

# Psychological Science

<http://pss.sagepub.com/>

---

## **It's Only a Matter of Time : Death, Legacies, and Intergenerational Decisions**

Kimberly A. Wade-Benzoni, Leigh Plunkett Tost, Morela Hernandez and Richard P. Larrick

*Psychological Science* 2012 23: 704 originally published online 12 June 2012

DOI: 10.1177/0956797612443967

The online version of this article can be found at:

<http://pss.sagepub.com/content/23/7/704>

---

Published by:



<http://www.sagepublications.com>

On behalf of:



[Association for Psychological Science](http://www.sagepublications.com)

**Additional services and information for *Psychological Science* can be found at:**

**Email Alerts:** <http://pss.sagepub.com/cgi/alerts>

**Subscriptions:** <http://pss.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [Version of Record](#) - Jul 18, 2012

[OnlineFirst Version of Record](#) - Jun 12, 2012

[What is This?](#)

# It's Only a Matter of Time: Death, Legacies, and Intergenerational Decisions

Kimberly A. Wade-Benzoni<sup>1</sup>, Leigh Plunkett Tost<sup>2</sup>,  
Morela Hernandez<sup>3</sup>, and Richard P. Larrick<sup>1</sup>

<sup>1</sup>Fuqua School of Business, Duke University; <sup>2</sup>Ross School of Business, University of Michigan;  
and <sup>3</sup>Foster School of Business, University of Washington

Psychological Science  
23(7) 704–709  
© The Author(s) 2012  
Reprints and permission:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/0956797612443967  
http://pss.sagepub.com



## Abstract

Intergenerational decisions affect other people in the future. The combination of intertemporal and interpersonal distance between decision makers in the present and other people in the future may lead one to expect little intergenerational generosity. In the experiments reported here, however, we posited that the negative effect of intertemporal distance on intergenerational beneficence would be reversed when people were primed with thoughts of death. This reversal would occur because death priming leads individuals to be concerned with having a lasting impact on other people in the future. Our experiments show that when individuals are exposed to death priming, the expected tendency to allocate fewer resources to others in the future, as compared with others in the present, is reversed. Our findings suggest that legacy motivations triggered by death priming can trump intergenerational discounting tendencies and promote intergenerational beneficence.

## Keywords

death, discounting, intergenerational, legacy, time, dying, decision making, priming, mortality, meaning

Received 4/28/11; Revision accepted 11/19/11

Decisions that individuals make today not only affect the experiences of contemporaries, but also determine resources available to future generations. Research on self-other trade-offs (e.g., Jones & Rachlin, 2006; Loewenstein, Thompson, & Bazerman, 1989) and intertemporal discounting in individual decision making (e.g., Frederick, Loewenstein, & O'Donoghue, 2002; Loewenstein, Read, & Baumeister, 2003) has found that individuals tend to be selfish and shortsighted in their use of resources. That is, individuals favor using resources themselves rather than allocating them to others, and they favor immediate to future consumption. Thus, one would expect that when individuals are faced with making self-other trade-offs in intergenerational contexts, beneficence to others in the future would be quite minimal. Indeed, research has demonstrated that as the temporal distance between a decision and its benefits to other people increases, beneficence to those others decreases (Wade-Benzoni, 2008).

We propose, however, that when people are primed with thoughts of death, their inherent desires to generate a positive legacy can transform the expected barriers to intergenerational beneficence (i.e., social and temporal distance) into conditions that promote beneficent allocations to other people in the future. Scholars have noted that people's strong drive for self-preservation, coupled with the certainty of their own eventual deaths, fuels a motivation to know that a part of them will live on past their physical existence (e.g., Becker, 1973, 1975).

Individuals strive to transcend death by finding expansive meaning for their lives. Central to this meaning is having an impact on other people that persists into the future (Kotre, 1984, 1999). A legacy can function as a carrier of personal life meaning that extends oneself into the future beyond the temporal constraints of the life span by affecting other people in the future (Fox, Tost, & Wade-Benzoni, 2010).

We suggest that intergenerational beneficence in reaction to thoughts of death is a means by which individuals can form a psychological bond with others in the future, thereby symbolically extending themselves into the future and helping to fulfill their desires to establish a positive legacy. It is important to note that it is only intergenerational allocations, and not allocations to other people in the present or to oneself in the future, that elicit these reactions. It is the combination of intertemporal and interpersonal distance that enables legacy-building potential; one cannot create a legacy by having a fleeting effect on others now or by affecting merely one's own future self. Thus, intergenerational decisions provide a unique opportunity to form a connection with other people in the future, thereby serving as an outlet for legacy motivations.

## Corresponding Author:

Kimberly A. Wade-Benzoni, Duke University, Fuqua School of Business,  
100 Fuqua Dr., P. O. Box 90120, Durham, NC 27708-0120  
E-mail: kimberly.wadebenzoni@duke.edu

Accordingly, by specifying conditions under which death priming leads to beneficent behavior, we were able to extend past findings reported in the literature on terror management theory, which has demonstrated that a broad range of thoughts, attitudes, and behaviors are rooted in the human need to combat the notion that physical death is the end of individual existence (Jonas, Schimel, Greenberg, & Pyszczynski, 2002). For example, although scholars have found that death priming can increase selfishness in forest-management games (Dechesne et al., 2003; Kasser & Sheldon, 2000), such scenarios have not involved other players who will only experience the impact of decisions in the future. Following the tenets of intergenerational decision making (e.g., Wade-Benzoni, 2006), we expected that the positive effect of death priming on intergenerational beneficence would require the specification of future beneficiaries, even if they are only vaguely identified, so that a self-other trade-off would be explicit.

In our experiments, we examined how death priming interacted with the timing of when another recipient of resources would benefit from an allocation (i.e., in the present or in the future) to influence the extent to which people engaged in beneficent behavior toward others. We predicted that death priming would increase individuals' desires to establish a positive legacy by forming a connection with others in the future through beneficent behavior. We further predicted that when individuals were exposed to death priming, the expected tendency to allocate fewer resources to individuals in the future rather than in the present would be reversed, such that people would allocate resources more generously to future others than to contemporary others. We also expected these effects to be mediated by a feeling of connection with allocation recipients.

## Experiment 1

### Method

Fifty-four graduate students at a large U.S. university were entered into a lottery to win \$1,000 as compensation for participation. The experiment had a 2 (prime: death vs. control)  $\times$  2 (recipient: present vs. future) between-participants design. Participants first read a newspaper article that contained the experimental manipulation, and then they were asked to write briefly about the author's writing style. In the death-prime condition, the article was titled "Person Killed in Aircraft Brake Failure Accident," and it described an airplane that had careened onto a highway in a midsized urban area, killing someone.<sup>1</sup> In the control condition, the article was titled "Has Russian Math Whiz Solved \$1M Puzzle?" and it described a reclusive Russian mathematician who had posted a solution to one of the world's toughest math problems on the Internet.

Participants then saw a statement thanking them for participating and confirming that they would be entered in the lottery. Participants were told that they could precommit a portion of the prize to a charity. Participants were presented with

information about an actual charity, which was described as serving the needs of individuals in "impoverished communities." In the present-recipient condition, the charity was described as an organization that focused on meeting the immediate needs of people in those communities. In the future-recipient condition, the charity was described as an organization that focused on creating lasting improvements that would benefit people in those communities in the future. The amount of U.S. dollars that individuals indicated they would like to donate was used as the measure of beneficence. Participants had no reason to suspect that the amount indicated was the dependent variable.

## Results

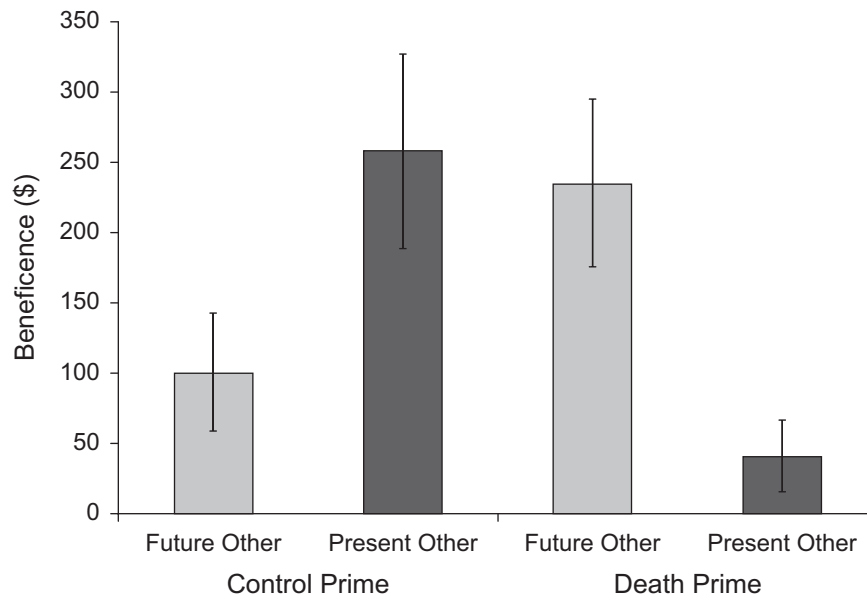
The 2 (prime)  $\times$  2 (recipient) between-participants analysis of variance with donation amount as the dependent variable revealed no main effects and a significant interaction between death priming and recipient,  $F(1, 50) = 10.49, p = .002, \eta_p^2 = .173$  (see Fig. 1). Levene's test for equality of variances indicated that the assumption of homogeneity of variance was violated, so we further examined our predictions using unequal-variance  $t$  tests. Consistent with our predictions, results showed that individuals in the control condition allocated more money to the present-oriented charity ( $M = \$257.77, SD = \$249.79$ ) than to the future-oriented charity ( $M = \$100.00, SD = \$173.21$ ),  $t(20.38) = 1.95, p = .065$ ; in contrast, participants in the death-prime condition allocated significantly more money to the future-oriented charity ( $M = \$235.71, SD = \$223.98$ ) than to the present-oriented charity ( $M = \$40.00, SD = \$80.97$ ),  $t(17.35) = 3.01, p = .008$ . In addition, individuals in the death-prime condition allocated more money to the future-oriented charity than did individuals in the control condition,  $t(24.19) = 1.86, p = .076$ .

## Experiment 2

In our next experiment, we sought to replicate our previous findings and test our prediction that these effects would be mediated by a perceived connection with the recipients of the allocation. In addition, to provide support that this effect is unique to intergenerational contexts, we included a future-self condition, in which individuals were asked to allocate resources between themselves in the present and themselves in the future. This condition allowed us to manipulate time and social distance independently. We expected that the reversing effect of the death prime would occur only when individuals allocated resources to others.

### Method

Seventy-one (50 female, 21 male) undergraduates (42%), graduate students (32%), and working adults (26%) participated in an online experiment in exchange for \$10. After being exposed to the same death or control prime used in



**Fig. 1.** Results from Experiment 1: mean amount of dollars participants were willing to donate to charity as a function of prime condition and recipient. Participants donated money to charities that benefited communities either in the present or in the future. Error bars show standard errors.

Experiment 1, participants were asked to allocate a resource between their own organization in the present and one of three other recipients: (a) another organization that would benefit from the resource in the present (“present other”), (b) another organization that would benefit from the resource in the future (“future other”), or (c) their own organization in the future (“future self”). Thus, the experiment had a 2 (prime)  $\times$  3 (recipient) between-participants design.

The materials provided described a situation in which the participant was the vice president of operations of an energy company’s subsidiary. Participants were told that their company was in possession of a new energy source and that the energy source could be converted into inexpensive and efficient usable energy. Their task was to decide how much of the converted energy they wished to consume today versus allocate to the recipient.

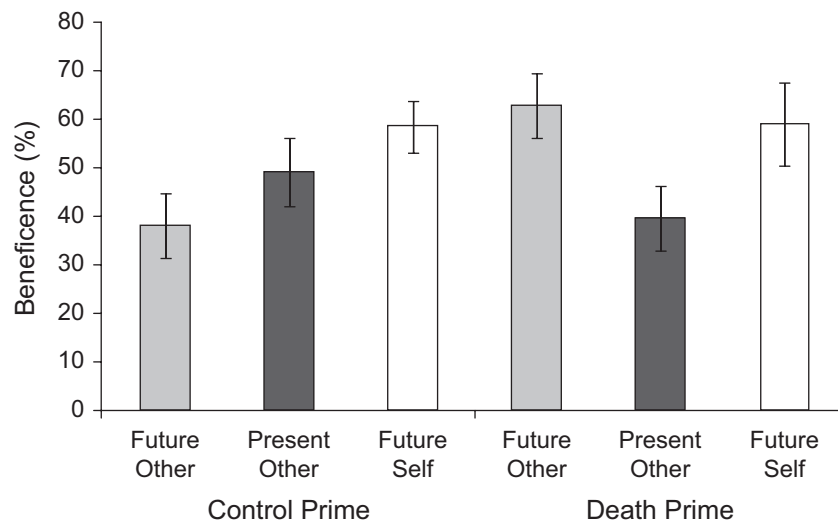
Participants in the present-other and future-other conditions were told that another subsidiary of the parent company of their firm wanted access to the participant’s supply of the energy source. This other subsidiary had access to superior technology that would allow it to make 50% greater use of the energy either now (present-other condition) or in the future (future-other condition) than the participant’s own division would be able to make of it now. Similarly, participants in the future-self condition were told that their own division would make 50% greater use of the energy in the future than it would be able to make of it now. The indication of increasing future benefit was included to keep the situation consistent with the structural features of intergenerational dilemmas, in which resources tend to increase in value with the passing of time (Wade-Benzoni, 2002; Wade-Benzoni, Hernandez, Medvec, & Messick, 2008; Wade-Benzoni & Tost, 2009).

**Measure of beneficence.** The measure of beneficence was the percentage of the converted energy that participants indicated they would allocate to the other organization (or their own organization in the future) rather than to their own organization in the present.

**Measure of mediator.** The mediator in our analysis was the connection participants felt with other recipients. In the present-other and future-other conditions, participants were therefore asked to indicate the extent to which they agreed with the statement, “I felt an affinity with the other subsidiary” (1 = *strongly disagree*, 7 = *strongly agree*).

## Results

The beneficence scores were submitted to a 2 (prime)  $\times$  3 (recipient) between-subjects analysis of variance. The analysis revealed no main effects and a significant interaction,  $F(2, 65) = 3.17, p = .049, \eta_p^2 = .089$  (Fig. 2). The pattern of means was as expected. First, participants primed with death exhibited higher levels of beneficence when allocating to the other organization that would benefit in the future ( $M = 62.90\%$ ,  $SD = 21.13\%$ ) than when allocating to the other organization that would benefit in the present ( $M = 39.64\%$ ,  $SD = 24.92\%$ ),  $F(1, 45) = 5.48, p = .024, \eta_p^2 = .109$ . Second, individuals in the death-prime condition allocated significantly more resources to the other organization that would benefit in the future than did individuals in the control condition ( $M = 38.09\%$ ,  $SD = 22.07\%$ ),  $F(1, 45) = 5.60, p = .02, \eta_p^2 = .11$ . Also consistent with our theoretical rationale, results showed that participants in the control condition exhibited greater beneficence to their own organization in the future ( $M = 58.42\%$ ,  $SD = 18.49\%$ )



**Fig. 2.** Results from Experiment 2: mean percentage of converted energy participants allocated as a function of prime condition and recipient. Participants allocated energy to their own organization in the future, another organization in the future, or another organization in the present. Error bars show standard errors.

than to the other organization in the future ( $M = 38.09\%$ ,  $SD = 22.07\%$ ),  $F(1, 39) = 4.73$ ,  $p = .036$ ,  $\eta_p^2 = .108$ , but this tendency was eliminated in the death-prime condition (future-self condition:  $M = 59.00\%$ ,  $SD = 27.67\%$ ),  $F(1, 39) = 0.15$ ,  $p = .70$ ,  $\eta_p^2 = .004$ .

We predicted that there would be first-stage moderated mediation, in which the recipient of the allocation (present vs. future) would moderate the effect of death priming on feelings of connection with others. Thus, we expected that death priming would increase participants' feelings of connection to future beneficiaries of their allocations, whereas it would have no effect on feelings of connection with beneficiaries in the present. To test this prediction, we followed the advice of Edwards and Lambert (2007), first regressing the mediator (affinity with the other organization) on recipient (present other vs. future other; contrast-coded), prime (death vs. control; contrast-coded), and the interaction between the two. For the second stage, we regressed our measure of beneficence on the mediator (affinity with the other organization), the death-prime variable, and recipient. For the second equation, we also entered the interactions between the type of recipient (present other, future other) and the mediator, as well as between the type of recipient and the death prime. To construct bias-corrected confidence intervals for the simple and indirect effects, we used bootstrapping methods based on 1,000 random samples with replacement (Edwards & Lambert, 2007).

Consistent with our expectations, results showed that the indirect path from death prime to beneficence through feelings of connection was significant for allocations to another organization in the future ( $b = 8.49$ , bias-corrected 95% confidence interval = [0.40, 25.61]) but not for allocations to another organization in the present ( $b = -3.67$ , 95% confidence interval = [-13.09, 3.72]; Table 1).

## General Discussion

People can gain psychological security in the face of death by feeling as though they are part of something that will "live on" after them. Acting on behalf of other people in the future presents an opportunity to create a feeling of connection with them, thereby helping to fulfill legacy-building needs. The experiments presented here support this notion. Individuals primed with death engaged in more beneficent behavior when allocating to others who would benefit from the resources in the future than when allocating to others who would benefit from the resources in the present. This result is a reversal of the tendency for time delay to reduce beneficence to other people in the future. Thus, in contrast with what might be expected based on traditional theories of intertemporal choice, our results suggest that, under certain conditions, the temporal aspect of intergenerational contexts can promote rather than hinder other-oriented behavior.

In addition, the results of Experiment 2 supported our causal mechanism: Relative to individuals in the control condition, individuals primed with death felt a stronger connection to other recipients in the future than to those in the present, and this feeling of connection mediated the effect of the death prime on beneficence. These findings suggest that acting on the behalf of other people in the future allows individuals an opportunity to extend themselves symbolically into the future by creating a feeling of connection with these future others, and thus helps to fill legacy-building needs that emerge from reminders of death.

Our findings also make important theoretical contributions to research on the effect of death priming on prosocial behavior. Researchers who investigate terror management theory have examined the effect of death priming on individuals' other-oriented behaviors and found that death primes increase



**Table 1.** Results from Experiment 2: Decomposed Effects of the Moderated Mediation Regression Analysis

Moderator	Stage		Effect		
	First	Second	Direct	Indirect	Total
Future-other recipient	0.66*	12.87*	7.30	8.49*	15.79**
Present-other recipient	-0.28	13.13*	-2.38	-3.68	-6.06
Difference	0.94*	-0.26	9.68	12.17*	21.85*

Note: This analysis tested the effect of priming condition (contrast-coded; death prime = 1, control = -1) on the beneficence score, as moderated by the recipient of the allocation (contrast-coded; future-other recipients = 1, present-other recipients = -1). Tests of differences for the indirect and total effects were based on 95% bias-corrected confidence intervals derived from bootstrapped estimates.

\* $p < .05$ . \*\* $p < .01$ .

prosocial behavior toward those who validate the individual's worldview, but not toward others who violate it (Jonas et al., 2002). According to terror management theory, death priming does not increase prosocial behavior toward the latter group because the purpose of prosocial behavior in this context is purportedly to endorse other people who represent the individual's worldview. Our work suggests an additional situation in which death priming can produce beneficent behavior: Not only does death priming increase the desire to help other people with whom individuals already feel a connection (e.g., those in our cultural groups), but it also induces a desire to connect with others in the future as a mechanism for establishing a legacy, which produces beneficence to these future others.

One finding from research on terror management theory, however, may identify possible boundary conditions of our effects: Hirschberger, Ein-Dor, and Almakias (2008) found that death priming decreased participants' willingness to sign organ donation cards. With organ donation, it is unclear whether the recipient's existence alone provides personal meaning to the donor. We suspect that organ donation creates a stronger legacy for the donor when it allows the recipient to pursue purposes that are meaningful to the donor. We also suspect that activities that require death are less desirable as mechanisms for legacy creation than those that do not. Future research should examine these propositions.

Intertemporal and interpersonal distance creates inherent barriers to intergenerational beneficence. We highlight, however, that these two components can, under certain conditions, combine to produce psychosocial benefits that promote intergenerational beneficence. The intertemporal aspect of intergenerational decisions can change the meaning of interpersonal trade-offs, transforming them into an opportunity for self-extension in time. These findings imply that the degree to which public policies can encourage environmentally and ecologically sustainable behaviors, for example, may depend on

making individuals' mortality salient and explicitly framing their decisions as intergenerational trade-offs. Taken together, the results indicate that people's desire to extend themselves into the future and potentially beyond mortal life, such as when they create a legacy, is a deep and strong impetus for generative action.

#### Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

#### Supplemental Material

Additional supporting information may be found at <http://pss.sagepub.com/content/by/supplemental-data>

#### Note

1. For details of a pilot study we conducted on the death prime, see the Supplemental Material available online.

#### References

- Becker, E. (1973). *The denial of death*. New York, NY: Free Press.
- Becker, E. (1975). *Escape from evil*. New York, NY: Free Press.
- Dechesne, M., Pyszczynski, T., Arndt, J., Ransom, S., Sheldon, K. M., van Knippenberg, A., & Janssen, J. (2003). Literal and symbolic immortality: The effect of evidence of literal immortality on self-esteem striving in response to mortality salience. *Journal of Personality and Social Psychology, 84*, 722-737.
- Edwards, J. E., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12*, 1-22.
- Fox, M., Tost, L. P., & Wade-Benzoni, K. A. (2010). The legacy motive: A catalyst for sustainable decision making in organizations. *Business Ethics Quarterly, 20*, 153-185.
- Frederick, S., Loewenstein, G., & O'Donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of Economic Literature, 40*, 351-401.

- Hirschberger, G., Ein-Dor, T., & Almakias, S. (2008). The self-protective altruist: Terror management and the ambivalent nature of prosocial behavior. *Personality and Social Psychology Bulletin, 34*, 666–678.
- Jonas, E., Schimel, J., Greenberg, J., & Pyszczynski, T. (2002). The Scrooge effect: Evidence that mortality salience increases prosocial attitudes and behavior. *Personality and Social Psychology Bulletin, 28*, 1342–1353.
- Jones, B., & Rachlin, H. (2006). Social discounting. *Psychological Science, 17*, 283–286.
- Kasser, T., & Sheldon, K. M. (2000). Of wealth and death: Materialism, mortality salience, and consumption behavior. *Psychological Science, 11*, 348–351.
- Kotre, J. (1984). *Outliving the self: Generativity and the interpretation of lives*. Baltimore, MD: Johns Hopkins University Press.
- Kotre, J. (1999). *Make it count: How to generate a legacy that gives meaning to your life*. New York, NY: Free Press.
- Loewenstein, G. F., Read, D., & Baumeister, R. (2003). *Time and decision: Economic and psychological perspectives on intertemporal choice*. New York, NY: Russell Sage Foundation.
- Loewenstein, G. F., Thompson, L., & Bazerman, M. H. (1989). Social utility and decision making in interpersonal contexts. *Journal of Personality and Social Psychology, 57*, 426–441.
- 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. (2006). Legacies, immortality, and the future: The psychology of intergenerational altruism. *Research on Managing Groups and Teams, 8*, 247–270.
- Wade-Benzoni, K. A. (2008). Maple trees and weeping willows: The role of time, uncertainty, and affinity in intergenerational decisions. *Negotiation and Conflict Management Research, 1*, 220–245.
- Wade-Benzoni, K. A., Hernandez, M., Medvec, V. H., & Messick, D. M. (2008). In fairness to future generations: The role of ego-centrism, uncertainty, power, and stewardship in judgments of intergenerational allocations. *Journal of Experimental Social Psychology, 44*, 233–245.
- Wade-Benzoni, K. A., & Tost, L. P. (2009). The egoism and altruism of intergenerational behavior. *Personality and Social Psychology Review, 13*, 165–193.