences).

In many intergenerational decisions, the consequences to future generations (whether they are positive or negative) increase over time. In these situations, intergenerational beneficence involves deferring benefits so that they can grow, or addressing burdens to prevent them from mounting in the future. In the case of long-term investments, for example, future generations are expected to experience greater monetary benefits relative to those forgone 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 where it poisons drinking water decades later) than would be experienced by the present generation had they handled the burdens themselves.

In contexts in which intergenerational consequences increase over time, such as those described above, the nature of the decision is critically different from traditional negotiations in that it is not possible for decision makers to maximize on both the distributive and collective dimensions (Wade-Benzoni, 2006a). Rather, they are faced with a stark choice between the two: Increasing the size of the ''pie'' of resources by deferring escalating benefits (or preventing escalating burdens) for future others requires self-sacrifice on the distributive dimension (i.e., keeping less benefits or taking on more burdens oneself). Since decisions and behaviors that benefit actors in the present translate into more serious downsides for future actors, a self-interested choice is even more selfish than it would be otherwise. This feature further elevates the dilemma that people face when allocating resources to powerless future others, and exacerbates the inherent power asymmetry between present and future generations. The parties who have control over the decision process (present generation) are not the parties with the most at stake (future generations) and thus the dependency of future generations on the present generation is intensified.

Consistent with earlier work on intergenerational dilemmas (e.g., see Hernandez, Chen, & Wade-Benzoni, 2006; Wade-Benzoni, 2002; Wade-Benzoni, Hernandez, Medvec, & Messick, 2008), I adopt a broader definition of "generation" than its conventional application to a 20–30 year time frame within society and family contexts. Prior research has highlighted that it is useful to apply intergenerational terminology to issues and contexts that share characteristics with more traditional applications. For example, past, present, and future sets of organizational actors can be thought of as different "generations" in organizations (see Wade-Benzoni, 2002, for a more in depth discussion of organizational and nontraditional applications of intergenerational terminology). This line of work emphasizes that the simultaneous presence of important features including power asymmetry among actors, lack of direct reciprocity, self-other conflict, future impact of decisions, and role transition is more critical to creating the psychological dynamics of intergenerational decisions than a particular time frame (Wade-Benzoni, 2002, 2003, 2006b; Wade-Benzoni et al., 2008).

Barriers to Intergenerational Beneficence

Given that the decisions of actors in the present can potentially incur large and not easily reversed long-term consequences to organizations and societies alike, it is critical to have a clear understanding of the factors that influence intergenerational decisions. Philosophers and theorists have cited two central reasons why people often do not act on the behalf of future generations: (a) the absence of traditional bonds of reciprocity and (b) the lack of immediacy of future consequences (Care, 1982).

In intergenerational contexts, one generation itself typically does not benefit from the sacrifices it makes for future generations. Arguments on behalf of future generations do not include the kind of actual reciprocity characteristic of intragenerational contexts. Norms of reciprocity are fundamental to social relationships and are a basic metric against which determinations of justice are measured (McLean Parks, 1997). Gouldner (1960) suggests that reciprocity as a moral norm is one of the universal "principal components" of moral codes. He explains that norms of reciprocity provide the social system with stability, especially when there is a potential for exploitation in the presence of power disparities among the parties.

Trivers' (1971) model of reciprocal altruism attempts to explain why organisms do not cheat, where cheating is defined as failure to reciprocate. According to his theory, selection will discriminate against the cheaters if cheating has later adverse effects on their lives which outweigh the benefit of not reciprocating. It will pay to cheat when the "others" will not find out, when they will not discontinue their altruism even if they do find out, or when they are unlikely to survive long enough to reciprocate adequately. In the intergenerational case, all these conditions either hold or they are irrelevant. Future generations may find out about uncooperative behavior of earlier generations, but do not have the opportunity to directly reciprocate those behaviors once the members of earlier generations are no longer a part of the social exchange context. Thus, according to Trivers' model (as well as several other models of altruism) it always pays to "cheat" in such intergenerational contexts.

This observation raises the question of why present generations would ever act on the behalf of future generations in the absence of direct reciprocation opportunities. Proponents of intergenerational justice argue that present generations should treat future generations as they *would like to have been* treated by the generation preceding themselves (Richards, 1983). Such arguments focus on the concept of ''moral'' reciprocity. The moral idea of reciprocity is not that of reciprocal actual advantage, but that of treating persons in the way one would reasonably like to be treated oneself (Richards, 1983).

Further, prior research investigating the role of reciprocity in intergenerational decisions has demonstrated that reciprocity can take on a more generalized form in which people can ''reciprocate'' the good or bad left to them by previous generations by behaving similarly to the next generation (Wade-Benzoni, 2002). In other words, people can pass on benefits (or burdens) to future generations as a matter of retrospective obligation (or retaliation) for the good (or bad) received from past generations. Reciprocity can thus come into play as either a barrier or a facilitator of intergenerational beneficence depending on the behavior of prior generations (see Wade-Benzoni, 2002, for a thorough empirical and theoretical treatment of the role of reciprocity in intergenerational decisions).

Psychological Distance

While prior research has explored the role of reciprocity in intergenerational decisions, in this article I explore the second set of barriers to intergenerational beneficence (e.g., see Care, 1982)—the inherent ''psychological distance'' between decision makers and the future consequences of their decisions. Psychologically distant events are those that are not present in one's direct experience of reality (Liberman, Trope, & Stephan, 2007). Theorists have identified a variety of dimensions of psychological distance (alternatively referred to as ''distality'' or ''lack of immediacy'') including temporal, spatial, social, hypotheticality, and probabilistic (e.g., Bjorkman, 1984; Henderson, Trope, & Carnevale, 2006; Liberman et al., 2007; Loewenstein, 1996; Trope & Liberman, 2003; Wong & Bagozzi, 2005). These various dimensions are anchored on a single starting point (zero psychological distance) corresponding to one's direct experience of the here and now (Bjorkman, 1984; Liberman et al., 2007). Anything else—other times, other places, experiences of other people, and hypothetical or probabilistic alternatives to reality—is psychologically distant to some degree. The intergenerational decisions examined here deal with three of the five dimensions that have been variously identified by theorists as possible contributors to psychological distance: temporal, probabilistic, and social.

Temporal Distance

First, the consequences of intergenerational decisions are removed from the decision maker through the temporal delay that exists between the decision and the consequences of that decision. There is a large and well-established literature on intertemporal choice showing that generally people value commodities that will be consumed in the future less than those in the present—reflecting an inborn impatience and preference for immediate over postponed consumption. As time delay increases, people have greater

difficulty fully understanding and envisioning the consequences of decisions. Beyond cognitive limitations, however, motivational effects—such as the immediate pain of deferral—also make it difficult for people to delay benefits for the future. (See Loewenstein, 1992, for a good review of the cognitive and motivational factors influencing intertemporal choice.)

Analogous to the notion that people are unable to treat their own immediate and future consumption as perfectly commensurable is the idea that the present generation does not put the consumption of future generations on an equal footing with its own current consumption (Elster, 1985; Phelps & Pollak, 1968). Thus, consistent with the findings from the literature on intertemporal choice, we would expect the temporal aspect to make it more difficult for people to act on the behalf of future generations when compared with comparable intratemporal trade-offs.

Probabilistic Distance

Further, decisions regarding the future inevitably involve uncertainty. Although they can influence decisions independently, time and uncertainty are inherently confounded. Uncertainty about the future is 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 itself (Jungermann & Fleischer, 1988). 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.

Uncertainty comes into play in intergenerational contexts in many ways. Future consequences of intergenerationally relevant decisions are often not well determined 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). Damage to future generations might be severe, but the probability of occurrence of such damage is unknown. Further, the outcomes of various decision options in intergenerational decisions are often not clear to the decision maker. The future course of the environment, societies, and technologies is to a large extent unknown to the decision maker at the time of the decision, but will also codetermine its consequences (Hillerbrand, forthcoming).

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. Beyond this, some theorists note that the preferences and values of future others might be unknown and further wonder how uncertainty about the existence of future generations might influence our current decisions regarding the future (Ponthiere, 2003). Thus, uncertainty about how future generations will be affected by our actions is fundamental to intergenerational dilemmas and adds nontrivially to moral reasoning when intergenerational allocation decisions are made (Wade-Benzoni et al., 2008). In addition, empirical evidence shows that uncertainty

influences decisions in many contexts, and individuals are typically neither rational nor consistent in making judgments under uncertainty (Brannon, 1985; Crawford, 1974; Salancik & Pfeffer, 1978). Since uncertainty is so prevalent in intergenerational situations, and we know that uncertainty affects decision making, understanding the role of uncertainty is central to understanding the psychology of intergenerational decisions.

Uncertainty represents its own form of psychological distance. An uncertain event has a degree of abstractness about it—it lacks the concreteness and value of an outcome that is guaranteed. The adage "a bird in hand is worth two in the bush" captures this notion well. Uncertainty gives people an excuse to choose outcomes that favor themselves because they can reason that maybe events will turn out better than predicted. People 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). Thus, we would expect that the greater the uncertainty about the consequences to future generations, the lower the intergenerational beneficence.

Social Distance

Finally, the psychological distance that is already present from the time dimension and corresponding uncertainty is compounded in intergenerational contexts by the fact that it is others (rather than oneself) that will be affected in the future by one's decisions. This fact critically differentiates intergenerational decisions from more traditional intertemporal contexts in which actors make decisions in the present that affect themselves (rather than others) in the future. When making trade-offs between the well-being of oneself and that of others, there is a tension between self-interest and the desire to benefit others. Although people may care about the outcomes of others, trade-offs between one's own and others' well-being are typically skewed to the point where very little weight is put on the effect of one's decisions on others (Loewenstein, 1996). The impact of individuals' decisions on themselves is generally far more immediate than their impact on other parties. It is difficult to forgo consumption for one's own deferred benefit, but even more difficult to forgo consumption for the benefit of another person in the future.

There is concreteness and importance attached to personal events. Events that affect others can appear abstract and unreal in comparison to events that involve oneself. There are, however, certain factors that bring events involving others closer to oneself, without them actually happening to oneself. In this article, I posit that the psychological distance between oneself and future generations stemming from the interpersonal dimension can be influenced by "affinity" to future generations. Affinity is conceptualized as a combination of empathy, perspective-taking, and perceived oneness. It is a function of the extent to which the present generation feels empathetic toward future generations, is able to visualize future generations, and believes they understand how their actions will affect future generations. People can gain a sense of vicariously experiencing the benefits and

burdens left to future generations if adequate levels of affinity are present, and thus greater levels of affinity will likely promote more intergenerational beneficence. High affinity with future generations can contribute to a blurring of the distinction between the interests of the present generation and those of future generations.

In sum, consequences of decisions have the most immediate effect on decision makers when certain events occur now (or in the immediate future) to the decision maker him- or herself. In contrast, intergenerational decisions typically involve consequences that are more distant or "less immediate" to the decision maker because they are farther away in time, less certain, and have less to do with the self and more to do with others who may not be important or relevant to the self. The limitations of distal cognition prevent people from being fully aware of effects that are delayed, uncertain, and do not involve the self. These limitations affect human cognitive ability to understand and make sense of the consequences of intergenerational decisions. In addition to cognitive factors such as the ability to imagine the future, intergenerational decisions are also affected by motivational factors such as immediately experienced emotions (Cottle & Klineberg, 1974; Jevons, 1871). The closer events are to us, the more we care. Since intergenerational consequences of one's actions lack a sense of immediacy, there is great psychological distance between oneself and those consequences—which can accordingly limit intergenerational beneficence.

Intergenerational Discounting

The psychological distance between decisions and consequences on multiple dimensions leads people to discount the value of commodities to future generations. Intergenerational discounting refers to the observation that individuals prefer smaller, highly probable benefits for themselves now as opposed to larger but less certain benefits for others in the future (Wade-Benzoni, 1999, 2002). In Pollan's tree planting decision, he can literally witness the benefits of the willow as he "practically watches it grow," or he can hope that others will experience the grown maple at some point in the future. The maple offered more shade, more beauty, and more "gravitas" than the willow, but those uncertain benefits were not worth as much to unspecified future others in 20 years as they would be to him in 3 years. The greater psychological distance between the decision maker and the future benefits of the maple would likely cause the gardener to discount the benefits to future others. As a result, he may prefer the smaller amount of shade and beauty in 3 years to a much larger amount of shade and beauty in 10 or 20 years.

The degree of intergenerational discounting reflects how much the interests of future generations are represented in current decisions and can be measured by observing the extent to which decisions favor gaining a benefit or avoiding a burden for oneself in the present over gaining a larger benefit or avoiding a larger burden for others in the future. Generally, the greater the discount rate, the less future benefits count when compared with present costs (Brennan, 1995).

A discount function is the relation between the value of a good and a given dimension of discounting. The value of a commodity to an individual may be discounted in

several ways. Since costs and benefits are spread out over time in the intergenerational context, at first glance it seems that time discounting is appropriately applied to intergenerational issues. In the existing literature on intertemporal choice, time discounting as a preference for earlier rather than later consumption generally concerns impatience with respect to one's own consumption (Schelling, 1995). By contrast, as noted earlier, intergenerational trade-offs involve forgoing a benefit or taking on a burden so that *someone else* may benefit at a later point in time. The application of the traditional notion of time discounting to intergenerational issues would thus be inappropriate because it would assume that those who make sacrifices for the benefit of future generations value increments in other people's utility as if they were increments in their own utility (Schelling, 1995); present and future generations would be treated as a single agent.

A hazard in the assumption of the ''single agent'' is the loss of a core issue in intergenerational situations—the trade-off between the well-being of the decision maker(s) and that of others. In this respect, the trade-off is comparable to social discounting, in which the value of a good is discounted because it is split among a group of people. Either the number of people who share the resource or the very act of sharing alters the subjective value of the benefit. For example, an individual may choose to keep $11 for him- or herself rather than agree to share $100 with nine other people (Rachlin & Raineri, 1992).

Based on the discussion above, it is predicted that the further removed the consequences of a decision are from the decision maker, the greater the intergenerational discounting. To represent suitably the discounting in intergenerational decisions, it is necessary to consider a discount function that includes all three dimensions discussed above: temporal, probabilistic, and social discounting in which attainment of the commodity may be (respectively) delayed, risky, or shared with other individuals. In the three studies that follow, I investigate the role of time delay, uncertainty, and affinity to future generations in the phenomenon of intergenerational discounting. Specifically, I predict that the greater the time delay between the action and the consequence of the action, the greater the uncertainty about the future consequences of a present action, and the lesser the affinity with future generations, the greater the extent of intergenerational discounting.

Study 1

Methods

Eighty-one randomly selected travelers at a major international airport participated in this study.[1] The materials were based on the real life crisis in the northeastern

[1]This participant population was chosen as an alternative to traditional student samples in order to obtain more variance on the demographic variables of age and number of children. The data presented here do not provide evidence that these variables influence intergenerational behavior, despite the common perception that they do.

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. The fisheries situation is a critical intergenerational issue for both business and society since an entire industry is suffering economic consequences of previous generations' myopic decisions, and an important natural resource is threatened.

Participants were put in the role of an owner of a large commercial fishing business. They were told that this was the last year that they would be in the business because, for personal reasons, they would be retiring from the business after this season. The National Marine Fisheries Service (NMFS) had informed them about a problem of over-exploitation of the fish resource. They 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. They were told that since they were the largest commercial fishing company in the industry, their harvest would have the greatest impact on the resource. Accordingly, the behavior of other companies would not be an issue in their decisions. At maximum capacity, they could harvest 1,000 metric tons. Thus, the NMFS was asking them to harvest only 500 metric tons this year. The NMFS's request was not legally enforceable—participants were asked to limit their harvest voluntarily. Participants were told that their personal savings for retirement was modest.

The situation described to participants was such that they would not benefit from a sacrifice (harvesting reduction), but the costs of the collapsed resource to future fishers was much greater than the cost to the present fishers (the participants in the study) of reducing their harvest. Participants were shown two graphs. The first one illustrated the inverse relationship between their harvest level and the sustainability of the resource such that greater harvests reduced sustainability and thus negatively affected future fishers. The second graph showed a positive correlation between their profits and their harvest level (i.e., greater harvests corresponded to greater profits) in order to highlight the self-other trade-off inherent in the decision. For example, if they cut their current harvest in half (i.e., from 1,000 to 500 metric tons), their current profits would be reduced by 50%.

The cost/benefit trade-off between present and future generations described in the materials mirrored the real-world situation. In addition, the NMFS is an actual organization whose responsibilities may include attempts to persuade fishers to reduce their harvests voluntarily (e.g., see McBeath, 2004; National Marine Fisheries Service, 1992).

Measures

After reading the information described above, participants were asked to refer to their thoughts and feelings while making their harvesting decision, and to indicate using a 7-point scale (1 = not at all and 7 = very much so) the extent to which they agreed with the following statements for each of the three independent variables listed below. The questions measured the participants' actual perceptions of time delay, uncertainty,

and affinity to future generations.[2] Scales were created from the items for each of the three variables.

Time Delay

"Future fishers would begin to benefit from my potential sacrifice in the near future"; "Future fishers would begin to benefit from my potential sacrifice in the distant future"; "Future fishers would begin to benefit from my potential sacrifice in less than one decade"; "Future fishers would begin to benefit from my potential sacrifice in more than one decade."

Uncertainty

"The benefit to future fishers from my potential sacrifice was uncertain"; "My potential sacrifice would guarantee benefit to future fishers"; "I was unsure whether my potential sacrifice would benefit future fishers"; "The benefit to future fishers from my potential sacrifice was clear and unambiguous."

Affinity to Future Generations

"I felt empathetic toward future fishers"; "I was able to imagine future fishers"; "I felt an affinity toward future fishers"; "I understood the impact my decision would have on future fishers."

Measure of Discounting

Intergenerational discounting was measured implicitly from participants' decisions. Participants decided how they would allocate resources between themselves and future generations, knowing that future generations would be affected by the allocation more so than they themselves would be affected. For example, the benefits kept for present generations were smaller relative to the amount of benefit they represented if they were allocated to future generations. Thus, the more resources participants' kept for themselves, the more intergenerational discounting was occurring. Specifically, participants were asked to indicate the amount of fish they would harvest. Participants could decide to operate their business at any capacity between 100% and 50%. In other words, they could harvest any amount between 1,000 and 500 metric tons. The closer to 100% they chose to operate (1,000 metric tons), the more they were discounting the benefits to future generations.

[2]Note that these variables measured actual perceptions of these dimensions of psychological distance rather than representing an experimental manipulation of them. Earlier versions of this study revealed that time, uncertainty, and affinity are difficult to manipulate in such vignette contexts for several reasons. First, individuals' perceptions of a given time delay differ. For example, for some people 2 years may be a very long time, so they perceive a long time delay even though this may represent a small time delay manipulation (as opposed to a long time delay manipulation of 20 years). Similarly, for some people anything involving future generations is extremely uncertain regardless of how uncertainty is manipulated. Those individuals perceive large amounts of uncertainty even in small uncertainty manipulation conditions. Affinity is similarly difficult to manipulate in imaginary contexts.

Demographic and Altruism Measures

Because of the common perception that age, gender, number of children, and individual altruism can influence intergenerational behavior, measures of these variables were included at the end of the exercise. For altruism, a measure called the ''self-report altruism scale'' developed by Rushton, Chrisjohn, and Fekken (1981) was used. In this self-report altruism scale, respondents rate the frequency with which they have engaged in 20 specific behaviors. Rushton et al. found that this scale predicts such criteria as peer-ratings of altruism, completing an organ-donor card, and paper-and-pencil measures of prosocial orientation.

Results

The overall mean harvest for all participants was 597 metric tons (SD = 138). Reliability tests were conducted for each block of four questions for each of the three independent variables. The tests indicated alphas of .71, .76, and .81 for time, uncertainty, and affinity, respectively. The items for each variable were then averaged together to create a scale measuring each one. Responses for two of the time and two of the uncertainty items were appropriately reversed.

A regression was run treating harvest (discounting measure) as the dependent variable and the measures of time delay, uncertainty, and affinity to future generations as the independent variables. The results from the regression are summarized in Table 1. Uncertainty was significantly related to harvest in the predicted direction (the higher the uncertainty, the greater the discounting) and affinity was significantly related to harvest in the predicted direction (the higher the affinity, the lower the discounting). Time, age, gender, and number of children were not significantly related to harvest. Altruism was significantly related to harvest, but in a curiously unexpected direction (greater altruism was related to greater harvesting). See Table 2 for descriptive statistics and correlations among the primary variables.

Table 1
Regression Results—Study 1

Variable	*B*	Beta	*t*
Affinity	−45.12	−.37	−3.56**
Time	.89	.01	.12
Uncertainty	39.74	.42	3.91**
Gender	−1.49	−.01	−.06
Children	4.48	.04	.35
Age	−.76	−.07	−.54
Altruism	2.70	.22	2.07*
(constant)	574.78		

Notes. *$p < .05$ and **$p < .001$.
R^2 = .42 and adj. R^2 = .36

Table 2
Descriptive Statistics and Correlations for Studies 1 and 2

	Study 1 (harvest)			Study 2 (tax)						
Variable	*M*	*SD*	alpha	*M*	*SD*	alpha	1	2	3	4
1. Time	4.40	1.53	.71	4.29	1.38	.70		.26*	−.16	.12
2. Uncertainty	3.16	1.44	.76	3.87	1.67	.86	.078		−.27*	.53**
3. Affinity	5.64	1.10	.81	5.25	1.12	.77	.005	−.40**		−.46**
4. Discounting	597	138	–	33	34	–	−.19**	−.47**	.099	

Notes. Study 1 correlations (n = 81) are above the main diagonal and Study 2 correlations (n = 203) are below the main diagonal. Dashes indicate that values are not applicable.
*p < .05 and **p < .01.

Study 2

In Study 2, I examine the relationships among time, uncertainty, affinity, and intergenerational discounting in a different context. In addition, a central purpose of Study 2 was to explore potential interactions among the three dimensions of psychological distance. Theoretically, it is reasonable to anticipate that these factors may have an effect on the extent to which the other variables will influence intergenerational discounting. That is, each may have a moderating effect on the other.

Consistent with this line of thought, research by Jenni and Loewenstein (1997) reveals that people may be more empathetic toward identifiable when compared with statistical victims—suggesting a possible interaction between uncertainty and affinity. Similarly, recent research conceptualizing organizational citizenship behaviors (OCBs) as social dilemmas in which short-term employee sacrifice leads to long-term organizational benefits suggests an interaction between time and affinity (Joireman, Daniels, George-Falvy, & Kamdar, 2006; Joireman, Kamdar, Daniels, & Duell, 2006). Joireman et al. find that empathy moderates the impact of anticipated time horizons (i.e., tenure in the organization) on OCBs, such that short-term horizons lead to declines in OCBs only among those low in empathy. Specifically, when employees believe they will be leaving the company soon and thus will not personally benefit from their OCBs (a special case of the social delayed traps considered by Joireman et al. that corresponds to intergenerational dilemmas), those with lower propensities for empathy and perspective-taking reduce their OCBs more than those higher in empathetic dispositions. Thus, in Study 2, in addition to testing for the main effects of time, uncertainty, and affinity on intergenerational discounting, I also test for all three possible two-way interactions among these variables.

Methods

Two hundred three graduate students participated in this study. Participants were entered in a lottery to win $200 for their participation in the study. Participants were told that comprehensive research was being conducted to gather information on the

issue of gasoline taxation. Since the university was located within a suburban environment, and it was not common for graduate students to live on campus, most participants drove cars on a regular basis. Thus, gasoline taxation was an issue relevant to the real lives of participants. Participants' decisions had no bearing on their likelihood of winning the lottery. All participants' chances of winning the lottery were equally likely.

Participants were first provided with some actual information relevant to the taxation of gasoline such as statistics on the transportation sector (petroleum consumption, energy use, and contribution to air pollution) and an outline of the benefits of the gasoline tax. Then, an illustration of the relationship between the amount of increase in the gasoline tax and the benefits to future generations was provided. The illustration showed that the relationship was positive such that the greater the gasoline tax increase, the greater the future benefits. Participants were specifically asked to consider the relationship between the gas tax and greenhouse emissions. They were told that scientists estimated that with a 50 cent increase in the federal gasoline tax, the United States annual emission of greenhouse gas from the transportation sector would be reduced by a given amount.

Measures

After completing the exercise, participants were asked to refer to their thoughts and feelings while reading the gasoline tax increase survey they had just completed, and to indicate using a 7-point scale (1 = not at all and 7 = very much so) the extent to which they agreed with the statements listed below. Once again, the questions formed scales that measured the participants' actual perceptions of time delay, uncertainty, and affinity to future generations.

Time Delay

"Future generations would begin to benefit from a gasoline tax increase in the near future"; "Future generations would begin to benefit from a gasoline tax increase in the distant future"; "Future generations would begin to benefit from my potential sacrifice in less than one decade"; "Future generations would begin to benefit from my potential sacrifice in more than one decade."

Uncertainty

"The benefit to future generations from a gasoline tax increase was uncertain"; "My potential sacrifice would guarantee benefit to future generations"; "I was unsure whether my potential sacrifice would benefit future generations"; "The benefit to future generations from a gasoline tax increase was clear and unambiguous."

Affinity to Future Generations

"I felt empathetic toward future generations"; "I was able to imagine future generations"; "I felt an affinity toward future generations"; "I understood the impact the gasoline tax increase would have on future generations."

Measure of Discounting

Participants were asked to indicate how much of a federal gasoline tax increase they thought would be appropriate given the relationship between the benefits to future generations and an increase in the tax. They were told that the increase would be in addition to the current federal and state tax and, for the purposes of this survey, they should assume that the burden of the tax would be distributed equitably on all sectors of society. Intergenerational discounting was measured implicitly from participants' decisions. The greater the amount (in cents) they thought was appropriate, the more they were willing to take on a burden for the benefit of future generations. Thus, the greater the amount (in cents) they thought was appropriate, the less intergenerational discounting was occurring.

Demographic and Altruism Measures

After completing the exercise, participants recorded their age, gender, number of children, and the ''self-report altruism scale'' developed by Rushton et al. (1981).

Results

The overall mean increase in the federal gasoline tax that participants reported as appropriate was 33 cents (SD = 34). Measures were created for time, uncertainty, and affinity using the four questions for each of the variables described in the methods section. Reliability tests were conducted for each of the three variables. The tests indicated alphas of .70, .86, and .77 for time, uncertainty, and affinity, respectively. The four items for each variable were then averaged together to create an overall measure of each one. Responses for two of the time and two of the uncertainty items were appropriately reversed.

A regression was run treating gas tax (discounting measure) as the dependent variable and the measures of time delay, uncertainty, and affinity to future generations as the independent variables. Both time and uncertainty were significantly related to gas tax in the predicted direction (greater time delay and uncertainty were related to greater discounting). Affinity was not significantly related to gas tax. The results from this regression are summarized in Table 3a. Further, analyses were run to check for evidence of interactions among the three variables. Results indicated a positive, significant time–affinity interaction (see Table 3b). There was no evidence of a time–uncertainty (t = .279, p = .780) or an uncertainty–affinity interaction (t = −.189, p = .850).

Age and number of children were not significantly related to gas tax. Gender and altruism were significantly related to gas tax. Altruism was in the expected direction; that is, greater altruism was related to lower discounting (i.e., higher tax). The results indicated that women discount more than men: The mean gas tax was 36 cents (SD = 38) for men and 26 (SD = 20) cents for women. (Recall that lower tax indicates greater discounting since the tax benefits future generations.)

For exploratory purposes and to better understand the role of gender, I also tested for interactions between gender and the three dimensions of psychological distance.

Table 3a
Regression Results—Study 2

Variable	*B*	Beta	*t*
Affinity	−3.12	−.10	−1.51
Time	−3.88	−.16	−2.54*
Uncertainty	−10.19	−.50	−7.39**
Gender	10.85	.15	2.31*
Children	−.56	−.01	−.13
Age	.16	.01	.17
Altruism	.46	.13	2.00*
(constant)	64.69		

Notes. *$p < .05$ and **$p < .0001$.
$R^2 = .30$ and adj. $R^2 = .27$.

Table 3b
Regression Results with Interaction—Study 2

Variable	*B*	Beta	*t*
Affinity	−14.36	−.48	−2.79***
Time	−19.35	−.79	−2.89***
Uncertainty	−9.88	−.48	−7.22****
Time–affinity	2.92	.75	2.38**
Gender	11.84	.16	2.54**
Children	−.89	−.01	−.21
Age	.56	.04	.58
Altruism	.43	.12	1.92*
(constant)	112.84		

Notes. *$p = .057$, **$p < .05$, ***$p < .01$, and ****$p < .0001$.
$R^2 = .32$ and adj. $R^2 = .29$.

There was no evidence for interactions between gender and time or affinity, but there was a significant interaction between gender and uncertainty ($t = -3.063$, $p = .003$), such that perceptions of uncertainty were significantly correlated with discounting in men ($t = -.542$, $p < .001$, male sample only), but not in women ($t = -.174$, $p = .179$, female sample only).

Discussion—Studies 1 and 2

The results across the first two studies provided evidence of a relationship between individuals' perceptions of time delay, uncertainty, and affinity to future generations and intergenerational discounting. Specifically, there was evidence for a relationship between discounting and uncertainty in both Studies 1 and 2, affinity in Study 1, and time delay in Study 2. There were not consistent patterns in the relationship between demographic factors, individual level altruism, and discounting. The interaction between time and affinity identified in Study 2 could suggest that if people have a high affinity for future

generations, they may be less influenced by the time delay. Study 3 was designed to explore this time–affinity interaction more directly.

Study 3

While the contexts of Studies 1 and 2 were inspired by real-world intergenerational issues, the decisions were hypothetical and thus the participants did not experience consequences from their decisions. Study 3 addresses this limitation. In addition, Study 3 was conducted to replicate the interaction found in Study 2 using a cause-effect experimental rather than correlational methodology. Here, I orthogonally manipulated affinity with future generations and temporal distance between the allocation decision and the consequences of that decision. Since the time–affinity interaction was the specific focus of Study 3, and there was already consistent evidence of a relationship between uncertainty and intergenerational discounting from Studies 1 and 2, uncertainty was not included as a variable in Study 3.

Methods

Participants and Design

Participants in this study were 37 individuals on the administrative staff (secretaries, area coordinators, area managers, etc.) at a university; 8% of the participants were men and 92% were women. They were each paid $5 to participate in the experiment. The experiment was a two (time delay: short vs. long) by two (affinity: low vs. high) between-participants design.

Procedure

Participants were told that research was being performed on how people allocate resources, and they would be deciding how to allocate some money between themselves and another person who would be participating in the research after them. They were given a sum of money ($7) and asked to decide how much of it to keep for themselves and how much to leave for the next person. They were told that the amount that they left for the next person would be increased by 50%, such that the next person would receive 50% more than was left for them. Thus, participants were in the role of the present generation and the ''next person'' represented future generations.

Participants were given an envelope with the money (in single dollar bills) and asked to take the amount that they wished to keep for themselves and leave the amount that they wished to give to the next person in the envelope. All allocation decisions were required to be in $1 increments.[3] Participants made their decisions privately and were assured that their decisions would be confidential. The money that they kept from the

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

$7 was in addition to the $5 that they were paid to participate in the research. Participants were run individually, one at a time, and were randomly assigned to one of the conditions described below.

Manipulation of Time

The delay between the time when decisions were made by the present generation and the time at which the future generation would experience the consequences was manipulated. In the *short time delay condition*, participants were told that the person for whom they would be leaving money would be participating in the research after them on the same day. In the *long time delay condition*, participants were told that the person for whom they would be leaving money would be participating in the research 6 months from that day.

Manipulation of Affinity

In the *low affinity condition*, participants were told that they would be allocating money between themselves and a student from another university. In the *high affinity condition*, participants were told that they would be allocating money between themselves and another staff person like themselves from the same university.

The affinity manipulation was based on the results of a survey conducted with a subsample of 36 participants from the same population prior to the experiment (not the same individuals who participated in the actual experiment) that identified the above ''others'' as high and low affinity populations for the participant population. The questions from the survey and the details of the procedure and results are listed in the Appendix.

Measure of Discounting (Dependent Variable)

Discounting was measured implicitly by how much of the resources (money) participants kept for themselves. The more money they kept for themselves, the more they were discounting the value of the money left for ''future generations'' since the money left for future generations was increased by 50%.

Results

The amount of money participants kept for themselves was submitted to a two (time delay: short vs. long) by two (affinity: low vs. high) between-participants ANOVA. The means by condition are summarized in Table 4. There was a main effect for time

Table 4
Allocation by Condition—Study 3

	Short delay	Long delay
Low affinity	4.2 (.44)	4.3 (.48)
High affinity	3.6 (.53)	4.6 (.53)

Notes. Means are the amount of money (in dollars) participants kept for themselves. Standard deviations are in parentheses.

[$F(1, 33) = 10.92$, $p = .002$] and a significant time–affinity interaction [$F(1, 33) = 8.00$, $p = .008$]. Planned comparisons indicated that the high affinity, short time delay condition differed from all other conditions, all $t(33)$'s > 2.8, all p's $< .01$ and the other three conditions did not differ from each other. Self-interested behavior was reduced only when the next generation was immediately affected and affinity with them was high.

Discussion—Study 3

A notable point suggested by Study 3 is that increasing affinity with future others does not need to be accomplished by the present generation actually knowing or interacting with them. In this experiment, psychological distance was reduced when people simply identified themselves with future others as part of a common group. This finding is consistent with both identity and self-categorization research, which shows that group members need not interact or even feel strong interpersonal ties to perceive themselves as a member of a group (Brewer, 2000; Tajfel, 1982). This insight is especially relevant in the intergenerational domain where members of different generations do not necessarily have an opportunity to interact.

I also note that in all conditions in Study 3 people left something for the other person in the future even though the parties had no personal knowledge of each other and there was no possibility of reciprocation by the recipient. Thus, some beneficence was evident even when there was no material incentive to leave anything for others and even when psychological distance was high. On the other hand, self-interested behavior decreased significantly only when psychological distance was low both intertemporally and interpersonally—suggesting that promoting intergenerational beneficence may be difficult in light of the inherent psychological distance on both dimensions in intergenerational contexts.

General Discussion

Building on earlier work on intergenerational dilemmas (e.g., Wade-Benzoni, 1999, 2002), in this article, I further develop the construct of intergenerational discounting. In contrast to approaches in the economics and accounting literatures, which seek to determine an appropriate discount rate to be applied intergenerationally (e.g., see Kotlikoff, 1992; Portney & Weyant, 1999), research on intergenerational dilemmas (including this article) seeks to determine the factors that affect the extent to which people exhibit intergenerational discounting. The pattern of results over three studies indicates a significant relationship between the three variables of time delay, uncertainty, and affinity to future generations and intergenerational discounting. In addition, a time–affinity interaction was identified. Time discounting is a well-established phenomenon, but the interaction between time and affinity suggests that time discounting might be moderated by increasing the affinity with future generations.

The participants in each study were from three very different populations (airport travelers, graduate students, and administrative staff in an organization). Yet, the three studies yielded similar, consistent, and compatible results—indicating greater

generalizability than might otherwise be the case. The methodology used in Studies 1 and 2 required participants to make intergenerational allocation decisions within two contexts based on real world intergenerational situations, including the fisheries and federal gasoline taxation. The main limitations in these studies were that the decisions were hypothetical, self-report, and involve common source variance. Study 3 addressed these limitations by linking participants' decisions to actual (rather than imagined) consequences, and using a cause-effect rather than correlational approach to explore the relationships among the variables. A potential limitation in Study 3 is that the majority of participants were women. The results in Study 2 suggested, however, that a possible gender effect was primarily linked with uncertainty. Since Study 3 did not involve uncertainty and focused instead on time and affinity, this concern is minimized.

Time delay, uncertainty about the future, and low affinity to future generations are factors that can prevent present generations from adequately acting on the behalf of future generations. This research suggests a number of ways in which the interests of future generations can be made more immediate to the present generation, and thus reduce intergenerational discounting. Specifically, it may be helpful to reduce perceptions of time delay between our decisions and associated future consequences, reduce perceptions of the uncertainty about how our actions impact future generations, and increase affinity with future generations. Time delay (and to a lesser extent uncertainty) is not something that is easily changed in intergenerational decisions (although changing *perceptions* of time delay and uncertainty may be possible), but affinity with future generations may be influenced. An important question, then, for future research is: How might affinity with future generations be increased? Based on the time–affinity interaction, affinity may be one way to moderate the well-established phenomenon of time discounting—at least in the intergenerational domain in which both time delay and affinity with future generations are relevant variables. Future research can explore ways to increase affinity with future generations as a means to decrease intergenerational discounting.

One strategy for increasing affinity to future generations may be to think of them in terms of one's own offspring. Thoughts of one's own progeny brings the outcomes of future generations closer to oneself because, due to genetic linkage and emotional ties, progeny are (genetically and emotionally) an extension of oneself. Progeny affects the ''imaginability'' of future generations (Wade-Benzoni, 1999). In addition, something that happens to a child is *like* something happening to the parent him- or herself. If the consequences of one's decision affect one's children, the consequences are brought close to the self. Some cases of intergenerational justice, however, involve our relations to persons not currently existing. In addition, some decision makers do not have children, and so we cannot rely on the effect of progeny alone.

Another future direction would be to explore the relationship between psychological distance and reciprocity. As noted earlier, reciprocity plays a key role in the dynamics of intergenerational decisions (Wade-Benzoni, 2002). The very process of thinking in terms of intergenerational reciprocity helps to reduce the psychological distance between present and future generations because it acts as a natural aid to perspective-taking

(Wade-Benzoni, 2008). By thinking about how prior generations treated us, we are able to put ourselves in the role of the future generation.

The current research investigated both the intergenerational allocation of benefits (natural resources in Study 1 and money in Study 3) and burdens (tax in Study 2) in separate studies. Recent research that compares intergenerational allocations of benefits and burdens directly to each other suggests that the valence of resources (whether they are benefits or burdens) influences affinity with future generations and generosity toward them (Wade-Benzoni, Sondak, & Galinsky, 2008). Specifically, people feel greater affinity with future generations and demonstrate greater intergenerational beneficence when allocating burdens (e.g., debt, garbage, and toxic waste) than when allocating benefits (e.g., money, natural resources, and desirable tasks). Future research can explore further the relationship between psychological distance and resource valence.

Research by Milfont and Gouveia (2006) suggests that individual values might make a difference in contexts such as those studied here. Specifically, their research demonstrates empirical relationships between time perspective, values, and environmental attitudes. They found that valuing environmental preservation was positively correlated with future oriented time perspectives as well as an altruistic orientation. Future research can investigate directly whether individual values influence intergenerational decisions.

Finally, another direction for future research would be to begin to explore how contextual factors may affect the psychological phenomena I have outlined here. One example of an important contextual factor is national culture. All cultures that have survived over time to date possess various mechanisms that directly or indirectly reduce psychological distance between present and future generations, and thus, ensure their very survival (Schein, 1992). Hernandez et al. (2006) suggest that an examination of cultural factors can help identify processes underlying the reduction of embedded psychological distance between the present and future generations. Specifically, they argue that different conceptions of time and relationships across cultures may fundamentally influence the manner in which intergenerational consequences are perceived and understood and, as a result, the degree to which psychological distance is experienced. In addition, the time orientation of a culture may fundamentally affect the perceived psychological distance between present and future generations as the weight and value given to time delay differs cross-culturally. Nevertheless, people in all cultures can be motivated to act on the behalf of future generations. The motivational bases underlying their actions, however, may be different (Hernandez et al., 2006), and I leave that agenda for future research.

Concluding Comments

In many intergenerational situations, including those described in this article, it is less costly in the short term to ignore a problem (e.g., harvest a resource unsustainably). In the long run, however, it ends up costing more—but those costs can accrue to a different set of people. This research suggests that a general strategy that may reduce intergenerational discounting and help individuals to more adequately represent the

interests of future generations in their decisions would be to highlight affinity with future generations. This suggestion, however, can only be effective if decisions are framed in intergenerational terms. Decision makers in organizations and society need to continuously keep in mind that decisions made today often have consequences in the future. This point represents another challenge for future research: How can we ensure that decisions that affect the distant future are understood in intergenerational terms?

When different generations exist contemporaneously, then intergenerational relations look a lot more like traditional intergroup, negotiation, and social dilemma situations. In contrast, this research considers situations in which the present generation is responsible for being the voice of future others. The intergenerational context challenges the boundaries of the traditional negotiation realm by considering situations in which conflicting interests involve parties who may not even exist contemporaneously (Wade-Benzoni, 2006a).

In today's world, intergroup conflict transcends time and space as we face problems that affect multiple generations. Organizations and societies have evolved in such a way that they are more capable than ever before through their actions and decisions of having a great impact on future generations. This development is a key reason why intergenerational issues are more pressing today than they have been in the past. Research shows that people value the well-being of future generations (Kempton, Boster, & Hartley, 1995). Behaviors, however, are not always consistent with this value. The present generation often neglects to represent accurately the value placed on the collective well-being of future generations. Psychological distance between decisions and consequences can lead the present generation to radically discount the value of resources to future generations, or neglect to remember them altogether. Research on intergenerational behavior can help us to better understand the factors that influence intergenerational decisions, and thus help us bring our behaviors more in line with the value we place on fairness to future generations.

References

Bjorkman, M. (1984). Decision making, risk taking and psychological time: Review of empirical findings and psychological theory. *Scandinavian Journal of Psychology*, *25*, 31–49.

Brannon, D. (1985). Decision making in public welfare: Scientific management meets organized anarchy. *Administration in Social Work*, *9*, 23–33.

Brennan, T. J. (1995). Discounting the future: Economics and ethics. *Resources*, *120*, 3–6.

Brewer, G. (2000). The changing world of continuing and professional education. *Continuing Higher Education Review*, *64*, 23–34.

Brewer, M. B., & Kramer, R. M. (1986). Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of Personality and Social Psychology*, *50*, 543–549.

Care, N. S. (1982). Future generations, public policy, and the motivation problem. *Environmental Ethics*, *4*, 195–214.

Cottle, T. J., & Klineberg, S. L. (1974). *The present of things future: Explorations of time in human experience*. New York: Free Press.

Crawford, J. L. (1974). Task uncertainty, decision importance and group importance as determinants of communication processes in groups. *Journal of Personality and Social Psychology*, *29*, 619–627.

Dawes, R. M. (1980). Social dilemmas. *American Review of Psychology*, *31*, 169–193.

Elster, J. (1985). Weakness of will and the free-rider problem. *Economics and Philosophy*, *1*, 231–265.

Gilovich, T., Kerr, M., & Medvec, V. H. (1993). Effect of temporal perspective on subjective confidence. *Journal of Personality and Social Psychology*, *64*, 552–560.

Gouldner, A. W. (1960). The norm of reciprocity. *American Sociological Review*, *25*, 161–167.

Henderson, M. D., Trope, Y., & Carnevale, P. J. (2006). Negotiation from a near and distant time perspective. *Journal of Personality and Social Psychology*, *91*(4), 712–729.

Hernandez, M., Chen, Y., & Wade-Benzoni, K. A. (2006). Toward an understanding of psychological distance reduction between generations: A cross-cultural perspective. In E. Mannix, M. Neale & Y. Chen (Eds.), *Research on managing groups and teams* (Vol. *9*, pp. 3–20). Greenwich, CT: Elsevier Science Press.

Hillerbrand, R. (forthcoming). The problem of uncertainty. In A. Gosseries & L. H. Meyer (Eds.), *Theories of intergenerational justice*. New York: Oxford University Press.

Jenni, K. E., & Loewenstein, G. (1997). Explaining the "identifiable victim effect." *Journal of Risk and Uncertainty*, *14*, 235–257.

Jevons, W. S. (1871). *Theory of political economy*. London: Macmillan.

Joireman, J., Daniels, D., George-Falvy, J., & Kamdar, D. (2006). Organizational citizenship behaviors as a function of empathy, consideration of future consequences, and employee time horizon: An initial exploration using an in-basket simulation of OCBs. *Journal of Applied Social Psychology*, *36*(9), 2266–2292.

Joireman, J., Kamdar, D., Daniels, D., & Duell, B. (2006). Good citizens to the end? It depends: Empathy and concern with future consequences moderate the impact of a short-term time horizon on organizational citizenship behaviors. *Journal of Applied Psychology*, *91*(6), 1307–1320.

Jungermann, H., & Fleischer, F. (1988). As time goes by: Psychological determinants of time preferences. In G. Kirsch, P. Nijkamp & K. Zimmermann (Eds.), *The formulation of time preferences in a multidisciplinary perspective* (pp. 81–98). Aldershot, Averbury: Gower.

Kempton, W., Boster, J. S., & Hartley, J. A. (1995). *Environmental values in American culture*. Cambridge, MA: The MIT Press.

Kotlikoff, L. J. (1992). *Generational accounting*. New York: The Free Press.

Liberman, N., Trope, Y., & Stephan, E. (2007). Psychological distance. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (Vol. 2, pp. 353–381). New York: Guilford.

Loewenstein, G. (1992). The fall and rise of psychological explanations in the economics of intertemporal choice. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 3–34). New York: Russell Sage Foundation.

Loewenstein, G. (1996). Behavioral decision theory and business ethics: Skewed tradeoffs between self and other. In D. M. Messick & A. E. Tenbrunsel (Eds.), *Ethical issues in managerial decision making* (pp. 214–246). New York: Russell Sage Foundation.

McBeath, J. (2004). Management of the commons for biodiversity: Lessons from the North Pacific. *Marine Policy*, *28*, 523–539.

McLean Parks, J. (1997). The fourth arm of justice: The art and science of revenge. In R. J. Lewicki, R. J. Bies, & B. H. Sheppard (Eds.), *Research on negotiation in organizations* (Vol. 6, pp. 113–134). Greenwich, CT: JAI Press.

Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. In L. Wheeler & P. Shaver (Eds.), *Review of personality and social psychology* (Vol. 4, pp. 11–44). Beverly Hills, CA: Sage.

Milfont, T. L., & Gouveia, V. V. (2006). Time perspective and values: An exploratory study of their relations to environmental attitudes. *Journal of Environmental Psychology*, *26*, 72–82.

National Marine Fisheries Service. (1992). *Fishery management plan for sharks of the Atlantic ocean*. Washington, DC: U.S. Department of Commerce.

Phelps, E. S., & Pollak, R. A. (1968). On second-best national saving and game-theoretic equilibrium growth. *Review of Economic Studies*, *35*, 185–199.

Pollan, M. (1991). *Second nature: A gardener's education*. New York: Dell Publishing.

Ponthiere, G. (2003). Should we discount future generations' welfare? A survey on the pure discounting rate debate. CREPP Working paper, University of Liege.

Portney, P. R., & Weyant, J. P. (1999). *Discounting and intergenerational equity*. Washington, DC: Resources for the Future.

Rachlin, H., & Raineri, A. (1992). Irrationality, impulsiveness, and selfishness as discount reversal effects. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 93–118). New York: Russell Sage Foundation.

Richards, D. A. J. (1983). Contractarian theory, intergenerational justice, and energy policy. In D. MacLean & P. G. Brown (Eds.), *Energy and the future*. Totowa, NJ: Rowman and Littlefield.

Rushton, J. P., Chrisjohn, R. D., & Fekken, G. C. (1981). The altruistic personality and the Self-Report Altruism Scale. *Personality and Individual Differences*, *2*, 293–302.

Salancik, G. R., & Pfeffer, J. (1978). Uncertainty, secrecy, and the choice of similar others. *Social Psychology*, *41*, 246–255.

Schein, E. (1992). *Organizational culture and leadership*. San Francisco, CA: Jossey-Bass.

Schelling, T. C. (1995). Intergenerational discounting. *Energy Policy*, *23*, 395–401.

Svenson, O. (1991). The time dimension in perception and communication of risk. In R. E. Kasperson & P. J. M. Stallen (Eds.), *Communicating risks to the public* (pp. 263–281). Netherlands: Kluwer Academic Publishers.

Tajfel, H. (1982). *Social identity and intergroup relations*. Cambridge, England: Cambridge University Press.

Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology*, *46*, 35–57.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*(3), 403–421.

Wade-Benzoni, K. A. (1999). Thinking about the future: An intergenerational perspective on the conflict and compatibility between economic and environmental interests. *American Behavioral Scientist*, *42*(8), 1393–1405.

Wade-Benzoni, K. A. (2002). A golden rule over time: Reciprocity in intergenerational allocation decisions. *Academy of Management Journal*, *45*, 1011–1028.

Wade-Benzoni, K. A. (2003). Intergenerational identification and cooperation in organizations and society. In M. Neale, E. Mannix & A. Tenbrunsel (Eds.), *Research on managing groups and teams* (Vol. 5, pp. 257–277). Greenwich, CT: Elsevier Science Press.

Wade-Benzoni, K. A. (2006a). Giving future generations a voice. in A. Schneider & C. Honeyman (Eds.), *The negotiator's fieldbook: The desk reference for the experienced negotiator* (pp. 215–223). Washington, DC: American Bar Association.

Wade-Benzoni, K. A. (2006b). Legacies, immortality, and the future: The psychology of intergenerational altruism. In M. Neale, E. Mannix & A. Tenbrunsel (Eds.), *Research on managing groups and teams* (Vol. 8, pp. 247–270). Greenwich, CT: Elsevier Science Press.

Wade-Benzoni, K. A. (2008). The egoism and altruism of intergenerational behavior. Working paper, Duke University.

Wade-Benzoni, K. A., Hernandez, M., Medvec, V., & Messick, D. (2008) . In fairness to future generations: The role of egocentrism, uncertainty, power, & stewardship in judgments of intergenerational allocations. *Journal of Experimental Social Psychology*, 44, 233–245.

Wade-Benzoni, K. A., Sondak, H., & Galinsky, A. (2008). Leaving a legacy: The intergenerational allocation of benefits and burdens. Working paper, Duke University.

Wong, N. Y., & Bagozzi, R. P. (2005). Emotional intensity as a function of psychological distance and cultural orientation. *Journal of Business Research*, *58*, 533–542.

Appendix

Procedures for survey to determine high and low affinity manipulations for Study 3

Participants in the survey were asked to indicate the extent to which they agree with 36 statements using a 6-point scale (1 = not at all and 6 = very much so): The statements began:

"In general, I feel an affinity with…,"

"In general, I feel as though I have something in common with…,"

"In general, I feel a closeness with…,"

"In general I like other…,"

"In general I feel as though I can empathize with…,"

"In general, I can identify with…,"

These statements ended with "staff members, faculty members, or students" from the same university (for half the statements) or from another university (for the other half of the statements). Thus, there were six types of questions about affinity, and six different types of "others." Note that the actual survey specified the two names of the universities (same and another).

Reliability tests were conducted for each block of six questions involving a given type of "other." Tests for all six types of "others" (staff member same university, faculty member same university, student same university, staff member different university, faculty member different university, and student different university) had alphas higher than .80. Six scales were created for each type of other, and results indicated that affinity was highest for staff members from the same university ($M = 4.28$, $SD = 1.10$) and lowest for students from another university ($M = 1.54$, $SD = .70$). The affinity for these two groups was significantly different from one another [$t(1,35) = 12.67$, $p < .001$].

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