Sizing up information distortion: Quantifying its effect on the subjective values of choice options

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Abstract When choosing between options, people often distort new information in a direction that favors their developing preference. Such information distortion is widespread and robust, but less is known about the magnitude of its effects. In particular, research has not quantified the effects of distortion relative to the values of the choice options. In two experiments, we manipulated participants' initial preferences in choices between risky three-outcome monetary gambles (win, lose, or neither) by varying the order of five information items (e.g., amount to win, chance of losing). In Experiment 1 ($N = 397$), the effect of initial information on gambles' certainty equivalents (subjective values) was mediated by the distortion of later information. The indirect effect on the difference between gambles' certainty equivalents averaged 27% of the gambles' mean expected value. In Experiment 2 ($N = 791$), we increased the difference between gambles on a later information item to overcome the effect of initial information on participants' choices. The required change averaged 31% of the gambles' mean expected value. We conclude that the effects of information distortion can be substantial.

Keywords Certainty equivalent · Choice · Information distortion · Mediation · Monetary gambles · Multilevel modeling · Preference formation · Risk

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When people choose between alternatives that vary on a number of attributes, an early preference for one alternative can lead to the distortion of later information in the direction of the tentative favorite (Brownstein, 2003; DeKay, Patiño-Echeverri, & Fischbeck, 2009b; Holyoak & Simon, 1999; Russo, Medvec, & Meloy, 1996; Russo, Meloy, & Medvec, 1998; Simon, Krawczyk, & Holyoak, 2004; Simon, Pham, Le, & Holyoak, 2001; Simon, Snow, & Read, 2004). This *predecisional information distortion* occurs in decisions that do not explicitly involve risk (e.g., Russo et al., 1996, 1998; Simon, Krawczyk, & Holyoak, 2004) and in those that do (DeKay et al., 2009b; DeKay, Stone, & Miller, 2011; Glöckner & Herbold, 2011; Russo & Yong, 2011). It results from a motivation or unconscious inclination to achieve consistency (Glöckner, Betsch, & Schindler, 2010; Holyoak & Simon, 1999; Russo, Carlson, Meloy, & Yong, 2008; Simon et al., 2001) and mediates the effects of initial preferences on final choices and confidence judgments (DeKay et al., 2011).

The distortion of input information to support a tentatively preferred option highlights the bidirectional or circular nature of decision processes. This well-replicated finding contradicts most descriptive and normative theories of choice (e.g., prospect theory, regret theory, expected utility theory, multiattribute utility theory), which assume that the evaluation of information affects the evaluation of alternatives, but not vice versa (DeKay et al., 2009a, 2009b, 2011; Glöckner et al., 2010; Holyoak & Simon, 1999; Russo & Yong, 2011; Simon, Snow, & Read, 2004). In contrast, one descriptive theory that does not assume unidirectionality is parallel constraint satisfaction (PCS), a coherence-maximizing connectionist model that incorporates bidirectional links between the choice options and the input information (Glöckner et al., 2010; Holyoak & Simon, 1999; Simon, Snow, & Read, 2004).

The circularity of coherence-driven decision processes is not only normatively troubling, but also potentially harmful. For example, Russo, Carlson, and Meloy

(2006) demonstrated that information distortion can lead people to select alternatives that they had previously evaluated as inferior, and Levy and Hershey (2006) noted that the distortion of probabilities can lead patients to make poor medical choices. In the legal domain, Simon (2004) described several adverse consequences of jurors' distorted evaluations of evidence, including the increased likelihood of erroneous decisions in civil and criminal trials.

In most studies, however, assessment of the effects of information distortion has been limited to comparing choice proportions for options with intentionally ambiguous values. As a result, no study has quantified the effects of distortion relative to the values of the decision alternatives in question. We addressed this gap by conducting two experiments involving choices between risky monetary gambles. Although the potential gains and losses in these gambles were hypothetical rather than real, previous research indicates that moderate financial incentives (from \$7 to over \$30) do not reduce information distortion, and sometimes amplify it (Brownstein, Read, & Simon, 2004; Meloy, Russo, & Miller, 2006). The amplification of distortion stems, at least in part, from the elevation of participants' moods (Meloy, 2000; Meloy et al., 2006). Information distortion is also observed in choices between real goods (i.e., choices with real nonmonetary consequences; Carlson & Pearo, 2004). To the extent that information distortion is based on associative processes (as in the PCS model), these results are consistent with the general ineffectiveness of incentives in reducing association-based errors (Arkes, 1991).

In both of our experiments, we manipulated participants' initial preferences by varying the order of information about the gambles (Carlson, Meloy, & Russo, 2006; DeKay et al., 2011). In Experiment 1, we investigated the effect of

distortion on the difference between the subjective values of the two gambles, as assessed by participants' certainty equivalents (CEs). A CE is the sure gain or loss that one considers equal to the value of the gamble (i.e., one is indifferent between the CE and the gamble). In Experiment 2, we measured the effect of initial information on subjective values in a completely choice-based design, without assessing CEs.

Experiment 1

Method

Participants A sample of 397 undergraduates (201 at Ohio State and 196 at Wake Forest) received course credit for participating; 50% were female.

Procedures Participants were randomly assigned to the choice condition ($n = 265$) or the no-choice control condition ($n = 132$) (see the [supplementary materials](#) for the actual questionnaires). Both groups were asked to imagine choosing between two urns, each with 100 colored tickets, and drawing one ticket from the chosen urn. With each urn, participants could (hypothetically) win \$ x by drawing a green ticket with probability p , lose \$ y by drawing a red ticket with probability q , or obtain \$0 by drawing a white ticket with probability $r = 1 - p - q$.

Participants in the choice condition considered four pairs of gambles (urns). The gambles in each pair differed on five *information items* (\$ x , p , \$ y , q , r) and had different expected values (EVs) (see Table 1). Information items were presented sequentially for each gamble pair. The item appearing first

Table 1 Characteristics of gambles in Experiment 1

Gamble	Amount to Win (\$ x)	Probability of Winning (p)	Amount to Lose (\$ y)	Probability of Losing (q)	Probability of \$0 (r)	Expected Value
A	\$51	.26	\$24	.23	.51	\$7.74
B	\$35	.29	\$26	.12	.59	\$7.03
C	\$52	.49	\$33	.23	.28	\$17.89
D	\$73	.30	\$31	.25	.45	\$14.15
E	\$63	.30	\$19	.36	.34	\$12.06
F	\$61	.44	\$34	.33	.23	\$15.62
G	\$46	.46	\$29	.26	.28	\$13.62
H	\$49	.44	\$42	.14	.42	\$15.68

Bold entries indicate high-diagnostics information items, which appeared in Serial Positions 1 or 4.

(Item 1) was intended to influence participants' initial preferences and strongly favored one gamble over the other. For example, the following information item favors Urn B:

In Urn A, there are 23 red tickets, so the chance of losing is 23%.

In Urn B, there are 12 red tickets, so the chance of losing is 12%.

Items 2 and 3 each weakly favored one gamble or the other (e.g., losing \$24 vs. \$26 if a red ticket is drawn; a 26% vs. 29% chance of drawing a green ticket). We anticipated that participants' initial preferences would be maintained over these items or be strengthened by the distortion of these items. After participants' preferences were well established, Item 4 strongly favored the gamble that was not favored by Item 1 (e.g., winning \$51 vs. \$35 if a green ticket is drawn). Finally, Item 5 was always the chance of obtaining \$0 (e.g., a 51% vs. 59% chance of drawing a white ticket). This information appeared last because we did not want participants to infer the values of more relevant probabilities.

All participants in the choice condition considered the same information, but in different orders. As in Carlson et al. (2006) and DeKay et al. (2011), the key manipulation was whether the high-diagnosticity Item 1 (rather than Item 4) favored Gamble 1 (e.g., Gamble A in the AB pair). In addition, we orthogonally varied whether the low-diagnosticity Item 2 (rather than Item 3) favored Gamble 1. Thus, there were four versions of the questionnaire in the choice condition. The four gamble pairs appeared in one random order (AB, EF, CD, GH) in all versions.

After each item, participants were asked, "Considering only the new information presented on this page, to what extent do you think this information favors Urn A or Urn B?" (for example), with endpoints labeled *Strongly favors Urn A* (1) and *Strongly favors Urn B* (9). They also indicated which urn they thought was "leading at the moment" and reported their confidence that they would eventually choose that urn, on a scale with endpoints labeled *A complete toss-up* (50%) and *Absolutely certain* (100%).

After evaluating all five information items, participants reported their final choice and their confidence that they had chosen the better urn. Additionally, they provided a CE for each gamble in the pair by circling a dollar amount in a matrix of values. Two identical matrices (one for each gamble) were presented side by side. The values ranged from just below the worst possible outcome from either gamble to just above the best possible outcome, in \$2 increments (e.g., from -\$28 to +\$52 in the above choice between Gambles A and B). Complete information about both gambles appeared at the top of the page.

In the no-choice control condition, participants simply indicated how strongly each information item favored one

urn over the other. Items appeared in either a random order or the reverse order. Each item was said to refer to a new pair of urns (e.g., Urns Y1 and Y2, then Urns D1 and D2, and so on), precluding preference formation (Russo et al., 1998) and providing a baseline for assessing information distortion in the choice condition. DeKay et al. (2011) demonstrated the merits of using different participants in the two conditions, as in this experiment, rather than letting each participant serve as his or her own control.

Results and discussion

Manipulation check Participants correctly identified the gamble favored by Item 1 (e.g., Gamble B in the above example) 93% of the time. We excluded the other 7% of cases from further analysis. For retained cases, the favored gamble was selected as the initial leader 96% of the time.

Effects of information order on final choices, final confidence ratings, and certainty equivalents Participants selected Gamble 1 as their final choice 61% of the time when Item 1 favored that gamble, but only 43% of the time when the initial item favored Gamble 2. We assessed this difference in a multilevel logistic regression with gamble pairs nested under participants, using Item 1 (coded +0.5 if it favored Gamble 1 and -0.5 if it favored Gamble 2) to predict participants' choice of Gamble 1. The slope of this relationship was positive and significant, $\hat{\gamma}_{10} = 0.72$, OR = 2.06, $t(719) = 3.93$, $p < .0001$ (see the [supplementary materials](#) for analytical details).

For final confidence, we recoded participants' ratings so that values ranged from 0 (certain that Gamble 2 was better) to 100 (certain that Gamble 1 was better). Confidence that Gamble 1 was better was greater when Item 1 favored Gamble 1 ($M = 55$) than when it favored Gamble 2 ($M = 46$). This difference was significant, as evidenced by the Item 1 slope in a multilevel linear regression for predicting confidence, $\hat{\gamma}_{10} = 9.40$, $t(719) = 4.38$, $p < .0001$.

The difference between the CEs for Gambles 1 and 2 (i.e., $CE_{\text{Gamble1}} - CE_{\text{Gamble2}}$) was \$2.32 when Item 1 favored Gamble 1 and \$0.30 when it favored Gamble 2. For comparison, \$2.02 (\$2.32 - \$0.30) is 16% as large as the mean EV of the eight gambles (\$12.97). This effect of information order on CEs did not reach significance, however, $\hat{\gamma}_{10} = \$2.02$, $t(706) = 1.40$, $p = .16$.¹

¹ When we used the initially leading gamble rather than the gamble favored by Item 1 as the predictor (these differed only 4% of the time), the effect on the difference between CEs was significant, $\hat{\gamma}_{10} = \$2.92$, $t(706) = 2.08$, $p = .038$. Although some participants might have erred in initially selecting the gamble not favored by Item 1, others might have selected that gamble because they anticipated receiving later countervailing information.

Fig. 1 Experiment 1: **(a)** Percentages of participants choosing Gamble 1 (e.g., Gamble A in the AB pair) as their final choice when the first information item favored Gamble 1 or Gamble 2. **(b)** Differences in certainty equivalents for Gambles 1 and 2 (i.e., $CE_{\text{Gamble 1}} - CE_{\text{Gamble 2}}$) when the first information item favored Gamble 1 or Gamble 2. Error bars indicate standard errors

Figure 1 shows choice percentages and CE differences for each gamble pair. The pattern of results for confidence ratings (not shown) closely matched that for choice percentages. Although the results for Gamble Pair GH appear anomalous, the interaction between information order and gamble pair was not significant for final choice, $F(3, 713) = 1.26$, $p = .29$, and not quite significant for CEs, $F(3, 700) = 2.25$, $p = .082$. Because the effect of information order on final choice for Gamble Pair GH was larger in DeKay et al.'s (2011) Experiment 1 and in Experiment 2 of this article, we are reluctant to speculate about the source of the apparent discrepancy in this study. (See the [supplementary materials](#) for additional tests of moderation.)

Information distortion and its mediational effect on certainty equivalents For Items 2–5, we computed the difference between each item evaluation in the choice condition and the mean evaluation of the corresponding item in the control condition (all evaluations used 9-point scales). We then coded these differences so that positive values indicated information distortion in favor of Gamble

1. To maintain a consistent unit of analysis (gamble pair rather than information item), we averaged distortion scores over Items 2–5 for each gamble pair. Mean distortion was 0.41 when Item 1 favored Gamble 1 and -0.38 when Item 1 favored Gamble 2, yielding a difference of $\hat{\gamma}_{10} = 0.79$, $t(722) = 6.51$, $p < .0001$ (see Fig. 2). The mean level of distortion in the direction of the gamble favored by Item 1 was thus 0.39 ($0.79/2$). For comparison to other research, the average value of Russo et al.'s (e.g., 1996, 1998) *leader-signed* distortion metric (i.e., distortion in the direction of the gamble that was leading after the preceding information item) was 0.49 in this experiment.

When we controlled for information order, distortion in favor of Gamble 1 predicted a CE difference in the same direction, $\hat{\gamma}_{20} = \$4.39$, $t(705) = 6.25$, $p < .0001$. In a typical mediation model, one might multiply the effect of Item 1 on information distortion (0.79 , from above) by the effect of information distortion on the CE difference ($\$4.39$) to get an estimate for the indirect effect of information order on the CE difference ($\$3.47$). With multilevel models, however, such calculations should also incorporate the covariance between the random components of the two paths that make

Fig. 2 Experiment 1: Mean distortion of later information items in the direction of Gamble 1 when the first information item favored Gamble 1 or Gamble 2. Error bars indicate standard errors

up the indirect effect. We therefore used Bauer, Preacher, and Gil's (2006) multilevel mediation procedure, which estimates the required covariance by fitting the models for predicting the mediator (information distortion) and the outcome (CE difference) simultaneously. The results are depicted in Fig. 3. The average indirect effect (calculated as $ab + \sigma_{a,b_j}$, where σ_{a,b_j} is the covariance between the random components of a and b) was \$3.50, with a bootstrapped 95% confidence interval (CI) of \$0.59 to \$6.41. The average total effect (i.e., the sum of the indirect and direct effects, calculated as $ab + \sigma_{a,b_j} + c'$) was \$2.53, with a 95% CI of $-\$1.38$ to \$6.31. These results indicate significant mediation, even though the total effect of information order on the CE difference was not significant. The total effect was smaller than the indirect effect because the direct effect of information order (c') was negative, though not significant (see MacKinnon & Fairchild, 2009; MacKinnon, Fairchild, & Fritz, 2007; Shrout & Bolger, 2002).² The distortion-mediated effect (\$3.50) was 27% as large as the mean EV of the eight gambles, whereas the total effect (\$2.53) was 20% of the mean EV.

Limitations of certainty equivalents In 22% of cases, participants reported a higher CE for the gamble they did not choose than for the gamble they did choose. This result is reminiscent of classic preference reversals (Slovic, 1995). The reversals in this study were not necessarily errors, however, because participants may have changed their minds when they viewed complete information in the CE task. Even so, such reversals suggest that CE differences may underestimate the effect of information distortion. If the reversed CEs are treated as missing, the coefficients b

and c' in Fig. 3 increase to \$7.16 and \$0.22, respectively, with corresponding increases in the indirect and total effects. Thus, the negative direct effect (c') in our initial analysis appears to have resulted from reversals in the CE task.

Additionally, in 10% of cases, at least one of the two CEs was out of range (e.g., more negative than the amount that could be lost). Although these out-of-range CEs had little consequence (the indirect effect increased from \$3.50 to \$3.66 without them), they suggest that some participants misunderstood CEs or used them only as relative ratings. Experiment 2 quantified the effect of information distortion using only choices, thereby avoiding these difficulties.

Experiment 2

In Experiment 1, Item 1 strongly favored one gamble over the other. Item 4 strongly favored the other gamble, but its effect was insufficient to overcome the initial advantage and subsequent information distortion created by Item 1. As

Fig. 3 Experiment 1: Mediation of the effect of Item 1 (information order) on the difference in certainty equivalents for Gambles 1 and 2 (i.e., $CE_{\text{Gamble1}} - CE_{\text{Gamble2}}$). Average unstandardized regression coefficients were derived using Bauer, Preacher, and Gil's (2006) multilevel mediation procedure. The covariance between the random components of a and b , σ_{a,b_j} , was $-\$1.38$. The average indirect and total effects were thus $0.82 \times \$5.95 - \$1.38 = \$3.50$ and $0.82 \times \$5.95 - \$1.38 - \$0.97 = \2.53 , respectively. $**p < .01$

² Both the indirect effect and the total effect were significant when we used the initially leading gamble rather than the gamble favored by Item 1 as the predictor, and when we used final confidence rather than the CE difference as the dependent variable. In neither case was the direct effect significant.

a result, more participants chose Gamble 1 when Item 1 favored that gamble (see Fig. 1a). In Experiment 2, we used the difficulty of eliminating this effect as a measure of its magnitude. Specifically, we increased the Item 4 difference so that it favored the initially unfavored gamble by an even greater margin, paying particular attention to the size of the Item 4 change required to eliminate the original effect of Item 1. Although the content of Item 4 varied (e.g., amount to win, chance of losing), changes to Item 4 also affected the gambles' EVs. As a result, the required change in EV provided a common metric for assessing the magnitude of distortion across gamble pairs.

Method

Participants A sample of 791 Ohio State undergraduates received course credit for participating; 51% were female.

Procedures The procedures were similar to those in the choice condition of Experiment 1, but participants worked at computers and did not report CEs. The order of gamble pairs, the information item that appeared first (rather than fourth), and the information item that appeared second (rather than third) were randomized.

For each gamble pair and information order, participants viewed one of six versions of Item 4 (varied between participants). One version was the same as that in Experiment 1; in other versions, the difference was increased to favor (even more strongly) the gamble not

favored by Item 1. In our initial example from Experiment 1, Item 1 favored Gamble B and Item 4 favored Gamble A. In Experiment 2, the original \$16 Item 4 difference in favor of Gamble A (winning \$51 vs. \$35) was increased to \$36 (\$63 vs. \$27) in five steps. As a result, the gambles' final EVs (\$10.86 vs. \$4.71) favored Gamble A more strongly than the original EVs (\$7.74 vs. \$7.03). Thus, the EV difference changed by $(\$10.86 - \$4.71) - (\$7.74 - \$7.03) = \$5.44$ in favor of Gamble A. When the information items in Positions 1 and 4 were switched (for other participants), so that Item 1 favored Gamble A, increasing the Item 4 difference changed the EVs in favor of Gamble B (see Table S3 in the supplementary materials).

Results and discussion

As before, we excluded cases (8%) in which participants incorrectly identified the gamble favored by Item 1.

Figure 4 depicts the effect of increasing the Item 4 difference on the percentage of participants choosing Gamble 1. In each panel, the horizontal axis represents the change in the EV difference in favor of the initially unfavored gamble. For comparability across gamble pairs, the original EV difference calculated using the Experiment 1 values for Item 4 defines the zero point on this axis. Thus, the leftmost symbols in each panel of Fig. 4 replicate the results in Fig. 1a: Participants in Experiment 2 were more likely to choose Gamble 1 when Item 1 favored that gamble

Fig. 4 Experiment 2: Percentages of participants choosing Gamble 1 as their final choice when the first information item favored Gamble 1 or Gamble 2, as a function of the change in EV difference to favor the originally unfavored gamble. Changes in EVs resulted from changes to Item 4, which always favored the gamble not favored by Item 1. Crossover points indicate the EV changes necessary to overcome the effect of Item 1. Percentages in parentheses refer to the mean EVs of the two original gambles in the pair (e.g., \$3.13 is 42% of the mean EV of the original Gambles A and B, \$7.38)

than when it did not (69% vs. 44% on average). As one moves to the right in each panel of Fig. 4, the Item 4 difference favors the initially unfavored gamble by an increasing margin, with the anticipated effect on choice percentages. If Item 1 favored Gamble 1 (black circles), increasing the Item 4 difference made Gamble 1 less popular; if Item 1 favored Gamble 2 (gray triangles), increasing the Item 4 difference made Gamble 1 more popular.

For each gamble pair, we used logistic regression to model the choice proportion for Gamble 1 as a function of the gamble favored by Item 1 (determined by information order), the EV change in favor of the other gamble, and the interaction between these predictors (see the [supplementary materials](#)). The interaction was significant for each of the four gamble pairs, all $ps \leq .018$. Where the curves in Fig. 4 cross, the EV change was sufficient to overcome the effect of Item 1 on final choices. These points, which ranged from 22% to 42% of the average EV of the original gambles in each pair, provide estimates of the total effect of the order manipulation on the perceived values of the original gambles. Considering all gamble pairs at once, repeated measures logistic regression yielded an average crossing point of \$3.99 (31% of the original gambles' mean EV), with a bootstrapped 95% CI of \$3.47 to \$4.59 (27% to 35%).

General discussion

These experiments are the first to quantify the effects of information distortion on the subjective values of choice alternatives. In our judgment, the observed effects are large, with differences between subjective values averaging 16% to 31% of the mean EV of the gambles in question. In addition, Experiment 1 replicates DeKay et al.'s (2011) findings regarding the mediational role of information distortion and extends that work by demonstrating an indirect effect on the subjective monetary values of the alternatives. It is perhaps surprising that seemingly small distortions of information items (e.g., 0.39 on a scale with a range of 8) can lead to such large effects on subjective values and choices. We offer two explanations. First, distortion appears to be cumulative (e.g., 0.39×4 items), as noted by Russo et al. (2006), and mutually reinforcing, as in the PCS model (Glöckner et al., 2010; Holyoak & Simon, 1999; Simon, Snow, & Read, 2004). Second, information distortion may be particularly important when the options are of similar value, as in our studies and in many real-world decisions. In such cases, even small distortions may hold sway over one's selection.

Our use of the gambles' average EV as a benchmark for assessing these effects was conservative; other benchmarks can lead to larger and more varied estimates. For example, if the difference between gambles' EVs is used instead (e.g., \$7.74 –

\$7.03 = \$0.71 for Gamble Pair AB), the crossover points in Fig. 4 range from 95% to 441% of those differences. Using the gambles' average CE or the difference between gambles' CEs as a benchmark in Experiment 1 also yields very large percentages, in part because the CEs were less than the EVs, as is typically the case for risky gambles.

A possible concern about our experimental procedure is that requiring participants to indicate a leading option after each information item may have forced them into early choices that they would not normally have made, thereby inflating information distortion and its subsequent effects. Carlson et al. (2006) and DeKay, Stone, and Sorenson (2008) assessed this possibility by including a condition that omitted the intervening questions. This change had no effect in Carlson et al.'s (2006) study and actually strengthened the relationship between information order and final choice in DeKay et al.'s (2008) study. Moreover, numerous studies (e.g., Holyoak & Simon, 1999; Simon, Krawczyk, & Holyoak, 2004; Simon, Snow, & Read, 2004) have documented information distortion in pre–post designs that did not require the selection of an early leader. A second (and opposing) concern is that our procedure might have underestimated the effects of information order because some participants forgot Item 1 before making their final choice. In a separate study, DeKay et al. (2008) reported that reminding participants of previously viewed information at the top of each page increased the distortion of later information in the expected direction, but did not significantly affect final choices. At the very least, these additional studies indicate that we have not overestimated the effects of information distortion in Experiments 1 and 2.

Are our observed magnitude estimates for the effects of information distortion applicable to other types of choices? It is hard to say. Information distortion has been observed in a wide variety of situations and content areas, but differences in participant samples and other details (e.g., stimuli that preclude the calculation of EVs) make cross-study comparisons difficult. Recently, however, Miller and DeKay (2009) investigated information distortion in gambles involving money, frequent-flier miles, years of life expectancy, votes in an upcoming election, or song downloads, with probabilities and ratios of gains and losses held constant across domains. Results indicated that neither the magnitude of distortion nor its significant mediational effects on final choices and confidence judgments varied significantly over domains. Although Miller and DeKay did not assess the effects of distortion in EV terms, we cautiously speculate that the magnitude of such effects is likely to generalize to content areas beyond risky monetary gambles. Of course, many common decisions involve information that is both more complex and more ambiguous than the numerical attributes of gambles. Because the leader-signed distortion of ambiguous,

nonnumerical information is typically somewhat greater than the 0.49 figure observed in Experiment 1 (Russo et al., 1996, 1998, 2008), the effects of distortion in such situations are expected to be at least as large as those reported here.

In any particular choice, whether the effects of information distortion are harmful depends in part on the quality of the initially preferred option. The initial frontrunner depends in turn on the initial information, which can be manipulated either by well-intentioned choice architects (Thaler & Sunstein, 2008) or by advertisers, salespeople, attorneys, or pundits whose interests may differ from those of the decision maker. Indeed, Russo et al. (2006) were able to entice unwitting participants into making poor choices by “stacking the deck” in exactly this manner. Unless initial information systematically favors the best option (which seems very unlikely), biased assessments of other relevant information will, almost by definition, lower the average quality of the resulting choices. The studies reported here indicate that the effects of such distortions can be considerable.

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