Gratitude: A Tool for Reducing Economic Impatience

Gratitude: A Tool for Reducing Economic Impatience

David DeSteno[1], Ye Li[2], Leah Dickens[1], Jennifer S. Lerner[3]

[1]Northeastern University, [2]University of California Riverside,

[3]Harvard University

Corresponding Author:

David DeSteno
Department of Psychology
Northeastern University
Boston, MA 02115
d.desteno@gmail.com

In press, *Psychological Science*

Date: March 5, 2014

Word Count: 2499

Abstract

The human mind tends to excessively discount the value of delayed rewards relative to immediate ones, with "hot" affective processes believed to drive desires for short-term gratification. Supporting this view, recent findings demonstrate that sadness exacerbates financial impatience even when the sadness is unrelated to the economic decision at hand (Lerner, Li, & Weber, 2012). Such findings might reinforce the view that emotions must always be suppressed to combat impatience. But if emotions serve adaptive functions, then certain emotions might be capable of reducing excessive impatience for delayed rewards. We find evidence supporting this alternative view. Specifically, we find that (1) the emotion gratitude reduces impatience even with real money at stake, and (2) the effects of gratitude are differentiable from those of the more general positive state of happiness. These findings challenge the view that individuals must tamp down affective responses through effortful self-regulation to reach more patient and adaptive economic decisions.

The propensity of the human mind to overly discount the value of future rewards is well established (Ainslie, 1975; Berns, Laibson, & Loewenstein, 2007; Loewenstein & Thaler, 1989). At base, this phenomenon, known as temporal discounting, has an adaptive basis: *future* gains generally hold less utility than do *immediate* gains of equivalent value (Loewenstein & Prelec, 1992). The excessive extent to which discounting regularly occurs, however, often leads to remarkably impatient decisions that result in suboptimal outcomes (Berns et al, 2007; Frank, 1988; Frederick, Loewenstein, & O'Donoghue, 2003). Indeed, the tendency to favor smaller immediate gains over larger long-term ones may underlie problems ranging from credit-card debt (Meier & Sprenger, 2010) to unhealthy eating and associated increased mortality risk (Chabris, Laibson, Morris, Schuldt, & Taubinsky, 2008; DeSteno, Gross, & Kubzansky, 2013) to substance addiction (Bickel, Miller, Yi, Kowal, Lindquist, & Pitcock, 2007; Kirby, Petry, & Bickel, 1999).

Given the problems that can arise from chronic and excessive devaluing of future rewards relative to immediate ones, it is not surprising that patience has long been viewed as a virtue. The philosophers Hobbes (1642/1949), Hume (1888), and Locke (1693/1964) all emphasized the benefit of combatting desires for immediate pleasure that inhibit larger, future gains. In modern psychology, the story has been much the same, with Mischel and colleagues (Mischel, Shoda, & Rodriguez, 1989) providing perhaps the clearest evidence linking a capacity for patience with future success.

These older and contemporary views both maintain that the appropriate selection of long-term gains over smaller, sooner ones requires decision makers to

overcome affective responses (Berns et al., 2007; Frank, 1988; Metcalfe & Mischel, 1999). Spinoza (1670/2001) may capture it best in stating, "In their [humans'] desires and judgments of what is beneficial, they are carried away by their passions, which take no account of the future or anything else . . . ." Supporting this view, recent work has in fact shown that increases in the intensity of experienced *sadness* exacerbate people's impatience (Lerner, Li, & Weber, 2013). This phenomenon occurs even when that sadness is incidental to the real-stakes financial judgments or choices at hand.

Yet, if we take seriously the view that the capacity for emotion evolved to provide a relatively automatic means for guiding cognitive and behavioral processes in generally adaptive ways (Keltner, Haidt & Shiota, 2006), the notion that all emotions necessarily lead to impatience becomes questionable. After all, humans have faced trade-offs in short- versus long-term rewards for millennia. In all likelihood, before we even had the ability to engage in mental time-travel and imagine what the future might bring (Boyer, 2008; Suddendorf & Corballis, 2007), humans regularly faced challenges where success required decisions that favored long-term gains – decisions where excessive impatience would have led us astray.

Successful social living for humans frequently requires the acceptance of short-term costs in exchange for future capital (DeSteno, 2009). The benefits derived from cooperation and trust, for example, require one to accept the immediate costs of providing support to another in return for the longer-term gains associated with a lasting relationship characterized by continued exchange (Bartlett & DeSteno, 2006; Frank, 1988; Nowak & Highfield, 2011). Given the long-standing challenges posed

by such choices, it seems plausible that one or more specific emotions could act to attenuate impatience stemming from excessive discounting of the value of future rewards. That is, just as sadness increases impatience – presumably to combat a sense of immediate loss (Lerner et al., 2013; cf. Lerner, Small, & Loewenstein, 2004) – one or more discrete positive emotions might enhance patience by attenuating the discounting of future gains. (DeSteno, 2009). Because the value of both short- and long-term gains depend on context, intuitive mechanisms favoring each are likely to reside in the mind.

Gratitude: A Tool for Patience?

One might hypothesize that positive affect of any type might attenuate economic impatience. That is, any good feeling might make one willing to wait for greater financial gain. However, research on emotion and decision-making has shown that predictions based solely on the positive or negative *valence* of affective states are often problematic (DeSteno, Petty, Rucker, Wegener, & Braverman, 2004; Lerner & Keltner 2000, 2001). Valence constitutes only one dimension of an emotion and, as such, cannot by itself determine the cognitive and behavioral sequelae of any affective state (for a review, see Keltner & Lerner, 2010). Multi-dimensional theoretical frameworks of emotion and decision making (e.g., The Appraisal-Tendency Framework, see Lerner & Keltner 2000, 2001; Lerner & Tiedens, 2006) therefore argue for the importance of considering discrete emotional states in predicting choice.

Unlike global positive or negative affect, discrete emotions (e.g., gratitude, sadness) correspond to specific challenges and, therefore, shape subsequent

decisions and behaviors in accord with their respective functional goals (DeSteno, 2009; Lerner & Keltner 2000; 2001; Han, Lerner & Keltner, 2007). For example, whereas sadness has been shown to increase impatience, disgust, though negative, does not influence patience, as disgust's goal of contamination avoidance is less relevant to resolving tradeoffs between immediate and future rewards (Lerner et al., 2013).

The question at hand, therefore, centers on which discrete emotional state could potentially reduce impatience. Based upon theoretical considerations and a growing body of behavioral evidence, we believe that the emotion gratitude is a likely candidate. Both classical (Smith 1790/1976) and modern (Frank, 1988) economic theorists have suggested that socially oriented emotions such as gratitude might play a role in inhibiting decisions favoring immediate gratification. Within evolutionary biology, a similar view has emerged. Trivers (1971) argued that gratitude might be a proximate motivator of reciprocal altruism, and Nowak and Roch (2007) suggested it is linked to indirect upstream reciprocity. Both phenomena require individuals to accept short-term costs in resources (e.g., time, money, physical effort) in an effort to access future gains. Supporting this view, recent work has shown that direct manipulations of gratitude enhanced behaviors that were costly in the moment but that held the potential to build long-term cooperation in the future (Bartlett, Condon, Cruz, Baumann, & DeSteno, 2012; Bartlett & DeSteno, 2006; DeSteno, Bartlett, Baumann, Williams, & Dickens, 2010).

To determine whether gratitude reduces impatience, we must distinguish its effects from that of a more general state of the same valence. That is, if gratitude

functions as we believe, its effects should be differentiable from other positive states. Findings from the nascent literature examining the impact of nonspecific positive affect on impatience have been mixed, with some finding null effects or an exacerbation of impatience among those prone to extraversion (Hirsh, Guindon, Morisano, & Peterson, 2010), and others finding attenuation (Ifcher & Zarghamee, 2011; Pyone & Isen, 2011). Such variability likely stems from the fact that induction and measurement procedures for positive states have varied greatly, with little focus on delineation of one positive state from another. To date, we know of no previous examinations of the link between gratitude and economic impatience.

In the present experiment, therefore, we directly compared gratitude to happiness in order to examine gratitude's effect on impatience while controlling for a simpler, valence-based explanation. After inducing participants to experience one of these two affective states or a neutral control, we had them complete a standard set of intertemporal choices designed to assess economic impatience. We expected that gratitude would reduce impatience and that happiness, due to a lack of tight functional ties to temporal trade-offs in rewards, would likely produce a pattern similar to a neutral state.

Method

We randomly assigned 75 participants (32 males, 43 females, mean age=19, age range=18-23 years) to one of three emotion-induction conditions: Gratitude, Happiness, or Neutral. Individuals received course credit for participation and were eligible to receive a monetary award based on their decisions in the discounting task

(see below). Participants sat in individual cubicles equipped with personal computers.

After providing informed consent, participants began their respective emotion-induction procedure. Inductions took the form of autobiographical recall. Participants were asked to recall an event that made them feel grateful, an event that made them feel happy, or the events of a typical day (i.e., the neutral condition). They then spent five minutes writing about the respective topic in detail. Following completion of the recall task, participants completed a measure of emotion that required them to indicate how well, if at all, each of numerous affective descriptors (e.g., sad, angry, grateful, happy) captured their current feeling state using 5-point scales. Embedded within the measure were descriptors specifically related to the induced emotions. Gratitude was assessed as the mean response to *grateful, appreciative,* and *thankful* (Cronbach α=.92); happiness was assessed as the mean response to *happy, content,* and *pleasant* (Cronbach α=.74).

Participants next made 27 choices between receiving cash amounts (ranging from $11 to $80) immediately and larger cash amounts (ranging from $25 to $85) at a point from one week to six months in the future (Kirby et al., 1999; see supplementary materials for complete set of items). In accord with standard behavioral economic norms (e.g., Weber et al., 2007), we incentivized participants to engage in the task and provide their true preferences by informing them that one participant in each session (median of three participants per session) would have one of her or his decisions randomly selected and would receive the preferred amount. If the selected choice was for an immediate reward, the participant was

paid in cash at the end of the session. If the choice was for a later reward, he or she would return to pick up the money or have it mailed in the form of a check on the specified date.[1]

Results

Emotion Manipulation Check

We submitted participants' self-reported emotion intensity scores to a 3 (Induction Condition: Neutral, Grateful, Happy) × 2(Measured Emotion: Gratitude or Happiness) mixed Analysis of Variance, with the second factor being repeated, in order to confirm the success of the manipulations. As expected, the Condition × Measured Emotion interaction proved significant, $F(2, 72)=22.48$, $p<.001$. A planned contrast revealed that participants in both induction conditions evidenced a significant elevation in positive emotions ($M_{grateful}=4.47$, $SD_{grateful}=0.38$; $M_{happy}=4.11$, $SD_{happy}=0.72$) compared to those in the neutral condition ($M=3.17$, $SD=0.84$), $F(1, 72)=45.97$, $p<.001$. In addition, a focused contrast using happiness as a covariate (cf. Lerner & Keltner, 2001) confirmed that participants induced to feel gratitude reported significantly elevated feelings of gratefulness compared to participants induced to feel happy, $F(1, 47)=34.08$, $p<.001$. A similar focused contrast using gratitude as a covariate confirmed that participants induced to feel happy reported significantly elevated feelings of happiness compared to participants induced to feel gratitude, $F(1, 47)=10.81$, $p=.002$.[2]

Temporal Discounting

We used maximum-likelihood estimation to fit each participant's financial choices to an exponential discounting function, $D(t) = \delta^t$, where larger values of δ

(the annual *discount factor,* as opposed to the *discount rate*) indicate more patience. An annual discount factor reflects the extent to which a fixed amount to be received 1 year from now would be valued relative to the same amount received immediately. In other words, a discount factor of .50 would imply that $100 today is worth only $50 in 1 year and $25 in 2 years. Or, put differently, it means one would be willing to accept $50 today rather than $100 a year from now. As such, the discount factor can range from 0 (extreme impatience) to 1 (extreme patience).

To examine our central prediction that gratitude would result in less impatience (i.e., a larger annual discount factor), we conducted a planned contrast on the mean annual discount factors using weights of (-1) neutral, (-1) happiness, and (2) gratitude. In support of expectations, the contrast confirmed that grateful participants evidenced greater patience (i.e., less temporal discounting) in comparison to neutral and happy participants (who did not significantly differ from each other), $t(72)=2.18$, $p=.03$, $d=0.62$ (see Figure 1).[3,4] In monetary terms, the mean grateful participant required $63 immediately to forgo receiving $85 in three months, whereas the mean neutral or happy participant required only $55 immediately.

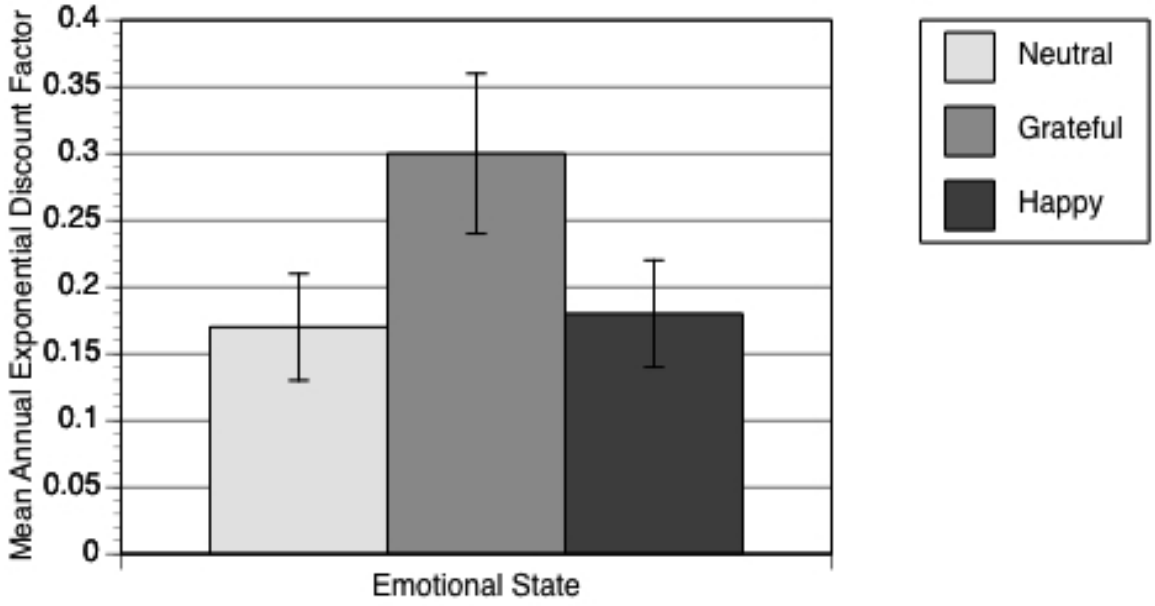

Figure 1. Mean exponential annual discount factors as a function of emotion condition. Error bars indicate ± one standard error.

In order to further demonstrate the specific link between gratitude and increased patience, we regressed participants' annual discount factors onto their reported intensities of gratitude and happiness. Within this model, only gratitude emerged as a reliable predictor. Increasing intensities of gratitude corresponded to increasing annual discount factors (β=.32, t=2.29, p<.03, R^2=.07); intensities of happiness predicted no appreciable changes (t<1.13).

Discussion

The results reveal that gratitude reduces excessive economic impatience. Comparing gratitude's effects to those of happiness, the results also confirm the importance of more narrowly parsing the influence of positive emotional states within the context of economic choice. Perhaps most importantly, they substantially challenge the view that individuals must tamp down affective responses through

effortful self-regulation to make more patient and adaptive economic decisions (cf. Berns et al., 2007; Mischel et al., 1989; Metcalfe & Mischel, 1999).

This final point holds potentially profound consequences. Ample research from many domains has shown that willpower aimed at self-regulation can and does fail, leading at times to negative outcomes (Vohs & Baumesiter, 2011; Vohs et al., 2008; Vohs & Faber, 2007). Ability, time, and motivation to engage in effortful self-regulation are not always available. According to the traditional view of intertemporal choice, such situations can be expected to leave individuals highly vulnerable to decisions favoring excessive impatience – decisions that they will likely come to regret over time. The current findings argue strongly for a second route to combat excessive impatience – a route that can operate relatively intuitively and thus effortlessly from the bottom-up.

Research has already shown that gratitude enhances behaviors, such as cooperation, that favor long-term gain even at an immediate cost (DeSteno, 2009). The identification of a direct effect of gratitude on impatience provides insight not only into a possible mechanism underlying such behavioral effects, but also opens new paths with which affect-based interventions might profitably be used. For example, work by Emmons and McCullough (2003) has shown that engagement in simple daily reflective exercises about events for which one is grateful leads to increased subjective wellbeing. It may well be that similar interventions can be used to inoculate people against the pernicious effects of excessive impatience on their financial and health-related decisions.

References

Ainslie, G. (1975). Specious reward: A behavioral theory of impulsiveness. *Psychological Bulletin, 82,* 463-496.

Andreoni, J., & Sprenger, C. (2012). Risk preferences are not time preferences. *The American Economic Review, 102*(7), 3357-3376.

Bartlett, M. Y., Condon, P., Cruz, J., Baumann, J., & DeSteno, D. (2012). Gratitude: Prompting behaviors that build relationships. *Cognition and Emotion*, *26*(1), 2-13.

Bartlett, M. Y., & DeSteno, D. (2006). Gratitude and prosocial behavior: Helping when it costs you. *Psychological Science*, *17*(4), 319-325.

Berns, G. S., Laibson, D., & Loewenstein, G. (2007). Intertemporal choice—toward an integrative framework. *Trends In Cognitive Sciences*, *11*(11), 482-488.

Bickel, W. K., Miller, M. L., Yi, R., Kowal, B. P., Lindquist, D. M., & Pitcock, J. A. (2007). Behavioral and neuroeconomics of drug addiction: Competing neural systems and temporal discounting processes. *Drug and Alcohol Dependence*, *90*, S85-S91.

Boyer, P. (2008). Evolutionary economics of mental time travel. *Trends In Cognitive Sciences*, *12*(6), 219-224.

Chabris, C. F., Laibson, D., Morris, C. L., Schuldt, J. P., & Taubinsky, D. (2008). Individual laboratory-measured discount rates predict field behavior. *Journal of Risk and Uncertainty*, *37*(2-3), 237-269.

DeSteno, D. (2009). Social emotions and intertemporal choice: 'Hot' mechanisms for building social and economic capital. *Current Directions in Psychological Science*, *18*(5), 280-284.

DeSteno, D., Bartlett, M. Y., Baumann, J., Williams, L. A., & Dickens, L. (2010). Gratitude as moral sentiment: Emotion-guided cooperation in economic exchange. *Emotion*, *10*(2), 289-293.

DeSteno, D., Gross, J. J., & Kubzansky, L. (2013). Affective science and health: The importance of emotion and emotion regulation. *Health Psychology*, *32*(5), 474-486.

DeSteno, D., Petty, R. E., Rucker, D. D., Wegener, D. T., & Braverman, J. (2004). Discrete emotions and persuasion: The role of emotion-induced expectancies. *Journal of Personality and Social Psychology*, *86*(1), 43-56.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, *84*(2), 377-389.

Frank, R. H. (1988). *Passions within reason: The strategic role of the emotions*. New York, NY: W. W. Norton & Co.

Frederick, S., Loewenstein, G., & O'Donoghue, T. (2003). Time discounting and time preference: A critical review. In G. Loewenstein, D. Read, R. Baumeister (Eds.), *Time and decision: Economic and psychological perspectives on intertemporal choice* (pp. 13-86). New York, NY: Russell Sage Foundation.

Han, S., Lerner, J. S., & Keltner, D. (2007). Feelings and consumer decision making: The appraisal-tendency framework. *Journal of Consumer Psychology*, *17*(3), 158-168.

Hirsh, J. B., Guindon, A., Morisano, D., & Peterson, J. B. (2010). Positive mood effects on delay discounting. *Emotion*, *10*(5), 717-721.

Hobbes, T. (1642/1949). *The citizen*. New York, NY: Appleton-Century Crofts.

Hume, D. (1888). A treatise of human nature. Clarendon Press.

Ifcher, J., & Zarghamee, H. (2011). Happiness and time preference: The effect of positive affect in a random-assignment experiment. *American Economic Review*, *101*(7), 3109-3129.

Keltner, D., Haidt, J., & Shiota, M. N. (2006). Social functionalism and the evolution of emotions. In M. Schaller, J. A. Simpson, D. T. Kenrick (Eds.), *Evolution and social psychology* (pp. 115-142). Madison, CT: Psychosocial Press.

Keltner, D., & Lerner, J. S. (2010). Emotion. In S. T. Fiske, D. T. Gilbert, G. Lindzey (Eds.), *Handbook of social psychology,* Vol. 1 (5th ed.) (pp. 317-352). Hoboken, NJ: John Wiley & Sons Inc.

Kirby, K. N., Petry, N. M., & Bickel, W. K. (1999). Heroin addicts have higher discount rates for delayed rewards than non-drug-using controls. *Journal of Experimental Psychology: General*, *128*(1), 78-87.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion*, *14*(4), 473-493.

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, *81*(1), 146-159.

Lerner, J. S., Li, Y., & Weber, E. U. (2013). The financial costs of sadness. *Psychological Science, 24*(1), 72-79.

Lerner, J. S., Small, D. A., & Loewenstein, G. (2004). Heart strings and purse strings: Carryover effects of emotions on economic decisions. *Psychological Science, 15*(5), 337-341.

Lerner, J. S., & Tiedens, L. Z. (2006). Portrait of the angry decision maker: How appraisal tendencies shape anger's influence on cognition. *Journal of Behavioral Decision Making*, *19*(2), 115-137.

Locke, J. (1693/1964). "Some thoughts concerning education." In P. Gay (Ed.), *John Locke on Education.* New York, NY: Bureau of Publications, Teachers College, Columbia University.

Loewenstein, G., & Prelec, D. (1992). Anomalies in interpersonal choice: Evidence and an interpretation. In G. Loewenstein, J. Elster (Eds.), *Choice over time* (pp. 119-145). New York, NY: Russell Sage Foundation.

Loewenstein, G. & Thaler, R. (1989). Anomalies: Intertemporal choice. Journal *of Economic Perspectives, 3(4)*, 181-193.

Meier, S., & Sprenger, C. D. (2012). Time discounting predicts creditworthiness. *Psychological Science*, *23*(1), 56-58.

Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review*, *106*(1), 3-19.

Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science*, *244*(4907), 933-938.

Nowak, M. A., & Highfield, R. (2011). *SuperCooperators: Why We Need Each Other to Succeed.* New York, NY: Simon & Schuster.

Nowak, M. A., & Roch, S. (2007). Upstream reciprocity and the evolution of gratitude. *Proceedings of the Royal Society B, 274,* 605-609.

Pyone, J. S., & Isen, A. M. (2011). Positive affect, intertemporal choice, and levels of thinking: Increasing consumers' willingness to wait. *Journal of Marketing Research*, *48*(3), 532-543.

Smith, A. (1790/1976). *The theory of moral sentiments.* Oxford, England: Clarendon Press.

Spinoza, B. (1670/2001). *Theological-Political Treatise* (S. Shirley & S. Feldman, translators). Cambridge, MA: Hackett Publishing.

Suddendorf, T., & Corballis, M. C. (2007). Mental time travel across the disciplines: The future looks bright. *Behavioral and Brain Sciences*, *30*(3), 335-351.

Trivers, R. L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology 46*(1), 35–57.

Vohs, K. D., & Baumeister, R. F. (2011). What's the use of happiness? It can't buy you money. *Journal of Consumer Psychology*, *21*(2), 139-141.

Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2008). Making choices impairs subsequent self-control: A limited-resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology*, *94*(5), 883-898.

Vohs, K. D., & Faber, R. J. (2007). Spent resources: self-regulatory resource availability affects impulse buying. *Journal of Consumer Research*, *33*(4), 537-547.

Weber, E. U., Johnson, E. J., Milch, K., Chang, H., Brodscholl, J., & Goldstein, D. (2007). Asymmetric discounting in intertemporal choice: A query theory account. *Psychological Science, 18,* 516-523.

Notes

[1]Note that this design implies higher transaction costs and potential risks of not receiving payment for future options, relative to immediate options. Although this may reduce overall patience levels (Andreoni & Sprenger, 2012), this study focuses on relative differences in patience among different emotion conditions, not absolute levels.

[2]Levels of the non-target positive emotion were used as covariates given the correlation between reported feelings of gratitude and happiness (r=.57), which regularly results from people's tendency to use the term *happy* as a relevant descriptor for many positive states (cf. Lerner & Keltner, 2001).

[3]Contrasts provide increased power for examining predicted mean differences. Simple paired comparisons also confirm that the discount rate of grateful participants differs from that of neutral (p=.05) and happy (p=.08) participants, respectively.

[4]Conducting a similar contrast analysis on ranks for the annual discount factors produces a similar result, $t(72)=1.93$, $p<.06$. ANOVA on ranks, though often possessing less power than its raw score counterpart, is less influenced by distributional skews.