

## Experts, Amateurs, and Real Estate: An Anchoring-and-Adjustment Perspective on Property Pricing Decisions

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The studies described in this paper investigated the use of a decisional heuristic—anchoring-and-adjustment—in an information-rich, real world setting. In order to assess the generalizability of laboratory research on this decision heuristic, students and real estate agents toured and made pricing decisions about real estate properties. It was hypothesized that manipulated listing prices would anchor values assigned to the properties. Results were consistent with the use of an anchoring-and-adjustment value estimation strategy in information-rich, real world settings. Implications for the understanding of judgmental expertise are discussed. © 1987 Academic Press, Inc.

Interest in the relevance of behavioral decision theory and laboratory-documented cognitive biases to real world decision behavior has increased markedly over the last 10 years. Recently, researchers (Berkeley & Humphreys, 1982; Hogarth, 1981; Winkler & Murphy, 1973) have suggested that the demonstration of decisional biases is a function of the contrived nature of the laboratory setting or the decisional demands of laboratory experiment participation. Much of the research on decision bias is based upon individuals making decisions under the controlled and “degraded” or informationally impoverished conditions of the laboratory (e.g., Kahneman & Tversky, 1972, 1979; Tversky, 1972; Tversky & Kahneman, 1973). It has been hypothesized that, as with “perceptual illusions” in experimental psychology (Neisser, 1976) which disappear once the subject is allowed to interact with the object, decisional biases also may disappear once decision makers are placed in the information-rich context in which actual decisions are made. The studies described in this paper investigated the biasing potential of one particular decisional heuristic—anchoring-and-adjustment—in an information-rich, real world setting.

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The psychological literature on the “anchoring-and-adjustment” heuristic suggests that (a) an arbitrarily chosen reference point (anchor) will significantly influence value estimates, and (b) value estimates will be insufficiently adjusted away from the reference point toward the true value of the object of estimation (Slovic & Lichtenstein, 1971). The insufficient adjustment of the estimate away from the anchor provides the source of decision bias. In a demonstration of this effect, Tversky and Kahneman (1974) had subjects estimate the percentage of African countries in the United Nations. The subjects were given a starting point (between 1 and 100) by the spinning of a “wheel of fortune.” Subjects first had to decide whether their “wheel-of-fortune” number was higher or lower than the correct percentage and then had to give their best estimate of the correct percentage. The median estimate for subjects whose starting point was 10 was 25%, while the median estimate for subjects whose starting point was 45 was 65%. Further, this anchoring of the estimate was not diminished when rewards were offered for accuracy.

Anchoring seems especially relevant to a bargaining setting such as the purchase of residential real estate, where (1) the fair market value (FMV) of the piece of property is not objectively determinable, and (2) a bidding process is used to arrive at the property’s actual selling price. The first value of the bidding process—the seller’s asking or listing price—might serve as an anchor, effectively determining the neighborhood of appropriate prices for subsequent price negotiations.

Every piece of property has an appraised value which is often used as the property’s objective value for insurance or loan purposes. However, while this appraisal value is thought to be primarily systematic, it does contain subjective components. For example, one way of arriving at an appraisal value for a piece of residential property is given by the equation

$$V = (S \times \bar{P}) + C + (F_1 + F_2 + \dots + F_n).$$

In this formula, the appraised value ( $V$ ) is defined as the product of the size of the residence in square feet of living space ( $S$ ) and the average price per square foot of living space for comparable neighborhood properties ( $\bar{P}$ ). Adjustments are made for condition of the residence ( $C$ ) and any significant features ( $F_1$  to  $F_n$ ) which differentiate this property from comparable neighborhood properties, including financing arrangements. Notice that even if all appraisers used the same formula, individual differences among appraisers could enter into the calculations in (a) defining the set of “comparable neighboring properties” from which the FMV for square footage is computed; (b) assessing the condition of the residence; (c) deciding how large or small is the universe of features for which adjustments need to be made.

Further, the appraised value (as calculated above) does not take into account such qualifications as the number and type of comparable properties currently available, and the availability of potential buyers. The property's listing price represents a first attempt by someone (namely, the seller) to adjust the appraised value for these "reality" constraints. The listing price may be viewed as the seller's best guess of the property's FMV. As a starting point in the price negotiation process, the anchoring-and-adjustment literature suggests that adjustments away from the listing price toward the FMV will be insufficient. The final selling price, therefore, should reflect the distance of the original listing price from the FMV.

The existence of systematic components in the valuation process suggests limits for the anchoring effect. While listing price may not be exactly reproducible among sellers, the attempt to be systematic in arriving at appraisal values suggests that FMVs are not random numbers. Rather, there should be a zone within which a credible listing price should fall. In the terms of decision heuristics, the degree of the anchoring-and-adjustment bias should be reduced, the further from the "zone of credibility" the listing price.

The literature on anchoring-and-adjustment and the previous discussion on the ambiguity of the FMV for residential real estate gives rise to the following hypotheses:

*H1.* Listing price will bias value estimates of the FMV of residential real estate. This hypothesis reflects the fact that the listing price is the first reality-constrained estimate of the FMV of a piece of property, and thereby provides an obvious candidate for anchoring estimates of a property's value. Subsequent adjustments away from this first estimate toward the FMV should be insufficient and, therefore, reflect the biasing influence of listing price as an anchor.

*H2.* The biasing influence of the listing price on estimates of FMV will decrease as the listing price becomes a less credible estimate of FMV. Because there are systematic components to valuations of residential real estate, a listing price will lose credibility as an accurate estimate the further it is removed from the FMV. As the listing price becomes less credible as an estimate of FMV, estimates should reflect it less and its biasing influence should decrease accordingly.

These two hypotheses were tested in the context of two experiments described below. In order to assess the generalizability of laboratory research on anchoring-and-adjustment to "real world" settings, the real estate pricing decisions made by subjects focused on properties actually for sale at the time of the study. Further, susceptibility of subjects to decision influence was examined both for novice (students) and expert (professional real estate agents) participants.

## EXPERIMENT 1

*Method*

*Design overview.* Each subject visited a piece of property currently for sale in Tucson, Arizona and filled out a short questionnaire concerned with estimating the value of the property. Each subject was provided with a 10-page packet of information which included the following:

1. a set of instructions concerning the exercise;
2. the standard Multiple Listing Service (MLS) listing sheet for the property;
3. a copy of the MLS summary of residential real estate sales for both the entire city and the immediate neighborhood of the property for the last 6 months;
4. information (including listing price, square footage, characteristics of the property, etc.) about other property located in the same neighborhood as the property being evaluated (this information was divided into four categories: property currently for sale, property recently sold, property sold but the sale not yet completed, and property previously listed which did not sell);
5. standard MLS listing information for other property in the immediate neighborhood currently for sale;
6. a questionnaire to be completed after touring the property being evaluated.

This packet was compiled after interviewing several local real estate agents in the Tucson area. The information included in the packet represented *all* the information which the agents claimed might be used to evaluate a piece of residential property.

After receiving the information packet, subjects were allowed to examine the house, surrounding property, and neighborhood for up to 20 min. Each subject then completed the questionnaire. A calculator was made available if needed.

The questionnaire provided the dependent measures for the study. The questionnaire required four different evaluations of the property. That is, each subject was asked to estimate (1) the appraised value of the property, (2) an appropriate advertised selling price, (3) a reasonable price to pay for the house, and (4) the lowest offer they would accept for this house if the subject were the seller. The questionnaire also assessed the *decision process* by which each subject arrived at these estimates. The questionnaire requested that subjects (1) check from a list of 16 relevant items (such as listing price, condition of house, comparisons with other neighborhood houses that had recently sold) any they had used in completing the follow-up questionnaire; (2) identify their "top three" considerations in completing the questionnaire; and (3) describe briefly the process by which they arrived at the price. Finally, to ascertain whether past real estate experience influenced pricing decisions, demographic information about the subjects also was collected.

*Independent variable.* There were four experimental conditions. Subjects in the four conditions received the same 10-page packet of information with one exception—the listing price for the property was different for each condition. The actual listing price and appraised value for this piece of residential real estate was \$74,900. The four listing price conditions were equally distributed around this point: in the “low-price” condition the property was listed for \$65,900; in the “moderately low price” condition for \$71,900; in the “moderately high price” condition for \$77,900; and in the “high price” condition for \$83,900. These prices were used because local real estate agents claimed that any deviation of listing price from appraisal value of more than 5% would be seen by most real estate agents as obviously deviant. The two “moderate” anchors were 4% from the appraisal value; the two extreme anchors were 12% from the appraisal value. To facilitate subjects’ decision making, price per square foot for the property was included on the MLS listing sheet. This piece of information also differed across groups as a function of the listing price differences.

*Amateur subjects.* Forty-eight junior and senior undergraduate business school students (30 male, 18 female) participated as subjects. The students averaged 22.2 years in age, and had been living in Tucson for an average of 7.72 years. Of the student subjects, 14.6% had been involved in a real estate transaction at some time. Each student received extra credit in an introductory organizational behavior course in exchange for participation. Prior to participation, subjects were told only that they would be participating in a study concerned with the pricing of residential real estate. Subjects were randomly assigned to experimental conditions.

To prevent contamination across conditions, participants in the same conditions were transported as a group to the property site. During transit, subjects reviewed the information packets. No interaction was allowed between subjects during the transit or while viewing the property. Any questions they had were answered individually by the experimenter or a research assistant on site at the property. After examining the property, subjects were transported back to the University; during the return transport, each subject completed the dependent measure questionnaire.

*Expert subjects.* Twenty-one volunteer real estate agents (17 female, 4 male) from the Tucson area participated as subjects. The average age of participants was 44.5 years. As a group they had been selling real estate for 6.99 years, and for 5.77 years in Tucson; they participated in an average of 12.95 real estate transactions per year. Volunteers were solicited via letters and phone calls to managers of local real estate agencies. Prior to participation, subjects were told only that they would be partici-

pating in a study of residential real estate pricing. In exchange for their participation, each volunteer received a state lottery ticket and was entered in a drawing for a dinner for two at an expensive local restaurant.

Both expert and amateur subjects were randomly assigned to experimental conditions. Because there were only 21 expert volunteers, only the \$65,900 and \$83,900 anchor conditions were used. (The house was sold and made unavailable as an experimental site before more expert subjects could be recruited.) Two expert subjects had examined the property previously on behalf of a client; these two subjects were not included in the final sample, leaving the data from 19 subjects for analysis.

### Results

*Estimation measures.* The impact of the listing price anchor for amateur subjects on each of the four dependent measures (property appraisal value, selling price, purchase price, and lowest acceptable offer) is presented in Table 1. Analysis of variance revealed a significant influence of the listing price anchor on all four dependent measures. The nature of the biasing effect proposed in Hypothesis 1 was tested further using planned comparisons. (For a discussion of this analytic technique, see Winer, 1962.) If the listing price *anchors* estimates on the dependent measures, a reasonable expectation would be that the estimates across treatment groups should mirror the relationship among the four anchor values. Since the four anchor values were separated by equal intervals (\$65,900 to 83,900, by \$6000 intervals), the appropriate planned comparison values

TABLE 1  
RESULTS FOR EXPERIMENT 1, HYPOTHESIS 1: MEAN ESTIMATES OF  
AMATEUR SUBJECTS ( $n = 48$ )

	Appraisal value	Listing price	Purchase price	Lowest offer
Listing price				
\$ 65,900	\$ 63,571	\$ 69,414	\$ 63,571	\$ 62,571
71,900	67,452	72,328	67,581	66,928
77,900	70,423	75,776	70,069	70,107
83,900	72,196	78,014	69,500	69,785
Simple $F$	$F = 4.85$	11.96	3.32	5.03
	$p < .01$	$p < .001$	$p < .01$	$p < .005$
Planned	$F = 14.26$	33.51	10.99	13.78
comparison	$p < .001$	$p < .001$	$p = .002$	$p = .001$
$\omega^2$ Planned				
comparison	0.22	0.40	0.17	0.21

used would be  $-3$ ,  $-1$ ,  $+1$ , and  $+3$ . As noted in Table 1, this set of planned comparison values is significant for all four dependent measures (all  $F$ 's  $>10.89$ , all  $p$ 's  $<.01$ ). For each of the four dependent measures, this particular planned comparison accounts for at least 17% of the total variance.

The mean estimates made by the *expert* subjects are shown in Table 2. Since there were only two experimental conditions,  $t$  tests were used to assess the impact of the anchors on subjects' assessments. As with the amateur subjects, expert subjects' estimates were significantly influenced by the anchors for all four estimate measures (all  $t$ 's  $>2.40$ , all  $p$ 's  $<.05$ ). Thus, hypothesis 1 was confirmed for both amateur and expert subjects: the listing price anchor significantly biased estimates on each of the four estimation measures.

Hypothesis 2 proposes that the impact of the listing price anchor value will be diminished when the anchor value is further from the true-score value. To test this hypothesis for amateur subjects, the four estimate measures were transformed into absolute deviation scores from the anchor. The resulting transformed scores reflect the absolute proximity of subjects' estimates to the anchor values. Because the mean values of these deviation scores were proportional to the magnitudes of the anchors, a second transformation to absolute percentage deviation from the anchor was performed. Analysis of variance using planned comparisons then was used to test the second hypothesis. The appropriate planned comparison values are  $-1$  for anchors close to the true-score value (\$71,900 and \$77,900) and  $+1$  for anchors distant from the true-score value (\$65,900 and \$83,900). As predicted, for all four estimation measures mean deviations were higher for more distant anchors. However, only for one estimation measure (listing price) did deviations prove significantly higher for more distant anchors ( $F_C = 10.55$ ,  $p < .01$ ,  $\omega^2 = .166$ ). Thus, Hypothesis 2 received only weak support. (Because there were only two groups of experts, this analysis was not possible for expert subjects.)

TABLE 2  
RESULTS FOR EXPERIMENT 1, HYPOTHESIS 1: MEAN ESTIMATES OF  
EXPERT SUBJECTS ( $n = 21$ )

	Appraisal value	Listing price	Purchase price	Lowest offer
Listing price				
\$ 65,900	\$ 67,811	\$ 69,966	\$ 66,755	\$ 65,000
83,900	75,190	76,380	73,000	72,590
$t$ value	$t = 3.28$	2.85	2.47	3.12
	$p < .01$	$p < .02$	$p < .05$	$p < .01$

*Decision processes.* In describing their decision processes, amateur subjects indicated that they had on the average considered 7.90 factors in completing the follow-up questionnaire, compared to 7.71 factors considered by the expert subjects. A significantly greater proportion of amateur than expert subjects (56.2% versus 24.0%;  $\chi^2 = 12.88, p < .002$ ) mentioned listing price as one of the factors considered in completing the follow-up questionnaire. Only 14.3% of expert subjects (compared with 22.9% of amateur subjects) indicated that listing price was one of their "top three" considerations.

Subjects' descriptions of their decisions revealed three different estimation strategies: (1) *comparison computations*—computations based upon comparisons with neighborhood housing and market values (e.g., "Compare to the houses that have sold in the area, then multiply square footage times the cost assigned to the houses that have closed"); (2) *features-only computations*—computations focused only on the features of the considered property (e.g., "By looking at the area in which it was located, how well taken care of the house was, and by looking at the size"); and (3) *concrete referent*—adjustment from a concrete referent value (e.g., "Since the house is not new, its price had to be lower than [the listing price]. Since it is a 9-year-old house, a deduction of \$10,000 seems reasonable"). The "comparison computations" strategy is the approach identified in interviews with local real estate professionals as the normatively correct estimation strategy; the "concrete referent" strategy is consistent with an anchoring-and-adjustment decision process. Both amateur and expert subjects were most likely to report using the "comparison computations" strategy (67.4 and 77.5%, respectively). Amateur subjects were only slightly more likely than expert subjects (15% to 10%) to report using a "concrete referent" strategy.

*Demographic variables.* The influence of experience and expertise on degree of anchoring (deviation from the anchor point) also was examined through an internal analysis within the amateur (student) and expert (real estate professional) samples. For amateur subjects, degree of anchoring for each dependent measure was regressed on age, sex, years lived in Tucson, whether the subject had ever bought a house, and whether the subject had ever bought a house in Tucson. For the amateur sample, only one variable for one dependent measure ("Have you ever bought a house?" for the estimation measure listing price) was significantly related ( $F = 5.80, p = .02$ ). For expert subjects, degree of anchoring for each estimation measure was regressed on age, sex, years as a real estate professional, years as a real estate professional in Tucson, and number of transactions participated in per year. None of these variables were significantly related to degree of anchoring.

## EXPERIMENT 2

*Method*

*Design overview.* Experiment 2 replicated the findings of Experiment 1 using a different piece of property and a second set of subjects. The actual listing price of the second property was \$134,900. (It had been appraised at \$135,000 a year earlier.) The “anchor” listing prices used in the experimental materials were \$119,900, \$129,900, \$139,900, and \$149,900. These listing prices represent deviations of approximately  $-11\%$ ,  $-4\%$ ,  $+4\%$ , and  $+11\%$ , respectively. All procedures and design features of this second experiment were identical to those of Experiment 1.

*Amateur subjects.* Fifty-four junior and senior undergraduate business school students (30 male, 24 female) participated as subjects. The students averaged 24.1 years in age, and had been living in Tucson for an average of 5.9 years. Of the student subjects, 11% had been involved in a real estate transaction at some time. Each student received extra credit in an introductory organizational behavior course in exchange for participation. Prior to participation, subjects were told only that they would be participating in a study concerning with the pricing of residential real estate. Subjects were randomly assigned to experimental conditions.

*Expert subjects.* Forty-seven volunteer real estate agents (29 female, 18 male) from the Tucson area participated as subjects. The mean age of participants was 48.0 years. As a group they had been selling real estate for 8.9 years, and for 8.3 years in Tucson; they participated in an average of 16.2 real estate transactions per year. Volunteers were solicited via personal visits of research assistants to local real estate agencies. Prior to participation, subjects were told only that they would be participating in a study of residential real estate pricing. In exchange for their participation, each volunteer was entered in a drawing for a dinner for two at an expensive local restaurant.

*Results*

*Estimation measures.* The impact of the listing price anchor on each of the four dependent measures for amateur and expert subjects is presented in Tables 3 and 4. Hypothesis 1 again was supported. Analysis of variance confirmed a significant influence of the listing price anchor on all four dependent measures (all  $F$ 's  $>7.0$ , all  $p$ 's  $<.001$ ) for both amateur and expert subjects. Planned comparisons again were highly significant for all four dependent measures (all  $F$ 's  $>17.5$ , all  $p$ 's  $<.001$ ), accounting for between 23% and 40% of the total variance.

Hypothesis 2 was not supported for amateur or expert subjects in Ex-

TABLE 3  
RESULTS FOR EXPERIMENT 2, HYPOTHESIS 1: MEAN ESTIMATES OF  
EXPERT SUBJECTS ( $n = 47$ )

	Appraisal value	Listing price	Purchase price	Lowest offer
Listing price				
\$ 119,900	\$ 114,204	\$117,745	\$ 111,454	\$ 111,136
129,900	126,772	127,836	123,209	122,254
139,900	125,041	128,530	124,653	121,884
149,900	128,754	130,981	127,318	123,818
Simple $F$	$F = 9.22$	8.42	13.69	8.52
	$p < .001$	$p < .001$	$p < .001$	$p < .001$
Planned comparison	$F = 18.76$	19.64	32.60	17.87
	$p < .001$	$p < .001$	$p < .001$	$p < .001$
$\omega^2$ Planned comparison	0.27	0.28	0.40	0.26

periment 2. Relative deviation scores of amateur subjects were not significantly predicted by distance of the anchor (listing price) from the true appraisal value for any of the four dependent measures (all  $F$ 's  $< 2.1$ , all  $p$ 's  $> .15$ ).

*Decision processes.* In describing their decision processes, amateur subjects indicated that they had on the average considered 6.15 factors in completing the follow-up questionnaire, compared with 8.34 factors considered by expert subjects. Again, a significantly greater proportion of amateur than expert subjects (37% versus 19%;  $\chi^2 = 6.93$ ,  $p < .01$ ) mentioned listing price as one of the factors considered. Only 9% of amateur

TABLE 4  
RESULTS FOR EXPERIMENT 2, HYPOTHESIS 1: MEAN ESTIMATES OF  
AMATEUR SUBJECTS ( $n = 54$ )

	Appraisal value	Listing price	Purchase price	Lowest offer
Listing price				
\$ 119,900	\$ 116,833	\$ 119,866	\$ 107,916	\$ 108,666
129,900	122,220	134,571	120,457	118,027
139,900	125,536	133,285	123,785	121,785
149,900	144,454	153,714	138,885	137,564
Simple $F$	$F = 7.06$	8.23	8.07	6.67
	$p < .001$	$p < .001$	$p < .001$	$p < .001$
Planned comparison	$F = 17.57$	21.13	22.97	18.56
	$p < .001$	$p < .001$	$p < .001$	$p < .001$
$\omega^2$ Planned comparison	0.23	0.27	0.29	0.25

subjects and 8% of expert subjects indicated that listing price was one of their "top three" considerations.

Both amateur and expert subjects were most likely to report using a "comparison computations" strategy (64 and 72%, respectively). Amateur subjects were more likely than expert subjects (22% versus 5%) to report using a "concrete referent" strategy.

*Demographic variables.* As in Experiment 1, within-sample analyses of possible experience or expertise predictors of degree of anchoring revealed nothing beyond what would be expected by chance. For amateur subjects, only "Have you ever bought a house in Tucson?" predicted degree of anchoring for the estimation measure purchase price ( $F = 5.78$ ,  $p = .02$ ); for expert subjects, none of the demographic variables was significantly related to any of the four estimation measures.

## GENERAL DISCUSSION

The purpose of these studies was to explore whether "real world" situations elicit the kinds of decisional biases and heuristics which have been documented in laboratory experiments. It has been suggested that the artificial and impoverished informational context of the laboratory may be responsible for eliciting the use of heuristics and producing the biases which recently have assumed such a prominent place in decision theory (Hogarth, 1981). Specifically, the controlled nature of laboratory experimentation often by necessity constrains the amount and types of information available, and traditionally has not provided subjects the opportunity for interaction with and exploration of information sources. These studies examined one acknowledged decisional heuristic with biasing potential—anchoring-and-adjustment—in an information-rich setting where subjects had ample opportunity for interaction with information sources.

The results described in this paper are consistent with the use of an anchoring-and-adjustment estimation strategy in information-rich, real world settings. As noted above, both amateur and expert subjects received fully 10 pages of information, and toured the properties about which they made estimates. Further, the decision was one for which local knowledge (such as proximity to shopping and parks) would be readily available to subjects and relevant to the focal estimates. Finally, the provision of considerable market analysis information to subjects might be thought to create some experimental demand for its use—and the use of a "comparison computation" estimation strategy. Of all the information provided to subjects, however, only one item of information—the listing price—differed among subjects. Yet this one item significantly biased the estimates given by subjects. These findings clearly point to the impor-

tance of laboratory findings on biases and heuristics—even to theorizing about decision behavior in considerably more information-rich, real world settings.

Other findings in these studies altogether did not support the hypothesis that an anchor will exert proportionally less influence on estimation and decision behavior as the anchor is placed further from the “true score” of the estimate. At issue here is just how malleable decision processes might be, and whether there is some reality constraint on the extent to which such processes can be influenced. For instance, can just any listing price really influence the perceived value of a piece of real estate, or does the listing price need to be credible to be considered, and therefore to influence value estimates? This study provided only limited support for a reality constraint on decision malleability. In all fairness, however, the range of listing prices may not have surpassed the subjects’ limits of credibility. Even the real estate professionals, who claim to have only a 5% credibility “window” were significantly influenced by listing prices well outside this limit. On the other hand, subjects in this study were provided with a very rich expert-derived information source. Several of the expert subjects even noted that the information packet contained information not always readily available to them. This suggests that the limits of malleability conceivably could be increased if the information source were less rich, while still realistic. For instance, would nonexperts be even more influenced by anchors if they received information only about the focal piece of property (as a house hunter might)? The richness (and expertness) of information available was manipulated only by implication in this study; in future research this also could be controlled directly.

The contrast of amateur and expert subjects in these studies is enlightening. Estimates of both subject populations were significantly biased by listing prices. However, amateur subjects appeared more aware of the role that listing price plays in their judgments; the decision checklists and descriptions of the expert subjects flatly denied their use of listing price as a consideration. Two conclusions seem warranted: (1) experts are susceptible to decision bias, even in the confines of their “home” decision setting, and (2) experts are less likely than amateurs to admit to (or perhaps understand) their use of heuristics in producing biased judgments. It remains an open question whether experts’ denial of the use of listing price as a consideration in valuing property reflects a lack of awareness of their use of listing price as a consideration, or simply an unwillingness to acknowledge publicly their dependence on an admittedly inappropriate piece of information.

The similarity of judgments of experts and amateurs in these studies also raises questions about the importance of feedback to judgmental ex-

pertise. Hogarth (1981) has argued that the demonstration of decision bias in laboratory settings may depend upon the discrete, static nature of laboratory tasks. In a continuous, dynamic environment, actions elicit reactions (feedback) such that fallible judgment can be self-correcting. A judgmental expert then would be an individual whose fallible judgments have been corrected many times and are no longer far wrong. Of course, in order for feedback to be corrective it must be reasonably diagnostic—it must reveal whether a past judgment was mistaken. This in turn presumes the existence of a knowable standard against which to evaluate judgments, such as the “true” price of a piece of real estate. However, for some judgments (such as beauty or value) there may be no absolute truth. Their correctness can be assessed only consensually, if at all. For these judgments, expertise may amount to little more than knowledge of relevant accepted conventions, and feedback may correct *descriptions* of the judgment process (so that the descriptions conform to convention) rather than accuracy of the judgments themselves. For such judgment tasks we might expect experts to talk a better game than amateurs, but to produce (on the average) similar judgments.

In conclusion, the findings of this study provide strong evidence that previous laboratory research on decisional heuristics and biases is applicable to “real world,” information-rich, interactive estimation and decision contexts. Much work remains to further our understanding of what factors in information-rich settings (such as characteristics of decision makers or information sources) influence the magnitude of these effects. None of the individual difference variables relating to expertise or experience examined in these studies proved predictive of susceptibility to decision influence. However, it does seem clear from these studies that decision biases and heuristics are more than just parlor tricks and that they should play an important role in our understanding of everyday decision behavior.

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