

From Loss Aversion to Loss Acceptance:  
How Casino Contexts Can Undermine Loss Aversion

Joseph P. Simmons

Nathan Novemsky\*

\* Joseph P. Simmons is assistant professor of marketing, Yale University, 135 Prospect Street, New Haven, CT 06520, Phone: 203-432-6670, Fax: 203-432-3003 ([joseph.simmons@yale.edu](mailto:joseph.simmons@yale.edu)).

Nathan Novemsky is associate professor of marketing, Yale University, 135 Prospect Street, New Haven, CT 06520, Phone: 203-436-4261, Fax: 203-432-3003

([nathan.novemsky@yale.edu](mailto:nathan.novemsky@yale.edu)). The authors thank Robyn LeBoeuf for insightful comments on a previous draft.

Although research shows that most participants are loss averse and therefore unwilling to accept gambles that offer a 50% chance to win or lose the same amount, many people accept such gambles in casinos. To partially reconcile these empirical realities, we start with the notion that people are not loss averse for small amounts. Then, we suggest that gambling contexts may make otherwise large-seeming amounts seem small, thereby decreasing loss aversion and increasing people's willingness to gamble. In four studies, we show three ways by which casino contexts may increase gambling, and decrease loss aversion, by making wager amounts seem small.

Keywords: Gambling, Loss Aversion, Risky Choice

This research informs an empirical paradox. On the one hand, much research shows that most people are unwilling to accept gambles that offer an equal chance to win or lose the same amount (e.g., a 50% chance to win or lose \$20), presumably because they are loss averse: People expect losing \$x to be more painful than they expect gaining \$x to be pleasurable (Kahneman and Tversky 1979). On the other hand, millions of people gamble in casinos, accepting odds that are even less favorable than those that most research participants find unacceptable. Indeed, in the United States alone, gross casino gaming revenues exceeded \$34 billion in 2007, and this industry is growing steadily (American Gaming Association 2008).

How can one reconcile the popularity of casino gambling with loss aversion? There are a number of possibilities. First, there may be self-selection: There are individual differences in loss aversion (Tom, Fox, Trepel, and Poldrack 2007) and people who choose to gamble in casinos may not be loss averse. Second, casinos may encourage loss averse individuals to gamble by creating a context that signals that gambling is normative (i.e., everybody is gambling so I should too; cf. Cialdini, Reno, and Kallgren 1990). Third, casino contexts may, by increasing the salience of big winners, dramatically increase the subjective probability of a win; the ill-calibrated feeling that one is likely to win may encourage gambling even when the expected pain of a loss is greater than the expected pleasure of a win. Finally, people may gamble at casinos because casino gambling is more fun than the often hypothetical gambling opportunities offered by researchers who study loss aversion (Conlisk 1993).

Although these (and many other) possibilities may all help to explain why people gamble at casinos, in this paper we offer an additional possibility. Whereas all of these explanations presume that loss aversion is stable, we propose that loss aversion is malleable. More specifically, we show that ubiquitous features of real-world gambling contexts may significantly

reduce loss aversion, thereby increasing people's willingness to accept gambles they would usually avoid.

### *HOW CASINO CONTEXTS CAN UNDERMINE LOSS AVERSION*

Together, two streams of research suggest how gambling contexts might undermine loss aversion. First, research shows that people are not loss averse for very small amounts of money (Harinck, Van Dijk, Van Beest, and Mersmann 2007). Harinck et al. found that although people's gambling preferences were consistent with loss aversion for large amounts – they were willing to risk only €23.04 for a 50% chance to win €50.00 – their preferences were inconsistent with loss aversion for very small amounts – they were willing to risk €0.12 for a 50% chance to win €0.10. They also found that people expect small gains to be more pleasant than they expect small losses to be unpleasant. The researchers attribute these effects to the fact that people find it easier to cope with (i.e. explain away) small losses than large losses (cf. Kermer, Driver-Linn, Wilson, and Gilbert 2006), and they propose that considerable experience with small losses teaches them to anticipate that small losses will not be very painful. Because people do not actively explain away small gains, people's expectations of the pleasure endured by small gains are unchanged by experience, and small losses “therefore will be outweighed by the positive feelings associated with small anticipated positive outcomes” (Harinck et al. 2007, p. 1100).

On its face, Harinck et al.'s (2007) investigation seems to shed little light on casino gambling, for although they found evidence of loss aversion for amounts as low as €1, many casino games disallow such small wager amounts and casinos accept millions of wagers that exceed this value. However, we believe that Harinck et al.'s findings do shed light on higher-

stakes casino gambling, because we expect that people will anticipate coping easily not only with *objectively* trivial losses but also with any loss that *seems* small. Thus, we predict that loss aversion will decrease, and the willingness to gamble will increase, as the *subjective* size of the loss decreases.

Importantly, a second stream of research suggests that the evaluation of loss magnitudes may not correlate perfectly with objective loss magnitudes, because subjective evaluations are often heavily dependent on context (Bettman, Luce, and Payne 1998; Hsee 2000; Huber, Payne, and Puto 1982; Simonson 1989; Simonson and Tversky 1992; Slovic, Finucane, Peters, and McGregor 2002). More specifically, research shows that the evaluation of a quantity as either “large” or “small” depends on which other quantities the judge compares it to. Hsee (2000) found that people were willing to pay more for an ice cream portion that came inside a small cup than an identical portion that came inside a large cup, presumably because the portion seemed larger when it was compared to the small cup. The use of context to judge quantities extends to evaluations of money. For example, Tversky and Kahneman (1981) found that although most people will travel 20 minutes to save \$5 on a \$15 purchase, most will not travel 20 minutes to save \$5 on a \$125 purchase. This result is consistent with the suggestion that \$5 seems smaller in the context of a large amount than in the context of a small amount. Similarly, Slovic et al. (2002) found that a gamble offering a 7/36 chance to win \$9 and a 29/36 chance to win nothing was judged *less* attractive than a gamble offering a 7/36 chance to win \$9 and a 29/36 chance to lose 5 cents, perhaps because a \$9 win seems larger in the context of a 5-cent loss. And, more recently, Baltussen, Post, and van den Assem (2008) have shown that the risk-taking behavior of contestants on the game show *Deal or No Deal* is influenced more by the relative stakes of the gamble (i.e., how large or small the money at stake is in the context of the game) than by the

absolute stakes of the gamble. All of this research suggests that an objective sum of money may seem larger (smaller) when the context presents comparison values that are significantly smaller (larger).

Drawing on this research, we suggest that people evaluate the size of a prospective loss by comparing the loss to other salient wager amounts, and the result of this comparison determines the subjective magnitude of the loss. When the prospective loss is much less (greater) than another salient wager amount, the loss will seem smaller (larger) than it will seem in the absence of a salient comparison standard. And, because we expect people to anticipate coping more easily with subjectively smaller losses, we expect the presence of a large (small) comparison standard to decrease (increase) loss aversion, and increase people's willingness to gamble.

In the studies described below, we manipulated the gambling context so as to make losses seem either big or small, and we assessed participants' willingness to accept a gamble offering an equal chance to win or lose a fixed amount of money. Holding constant the objective potential loss magnitudes, we expected participants' willingness to gamble to increase when the gambling context made potential loss magnitudes seem small.

This account can help us to understand why typically loss averse individuals may be inclined to gamble at casinos because casino contexts provide many cues that may make wager amounts seem small. Casinos often expose people to wager amounts that are larger than ones they would normally consider, and Studies 1 and 2 demonstrate that exposure to larger wager amounts decreases the expected pain of a smaller loss and increase people's willingness to gamble for that smaller amount. Casinos often post a sign that advertises the large maximum betting limit at each gaming table, and Study 3 shows that stating a larger maximum wager decreases the expected pain of a loss and increases gambling. Finally, casinos often require people to generate their own

wager amounts, and Study 4 shows that the mere act of generating wager amounts causes people to spontaneously consider wager amounts that are larger than the minimum acceptable wager, thereby decreasing the subjective magnitude of a prospective loss, and increasing their willingness to play a gamble.

### *STUDY 1*

One way that casinos might decrease the perceived size of a loss is by putting a potential wager in the context of a larger wager. For example, with high limit tables placed in prominent positions, many casino goers are aware that the casino would accept very large wagers. Our first study investigates whether considering a large gamble, regardless of whether or not they decide to play it, makes individuals more likely to accept a smaller gamble.

#### *Method*

We conducted a web survey in which we assessed undergraduate participants' (N = 208; 115 women) willingness to accept two gambles. Participants were asked to "Imagine that you are faced with the prospect of betting \$25 [\$5] on the flip of a coin. If you win, you win \$25 [\$5] and if you lose, you lose \$25 [\$5]. You can choose which side of the coin to bet on. Would you like to participate in this coin flip?" One gamble offered a 50% chance to win or lose \$25 and the other offered a 50% chance to win or lose \$5. The gambles were presented on separate web pages, and participants were not told in advance that a second gamble would follow the first one. Because the gambles were hypothetical, participants never learned the outcomes of the gambles.

We manipulated the order of the gambles. Participants were randomly assigned to consider the \$25 gamble before the \$5 gamble or the \$5 gamble before the \$25 gamble. Because \$5

should seem smaller after considering \$25 and \$25 should seem larger after considering \$5, we predicted that participants would be more likely to accept both gambles when the \$25 gamble was presented first.

### *Results and Discussion*

As predicted, participants were more likely to play the \$5 gamble,  $\chi^2(1) = 4.03, p < .05$ , and the \$25 gamble,  $\chi^2(1) = 8.32, p < .005$ , when the \$25 gamble was presented first than when the \$5 gamble was presented first (see Figure 1). Thus, even though the objective amount of the gambles was fixed, people were more (less) likely to accept a gamble when the context made the prospective loss seem small (large). In addition, participants in both conditions were more likely to accept the \$5 gamble than the \$25 gamble,  $\chi^2(1) > 9.04, p < .005$ , which is consistent with the idea that smaller gambles are less susceptible to loss aversion.<sup>1</sup>

## *STUDY 2*

In Study 1, participants were asked to actively consider whether to accept a gamble that provided the context for another gamble. Study 2 had two objectives. First, we used a more subtle manipulation to demonstrate that merely exposing participants to a context that alters the subjective magnitude of the potential loss can achieve the same results. Second, we set out to demonstrate that decreasing the subjective magnitude of the loss decreases the expected pain of the loss, and that this expectation mediates the effect of context on willingness to gamble.

### *Method*

In a web survey, undergraduate participants ( $N = 158$ ; 88 women) were presented with two gambles on the same page. Participants were instructed to skip the first gamble and to indicate

their willingness to play the second gamble. The exact instructions were: “In this survey, it is important that you follow the instructions. To test whether you are following the instructions, we are asking you to SKIP the first question, and answer the remaining questions. So, please do NOT answer the first question.” The second gamble was the same for all participants, and it offered a 50% chance to win or lose \$10. We manipulated the size of the first gamble, which offered either a 50% chance to win or lose \$1 or a 50% chance to win or lose \$50. We expected \$10 to seem smaller after exposure to the \$50 gamble than to the \$1 gamble, and we therefore expected participants to be more likely to accept the \$10 gamble after exposure to the \$50 gamble than to the \$1 gamble.

After participants indicated their willingness to play the \$10 gamble, we asked them to rate on a 7-point scale (1 = not at all; 7 = extremely) “How painful would it be for you to lose the \$10 coin flip?” and “How pleasurable would it be for you to win the \$10 coin flip?” The order of these two questions was randomized. We expected the anticipated pain of the \$10 loss to be lower after exposure to the \$50 gamble than after exposure to the \$1 gamble.

### *Results and Discussion*

Sixty-two percent (98 of 158) of the participants in this study failed to follow the instructions and answered the first gambling question. This percentage was high but, sadly, it is not unusual for participants to ignore instructions of this type (Oppenheimer, Meyvis, and Davidenko 2007; Simmons and Nelson 2006). Fortunately, as detailed below, the results did not differ depending on whether or not participants followed the instructions.

As predicted, participants were more willing to accept the \$10 gamble after exposure to the \$50 gamble (28.9%) than after exposure to the \$1 gamble (9.8%),  $\chi^2(1) = 9.44, p < .005$ . Importantly, this effect did not depend on whether participants followed the instructions to skip

the first question (interaction  $p = .50$  in a logistic regression), and the difference between conditions was significant even among those who did skip the first question (27.6% vs. 6.5%),  $\chi^2(1) = 4.82, p < .05$ . Thus, mere exposure to the \$50 gamble made participants more willing to accept the \$10 gamble than did exposure to the \$1 gamble.

Also consistent with our predictions, participants exposed to the \$1 gamble ( $M = 5.00, SD = 1.67$ ) expected the pain of the \$10 loss to be greater than did participants exposed to the \$50 gamble ( $M = 4.03, SD = 1.68$ ),  $t(156) = 3.65, p < .001$ . Again, this effect was significant even among those who skipped the first question,  $t(58) = 3.27, p < .005$ . There was a trend for participants to expect greater pleasure from a \$10 win after exposure to the \$1 gamble ( $M = 5.22, SD = 1.09$ ) than after exposure to the \$50 gamble ( $M = 4.84, SD = 1.52$ ), but this difference was not quite significant,  $t(156) = 1.80, p = .07$ , and it was not close to significant among those who skipped the first question,  $t(58) = .47, p = .64$ .<sup>2</sup>

The willingness to gamble for \$10 was negatively correlated with the expected pain of the loss,  $r(156) = -.33, p < .001$ , but uncorrelated with the expected pleasure of the win,  $r(156) = .07, p = .37$ . Finally, in support for our contention that context affects the willingness to gamble by altering the prospective pain of a loss, a Sobel test confirmed that the effect of context on the willingness to gamble was mediated by the expected pain of the loss,  $z = 2.49, p = .01$ . The willingness to gamble was not mediated by the expected pleasure of the win,  $z = 1.05, p = .29$ .

The results of Study 2 supported and extended the results of Study 1. When exposed to a gamble of greater magnitude, people expected the pain of a loss to be less severe, and they were more willing to gamble. Thus, it seems that one way in which casino contexts may increase gambling is by merely exposing people to relatively large wager possibilities.

### STUDY 3

Casino table games (e.g., roulette, blackjack) often post a sign that states the maximum allowable wager amount. This high maximum provides another contextual cue that might make a wager being considered feel like a small wager. Even if individuals do not actively consider wagering this value, merely attending to the maximum value may make typically moderate wager amounts seem small. This in turn could decrease the expected pain associated with losing moderate amounts, and increase the willingness to gamble for those amounts. We tested this idea in Study 3.

#### *Method*

As part of a larger questionnaire session, undergraduate participants ( $N = 79$ ; 41 women) were asked to, “Imagine that you can bet an amount between \$1 and \$25 [\$100] on the flip of a coin. If you win, you win the amount you bet. If you lose, you lose the amount you bet. Would you be willing to bet \$20 on the coin flip?” Participants were randomly assigned either to a condition in which \$25 was the maximum value or to a condition in which \$100 was the maximum value. We expected \$20 to seem smaller when the maximum bet was \$100 than when it was \$25, and we therefore expected participants to be more likely to accept the \$20 gamble when the maximum bet was \$100 than when it was \$25.

As in Study 2, after participants indicated their willingness to play the gamble, we asked them to rate on a 7-point scale (1 = not at all; 7 = extremely) “How painful would it be for you to lose the \$20 coin flip?” and “How pleasurable would it be for you to win the \$20 coin flip?” The “pain of the loss” question was always asked first. We expected the anticipated pain of the \$20 loss to be lower when the maximum bet was \$100 than when it was \$25.

### *Results and Discussion*

As predicted, participants were nearly four times more willing to accept the \$20 gamble when the maximum bet was \$100 (38.5%) than when it was \$25 (10.0%),  $\chi^2(1) = 8.76, p < .005$ . Also consistent with our predictions, participants who were told that the maximum bet was \$25 expected the pain of the \$20 loss to be greater ( $M = 5.90, SD = 1.22$ ) than did participants who were told that the maximum bet was \$100 ( $M = 4.97, SD = 1.39$ ),  $t(77) = 3.16, p < .005$ . Participants expected a \$20 win to give them the same pleasure regardless of whether the maximum bet was \$25 ( $M = 5.90, SD = 1.33$ ) or \$100 ( $M = 6.13, SD = 1.05$ ),  $t(77) = 0.84, p = .40$ .

As in Study 2, the willingness to gamble for \$10 was negatively correlated with the expected pain of the loss,  $r(77) = -.38, p = .001$ , but uncorrelated with the expected pleasure of the win,  $r(77) = .07, p = .55$ . Finally, a Sobel test confirmed that the effect of the maximum bet manipulation on the willingness to gamble was partially mediated by the expected pain of the loss,  $z = 1.93, p = .053$ , but not by the expected pleasure of the win,  $z = 0.33, p = .74$ . This suggests that exposure to the large maximum bet was sufficient to reduce the expected pain of the loss, and that reduction increased participants' willingness to accept a \$20 gamble.

### *STUDY 4*

Most demonstrations of loss aversion, including most of the studies reported in this paper, require people to indicate whether or not they would accept a gamble for a fixed wager amount (e.g., Do you want to play a gamble that offers a 50% chance to win or lose \$10?), but casino gambling allows people to generate their own wager amounts. People who are considering how

much they would be willing to wager are likely to consider only wager values that are at least as large as the minimum allowable wager, because values smaller than the minimum are not possible wager amounts. The consideration of larger wager amounts might make the minimum amount seem small, and so asking people to generate a wager amount might increase people's inclination to wager *something*. In Study 4, we examined whether people are more likely to accept a \$10 gamble when they are asked to generate a wager amount than when they are not.

### *Method*

In a web survey, we randomly assigned 243 participants from the general population (150 women) to one of two conditions. In the Choice condition, participants were asked to, "Imagine that you are faced with the prospect of betting \$10 on the flip of a coin. If you win, you win \$10 and if you lose, you lose \$10. Would you like to participate in this coin flip?" They answered the question by clicking either "yes" or "no." In the Wager condition, participants were instead asked to:

Imagine that you are faced with the prospect of betting on the flip of a coin. If you win, you win as much as you bet (e.g., if you bet \$10, you win \$10). If you lose, you lose as much as you bet (e.g., if you bet \$10, you lose \$10). Suppose the minimum wager is \$10. Thus, you can bet as much as you like on this coin flip, so long as the amount is equal to or greater than \$10. How much would you like to bet on the coin flip? If you do not want to play, please enter \$0 in the space below.

They answered the question by indicating a dollar value.

After answering the gambling question, participants in both conditions were asked, on a separate page, to indicate "which of the following dollar values came to your mind at some point? Please check all dollar values that you thought of." The five choice options were "\$1-\$9,"

“\$11-\$20,” “\$21-\$30,” “values greater than \$30,” and “I didn’t think of any of these dollar values.”

We expected that asking participants to generate a wager amount when the minimum wager amount was \$10 would increase their likelihood of considering values greater than \$10. Moreover, because considering values greater than \$10 should make \$10 seem smaller, we expected those who were asked to generate a wager to be more likely to play a \$10 gamble than those who were not.

### *Results and Discussion*

We compared the percentage of people in the Choice condition who were willing to play the \$10 gamble to the percentage of people in the Wager condition who were willing to play the gamble for \$10 or more.<sup>3</sup> As predicted, participants in the Wager condition (68.0%) were more likely to play a \$10 gamble than were those in the Choice condition (55.4%),  $\chi^2(1) = 4.12, p = .04$ . Also consistent with our predictions, participants in the Wager condition (52.5%) were more likely to consider dollar amounts greater than \$10 than were those in the Choice condition (33.9%),  $\chi^2(1) = 8.54, p = .003$ . Wager condition participants (36.9%) were not more likely than Choice condition participants (34.7%) to consider dollar amounts less than \$10,  $\chi^2(1) = 0.13, p = .72$ .

Participants who considered a dollar amount larger than \$10 were significantly more likely to gamble for \$10,  $r(241) = .40, p < .001$ .<sup>4</sup> Moreover, a Sobel test revealed that consideration of large amounts significantly, and fully, mediated the effect of condition on acceptance of the gamble,  $z = 2.58, p = .01$ . This suggests that generating wager amounts increased people’s willingness to gamble precisely because it led them to consider larger amounts.

## GENERAL DISCUSSION

Four studies demonstrated three ways in which casino contexts may undermine loss aversion, and increase gambling, by making potential loss magnitudes seem small. These include (1) exposing people to large gambles, (2) designating a large amount as the maximum wager amount, and (3) asking people to generate wager amounts that are at least as large as the minimum allowable bet. Each of the four studies showed that any one of these manipulations can, by reducing the subjective size, and pain, of the potential loss, increase typically loss averse individuals' willingness to gamble for fixed amounts. On this basis we would expect casinos, which generally employ *all* of these manipulations, to encourage many typically loss averse people to gamble at least some amount of money. Moreover, because people are more likely to gamble following wins (Thaler and Johnson 1990) *and* losses (Andrade and Iyer, forthcoming), a successful enticement to gamble for a subjectively small amount may cause people to gamble much more subsequently.

Beyond (partially) explaining why even loss averse gamblers might be enticed to gamble at casinos, this research may potentially explain other effects. Contrary to considerable data showing that people are risk-seeking when choosing between two potential losses, Kahneman and Tversky (1979) discovered that most people are willing to accept a sure loss of \$5 in order to avoid accepting a .001 chance at a loss of \$5,000. To explain these results, Kahneman and Tversky proposed that people are more willing to take the sure \$5 loss because people overweight small probabilities. Our research suggests an additional explanation for the effect: In the context of a potential \$5,000 loss, a loss of \$5 may seem very small, and people may consequently expect the \$5 loss to be relatively painless.

This research also suggests some interesting questions for future research. We find that providing comparison wagers can decrease the perceived size and pain of a loss and increase people's willingness to gamble. However, it is not clear which comparisons will have this influence. Does thinking about high numbers that are not dollar values reduce the perceived size of a potential wager? Or does the comparison need to be a dollar value or, even more specifically, a potential wager amount to have these effects? Future research could examine the boundaries of this comparison process to determine exactly which types of comparisons produce the effects we observe in the present research.

In our studies and those conducted by Harinck et al (2007), the key determinant of acceptance of risky prospects seems to be the expected pain of a loss rather than the expected pleasure of a gain (despite similar variance). Future research could examine whether this arises from a tendency to focus on the worst possible outcome when evaluating a gamble (e.g., Birnbaum 2008), and whether that tendency is mitigated in certain situations. For example, when individuals are in the domain of losses and concerned about reducing that loss or breaking even, it seems the value of the gain may play an important role in decisions regarding risky prospects (Thaler and Johnson 1990). In those situations, we might expect people's willingness to accept a 50/50 gamble for a chance to win or lose \$X to increase as the subjective size of \$X *increases*.

While we examined several features of casino environments that may make potential losses seem small, there are countless other possible aspects of casinos that might also contribute to this effect. For example, does displaying lots of high value chips make individuals feel their wager is smaller? Do smaller chips make any wager feel smaller compared to bigger chips?

Another area for further study involves testing contextual cues that could reduce loss aversion in consumer contexts and make some payments feel less aversive. For example, the

purchase of certain luxuries or even higher priced branded items might induce loss aversion.

Could contextual cues in the immediate shopping environment make a payment feel smaller and increase purchase incidence?

### *Conclusion*

While many experiments aim to understand risky choice, only a small fraction explicitly links their results to real-world risk taking behavior. The present research adds to this fraction by providing one piece in the puzzle arising from the juxtaposition of the ubiquity of real-world gambling behavior and the equally ubiquitous experimental phenomenon of loss aversion. While gambling behavior is clearly influenced by many psychological factors, our studies provide evidence that casino environments may actually serve to reduce the subjective size of wagers and thereby decrease loss aversion for risky prospects.

## References

- American Gaming Association (2008), *State of the States: The AGA Survey of Casino Entertainment*, AGA, Washington, D.C.
- Andrade, Eduardo B. and Ganesh Iyer, "Planned Versus Actual Betting in Sequential Gambles," *Journal of Marketing Research*, forthcoming.
- Baltussen, Guido, Thierry Post, and Martijn J. van den Assem (2008), "Risky Choice and the Relative Size of Stakes," Working Paper, Erasmus School of Economics, Erasmus University.
- Bettman, James R., Mary Frances Luce, and John W. Payne (1998), "Constructive Consumer Choice Processes," *Journal of Consumer Research*, 25 (December), 187-217.
- Birnbaum, Michael H. (2008), "New Paradoxes of Risky Decision Making," *Psychological Review*, 115 (2), 463-501.
- Cialdini, Robert B., Raymond R. Reno, and Carl A. Kallgren (1990), "A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places," *Journal of Personality and Social Psychology*, 58 (June), 1015-1026.
- Conlisk, John (1993), "The Utility of Gambling," *Journal of Risk and Uncertainty*, 6 (June), 255-275.
- Harinck, Fieke, Eric van Dijk, Ilja van Beest, and Paul Mersmann (2007), "When Gains Loom Larger Than Losses: Reversed Loss Aversion for Small Amounts of Money," *Psychological Science*, 18 (December), 1099-1105.
- Hsee, Christopher K. (2000), "Attribute Evaluability: Its Implications for Joint-Separate Evaluation Reversals and Beyond," in Daniel Kahneman and Amos Tversky (Eds.), *Choices, Values, and Frames* (pp.543-563), Russell Sage Foundation: Cambridge.

- Huber, Joel, John W. Payne, and Christopher P. Puto (1982), "Adding Asymmetrically Dominated Alternatives: Violations of Regularity and the Similarity Hypothesis," *Journal of Consumer Research*, 9 (June), 90-98.
- Kahneman, Daniel and Amos Tversky (1979), "Prospect Theory: Analysis of Decision Under Risk," *Econometrica*, 47 (2), 263-291.
- Kermer, Deborah A., Erin Driver-Linn, Timothy D. Wilson, and Daniel T. Gilbert (2006), "Loss Aversion is an Affective Forecasting Error," *Psychological Science*, 17 (August), 649-654.
- McGraw, A. Peter, Jeffrey T. Larsen, Daniel Kahneman, and David Schkade (2008), "Do Bipolar Scales Mask Loss Aversion?" Working Paper, University of Colorado.
- Oppenheimer, Daniel M., Tom Meyvis, and Nicolas Davidenko (2007), "Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power in Survey Studies," Working Paper, Princeton University.
- Simmons, Joseph P. and Leif D. Nelson (2006), "Intuitive Confidence: Choosing Between Intuitive and Nonintuitive Alternatives," *Journal of Experimental Psychology: General*, 135 (August), 409-428.
- Simonson, Itamar (1989), "Choice Based on Reasons: The Case of Attraction and Compromise Effects," *Journal of Consumer Research*, 16 (September), 158-174.
- Simonson, Itamar and Amos Tversky (1992), "Choice in Context: Tradeoff Contrast and Extremeness Aversion," *Journal of Marketing Research*, 29 (August), 281-295.
- Slovic, Paul, Melissa Finucane, Ellen Peters, and Donald G. MacGregor (2002), "The Affect Heuristic," in Thomas Gilovich, Dale Griffin, and Daniel Kahneman (Eds.), *Heuristics and Biases: The Psychology of Intuitive Judgment* (pp. 397-420), Cambridge University Press: Cambridge.

Thaler, Richard H. and Eric J. Johnson (1990), “Gambling with the House Money and Trying to Break Even: The Effects of Prior Outcomes on Risky Choice,” *Management Science*, 36 (June), 643-660.

Tom, Sabrina M., Craig R. Fox, Christopher Trepel, Russell A. Poldrack (2007), “The Neural Basis of Loss Aversion in Decision-Making Under Risk,” *Science*, 315 (January 26), 515-518.

Tversky, Amos and Daniel Kahneman (1981), “The Framing of Decisions and the Psychology of Choice,” *Science*, 211, 453-458.

## Footnotes

1. There were main effects of participant gender in Studies 2, 3, and 4 – men were more likely to gamble than were women – but not in Study 1. Importantly, participant gender did not interact with the context manipulation in any of the studies, nor did controlling for gender affect any of the results reported herein. Thus, we do not discuss this variable further.
2. In both conditions, people did not rate the expected pain of a loss to be more severe than the expected pleasure of a win. This may seem inconsistent with loss aversion, which predicts that the pain of losing \$x will be greater than the pleasure of gaining \$x. However, it is inappropriate to compare rating scales of pain to rating scales of pleasure to infer loss aversion (or the lack thereof), because people may treat these scale labels very differently. For example, people may consider “extreme pain” to be more severe or rarer than “extreme pleasure,” and they may consequently endorse higher values on the “pleasure” scale than on the “pain” scale (see McGraw, Larsen, Kahneman, and Schkade 2008).
3. This assumes that participants in the Wager condition who indicated a desire to play for more than \$10 would also be willing to play for exactly \$10. In a separate study (N = 58; 30 women), we tested this assumption by asking people to generate a wager for a gamble offering a 50% chance to win or lose \$x before deciding whether to play a gamble offering a 50% chance to win or lose \$5. The vast majority of participants (95.8%) who indicated a wager amount of at least \$5 chose to play the \$5 gamble (as did a few participants who indicated a wager amount less than \$5). Thus, it seems safe to assume that those who indicated a wager amount of at least \$5 would be willing to play a \$5 gamble.
4. Participants who considered a dollar amount less than \$10 were non-significantly less likely to gamble for \$10,  $r(241) = -.10, p = .12$ .

## Study 1: Percent Accepting the \$5 and \$25 Gambles

