10-2016

The too-much precision effect: When and why precise anchors backfire with experts

David D. LOSCHELDER
Leuphana University

Malte FRIESE
Universitat des Saarlandes

Michael SCHAERER
Singapore Management University, schaerer@smu.edu.sg

Adam D. GALINSKY
Columbia University

DOI: https://doi.org/10.1177/0956797616666074

The Too-Much-Precision Effect: When and Why Precise Anchors Backfire With Experts

David D. Loschelder[1], Malte Friese[2], Michael Schaerer[3], and Adam D. Galinsky[4]

[1]Faculty of Business and Economics, Leuphana University Lüneburg; [2]Department of Psychology, Saarland University; [3]Organisational Behavior, INSEAD; and [4]Management Department, Columbia Business School, Columbia University

Abstract

Past research has suggested a fundamental principle of price precision: The more precise an opening price, the more it anchors counteroffers. The present research challenges this principle by demonstrating a too-much-precision effect. Five experiments (involving 1,320 experts and amateurs in real-estate, jewelry, car, and human-resources negotiations) showed that increasing the precision of an opening offer had positive linear effects for amateurs but inverted-U-shaped effects for experts. Anchor precision backfired because experts saw too much precision as reflecting a lack of competence. This negative effect held unless first movers gave rationales that boosted experts' perception of their competence. Statistical mediation and experimental moderation established the critical role of competence attributions. This research disentangles competing theoretical accounts (attribution of competence vs. scale granularity) and qualifies two putative truisms: that anchors affect experts and amateurs equally, and that more precise prices are linearly more potent anchors. The results refine current theoretical understanding of anchoring and have significant implications for everyday life.

Keywords

anchoring, judgment, negotiation, first offers, precision, experts versus amateurs, open data, open materials

Received 10/7/15; Revision accepted 8/4/16

Negotiations and price decisions are omnipresent—whether it is a case of selling a car or house, buying jewelry, or negotiating salary. Research offers two crucial insights for promoting first movers' negotiation success: First, an ambitious first offer tends to increase a first mover's outcome by anchoring opponents to his or her preferred price (Loschelder, Swaab, Trötschel, & Galinsky, 2014; Schaerer, Swaab, & Galinsky, 2015). Second, precise offers exert a particularly strong anchoring effect (Janiszewski & Uy, 2008; Loschelder, Stuppi, & Trötschel, 2013). Thus, if you are trying to sell your car, starting with an ambitious and precise sales price of $27,750 will bring you the best deal. The present research, however, raises the question whether precision has its limits: Would you benefit even more or instead suffer if you started with a more precise anchor of, say, $27,735 or even $27,734.63?

Research offers a seemingly straightforward answer to this question: The more precise a number, the stronger its anchoring effect. Indeed, all 49 studies on this question that had been published in the literature as of March 2016 found a linear effect of anchor precision. For example, houses with more precise listing prices (e.g., $799,800) generated higher bids than houses with less precise listing prices ($800,000; Janiszewski & Uy, 2008; Thomas, Simon, & Kadiyali, 2010). Similarly, offers of €121.63 exerted a stronger anchoring effect than moderately precise offers of €125, which in turn exerted a stronger effect than round offers of €120 (Loschelder et al., 2013).

The current research challenges the universality of this linear effect of precision. We propose a too-much-precision effect—but only for experts. Prior research has relied

Corresponding Author:

David D. Loschelder, Faculty of Business and Economics, Leuphana University Lüneburg, Scharnhorststrasse 1, C1.016, 21335 Lüneburg, Germany

E-mail: david.loschelder@leuphana.de

almost entirely on amateur subjects in controlled laboratory settings. On the surface, this is not a problem because the anchoring literature suggests that amateurs and experts are equally susceptible to anchors. For instance, expert real-estate agents (Northcraft & Neale, 1987), people with car expertise (Mussweiler, Strack, & Pfeiffer, 2000), and seasoned judges (Englich, Mussweiler, & Strack, 2006) have shown anchoring effects similar to those of nonexpert samples. As Wright and Anderson (1989) put it, "The anchoring effect is so dominant that increasing situational familiarity did not result in decreased anchoring" (p. 68). In contrast, in the five experiments reported here, we found that high precision boosted an anchor's potency for amateurs (linear effect), but undermined an anchor's efficacy for experienced professionals (inverted-U effect). This backfiring effect occurred because experts questioned the competence of negotiators who suggested very precise prices.

Two Theoretically Distinct Mechanisms

In exploring this too-much-precision effect among experts, the current studies disentangle two distinct accounts for the effect of anchor precision—*scale granularity* and *attribution of competence*. The scale-granularity account builds on serial adjustment processes (Epley & Gilovich, 2001, 2006; Tversky & Kahneman, 1974). According to this view, more precise numbers, such as a $27,750 sales price for a car, create a finer-grained mental scale that leads people to adjust away from the anchors in smaller steps, such as steps of $50 or $250. In contrast, rounder numbers, such as a $28,000 sales price, create a more coarse-grained scale that produces larger adjustment steps, such as steps of $500 or $1,000. Janiszewski and Uy (2008) summarized the point very clearly: "X units of adjustment along a fine-resolution scale will cover less objective distance than the same number of units of adjustment along a coarse-resolution scale" (p. 121).

In contrast, the attribution-of-competence account posits that precision influences social perceptions: Compared with round numbers, more precise numbers suggest a more confident (Jerez-Fernandez, Angulo, & Oppenheimer, 2014) and competent (Mason, Lee, Wiley, & Ames, 2013) counterpart. This account builds on the conversational maxims of quantity and quality (Grice, 1975): People expect communicators to provide as much valid information as is needed, neither less nor more (Waenke, 2007; Zhang & Schwarz, 2012).

Disentangling the Mechanisms: Experts Versus Amateurs

We contrasted the negotiation performance of real-world negotiation experts and amateurs to test which of these two accounts outperforms the other. The scale-granularity account suggests a linear effect for both experts and amateurs: The more precise a number, the finer the mental scale, the smaller the adjustment steps, and the more potent the anchor (Janiszewski & Uy, 2008; Fig. 1a).

In contrast, the attribution-of-competence account suggests that when precision exceeds an appropriate level, it loses its anchoring impact. The finding that more precision is always better stems exclusively from amateur samples. On the basis of the attribution-of-competence account, one could propose that experts will attribute less competence to a negotiator who suggests an opening price that is highly precise than to a negotiator who opens with a moderately precise offer (Fig. 1b). Because experts have likely learned that negotiators do not start with highly precise offers, we expected such offers to signal a lack of competence to experts. Hence, the attribution-of-competence account would predict that increasingly precise numbers will initially boost an anchor's potency but eventually produce negative effects (inverted-U effect). However, this account also predicts that increasing precision even at high levels will yield linear benefits if plausible explanations accompany these precise offers; compelling explanations will prevent experts from denigrating the first movers' competence. To test this mechanism, we both measured and manipulated attributions of competence.

Experiment 1: Expertise Moderates the Effects of Anchor Precision in Real-Estate Negotiations

In Experiment 1, we manipulated first offers in a real-estate negotiation to be increasingly precise and contrasted experts' and amateurs' behavior.

Method

Subjects and design. We recruited 453 subjects (mean age = 38.51 years, *SD* = 14.92; 225 male, 157 female, 71 with unreported gender), who were assigned to a 2 (expertise: experts vs. amateurs) × 7 (precision: 2–8 digits) between-subjects design. The amateur sample consisted of 230 individuals who lacked professional negotiation experience and worked in professions outside of real estate. They were recruited via social-networking platforms or approached by research assistants in a local shopping mall. The expert sample consisted of 223 real-estate agents who averaged 17.18 years of professional experience (*SD* = 10.98, *Mdn* = 16) and who negotiated the sale of 19.67 houses per annum on average (*SD* = 28.18, *Mdn* = 10). These real-estate agents were either identified via the German Association of Real Estate Agents (Immobilienverband Deutschland) and contacted via e-mail or approached by research assistants in their respective agencies.

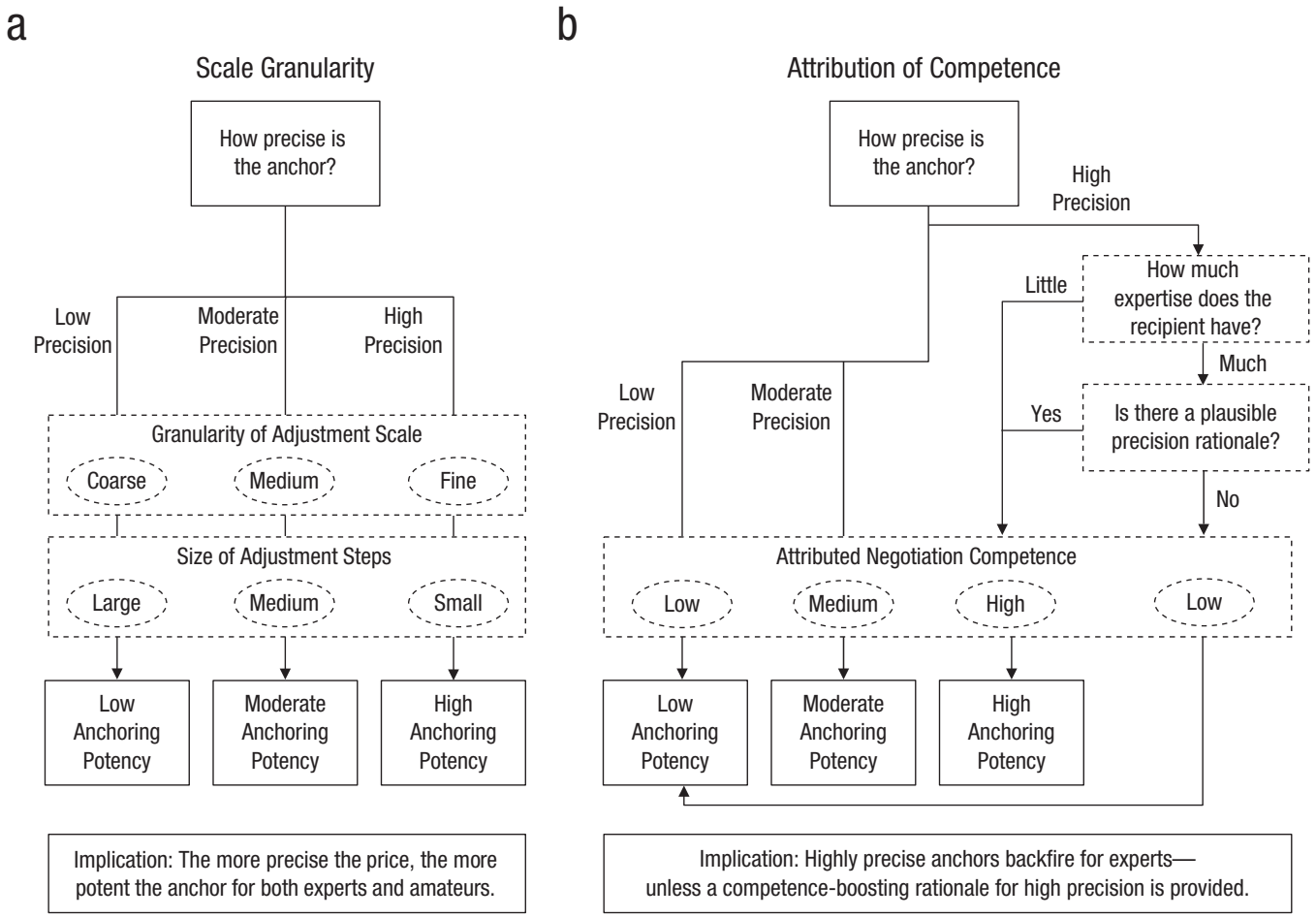

Fig. 1. Competing theoretical accounts' predictions of the effect of anchor precision in negotiation. According to the scale-granularity account (a), increasing anchor precision will have a linear effect irrespective of expertise: Both experts and amateurs will make smaller adjustment steps in response to increasingly precise anchors. According to the attribution-of-competence account (b), increasing anchor precision will have a linear effect for negotiators with relatively little expertise but an inverted-U effect for negotiators with considerable expertise: Too much precision reduces the competence that experts attribute to the first mover, unless a rationale that boosts their perception of the first mover's competence is present. Note that the process depicted for highly precise anchors in (b) is not necessarily sequential or explicit. Recipients of an offer may process the anchor's precision and the existence of a plausible rationale in parallel or automatically.

We planned for data collection to last a total of 10 weeks, provided that we succeeded in recruiting a minimum of 20 amateurs and 20 experts per condition in this time frame (see the recommendations for good research practice by Simmons, Nelson, & Simonsohn, 2011). Once the criterion was met, the research assistants collected data from as many additional subjects as possible until the 10 weeks were over, in order to increase the statistical power of the experiment. Nineteen subjects correctly suspected that the purpose of the experiment was to examine anchoring effects and were thus excluded from analyses. This criterion was adopted prior to data collection.

Procedure and manipulations. The experts and amateurs who were recruited online were invited with a standardized e-mail and participated in the experiment via the online survey tool SoSci Survey; those who were approached in person completed a written questionnaire given to them by the research assistant. The content of the experimental materials in the two mediums was identical. Subjects received a detailed real-estate listing with pictures, floor plans, and other relevant information (e.g., lot size, location, amenities; Northcraft & Neale, 1987; see the Supplemental Material available online for details).

The precision of the listing price was manipulated between subjects. In the *baseline condition*, subjects received a "round" anchor with only two precise digits (i.e., €980,000). In the conditions with increasing precision (3–8 digits), we followed previous research in giving half the subjects an anchor slightly above and the other half an anchor slightly below the baseline value[1] (Janiszewski & Uy, 2008; Mason et al., 2013). The listing price was

Table 1. The Impact of Anchor Precision on Willingness to Pay in Experiment 1

	Amateurs		Experts	
Predictor	Linear model	Quadratic model	Linear model	Quadratic model
Precision	29.53*** (7.31)	26.19 (40.41)	–2.47 (7.37)	101.30* (43.68)
Precision^2	—	0.34 (3.99)	—	–10.55** (4.38)
Intercept	543.22 (38.94)	550.31 (92.79)	692.05 (38.36)	481.03 (95.53)
F	$F(1, 214) = 13.13$***	$F(2, 213) = 6.54$**	$F(1, 187) = 0.16$	$F(2, 186) = 4.22$*

Note: The table reports unstandardized regression weights, with standard errors in parentheses. The estimates are based on experts' and amateurs' data and were obtained for each group by dummy coding the other group as the reference category.
*$p < .05$. **$p < .01$. ***$p < .001$.

€979,000 or €981,000 in the three-digits condition, €978,800 or €981,200 in the four-digits condition, €978,790 or €981,210 in the five-digits condition, €978,782 or €981,218 in the six-digits condition, €978,781.70 or €981,218.30 in the seven-digits condition, and €978,781.63 or €981,218.37 in the eight-digits condition.

Dependent measures and potential mediators. We asked subjects to make a counteroffer to the seller (Mason et al., 2013) and to state the highest price that they were willing to pay for the house (Thomas et al., 2010).

To cast light on the underlying mechanisms, we measured two competing mediators. To test the scale-granularity account, we followed prior research (Janiszewski & Uy, 2008; Mason et al., 2013) in coding the precision of subjects' responses (specifically, their counteroffers)—that is, we counted the number of digits that did not equal zero. If more precise anchors lead to more fine-grained adjustment scales, they should also encourage subjects to give more precise responses, and round anchors should encourage round responses. To test the attribution-of-competence account, we asked subjects to rate the seller's negotiation competence: "The seller knows the property's adequate value," "The seller made a competent offer," "The seller proposed a fair price," "The seller spent considerable energy researching the property's value" ($\alpha = .70$; see Mason et al., 2013). These four items were accompanied by 7-point rating scales ranging from 1, *do not agree*, to 7, *strongly agree*. Composite scores were calculated by averaging the four ratings.

Results[2]

Willingness to pay. We conducted linear and quadratic regression analyses on the maximum prices subjects were willing to pay. First, the linear model tested whether the anchoring effect increased with the precision of the anchor ($y_i = a_1 + b_1 * x_i$, where y_i = estimated willingness to pay, or WTP, and x_i = anchor precision). The model also tested whether experts and amateurs reacted differently to increasing precision. We regressed subjects' WTP on a contrast-coded predictor for expertise (–1 = amateur, 1 = expert), a linear predictor for anchor precision (2–8 digits), and their interaction term (i.e., Expertise × Precision). As predicted, the overall regression model was significant, $F(3, 401) = 5.55$, $p = .001$, as was the regression coefficient for the Expertise × Precision interaction, $b = -16.00$, $t(401) = 4.04$, $p < .001$. These results suggested that the linear effects of anchor precision differed between experts and amateurs.

Second, the quadratic model tested the curvilinear, inverted-U effect ($y_i = a_1 + b_1 * x_i - b_2 * x_i^2$; see Grant, 2013; Grant & Schwartz, 2011). We regressed subjects' WTP on the three predictors from the linear analyses plus a quadratic predictor for anchor precision (ranging from 4 to 64) and the interaction term of expertise and quadratic precision (i.e., Expertise × Precision^2). As expected, this overall model was also significant, $F(5, 399) = 4.53$, $p = .001$. In addition, the Expertise × Precision^2 term was marginally significant, $b = -5.44$, $t(399) = -1.84$, $p = .067$ (all other effects, ps > .208). These results suggested that the quadratic effects of anchor precision also differed between experts and amateurs.

To examine the interactions more closely, we estimated separate effects for experts and amateurs in the context of the overall model by dummy coding experts as the reference category (0 = expert, 1 = amateur) in one analysis and amateurs as the reference category (1 = expert, 0 = amateur) in another. Results from these regression analyses are summarized in Table 1. For amateurs, the data fit a linear regression model; more precise anchors were associated linearly with higher WTP (Fig. 2). For experts, however, the data fit a quadratic, inverted-U model. More precise anchors led to higher WTP, but only up to a point, after which the benefit of precision decreased and eventually turned into a disadvantage (Fig. 2).

Counteroffers. The counteroffer data corroborated the WTP pattern, fitting a linear regression model for amateurs and a quadratic model for experts (see Fig. 2 and the Supplemental Material).

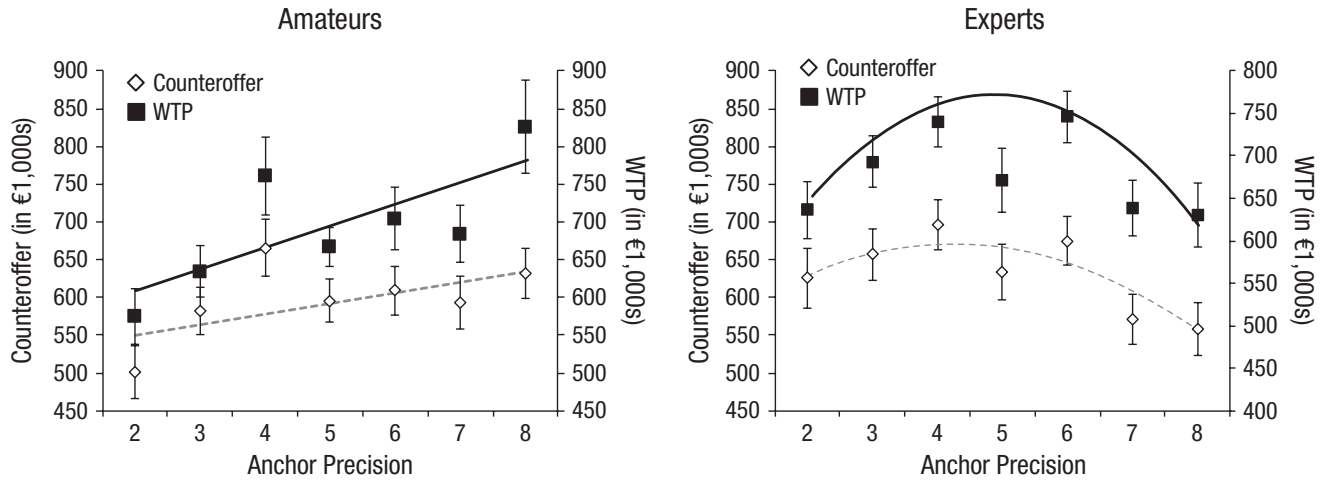

Fig. 2. Results from Experiment 1: mean willingness to pay (WTP) and mean counteroffer as a function of anchor precision (2–8 digits), separately for experts and amateurs. Also shown are the best-fitting regression lines. Error bars indicate ±1 *SEM*.

Mediation analyses. We conducted statistical mediation analyses using a bootstrapping procedure (with 5,000 iterations) that simultaneously tested for mediating roles of scale granularity and attributed competence (Hayes, 2013). To contrast the competing theoretical accounts, we entered as multiple mediators the level of precision in subjects' counteroffers (Janiszewski & Uy, 2008) and the degree of competence subjects attributed to the seller (Mason et al., 2013). For amateurs, the linear effect of anchor precision on WTP was mediated by attributed negotiation competence, $b = 14.04$, $SE = 4.48$, bias-corrected (BC) 95% confidence interval (CI) = [6.01, 23.62], whereas the indirect effect through counteroffer precision (i.e., scale granularity) was not significant, $b = -0.19$, $SE = 0.78$, BC 95% CI = [−2.86, 0.76] (i.e., zero was included in this CI). For experts, the quadratic, inverted-U effect of anchor precision was mediated by attributed competence, $b = -5.08$, $SE = 2.17$, BC 95% CI = [−9.64, −1.28], but not by scale granularity, $b = -0.05$, $SE = 0.32$, BC 95% CI = [−1.23, 0.34]. These mediation analyses indicate that attributed competence, but not scale granularity, is the psychological mechanism underlying the linear and curvilinear effects of anchor precision among negotiation amateurs and experts, respectively.

Discussion

The data from this experiment provide evidence that precise prices have differential anchoring effects on experts and amateurs. For amateurs, WTP and counteroffers increased linearly with precision of the first offer. For experts, WTP and counteroffers increased with precision only up to a point, after which greater precision backfired. The moderation by expertise and the results of our mediation analyses are consistent with the attribution-of-competence account.

Experiment 2: Expertise Moderates the Effects of Anchor Precision in Negotiations for Diamonds

Experiment 2 replicated Experiment 1 with experts and amateurs in a jewelry setting.

Method

Subjects and design. We recruited 432 subjects (mean age = 34.78 years, $SD = 12.99$; 126 male, 198 female, 108 with unreported gender), who were assigned to a 2 (expertise: experts vs. amateurs) × 7 (precision: 2–8 digits) between-subjects design. The amateur sample consisted of 225 individuals who had no professional negotiation experience and worked in a variety of professions unrelated to jewelry. They were recruited either online or in a local shopping mall. The expert sample consisted of 207 goldsmiths and jewelers who averaged 20.34 years of professional experience ($SD = 11.40$, $Mdn = 20$) and negotiated the sale of 34.65 pieces of jewelry per week on average ($SD = 81.05$, $Mdn = 20$). The experts were either identified online and contacted with a standardized e-mail or approached by research assistants in their respective jewelry store.

Again, we recruited a minimum of 20 amateurs and 20 experts per condition and terminated data collection after a predetermined period of 10 weeks. Fourteen subjects correctly suspected that the study's purpose was to examine anchoring effects and were thus excluded from analyses.

Table 2. The Impact of Anchor Precision on Willingness to Pay in Experiment 2

	Amateurs		Experts	
Predictor	Linear model	Quadratic model	Linear model	Quadratic model
Precision	3.61** (1.64)	6.06 (9.47)	0.12 (1.66)	26.39** (9.90)
Precision^2	—	–0.25 (0.94)	—	–2.58** (0.96)
Intercept	109.59 (8.58)	104.46 (19.19)	116.22 (8.89)	59.95 (22.70)
F	$F(1, 210) = 6.15^{**}$	$F(2, 209) = 3.11^{*}$	$F(1, 190) = 0.04$	$F(2, 189) = 2.98^{*}$

Note: The table reports unstandardized regression weights, with standard errors in parentheses. The estimates are based on experts' and amateurs' data and were obtained for each group by dummy coding the other group as the reference category.
$^{*}p < .05$. $^{**}p < .01$.

Procedure and manipulations. The experts and amateurs who were recruited online participated via the online survey tool SoSci Survey, and those who were approached in person filled out a written questionnaire that the research assistant gave them. Subjects received pictures and a description of an 18-carat white-gold necklace with 817 brilliant-cut diamonds (see the Supplemental Material for details). In the description, we manipulated only the precision of the listed price. In the *baseline condition*, this anchor was €180,000. In the conditions with increasing precision (3–8 digits), as in Experiment 1, half the anchors were slightly above and half slightly below the baseline value. The anchor was €178,000 or €182,000 in the three-digits condition, €178,500 or €181,500 in the four-digits condition, €178,250 or €181,750 in the five-digits condition, €178,264 or €181,736 in the six-digits condition, €178,263.70 or €181,736.30 in the seven-digits condition, and €178,263.62 or €181,736.38 in the eight-digits condition.

Dependent measures and potential mediators. We assessed subjects' WTP and counteroffers as dependent measures, and we tested the granularity of counteroffers and the competence attributed to the seller ($\alpha = .62$) as potential mediators. (See Experiment 1 for a description of the measures.)

Results[2]

Willingness to pay. We conducted the same linear and quadratic regression analyses on WTP as in Experiment 1. As predicted, the overall linear regression model was significant, $F(3, 400) = 3.27$, $p = .021$, though the Expertise × Precision interaction was not, $b = -1.75$, $t(400) = -1.50$, $p = .135$. The overall quadratic regression model was also significant, $F(5, 398) = 3.45$, $p = .005$. In addition, the Expertise × Precision^2 interaction was marginally significant, $b = -1.17$, $t(398) = -1.74$, $p = .083$.

As in Experiment 1, we next estimated separate effects for experts and amateurs in the context of the overall model by dummy coding experts as the reference category (0 = expert, 1 = amateur) in one analysis and amateurs as the reference category (1 = expert, 0 = amateur) in another. Results from these regression analyses are summarized in Table 2. For amateurs, the data fit a linear regression model. For experts, however, the data again fit only a quadratic, inverted-U model (Fig. 3; see the Supplemental Material for additional analyses).

Counteroffers. The counteroffer data corroborated the WTP pattern, fitting a linear regression model for amateurs and a quadratic model for experts (see Fig. 3 and the Supplemental Material).

Mediation analyses. We conducted multiple mediation analyses as in Experiment 1. The linear effect for amateurs and the quadratic effect for experts were both mediated by the negotiation competence that subjects attributed to the seller—amateurs: $b = 1.25$, $SE = 0.47$, BC 95% CI = [0.49, 2.42]; experts: $b = -1.10$, $SE = 0.49$, BC 95% CI = [−2.14, −0.22]. The indirect effects through counteroffer granularity were not significant—amateurs: $b = -0.27$, $SE = 0.57$, BC 95% CI = [−1.34, 0.98]; experts: $b = -0.06$, $SE = 0.30$, BC 95% CI = [−0.68, 0.51].

Discussion

The first two experiments established a linear effect of increasing anchor precision for amateurs but a quadratic, inverted-U effect for experts. This expert-amateur disparity was statistically accounted for by the attribution-of-competence and not the scale-granularity account.

Experiment 3: Is the Too-Much-Precision Effect Merely a Penny Effect?

Experiment 3 tested whether excessive precision backfired for experts only because the highly precise anchors featured cents. Does the too-much-precision effect generalize to precise offers that do not involve pennies?

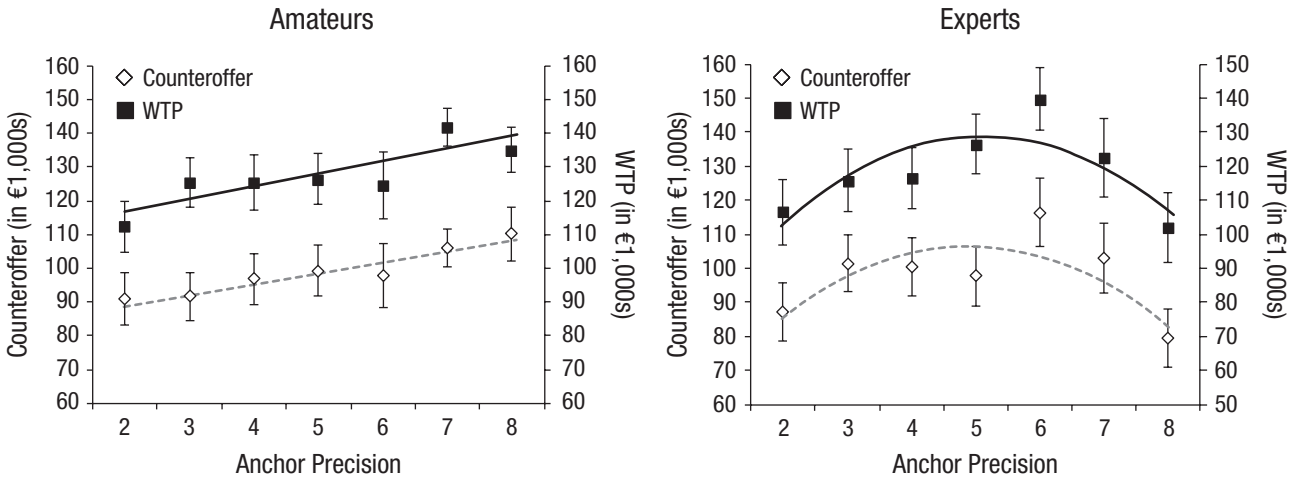

Fig. 3. Results from Experiment 2: mean willingness to pay (WTP) and mean counteroffer as a function of anchor precision (2–8 digits), separately for experts and amateurs. Also shown are the best-fitting regression lines. Error bars indicate ±1 *SEM*.

Method

Subjects and design. We recruited an expert sample of 150 real-estate agents (mean age = 50.29 years, *SD* = 13.36; 65 male, 15 female, 70 with unreported gender), who were randomly assigned to one of three conditions (precision: low vs. moderate vs. high). The recruited agents averaged 20.85 years of professional work experience in real estate (*SD* = 12.17, *Mdn* = 20), and they negotiated the sale of 27.93 real-estate properties per annum on average (*SD* = 42.05, *Mdn* = 15). We identified these experts countrywide via the German Association of Real Estate Agents (Immobilienverband Deutschland) and invited them to participate in this experiment with a standardized e-mail. Data were collected via the online survey tool SoSci Survey for a predetermined period of 7 days. We used the same a priori exclusion rule as in Experiments 1 and 2; 8 experts correctly suspected that the study's purpose was to examine anchoring effects and were thus excluded from analyses.

Procedure and manipulations. Subjects were asked to imagine buying a chemical plant that was estimated to be worth between €17 million and €25 million (Galinsky & Mussweiler, 2001; see the Supplemental Material for details). As a between-subjects factor, we manipulated the precision of the plant's sale price. In the *low-precision condition*, the seller asked for €26,000,000. In the *moderate-precision condition*, the seller asked for €25,750,000, and in the *high-precision condition*, the seller asked for €25,748,637.

Dependent measures and potential mediators. We assessed subjects' WTP and counteroffers as dependent measures, and we tested the granularity of counteroffers and the competence attributed to the seller (α = .79) as potential mediators. (See Experiment 1 for a description of the measures.)

Results[2]

Willingness to pay. As in Experiments 1 and 2, the experts' WTP followed an inverted-U pattern (Fig. 4). Compared with agents in the low-precision condition (*M* = €19.64 million, *SD* = 2.87), agents in the moderate-precision condition were willing to pay significantly more for the plant (*M* = €21.95 million, *SD* = 3.87), $t(80) = 2.65$, $p = .010$, $d = 0.68$. As expected, however, the maximum acceptable price for agents in the high-precision condition (*M* = €19.85 million, *SD* = 2.74) was lower than that for agents in the moderate-precision condition, $t(80) = -2.43$, $p = .017$, $d = 0.63$, and WTP did not differ between the high-precision and low-precision conditions, $t(80) = 0.268$, $p = .789$. The quadratic contrast was significant, $b = 1.80$, $SE = 0.63$, $p = .005$, 95% CI = [0.55, 3.05], whereas the linear contrast was not, $b = -0.15$, $SE = 0.57$, $p = .789$, 95% CI = [–0.99, 1.29]. The overall analysis of variance (ANOVA) showed a main effect of precision, $F(2, 80) = 4.15$, $p = .019$, $\eta_p^2 = .09$.

Counteroffers. The pattern for the experts' counteroffers paralleled the pattern for WTP. Moderately precise prices were more potent anchors (*M* = €19.11 million, *SD* = 4.54) than were nonprecise prices (*M* = €16.93 million, *SD* = 3.39), $t(139) = 2.89$, $p = .005$, $d = 0.54$, and highly precise prices (*M* = €17.44 million, *SD* = 2.98), $t(139) = 2.18$, $p = .031$, $d = 0.43$. Counteroffers in the low- and high-precision conditions did not differ, $t(139) = 0.69$, $p = .494$. The quadratic contrast was significant, $b = 1.57$, $SE = 0.54$, $p = .004$, 95% CI = [0.50, 2.64], whereas

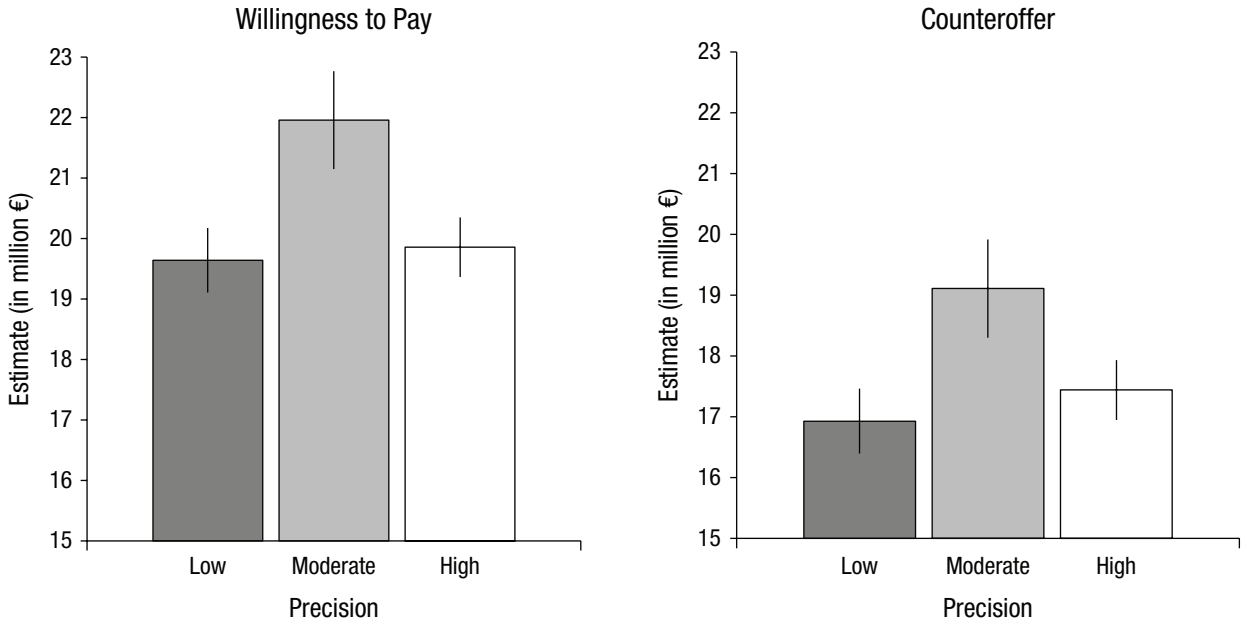

Fig. 4. Results from Experiment 3: experts' mean willingness to pay (left) and mean counteroffer (right) as a function of anchor precision. Higher estimates reflect stronger anchoring potency. Error bars indicate ±1 *SEM*.

the linear contrast was not, $b = 0.36$, $SE = 0.53$, $p = .494$, 95% CI = [–0.68, 1.41]. The overall ANOVA was significant, $F(2, 139) = 4.48$, $p = .013$, $\eta_p^2 = .06$.

Mediation analyses. We conducted a multiple mediation analysis as in Experiments 1 and 2. The quadratic effect for experts' WTP was mediated by the negotiation competence attributed to the seller, $b = 0.20$, $SE = 0.15$, BC 95% CI = [0.025, 0.60], whereas the indirect effect through counteroffer granularity was not significant, $b = 0.020$, $SE = 0.11$, BC 95% CI = [–0.20, 0.25].

Discussion

Experiment 3 established that the backfiring effect of too much precision emerges even when the level of precision does not involve pennies.

Experiment 4: Convincing Car-Sales Experts With a Rationale for Precision

We had three goals in Experiment 4: First, we hoped to replicate the expert-amateur disparity in a third domain—the automotive sector. Second, we wanted to address an endogeneity concern: The experts and novices in Experiments 1 through 3 might have differed not only in negotiation experience but also in general knowledge about real estate and jewelry. In Experiment 4, we therefore contrasted salespeople with mechanics; they differ in negotiation experience but not in car expertise. Third, we sought to shed causal light on the underlying mechanisms of anchoring effects by experimentally manipulating attributed competence (Spencer, Zanna, & Fong, 2005); in one condition, highly precise offers were accompanied by a rationale intended to boost subjects' perception of the seller's competence (a *competence-boosting rationale*). We expected that this manipulation would prevent highly precise prices from backfiring among experts. That is, anchoring effects should be equal for amateurs and experts when highly precise prices are accompanied by competence-boosting rationales.

Method

Subjects and design. We recruited 179 automotive professionals at their respective garages and dealerships. Subjects were assigned to a 2 (expertise: mechanics vs. salespeople) × 4 (condition: low precision vs. moderate precision vs. high precision vs. high precision plus rationale) between-subjects design. Research assistants contacted car dealerships by telephone to arrange an appointment or directly approached salespeople and mechanics on site. Eighty-five of the recruited subjects were mechanics, and 94 were salespeople (mean age = 35.41 years, $SD = 11.11$; 167 male, 12 female). As expected, the mechanics negotiated significantly fewer car sales per year ($M = 5.13$, $SD = 14.94$, $Mdn = 1$) compared with the salespeople ($M = 133.50$, $SD = 69.79$, $Mdn = 125$), $t(121) = 12.95$, $p < .001$, $d = 2.54$, but the two groups did not differ markedly in work experience in the

automotive sector (mechanics: $M = 12.74$ years; salespeople: $M = 15.38$ years), $t(158) = 1.60$, $p = .112$, $d = 0.25$.

We recruited a minimum of 20 experts and 20 amateurs per condition and terminated data collection after a predetermined period of 10 weeks. Sixteen subjects suspected correctly that the purpose of this experiment was to examine anchoring effects and were thus excluded from the analyses.

Procedure. Subjects received a detailed description of a black 2013 Peugeot 508 SW (Business Line; 4.80 L per 100 km, or 56.4 miles per gallon; 140-horsepower engine). At the time of data collection, the car was a year old and had run 22,000 km (approximately 13,700 miles; see the Supplemental Material for details). Subjects were told to carefully familiarize themselves with the car, as they would later negotiate the sale price with the car's present owner.

We manipulated the precision of the seller's first offer. In the *low-precision condition*, the first offer was €28,000. In the conditions with increased precision, half the anchors were above and half were below the baseline value; that is, the first offer was €27,830 or €28,170 in the *moderate-precision condition* and €27,837.63 or €28,162.37 in the *high-precision condition*.

In the *high-precision-plus-rationale condition*, the seller provided a rationale for the highly precise anchor. The seller stated, "I have corrected an expert's appraisal of the car's value for the following factors: (1) inspections by licensed dealers, (2) small scratch on mudguard, and (3) long-distance use only." This rationale manipulation allowed us to test the proposed causal effect of attributed competence through the *moderation-of-process* paradigm (Spencer et al., 2005). If attributed negotiation competence indeed mediates the effect of anchor precision, then experimentally boosting perceptions of the seller's competence with a compelling rationale should prevent highly precise prices from having a backfiring effect among experts. Unlike the classic approach of measuring a mediator (Baron & Kenny, 1986), the moderation-of-process design involves manipulating the mediator experimentally. If the proposed mediator is truly a mediator, it will have a moderation effect on the outcome variable when it is manipulated. The experimental component of this approach allows for causal inferences about a proposed process. It is thus recommended, and considered by many researchers to be the gold standard, to combine measurement and moderation approaches when trying to gather comprehensive evidence for a psychological process (Spencer et al., 2005; see Sigall & Mills, 1998).

Dependent measures and potential mediators. We assessed subjects' WTP and counteroffers as dependent measures, and we tested the granularity of their counteroffers and the competence they attributed to the seller ($\alpha = .83$) as competing mediators. (See Experiment 1 for a description of the measures.)

Results[2]

Manipulation check. To check whether the rationale manipulation was successful, we analyzed how much competence subjects attributed to the seller. As expected, among subjects who received highly precise first offers, those who were given a rationale ascribed more competence to the seller ($M = 4.07$, $SD = 1.15$) than did those who were not given a rationale ($M = 3.25$, $SD = 1.18$), $t(81) = 3.17$, $p = .002$.

Willingness to pay. Given that the mechanics were negotiation amateurs, they were expected to show a linear effect of increasing anchor precision. Indeed, the amount that the mechanics were willing to pay was lowest in the low-precision condition (M = €21,875, SD = 3,325), increased in the moderate-precision condition (M = €23,285, SD = 2,889) and the high-precision condition (M = €23,586, SD = 2,522), and was highest in the high-precision-plus-rationale condition (M = €24,222, SD = 3,649; see Fig. 5). The linear contrast was significant, $b = 1.64$, $SE = 0.70$, $p = .021$, 95% CI = [0.25, 3.03]; as expected, the quadratic contrast was not, $b = -0.39$, $SE = 0.68$, $p = .573$, 95% CI = [−1.75, 0.98].

Given that the salespeople were negotiation experts, their WTP was expected to exhibit the same inverted-U effect we found for experts in Experiments 1 through 3. Indeed, salespeople in the moderate-precision condition (M = €23,931, SD = 2,146) tended to be willing to pay higher prices compared with salespeople in the low-precision condition (M = €22,447, SD = 3,320), $t(76) = 1.61$, $p = .111$, $d = 0.53$. However, salespeople's WTP was significantly lower in the high-precision condition (M = €20,929, SD = 3,377) than in the moderate-precision condition, $t(76) = 3.35$, $p < .001$, $d = 1.06$, and their WTP was even marginally lower in the high-precision condition than in the low-precision condition, $t(76) = 1.69$, $p = .095$, $d = 0.45$ (see Fig. 5). The quadratic contrast for these three conditions was significant, $b = 1.83$, $SE = 0.69$, $p = .010$, 95% CI = [0.46, 3.21]; as expected, the linear contrast was not, $b = -1.07$, $SE = 0.68$, $p = .118$, 95% CI = [−0.28, 2.43].

The provision of a rationale counteracted the effect of highly precise anchors, as predicted: Salespeople given a highly precise first offer were willing to pay more if they also received a rationale (M = €23,350, SD = 2,251) than if they did not, $t(76) = 2.77$, $p = .007$, $d = 0.84$, and WTP did not differ between the high-precision-plus-rationale and moderate-precision conditions, $t(76) = 0.65$, $p = .519$ (see Fig. 5). For the salespeople, a cubic contrast for all four conditions was significant, $b = 2.20$, $SE = 0.64$, $p = .001$, 95% CI = [0.95, 3.48]; the linear and quadratic contrasts were not significant, ps > .463. An overall 2

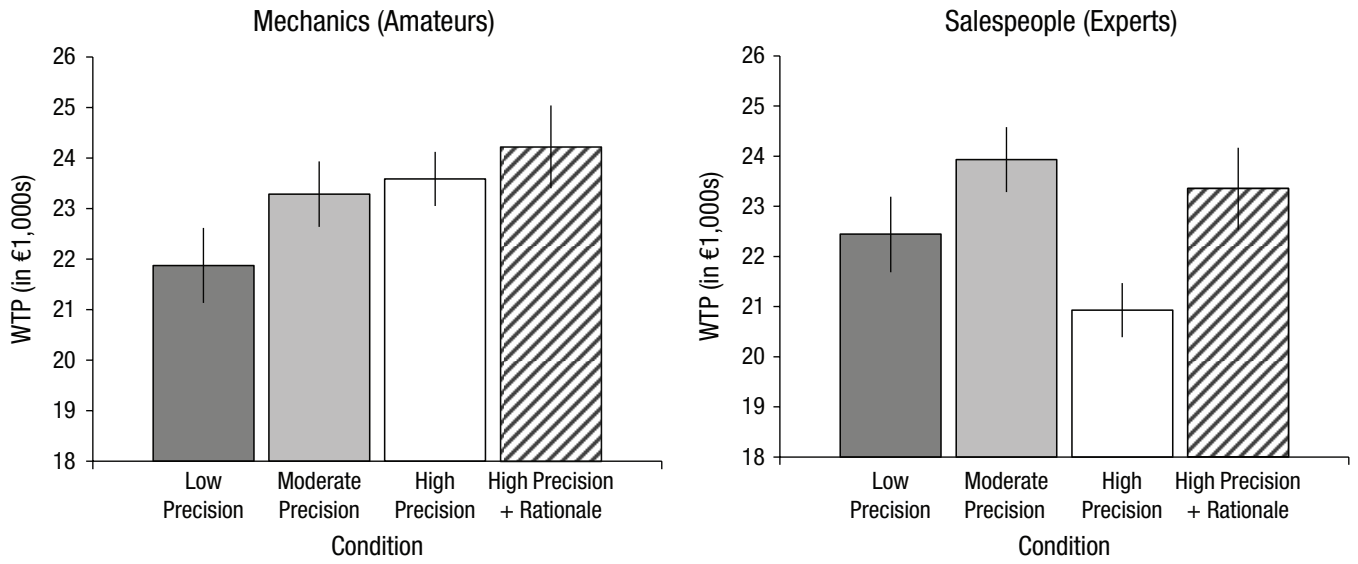

Fig. 5. Results from Experiment 4: mean willingness to pay (WTP) as a function of anchor precision. Results are shown separately for the mechanics (left) and salespeople (right). All subjects assumed the buyer role. Thus, higher prices reflect stronger anchoring potency. Error bars indicate ±1 *SEM*.

(expertise) × 4 (condition) ANOVA showed a main effect of condition, $F(3, 152) = 3.42$, $p = .019$, $\eta_p^2 = .06$, that was qualified by a two-way interaction, $F(3, 152) = 2.87$, $p = .038$, $\eta_p^2 = .05$.

Counteroffers. The counteroffer data corroborated the WTP patterns for experts and amateurs (see the Supplemental Material).

Mediation analyses. We conducted multiple mediation analyses analogous to those in the previous experiments (see Experiment 1). The linear effect for the mechanics and the quadratic effect for the salespeople were both mediated by attributed negotiation competence—mechanics: $b = 0.34$, $SE = 0.16$, BC 95% CI = [0.09, 0.74]; salespeople: $b = -0.28$, $SE = 0.16$, BC 95% CI = [−0.68, −0.04]. The indirect effects through counteroffer granularity were not significant—mechanics: $b = 0.03$, $SE = 0.09$, BC 95% CI = [−0.15, 0.24]; salespeople: $b = -0.09$, $SE = 0.09$, BC 95% CI = [−0.38, 0.013].

Discussion

Experiment 4 replicated the linear effect of precision among amateurs and the inverted-U effect of precision among experts. Attributions of competence accounted for both effects. Experiment 4 was a particularly conservative test of the expertise factor because we recruited mechanics and salespeople, who differed in negotiation expertise but not in car expertise. In addition, we tested the causality of the proposed underlying mechanism by manipulating the mediator, attributions of competence. Providing a compelling rationale for high precision boosted the competence ascribed to the seller and increased the potency of highly precise prices, even among expert negotiators.

Experiment 5: Convincing Human-Resources Experts With a Rationale for Precision

In Experiment 5, we again both measured and manipulated attributions of competence. This time, we studied human-resources experts and fully crossed the precision and rationale manipulations.

Method

Subjects and design. We recruited an expert sample of 171 recruitment professionals (mean age = 42.96 years, $SD = 12.62$; 83 male, 63 female, 25 with unreported gender). These experts were randomly assigned to a 3 (precision: low vs. moderate vs. high) × 2 (rationale: no rationale vs. rationale) between-subjects design. Subjects averaged 17.22 years of work experience in human resources ($SD = 12.13$, $Mdn = 15$) and negotiated 40.37 job contracts per annum on average ($SD = 84.95$, $Mdn = 17.5$). They were identified and contacted via the Federal Association of Human Resources Managers (Bundesverband der Personalmanager) and via the German Employment Agency (Bundesagentur für Arbeit).

Again, we recruited a minimum of 20 subjects per condition and terminated data collection after a predetermined period of 10 weeks. Eight subjects suspected correctly that

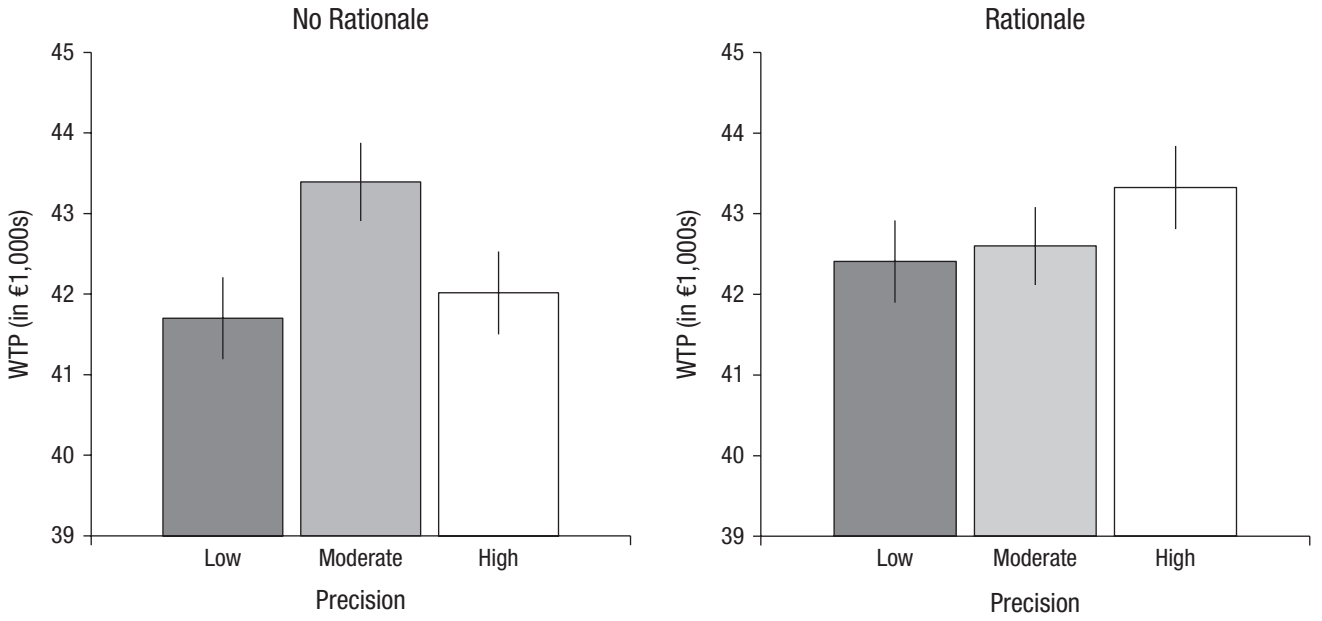

Fig. 6. Results from Experiment 5: expert recruiters' willingness to pay (WTP) as a function of anchor precision. Results are shown separately for the no-rationale (left) and rationale (right) conditions. Higher salaries reflect stronger anchoring potency. Error bars indicate ±1 *SEM*.

the purpose of this study was to examine anchoring effects and were thus excluded from the analyses.

Procedure. The experts participated via the online survey tool SoSci Survey. They were asked to imagine negotiating starting salary with a promising job candidate (adapted from Neale, 1997; see also Loschelder, Trötschel, Swaab, Friese, & Galinsky, 2016). Negotiations started with an opening proposal from the candidate (see the Supplemental Material for details).

We manipulated the precision of the candidate's opening proposal (precision: low vs. moderate vs. high). In the *low-precision condition*, the candidate asked for a salary of €48,000. In the conditions with increased precision, half the anchors were above and half were below that value; specifically, the anchors were €47,850 and €48,150 in the *moderate-precision condition* and €47,842.87 and €48,157.13 in the *high-precision condition*.

In each precision condition, approximately half of the subjects were given a rationale for the candidate's opening proposal. He said, "Preparing for this meeting, I have conducted a salary analysis and calculated an average for this field and position. I adjusted this mean value for my (1) final grade, (2) auxiliary qualifications, and (3) number of internships." No rationale was included in the materials that the other subjects received.

Dependent measures and potential mediators. We assessed the recruiters' WTP and counteroffers as dependent measures, and we tested the granularity of their counteroffers and the competence they attributed to the job candidate (α = .83) as competing mediators. (See Experiment 1 for a description of the measures.)

Results[2]

Manipulation check. To check whether the rationale manipulation was successful, we analyzed how much competence subjects attributed to the candidate. As expected, among recruiters in the high-precision condition, those who were given a rationale attributed significantly more competence to the candidate (M = 3.82, SD = 1.28) than did those who were not given a rationale (M = 2.87, SD = 1.13), $t(55) = 2.99$, $p = .004$. In addition, attributions of competence did not differ between the high-precision-plus-rationale condition and the moderate-precision condition (M = 3.67, SD = 1.11), $t(52) = 0.45$, $p = .658$.

Willingness to pay. As expected, among recruiters who were not given a rationale, WTP followed an inverted-U pattern (see Fig. 6). The recruiters in the low-precision condition (M = €41,700, SD = 2,545) were willing to pay significantly lower salaries than were those in the moderate-precision condition (M = €43,393, SD = 2,562), $t(81) = 2.30$, $p = .024$, $d = 0.87$. Also, WTP was lower for recruiters in the high-precision condition (M = €42,016, SD = 2,865) than for those in the moderate-precision condition, $t(81) = 1.98$, $p = .052$, $d = 0.51$. WTP did not differ between the high-precision condition and

the low-precision condition, $t(81) = 0.44$, $p = .661$. The quadratic contrast was significant, $b = 1.25$, $SE = 0.51$, $p = .015$, 95% CI = [0.25, 2.26]; the linear contrast was not, $b = 0.22$, $SE = 0.51$, $p = .661$, 95% CI = [−0.79, 1.24].

When the candidate provided a rationale, the expert recruiters' WTP was lowest in the low-precision condition (M = €42,407, SD = 1,886), higher in the moderate-precision condition (M = €42,600, SD = 2,578), and highest in the high-precision condition (M = €43,325, SD = 2,230; see Fig. 6). The linear contrast revealed a nonsignificant trend, $b = 0.65$, $SE = 0.44$, $p = .140$, 95% CI = [−0.22, 1.53], the quadratic contrast was clearly not significant, $b = 0.22$, $SE = 0.44$, $p = .626$, 95% CI = [−0.67, 1.10].

The data support the attribution-of-competence account in that the provision of a rationale counteracted the detrimental anchoring effect of highly precise anchors. Recruiters in the high-precision condition were willing to pay a marginally higher salary when the candidate provided a rationale than when he did not, $t(55) = 1.90$, $p = .063$, $d = 0.51$ (Fig. 6). An overall 3 (precision) × 2 (rationale) ANOVA showed a marginally significant two-way interaction, $F(2, 156) = 2.59$, $p = .079$, $\eta_p^2 = .03$ (all other Fs < 1.96, ps > .14).

Counteroffers. The counteroffer data corroborated the WTP patterns (see the Supplemental Material).

Mediation analyses. We contrasted the two competing theoretical accounts using a multiple mediation analysis analogous to the one for Experiment 1. The quadratic effect in the no-rationale condition was mediated by the negotiation competence that the experts attributed to the candidate, $b = 0.14$, $SE = 0.09$, BC 95% CI = [0.042, 0.37], whereas the indirect effect through counteroffer granularity was not significant, $b = 0.008$, $SE = 0.03$, BC 95% CI = [−0.034, 0.098].

Discussion

Experiment 5 provides causal support for the attribution-of-competence account. A competence-boosting rationale prevented the backlash otherwise observed among experts when first offers were overly precise. This effect of attributed competence was also confirmed through statistical mediation analyses including measured competence ratings.

Internal Meta-Analyses

To provide a comprehensive evaluation of the hypothesis that the effect of anchor precision is linear for amateurs but quadratic for experts, we conducted two internal random-effects meta-analyses based on all five experiments. One meta-analysis focused on linear effects, and the other focused on quadratic effects. To test for the focal moderation effect of subjects' negotiation expertise, we employed Q tests, which are analogous to one-way ANOVAs in primary research (see the Supplemental Material for details on this internal meta-analysis).

The meta-analysis for a linear effect of anchor precision produced an overall nonsignificant mean effect size, $r = .075$, 95% CI = [−.020, .170], $z = 1.55$, $p = .122$. However, more than half of the observed variance reflected true differences in effect size, $I^2 = 56.99$, $Q(7) = 16.28$, $p = .023$. Hence, we included subjects' negotiation expertise in the next step of the analysis, which showed a highly significant difference between amateurs and experts, $Q(1) = 13.21$, $p < .001$. Whereas there was a highly significant linear effect for amateurs, as expected, $r = .209$, 95% CI = [.122, .293], $z = 4.65$, $p < .001$, the linear effect was nonsignificant for experts, $r = -.011$, 95% CI = [−.092, .069], $z = -0.273$, $p = .785$.

The meta-analysis for a quadratic effect of anchor precision produced a small overall mean effect size, $r = .153$, 95% CI = [.057, .245], $z = 3.12$, $p = .002$. Again, more than half of the observed variance reflected true differences in effect size, $I^2 = 57.71$, $Q(7) = 16.55$, $p = .021$. Including subjects' expertise in the next step of the analysis revealed a highly significant difference between amateurs and experts, $Q(1) = 14.01$, $p < .001$. Whereas there was a highly significant quadratic effect of anchor precision for experts, as expected, $r = .230$, 95% CI = [.152, .305], $z = 5.67$, $p < .001$, the quadratic effect was nonsignificant for amateurs, $r = .003$, 95% CI = [−.086, .093], $z = 0.08$, $p = .940$. Together, these analyses further corroborate that the effect of anchor precision is moderated by expertise; the effect is linear for amateurs but quadratic for experts.

General Discussion

Five experiments across four domains found differential effects of anchor precision for negotiation amateurs and experts. Whereas amateurs showed a consistent linear effect, too much precision backfired among experts. We contrasted competing predictions from two theoretical accounts—attribution-of-competence and scale-granularity (Fig. 1): Statistical mediation analyses (Experiments 1–5) and experimental tests of moderation by competence-boosting rationales (Experiments 4 and 5) suggested that the competence attributed to the first mover accounted for amateurs' linear and experts' quadratic effects.

The findings contribute to psychological science in several ways. Past research has found that anchor extremity affects amateurs and experts equally. Here, we have shown for the first time that anchor precision can have markedly different effects for amateurs and experts. In addition, the results obtained with our rationale manipulation offer two important contributions. First, they provide causal evidence for the mediating role of competence attribution. Second, they challenge research showing that

rationales have a detrimental effect: Maaravi, Ganzach, and Pazy (2011) found that rationales justifying the extremity of a first offer can produce particularly aggressive counteroffers. In contrast, our findings show that rationales can help signal competence when offers are highly precise. Future research may examine whether the provision of any rationale—even an unconvincing, "placebic" argument—will also elevate the perceived competence of first movers and reduce the too-much-precision effect (Langer, Blank, & Chanowitz, 1978).

The present findings also contribute to psychological science more broadly by demonstrating the value of expanding the subject pool to negotiation experts: Our process analyses suggested that identical experimental manipulations caused psychologically distinct reactions in individuals with different levels of expertise. Hence, our findings suggest the need for caution in relying on highly homogeneous subject samples for theory testing. Our findings demonstrate how novel insights can emerge from taking advantage of heterogeneous samples (Henrich, Heine, & Norenzayan, 2010). That is, a psychological effect and its mechanism may differ depending on a variety of individual characteristics, including experience and cultural background (see also Adam, Shirako, & Maddux, 2010; Van Bavel, Mende-Siedlecki, Brady, & Reinero, 2016).

From an applied perspective, the results show that the optimal precision of one's first offer depends on the opponent's expertise. Note that we contrasted seasoned experts with less experienced amateurs. This does not imply that negotiation expertise is categorical; rather, it varies by degrees. Future research should examine when, in the process of becoming experts, people begin to denigrate the competence of a first mover who suggests too precise a price.

Although our findings support the attribution-of-competence account, scale-granularity processes may explain effects of precision in other settings. In social contexts such as negotiations, however, attribution of competence seems to trump scale granularity. We also believe that the inverted-U effect we observed among experts may not arise inevitably. This effect is likely dependent on the presence of a human counterpart to whom competence can be attributed (Zhang & Schwarz, 2013) and on a market environment in which round numbers are more prevalent than precise numbers (Jansen & Pollmann, 2001). For example, an inverted-U effect may not emerge in stock negotiations, in which highly precise numbers are the norm (Hukkanen & Keloharju, 2015).

Coda

Five experiments demonstrated that increasingly precise prices are increasingly potent anchors for amateurs. However, in negotiations with experts, moderately precise anchors are most effective. Experts react against too precise a price—unless a rationale that boosts the perceived competence of the first mover is provided.

Action Editor

Leaf Van Boven served as action editor for this article.

Author Contributions

D. D. Loschelder developed the study concept. All the authors contributed to the study design. Testing and data collection were performed by D. D. Loschelder and M. Friese. D. D. Loschelder and M. Schaerer performed the data analysis. D. D. Loschelder drafted the manuscript, and all the authors provided numerous critical revisions. All the authors approved the final version of the manuscript for submission.

Acknowledgments

We would like to thank Carsten De Dreu, Malia Mason, Johann Majer, Martin Schweinsberg, Roderick Swaab, Roman Trötschel, the Management group at Columbia University, and the Social Psychology lab at Saarland University for their valuable comments on this research, as well as Tobias Koch for his statistical advice.

Declaration of Conflicting Interests

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

Funding

The present research was supported by a grant from the German Academic Exchange Service to D. D. Loschelder and by a grant from the German Research Foundation to D. D. Loschelder and M. Friese (DFG LO-2201/2-1).

Supplemental Material

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

Open Practices

All data and materials have been made publicly available via the Open Science Framework and can be accessed at https://osf.io/b8zft/. The complete Open Practices Disclosure for this article can be found at http://pss.sagepub.com/content/by/supplemental-data. This article has received badges for Open Data and Open Materials. More information about the Open Practices badges can be found at https://osf.io/tvyxz/wiki/1.%20View%20the%20Badges/ and http://pss.sagepub.com/content/25/1/3.full.

Notes

1. Results did not differ between anchors above and those below the baseline value (all ts < 0.92, ps > .36). Controlling for this factor in analyses of covariance did not change the pattern

or significance of any results in any of the experiments (all covariate Fs < 1.39, ps > .24). For simplicity, we followed prior research in collapsing across this factor (Mason et al., 2013).

2. For all experiments, additional robustness analyses (e.g., polynomial contrasts, analyses of variance, linear and quadratic regression analyses, and mediation analyses) are reported in the Supplemental Material. The reported degrees of freedom in the experiments are sometimes smaller than the total sample size because some subjects failed to respond to all dependent variables (i.e., missing values).

References

Adam, H., Shirako, A., & Maddux, W. W. (2010). Cultural variance in the interpersonal effects of anger in negotiations. *Psychological Science*, *21*, 882–889.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.

Englich, B., Mussweiler, T., & Strack, F. (2006). Playing dice with criminal sentences: The influence of irrelevant anchors on experts' judicial decision making. *Personality and Social Psychology Bulletin*, *32*, 188–200.

Epley, N., & Gilovich, T. (2001). Putting adjustment back in the anchoring and adjustment heuristic: Differential processing of self-generated and experimenter-provided anchors. *Psychological Science*, *12*, 391–396.

Epley, N., & Gilovich, T. (2006). The anchoring-and-adjustment heuristic: Why the adjustments are insufficient. *Psychological Science*, *17*, 311–318.

Galinsky, A. D., & Mussweiler, T. (2001). First offers as anchors: The role of perspective-taking and negotiator focus. *Journal of Personality and Social Psychology*, *81*, 657–669.

Grant, A. M. (2013). Rethinking the extraverted sales ideal: The ambivert advantage. *Psychological Science*, *24*, 1024–1030.

Grant, A. M., & Schwartz, B. (2011). Too much of a good thing: The challenge and opportunity of the inverted U. *Perspectives on Psychological Science*, *6*, 61–76.

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics, vol. 3: Speech acts* (pp. 41–58). New York, NY: Academic Press.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral & Brain Sciences*, *33*, 61–83.

Hukkanen, P., & Keloharju, M. (2015). *Initial offer precision and M&A outcomes* (Working Paper 16-058). Retrieved from http://www.hbs.edu/faculty/Publication%20Files/16-058_27d73983-3441-4628-906c-10ce5fb7ac47.pdf

Janiszewski, C., & Uy, D. (2008). Precision of the anchor influences the amount of adjustment. *Psychological Science*, *19*, 121–127.

Jansen, C. J. M., & Pollmann, M. M. W. (2001). On round numbers: Pragmatic aspects of numerical expressions. *Journal of Quantitative Linguistics*, *8*, 187–201.

Jerez-Fernandez, A., Angulo, A. N., & Oppenheimer, D. M. (2014). Show me the numbers: Precision as a cue to others' confidence. *Psychological Science*, *25*, 633–635.

Langer, E. J., Blank, A., & Chanowitz, B. (1978). The mindlessness of ostensibly thoughtful action: The role of "placebic" information in interpersonal interaction. *Journal of Personality and Social Psychology*, *36*, 635–642.

Loschelder, D. D., Stuppi, J., & Trötschel, R. (2013). "€14,875?!": Precision boosts the anchoring potency of first offers. *Social Psychological & Personality Science*, *5*, 491–499.

Loschelder, D. D., Swaab, R. I., Trötschel, R., & Galinsky, A. D. (2014). The first-mover disadvantage: The folly of revealing compatible preferences. *Psychological Science*, *25*, 954–962.

Loschelder, D. D., Trötschel, R., Swaab, R. I., Friese, M., & Galinsky, A. D. (2016). The information-anchoring model of first offers: When and why moving first helps versus hurts negotiators. *Journal of Applied Psychology*, *101*, 995–1012.

Maaravi, Y., Ganzach, Y., & Pazy, A. (2011). Negotiation as a form of persuasion: Arguments in first offers. *Journal of Personality and Social Psychology*, *101*, 245–255.

Mason, M., Lee, A., Wiley, E., & Ames, D. (2013). Precise offers are potent anchors: Conciliatory counteroffers and attributions of knowledge in negotiations. *Journal of Experimental Social Psychology*, *49*, 759–763.

Mussweiler, T., Strack, F., & Pfeiffer, T. (2000). Overcoming the inevitable anchoring effect: Considering the opposite compensates for selective accessibility. *Personality and Social Psychology Bulletin*, *26*, 1142–1150.

Neale, M. A. (1997). *Teaching materials for negotiations and decision making*. Retrieved from http://www.kellogg.northwestern.edu/research/drrc/teaching-materials.aspx

Northcraft, G. B., & Neale, M. A. (1987). Experts, amateurs, and real estate: An anchoring-and-adjustment perspective on property pricing decisions. *Organizational Behavior and Human Decision Processes*, *39*, 84–97.

Schaerer, M., Swaab, R. I., & Galinsky, A. D. (2015). Anchors weigh more than power: Why absolute powerlessness liberates negotiators to achieve better outcomes. *Psychological Science*, *26*, 170–181.

Sigall, H., & Mills, J. (1998). Measures of independent variables and mediators are useful in social psychology experiments: But are they necessary? *Personality and Social Psychology Review*, *2*, 218–226.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, *22*, 1359–1366.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, *89*, 845–851.

Thomas, M., Simon, D. H., & Kadiyali, V. (2010). The price precision effect: Evidence from laboratory and market data. *Marketing Science*, *29*, 175–190.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*, 1124–1131.

Van Bavel, J. J., Mende-Siedlecki, P., Brady, W. J., & Reinero, D. A. (2016). Contextual sensitivity in scientific reproducibility.

Proceedings of the National Academy of Sciences, USA, *113*, 6454–6459.

Waenke, M. (2007). What is said and what is meant: Conversational implicatures in natural conversations, research settings, media and advertising. In K. Fiedler (Ed.), *Frontiers in social psychology: Social communication* (pp. 223–255). New York, NY: Psychology Press.

Wright, W. F., & Anderson, U. (1989). Effects of situation familiarity and financial incentives on use of the anchoring and adjustment heuristic for probability assessment. *Organizational Behavior and Human Decision Processes*, *44*, 68–82.

Zhang, Y., & Schwarz, N. (2012). How and why 1 year differs from 365 days: A conversational logic analysis of inferences from the granularity of quantitative expressions. *Journal of Consumer Research*, *39*, 248–259.

Zhang, Y., & Schwarz, N. (2013). The power of precise numbers: A conversational logic analysis. *Journal of Experimental Social Psychology*, *49*, 944–946.