Too Precise to Pursue:

How Precise First Offers Create Barriers-to-Entry in Negotiations and Markets

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Abstract

Prior research shows that precise first offers strongly anchor negotiation outcomes. This precision advantage, however, has been documented only when the parties were already in a negotiation. We introduce the concept of *negotiation entry*, i.e., the decision to enter a negotiation with a particular party. We predict that precise prices create barriers-to-entry, reducing a counterpart's likelihood of entering a negotiation. Six studies (N=1,580) and one archival analysis of real estate data (N=11,203) support our barrier-to-entry prediction: Potential negotiators were less likely to enter a negotiation with precise- versus round-offer makers. Using both statistical mediation and experimental-causal-chain analyses, we establish that perceptions of offer-maker inflexibility underlie the precision barrier. Furthermore, we demonstrate that the precision mechanism (inflexibility) is distinct from the extremity mechanism (being offended) that produces barriers-to-entry from extreme first offers. The discussion theoretically integrates research on first-offer precision and extremity by offering the Precision-Extremity Model of First Offers.

Keywords: anchor precision; negotiation entry; barriers-to-entry; first offers; social attribution; decision making

A few years ago, one of us recommended to a colleague who was selling his condominium that he might leverage recently published research on the anchoring effect of precise numbers. That research had found that precise offers (e.g., $4,998) serve as more potent anchors than round offers ($5,000; Janiszewski & Uy, 2008). Heeding this advice, our colleague listed his condominium for a very precise price—something like $454,963. Much to his and our chagrin, the condominium received no offers with this precise list price—not a single buyer expressed an interest in it, despite the fact that the list price was well within market value at the time.

At first blush, the colleague's poor outcome seems surprising given the growing body of evidence that precise offers can secure a distributive advantage in negotiations (Backus, Blake, & Tadelis, 2017; Loschelder, Stuppi, & Troetschel, 2014; Mason, Lee, Wiley, & Ames, 2013). This literature suggests that precise first offers—those with fewer trailing zeros (e.g., $454,963)—produce better outcomes than round offers (e.g., $450,000) because precise offers serve as particularly potent anchors. That is, recipients make counteroffers that are less adjusted from precise first offers as compared to round first offers.

Prior studies that have demonstrated a precision advantage have operated under the premise that the involved parties have already decided to negotiate. In many real-world negotiations, however, first offers are presented *before* the involved parties agree to negotiate—first offers precede negotiation entry. Individuals choose whether to enter a negotiation only after considering the first offer (e.g., a list price). Just consider the growing number of online marketplaces (e.g., eBay, Craigslist, Zillow), where buyers can evaluate numerous offers before entering a negotiation with one of the many available sellers.

We expect that the discrepancy between our colleague's experience and the evidence for a precision advantage can be reconciled by considering the concept of negotiation entry. The current research proposes that precision does not always produce a negotiation advantage. Instead, first-offer precision can create a *barrier-to-entry*[1], reducing individuals' willingness to enter a negotiation. We propose that social attribution processes account for this barrier-to-entry effect. Overall, our core proposition is that offer precision affects negotiation entry, with precise first offers creating a barrier-to-entry because recipients infer that precise-offer makers are more inflexible.

We begin by introducing a new construct: negotiation entry. After reviewing the literatures on anchoring, first offers, and anchor precision, we articulate the theoretical reasoning behind our prediction that precise offers can reduce negotiation entry. Furthermore, we articulate why the mechanism behind the barrier-to-entry created by first-offer precision differs from the barrier-to-entry mechanism caused by ambitious first offers (i.e., anchor extremity). We then present six studies and an archival analysis of real-world data that test the empirical foundation of our barrier-to-entry effect of price precision. In the discussion, we introduce the Precision-Extremity Model of First Offers (*PEMFO*), which theoretically integrates the distinct effects of anchor precision and extremity across current and past findings (see Figure 1).

Negotiation Entry

One notable aspect of past research on negotiations is that the literature has predominantly focused on the effect of first offers *after* a negotiation has commenced (e.g.,

[1] The term barrier-to-entry comes from the economics literature and has been traditionally used to describe strategic actions taken by firms to prevent new competitors from easily entering an industry (Bain, 1956; Demsetz, 1982). Ku, Galinsky, & Murnighan (2006) extended the application of the term to sellers who unwittingly prevent potential buyers from entering an auction by listing starting prices that are too high. Similarly, we consider how first-offer precision can unwittingly prevent potential negotiators from making counteroffers and entering a negotiation.

individuals had already begun interacting). However, prior work has paid very little attention to the pre-negotiation phase leading up to the decision to enter a negotiation. We view negotiation entry as a decision to enter a negotiation with a particular offer maker. Specifically, adopting the definition of a negotiation as "a discussion between two or more parties with the apparent aim of resolving a divergence of interests" (Pruitt & Carnevale, 1993, p. 2), we define negotiation entry as *the decision to engage in an exchange (e.g., dialogue, numeric offers) with a particular party with the intention to ask for something other than the stated offer*. Negotiation entry is distinct from *negotiation impasse*, when one person enters into a negotiation but walks away from the table without consummating a deal (Tripp & Sondak, 1992; Yip & Schweinsberg, 2017). Whereas an impasse is one of many potential outcomes once a negotiation has begun, negotiation entry is the decision to enter into a negotiation in the first place.

There is an existing term in the literature that relates to negotiation entry: *negotiation initiation.* We chose to use the term negotiation entry for the following reasons. First, negotiation initiation has only been studied in a very specific context: A person has an offer and their choice is to accept that offer or to negotiate and ask for more. Sometimes this has been studied after a task has already been completed and a person receives their payment (Small, Gelfand, Babcock, & Gettman, 2007); other times it has been studied in surveys that ask people in current jobs whether they accepted the offer from their current employer or asked for more compensation (Babcock & Laschever, 2009). Negotiation entry, on the other hand, refers to someone's decision whether and with whom to negotiate in a marketplace. In considering the best term, we chose negotiation entry because it is more general than negotiation initiation as it can include a current relationship (similar to how negotiation initiation has been studied) but extends beyond it.

Furthermore, its roots in economics capture the market context and extend it to consumer contexts and decision making more generally.

We believe it is critical to identify the factors that influence negotiation entry. After all, the psychological processes at play when individuals evaluate the actions of a negotiation partner may be distinct from those processes at play when individuals are evaluating the actions of a *potential* negotiation partner. In fact, discussing the processes that occur during a negotiation is moot without negotiation entry. Examining the factors that shape negotiation entry is necessary to understand how people decide whom to negotiate with and whether to negotiate at all.

Anchoring in Negotiations: First-Offer Extremity

Study after study has established that first offers matter in negotiations (see Galinsky, Ku, & Mussweiler, 2009 for a review). First offers are highly predictive of deal terms, often accounting for 30-50% of the variance in final outcomes (Galinsky, Ku, & Mussweiler, 2009; Loschelder, Weber, & Friese 2018). Overall, past findings demonstrate that more ambitious first offers produce more favorable outcomes for oneself compared to less ambitious first offers (see Mechanisms 1 and 2 in Figure 1).

However, making the first offer is not always advantageous (see Loschelder, Swaab, Troetschel, & Galinsky, 2014; Loschelder, Troetschel, Swaab, Friese, & Galinsky, 2016 for cases when moving first can backfire). Studies on offer extremity have found that overly ambitious first offers can offend recipients, motivating people to walk away from a negotiation (i.e., produce impasses; Ames & Mason, 2015; Schweinsberg, Ku, Wang, & Pillutla, 2012). For example, in a study involving renters and landlords in a simulated marketplace, renters who received extreme first offers, compared to moderate first offers, were more likely to walk away from the negotiation because they were offended by the offer (Schweinsberg et al., 2012; see

Mechanism 3 in Figure 1). We refer to the link between extreme first offers and impasses as the "extremity-impasse link" throughout the rest of the paper.

Overall, research suggests that the magnitude of the first offer has a strong effect on both financial and relational outcomes. Extreme first offers produce a distributive advantage but can also lead to impasses by offending negotiators.

The Upsides of First-Offer Precision: An Anchoring Advantage

Although the vast majority of research has explored the role of anchor extremity, recent research has started to examine the impact of anchor precision. This research has consistently demonstrated that precise numbers are more potent anchors than round numbers (Backus et al., 2017; Janiszewski & Uy, 2008; Loschelder, Friese, & Trötschel, 2016; Mason et al., 2013). Across different labs, different continents, and different decision domains (e.g., negotiation, consumer choice, price judgment), researchers have found that first-offer recipients make smaller adjustments away from precise as compared to round anchors (e.g., when making a counteroffer; for a meta-analysis and theoretical review see Loschelder, et al., 2018). Importantly, this adjustment difference translates into more favorable deal terms for precise- than for round-offer makers.

Researchers have proposed cognitive and social mechanisms for this precision effect (Janiszewsky & Uy, 2008; Thomas, Simon & Kadiyali, 2010; Zhang & Schwarz, 2013). The most prevalent mechanism involves the social inferences that people make about precise- versus round-offer makers (Loschelder et al., 2014; 2016a; 2017; Mason et al., 2013; Zhang & Schwarz, 2013). This social attribution account of anchor precision posits that recipients attribute more knowledge and competence to negotiators who make precise-first offers compared to those who make round-first offers (see Mechanism 4 in Figure 1). For example, Mason and colleagues

(2013) found that precise-opening negotiators were perceived as more reasoned and informed than round-opening negotiators. They argue that precise-opening negotiators are perceived as more credible and that credible numbers have a stronger anchoring effect than less plausible ones (Chapman & Johnson, 1994; Epley & Gilovich, 2001). Similarly, Loschelder and colleagues (2014; 2017) found that offer makers were seen as more competent when their offer was precise versus round. These attribution findings dovetail with those obtained outside of negotiation contexts. For instance, speakers who use more precisely expressed estimates (e.g., "seven days" versus "one week") are assumed to be more credible and confident about their numerical estimates than those who use less granular expressions (Jerez-Fernandez, Angulo, & Oppenheimer, 2014; Zhang & Schwarz, 2012; 2013).

Overall, anchor precision leads to a bargaining advantage. Because precise offers are seen as more knowledgeable and competent, offer recipients make smaller adjustments when formulating a counteroffer, which ultimately yields better deal terms to precise- as compared to round-offer makers. The current research is also concerned with social attribution processes but suggest that precise first offers not only produce positive anchoring effects but can also lead to a novel downside: the barrier-to-entry effect.

The Downsides of First-Offer Precision: Social Attribution Processes

All research on anchor precision published through November 2016 found that first-offer precision has uniformly positive outcomes. Recently, researchers discovered a too-much-precision effect for negotiation experts exposed to very high levels of precision (Loschelder et al., 2016a). For example, increasing the price precision for a diamond necklace from $180,000 to $178,250 increased the anchoring potency for both amateurs and experts. However, going from

$178,250 to $178,263.70 increased the anchoring potency for amateurs but too much precision *backfired* when offer recipients were experts.

Notably, this too-much-precision effect was driven by social attribution processes: Extreme precision backfired because offer-receiving experts saw too much precision as reflecting less competence. Zhang and Schwarz (2012, 2013) also established instances when anchor precision had little to no effect: when an opposing communicator was untrustworthy or uncooperative, and when a precisely expressed estimate was attributed to a computer that determined the precise number.

The Present Hypothesis: Precise Anchors Create a Barrier-to-Entry by Producing Social Attributions of Inflexibility

To date, all studies examining the underlying mechanisms of anchor precision have focused on the social attribution of knowledge and competence (Mechanism 4 in Figure 1). The present research develops and empirically tests a theoretical model that integrates previous precision findings with a novel social attribution process and a novel effect on negotiation entry. Our core hypothesis is that first-offer precision will create a barrier-to-entry, decreasing the probability that potential negotiators enter a negotiation with the offer maker. We propose that this barrier-to-entry will occur because precision affects another social attribution that is key to negotiations: judgments of offer-maker inflexibility (Mechanism 5 in Figure 1). Specifically, we propose that negotiators who make first offers or list prices with greater precision will be perceived as more inflexible than offer makers who make round ones and perceptions of inflexibility will account for the precision barrier-to-entry.

To illustrate our hypotheses, consider the case of list prices: Offer makers who use precise list prices may convey the impression that they intend to make smaller concessions than

offer makers who start with round list prices. A precise offer may signal that the offer maker is already close to the lowest price they are willing to accept (i.e., their reservation price) and thus unwilling to adjust much farther below the precisely-listed price. Consequently, the impression of inflexibility that precise-offer makers signal, even unintentionally, might deter offer recipients from entering into a negotiation in the first place.

These perceptions of inflexibility that produce the precision barrier-to-entry effect may be grounded in the past experiences of negotiators. Recent work suggests that precise-offer makers are indeed more inflexible. For example, Loschelder and colleagues (2017) demonstrated that offer makers anticipate having to make smaller concessions (i.e., they become less flexible) when they make precise offers compared to round offers. Likewise, Backus, Blake, and Tadelis (2017) established that sellers use round versus precise numbers to signal their willingness to lower prices in order to sell faster. This led us to predict that offer recipients may also (correctly) infer that precise-offer makers are inflexible.

To our knowledge, no past work has directly examined the effect of inflexibility perceptions on negotiation outcomes. However, research on competitive bargaining behavior lends support to our prediction that perceptions of inflexibility will produce adverse outcomes in negotiations. Competitive bargaining is characterized by behaviors aimed at coercing concessions from the other party, including threats, persuasive arguments, and inflexible behaviors (Clopton, 1984; Pruitt & Lewis, 1977). Importantly, evidence suggests that these forms of competitive behavior cause more impasses and reduce the chances of reaching mutually beneficial solutions (Clopton, 1984; Druckman, 1971). We, thus, predicted perceptions of inflexibility would deter individuals from negotiating with a precise-offer maker because they will be viewed as an adverse negotiation partner. Overall, we propose that the attribution of

inflexibility will have important consequences on a crucial but understudied negotiation outcome: negotiation entry.

Overview and Contributions

We tested our hypothesized barrier-to-entry effect of first-offer precision in six studies. In Study 1, we examined buyers' likelihood of entering a negotiation with precise- versus round-offer makers; this study also measured recipients' perceptions of the offer-maker's inflexibility. Study 2 sought evidence that increasingly precise numbers produce an increasingly stronger barrier-to-entry. Study 3 replicated the precision barrier-to-entry effect in a more complex marketplace setting where several potential interaction partners were available; this experiment also manipulated first-offer extremity in addition to first-offer precision, thereby allowing us to test whether the mechanism underlying the *precision* barrier-to-entry effect (attribution of inflexibility) is distinct from the mechanism underlying the *extremity*-impasse link (being offended). Studies 4a and 4b demonstrate that attribution of inflexibility is the mechanism underlying the precision barrier-to-entry effect based on both a correlational and a causal approach: Study 4a measured the mediator (measurement-of-mediation; Spencer, Zanna, & Fong, 2005; see Baron & Kenny, 1986), and Study 4b experimentally manipulated the mediator (experimental-causal-chain approach; Spencer et al., 2005). In Study 5, we extend our measure of inflexibility to examine whether the consequences of offer precision stretch beyond perceptions of how flexible the offer maker will be on their initial offer, to more general judgments about the offer maker. Furthermore, we examine whether giving offer recipients the option to accept an offer, in addition to the options to negotiate or reject an offer, affects the precision barrier-to-entry effect. Finally, Study 6 provides evidence of the precision barrier-to-

entry effect in real-world markets by exploring the relationship between list price precision and real estate transactions.[2]

The current paper contributes to and expands the current literature in several ways. First, we examine a new and vastly under-researched outcome in the literature: negotiation entry. By shedding light on the pre-negotiation phase, we expand existing scholarship on negotiations to provide a more holistic understanding of the negotiation process, including negotiations that may never take place. Second, we establish a novel precision *dis*advantage by documenting how precise offers can backfire in negotiations and markets. Although offer makers may gain a distributive advantage by making precise rather than round offers once an exchange of offers has commenced, we present evidence that precise offers can deter potential counterparts from entering a negotiation in the first place—that is, offer precision creates a barrier-to-entry. Third, we illuminate a previously undiscovered social attribution process that results from anchor precision: attribution of inflexibility. Importantly, this mechanism is distinct from (a) attributions of knowledge or competence, which have explained past precision anchoring advantages, and (b) feeling offended, which has explained the extremity-impasse link (Schweinsberg et al., 2012). Fourth, we develop and present the Precision-Extremity Model of First Offers (*PEMFO*) that theoretically integrates and predicts when and why first offers exert a negotiation advantage versus disadvantage. Figure 1 provides an overview of this model (see General Discussion for details). Finally, on a practical level, understanding when, how, and why precise offers help versus hurt enables those that are part of a joint decision-making process such as negotiators, marketers, traders, and price makers, to better strategize their approach in a variety of bargaining contexts.

[2] We confirm that we have reported all measures and conditions and all data exclusions in our studies.

Study 1: Entering a Negotiation with a Round versus a Precise First Offer

Study 1 examined whether precise first offers create a stronger barrier-to-entry than round first offers. We further tested whether sellers who open with a precise price are perceived as less flexible and as having less room to concede than sellers who offer a round price.

Method

Sample size analysis. To determine adequately-powered sample sizes for Study 1 and all of the subsequent experiments, we conducted sample size analyses using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). First, we generated an effect size estimate based on published literature of the extremity-impasse link (i.e., Ames & Mason, 2015, Study 5; Schweinsberg et al., 2012). This led to an average effect size estimate of Cohen's $d = 0.73$ ($f = 0.37$). We used this effect size as a foundation for the precision barrier-to-entry effect and determined the minimally required sample size to attain a power of $1\text{-}\beta = 0.95$ for all subsequent studies (G*Power parameters: $\alpha = .05$, $d = 0.73$, $OR = 3.79$, $f = 0.37$, allocation ratio = 1). All studies met the minimally required sample size for the observed effect ($1\text{-}\beta = 0.95$), and several exceeded the minimum requirement markedly.

Participants and design. Two hundred and one master of business administration (MBA) students (69 females; $M_{age} = 27.60$, $SD_{age} = 2.99$) at a business school in the United States participated in an online study that was conducted before the first day of class.

Materials and procedure. Participants read a scenario that described a negotiation over the price of an event space. Participants were tasked with finding an event space for a work function within a budget of $18,000. Participants learned that they could meet with only one coordinator of the two event spaces they had identified due to time constraints.

One coordinator, whose offer was displayed on the left half of participants' screens, offered the event space at a precise number of $21,947. The other coordinator, whose offer was displayed on the right half of the screen, offered a slightly higher price with a round number of $22,000. We chose the precise number to be lower as a conservative test for our predictions—traditional economic theory predicts a buyer should prefer the precise, lower number over the round but higher offer (Varian, 1992). Participants learned that, "The two event spaces are very similar in most aspects, and prices from both renters are in line with the average price for similar spaces in the area."

Negotiation entry. Immediately following the scenario, we measured negotiation entry by asking participants to choose which event space coordinator they preferred to negotiate with.

Inflexibility. We measured inflexibility in two ways: First, by asking participants to indicate how inflexible they perceived each coordinator to be on a seven-point scale ranging from 1 = *not at all inflexible* to 7 = *very inflexible*. Second, by measuring participants' perceptions of the offer-makers' reservation prices (i.e., the lowest price in U.S. dollars that each coordinator would be willing to accept before walking away from the negotiation); to the extent that offer makers are perceived as being unwilling to make large adjustments to their initial offer, they should be seen as having a high reservation price.

Results

Negotiation entry. Consistent with the prediction that precise first offers create a barrier-to-entry, participants were significantly less likely to enter a negotiation with the seller making a precise offer (M = 18.4%, N = 37) than with the seller making a round offer (M = 81.6%, N = 164), $\chi^2(1, N = 201) = 80.24$, $p < .001$. This was true despite the precise offer being lower and, thus, rationally more favorable to buyers than the round offer.

Inflexibility. As predicted, the precise-offer maker was perceived as more inflexible (M = 4.54, SD = 1.58) than the round-offer maker (M = 3.38, SD = 1.49), $t(200) = 5.98$, $p < .001$, d = .42. We also found that the precise-offer maker was perceived to have a higher reservation price (M = \$20,469.84, SD = \$1,460.61) than the round-offer maker (M = \$19,109.62, SD = \$1,461.42), $t(200) = 11.77$, $p < .001$, d = .83, meaning that participants thought the precise-offer maker was less likely to make concessions.

We next tested whether the difference in participants' inflexibility ratings for the precise-offer maker and the round-offer maker would predict their negotiation entry preference. A binary logistic regression revealed that the difference in inflexibility ratings predicted the likelihood of participants entering a negotiation with the precise-offer maker (b = -.290, SE = .070, Wald z = 17.17, $p < .001$). Participants were increasingly less likely to enter a negotiation with the precise- over the round-offer maker, the more they perceived the precise-offer maker to be more inflexible than the round-offer maker.[3]

Discussion

Study 1 provides initial evidence for the barrier-to-entry effect of precise offers. Participants were less willing to enter a negotiation with precise-offer makers, perceived them as more inflexible, and assumed they had higher reservation prices (i.e., less room to concede) than round-offer makers. All of these effects emerged despite the fact that the precise price was lower and, therefore, economically more favorable to our buying participants than the round price.

However, one could criticize that the visual presentation of the offers (round offer on the left, precise offer on the right) explains participants' preference for negotiating with round-offer

[3] Note that the design of Study 1 hinders us from conducting traditional mediation analyses. Studies 4a and 4b systematically test our mediation hypothesis both by measuring the mediator (Study 4a) and by manipulating it directly (Study 4b).

makers. Previous research shows that people prefer the first item they are presented with (Carney & Banaji, 2012; Mantonakis, Roder, Lesschaeve, & Hastie, 2009), and our mostly American participants read from left to right. Thus, to ensure that price precision was not confounded with presentation (i.e., option order), the remainder of our experiments counterbalanced the presentation order—the precise offer was presented on the left for half of the participants and on the right for the other half.

Study 2: Increasing Precision, Increasing Barrier

Study 2 sought to extend Study 1 by testing if individuals' willingness to enter a negotiation decreases with an increasing level of price precision. We predicted that participants' aversion to precise-offer makers would increase as the list price became more precise (i.e., as the number of trailing zeroes decreased; Dehaene & Mehler, 1992). Critically, we predicted that this pattern would emerge even as list prices continuously declined in value and, thus, should have become increasingly more appealing from a purely economic standpoint.

Method

Participants and design. A total of 440 MBA students (165 females; $M_{age} = 27.51$, $SD_{age} = 2.14$) at a business school in the United States participated as part of a decision-making exercise prior to the first day of class.

The study had two between-participants factors. First, we varied the offer precision level (*3-digit, 4-digit, 5-digit, 6-digit precision*) to test whether participants' likelihood of entering a negotiation decreased as the list price precision increased. We also varied the scenario (*condominium purchase* vs. *apartment rental*) to demonstrate that the precision barrier-to-entry generalizes across different settings and different absolute price magnitudes. Participants were

randomly assigned to one of the four precision conditions and to either the condominium purchase or the apartment rental scenario.

Precision and scenario manipulation. In the *condominium purchase* scenario, participants imagined that they were looking to buy a condominium and that they had identified two potential landlords selling condos; both condominiums were similar in size and quality. As with Study 1, participants learned that they could only negotiate with one of the two landlords due to time constraints. Across all precision conditions, one landlord offered a higher but round price ($350,000; *2-digit control*). The other landlord offered a lower but more precise price. This price varied in precision between participants (*3-digit precision:* $349,000 vs. *4-digit precision:* $348,900 vs. *5-digit precision:* $348,890 vs. *6-digit precision:* $348,889). Thus, one fourth of the participants chose between a condominium listed at $350,000 and $349,000 (n=55), between $350,000 and $348,900 (n=56), between $350,000 and $348,890 (n=54), and between $350,000 and $348,889 (n=53).

The *apartment rental* scenario was identical to the condominium purchase scenario, with the exception that absolute rental prices were of smaller magnitude. Participants chose between a higher but round offer ($3,500; *2-digit control*) and a precise offer (*3-digit precision:* $3,490 vs. *4-digit precision* $3,489 vs. *5-digit precision:* $3,488.90 vs. *6-digit precision:* $3,488.89). Paralleling the condominium scenario, one fourth of the participants chose between an apartment listed at $3,500 and $3,490 (n=56), between $3,500 and $3,489 (n=55), between $3,500 and $3,488.90 (n=54), and between $3,500 and $3,488.89 (n=57).

Across conditions, both housing units were displayed side-by-side and in counterbalanced order, each with a brief description of the unit and its list price. The descriptions of the alternatives were counterbalanced across conditions such that a given description (e.g.,

"newly renovated, has a dishwasher, and includes WiFi") was paired with a precise alternative for half of the participants and with a round alternative for the other half of the participants.

Negotiation entry. Participants were asked to indicate with whom they would like to enter a negotiation with. This served as our primary dependent variable.

Results

Scenario type (*condominium purchase* vs. *apartment rental*) did not moderate the subsequent precision effects (b = .014, SE = .190, Wald z = .006, p = .94), thus, we collapsed across the two scenarios. Consistent with the proposition that precise offers create a barrier-to-entry, we observed that participants were overall significantly less likely to enter a negotiation with a precise-offer maker (M = 43.4%) compared to a round-offer maker (M = 56.6%), $\chi^2(1, N = 440) = 7.65$, p = .006.

We also observed that the probability of participants choosing to enter a negotiation with the precise-offer maker decreased as the precision of the offer increased. A binary logistic regression showed a significant linear trend for first-offer precision: The odds of entering a negotiation with the offer maker decreased by 1.32 for each level of increase in precision (b = -.280, SE = .094, Wald z = 8.785, p = .003). While 53.1% chose to negotiate with the precise-offer maker in the *3-digit precision* condition, this rate dropped to 46.9% (*4-digit precision* condition), 37.0% (*5-digit precision* condition), and 36.3% (*6-digit precision* condition).

Discussion

Study 2 demonstrates that increasingly precise first offers create increasingly steeper barriers-to-entry. As the precision of the list price increased, the probability of a buyer entering a negotiation decreased. This linear trend emerged even though list prices decreased in value as they became more precise and were thus more economically attractive for buyers/renters.

Study 3: Offer Precision versus Offer Extremity

Study 3 sought to make three empirical contributions: First, we attempted to replicate the precision-barrier effect in a market setting with more than two potential counterparts. Hence, Study 3 used a marketplace scenario with a total of ten possible counterparts. Second, we sought to establish that precise offers create a barrier-to-entry not just for buyers and renters but also for sellers (see Troetschel, Loschelder, Hoehne, & Majer, 2015). In contrast to Studies 1 and 2, participants assumed the seller role in Study 3 and selected a buyer to negotiate with. Third, we manipulated first-offer extremity in addition, and orthogonal, to first-offer precision, predicting that precision and extremity create independent and separate barriers-to-entry (see *PEMFO* model in Figure 1). Past work has found that extreme offers heighten the risk for non-agreements because they tend to offend their recipients (Schweinsberg et al., 2012; Mechanism 3 in Figure 1). We expected to find that this offense explanation would account for the extremity barrier-to-entry effect. However, we predicted that offense would not account for the precision barrier-to-entry.

Methods

Participants and design. One hundred and twenty-three participants were recruited on Amazon's Mechanical Turk. Seven participants were excluded for failing at least one of two attention checks (e.g., asking participants to report the opponent's first offer; see Oppenheimer, Meyvis, & Davidenko, 2009). The final sample constituted 116 participants (58 females; M_{age} = 31.26, SD_{age} = 9.39).

The study had a 2 (first-offer precision: *round* vs. *precise*) × 2 (first-offer magnitude: *moderate* vs. *extreme*) between-participants design.

Materials and procedures. We adapted an established marketplace scenario, in which participants negotiated as landlords over the rent for a studio apartment in Chicago (see Schweinsberg et al., 2012). Participants entered a virtual waiting room and were informed the study would begin once 20 participants had logged on. A counter ostensibly indicated the number of other participants that had logged on and the study began once the counter reached 20 (after approximately 20 seconds of log-in simulations). All participants were (allegedly at random) assigned to the role of landlords. Participants learned that, given the apartment's location, size and amenities, they could expect to rent the apartment out for around $935 – $1,525 per month. Participants then selected one out of ten potential renters, who were in fact computer-simulated.

Precision manipulation. The first offer that participants received was based on random assignment to two factors: We manipulated the extremity (*moderate* vs. *extreme*) and precision (*round* vs. *precise*) as between-participants factors, resulting in four different first offers: $1,100 (*moderate and round* first offer), $1,115 (*moderate and precise* first offer), $600 (*extreme and round* first offer), and $615 (*extreme and precise* first offer). Critically, both precise first offers were slightly higher—and thus economically more attractive to participants in the landlord role—than the respective round offers.

Negotiation entry. After receiving one of the four first offers from their simulated counterpart, participants decided whether to enter a negotiation with their current counterpart or seek another renter from the marketplace.

Offense mediator. Participants reported how offended they were by the first offer (e.g., "How offensive is the offer?"; "How angry are you with the renter's offer?"; "How irritated are you by the offer?"; "How insulting is the offer?"; "How much do you care about the

relationship?", reverse-coded; α = .87[4]). All items were accompanied by seven-point scales ranging from 1 = *not at all* to 7 = *very much.*

Results

Negotiation entry. A binary logistic regression showed a main effect of first-offer precision (*b* = -1.21, *SE* = .63, Wald *z* = 3.71, *p* = .054). Precise first offers more than doubled the likelihood of participants choosing not to enter the negotiation (*M* = 18.6%) compared to a round first offer (*M* = 7.0%). There was also a main effect of first-offer extremity (*b* = -1.25, *SE* = .62, Wald *z* = 3.94, *p* = .047): In line with previous research (Schweinsberg et al., 2012), extreme first offers nearly tripled the likelihood of participants choosing not to enter the negotiation (*M* = 19.0%) compared to moderate first offers (*M* = 6.9%). The interaction effect was not significant (*b* = 0.26, *SE* = 1.39, Wald *z* = 0.34, *p* = .85). The combination of the two main effects led landlords in the *extreme and precise* condition to walk away from the bargaining table far more often (*M* = 28.6%) than in any of the other three conditions (*M* = 8.0%), (*b* = .38, *SE* = .14, Wald *z* = 7.11, *p* = .008).

Mediation by offense. We tested whether participants perceiving the offer maker as offensive would explain the barrier-to-entry effect for extreme and/or precise first offers. A process analysis using a bootstrapping procedure with 5,000 iterations (see Hayes, 2013, model 4) revealed that the indirect effect of extremity on the barrier-to-entry through offensiveness was significant, *b* = .83, *SE* = .49, $CI_{95\%}$ [+0.05, +1.91]. That is, extreme first offers led people to walk away from the bargaining table because they were offended by the extremity of those

[4] In addition to the present items measuring participants' offense reactions, we collected exploratory data for a related project, asking participants to estimate the first-mover's competence (e.g., Mason et al., 2013), fairness, respectfulness, and plausibility (e.g., Loschelder et al., 2014).

offers. In contrast, the indirect effect of the precision barrier-to-entry through participants' offense ratings was not significant, $b = .18$, $SE = .19$, $CI_{95\%}$ [-0.07, +0.72].

Discussion

Study 3 found that extreme and precise offers independently create barriers-to-entry. However, the two barriers seem to be caused by different psychological mechanisms. Whereas the extremity barrier was explained by elevated feelings of offense from offer recipients, this mechanism did not explain our novel precision barrier-to-entry. We next turn to the mechanism—attributions of inflexibility—that we propose underlies the precision barrier-to-entry (see Mechanism 5 in Figure 1).

Studies 4a and 4b: Mediation Analyses of Inflexibility through Correlational and Experimental Approaches

Studies 4a and 4b employed correlational and experimental approaches to establish the role of inflexibility in driving the precision barrier-to-entry effect (Spencer et al., 2005; see Mechanism 5 in Figure 1 for mediation path). Specifically, Study 4a manipulated offer precision and tested whether the precision to barriers-to-entry link is statistically mediated by perceptions of inflexibility (*measurement-of-mediation*; Spencer et al., 2005). In Study 4b, we adopted an *experimental-causal-chain* approach to demonstrate mediation by directly manipulating the mediator—perceptions of inflexibility—and testing its causal effect on negotiation entry. It is often considered the gold standard to combine statistical measurement and experimental mediation approaches when providing comprehensive evidence for a psychological process (see Sigall & Mills, 1998; Spencer et al., 2005).

4a: Methods

Participants and design. A total of 564 MBA students at a business school in the United States participated as part of a decision-making exercise prior to the first day of class. Ten students were excluded for failing to pay attention to the scenario (i.e., made responses that were beyond the bargaining limits stated in the instructions; see Ames & Mason, 2015), resulting in a sample of 554 individuals (220 females; M_{age} = 27.96, SD_{age} = 2.47).

The study had a single between-participants factor: first-offer precision (*round* vs. *precise*).

Materials and procedure. We used a simplified scenario version of the interactive marketplace paradigm utilized in Study 3. All participants played the role of a landlord negotiating the rental price of their apartment with an interested renter. The other details of Studies 4a and 4b were largely identical to that of Study 3, aside from the adjustments made to better fit the geographical characteristics of the study location (New York). Specifically, participants were told that they could expect to rent out their apartment for around $2,000 – $2,500 per month.

Precision manipulation. Participants randomly received one of two offers from their counterpart: $2,100 (*round* offer) or $2,117.53 (*precise* offer). In line with previous studies, the offer value was higher—and therefore more attractive to the participating landlords—in the precise than in the round condition.

Inflexibility mediator. Participants answered three questions that measured their perception of the offer-maker's inflexibility. They were asked (1) how reluctant they thought their counterpart was to adjust from their initial offer ("reluctant"; seven-point scale ranging from 1 = *not at all reluctant* to 7 = *very reluctant*), (2) how much (in dollars) they thought the renter would adjust away from their offer ("adjustment"), and (3) the amount of total concessions

(in dollars) they thought the renter would be willing to make ("concession"; see Study 1). Total concessions were computed by subtracting the renter's offer ($2,100 in the round offer condition and $2,117.53 in the precise offer condition) from participants' estimation of the highest price the renter would be willing to pay (i.e., perceived reservation price). We created a composite inflexibility scale by computing *z*-scores for each of these three measures and reverse-coding the standardized "adjustment" and "concession" values. As a result, higher scores on the composite inflexibility measure indicate perceptions of more inflexibility (Cronbach's $\alpha = .80$).

Negotiation entry. As our main dependent variable, participants chose whether or not to enter a negotiation with the current renter.

4a: Results

Negotiation entry. A binary logistic regression revealed an effect of first-offer precision on the likelihood of negotiation entry ($b = .66$, $SE = .17$, Wald $z = 14.60$, $p < .001$). Offer recipients were more likely to decline negotiating with a precise-offer maker ($M = 60.0\%$) than with a round-offer maker ($M = 43.8\%$).

Inflexibility. Participants perceived renters who made precise offers as more inflexible ($M = .37$, $SD = .88$) than renters who made round offers ($M = -.36$, $SD = .64$), $t(552) = 11.10$, $p < .001$, $d = .94$.

Mediation by inflexibility. As predicted, a bootstrap analysis with 5,000 resamples (Hayes, 2013, model 4; see Preacher & Hayes, 2004) revealed that participants' perception of the offer-maker's inflexibility statistically mediated the effect of offer precision on negotiation entry ($b = .76$, $SE = .12$, $CI_{95\%}$ [+0.55, +1.03]; CI excludes zero)[5].

[5] Each of the three measures that comprised the inflexibility composite score also independently mediated the precision barrier-to-entry effect when entered as a separate mediator ("reluctance": $b = .46$, $SE = .089$, $CI_{95\%}$ [+.31, +.65]; "adjustment": $b = .63$, $SE = .11$, $CI_{95\%}$ [+.43, +.87]; "concession": $b = .43$, $SE = .12$, $CI_{95\%}$ [+.21, +.69].

4b: Methods

Participants and design. One hundred and twenty-one participants were recruited on Amazon's Mechanical Turk. Fourteen participants were excluded for failing to pass the attention check question on what price the apartment was listed for in the scenario, leaving 107 individuals in the final sample (54 females; M_{age} = 34.34, SD_{age} = 9.76).

The study had a single between-participants factor: perception of offer-maker inflexibility (*flexible* vs. *inflexible*).

Materials and procedure. As in Study 4a, participants read an apartment rental scenario and expected to rent out their apartment for around $2,000 – $2,500 per month. Participants were then randomly assigned to one of two inflexibility conditions.

Inflexibility manipulation. Perceptions of inflexibility were manipulated by having participants read reviews about the renter with whom they were about to negotiate. These reviews came from three other landlords, who had supposedly negotiated with that renter before. The reviews either portrayed the renter as inflexible (i.e., "I found this renter to be very inflexible. They wouldn't move an inch."; "This renter does not make any concessions on price whatsoever."; "This renter is not willing to adjust their price."), or as flexible (i.e., "I found this renter to be quite flexible. They were accommodating."; "This renter makes some concessions on price."; "This renter is willing to adjust their price.").

Negotiation entry. As our primary dependent variable, participants chose whether to enter the negotiation with the current renter or not.

Inflexibility manipulation check. To assess whether our manipulation of perceived inflexibility was successful, we asked participants at the end of the survey how flexible the renter seemed, on a seven-point scale ranging from 1 = *not at all flexible* to 7 = *very flexible*.

4b: Results

Manipulation check. The manipulation of inflexibility was successful: Participants in the inflexible condition perceived their counterpart as less flexible (M = 1.31, SD = .78) than participants in the flexible condition (M = 6.11, SD = .79), $F(1, 105) = 1004.32$, $p < .001$.

Negotiation entry. A binary logistic regression revealed the predicted effect of perceptions of inflexibility on the likelihood of negotiation entry (b = 3.98, SE = .63, Wald z = 40.28, $p < .001$): Participants who perceived their counterpart as inflexible were more likely to walk away from the negotiation opportunity (M = 80.8%) than participants who perceived their counterpart as flexible (M = 7.3%).

Discussion

Study 4a used the correlational measurement-of-mediation approach to identify negotiators' perceptions of inflexibility as a mechanism linking precise offers to barriers-to-entry (see Figure 2). Study 4a thus provides causal evidence that precision elevates perceptions of inflexibility (i.e., the a-path in a mediation; see also Study 1). Study 4b completed the experimental-causal-chain by experimentally manipulating our proposed mediator (perceptions of inflexibility) and testing its effect on negotiation entry (i.e., the missing b-path). In combination, these studies demonstrate inflexibility as a mediating mechanism for the precision barrier-to-entry effect.

Study 5: Inflexible Negotiators

The purpose of Study 5 was twofold. First, we wanted to examine whether the precision of an offer affected attributions of inflexibility toward the offer-maker's approach more generally. This would suggest that the consequences of offer precision might extend beyond perceptions of the offer-maker's willingness to concede to more general judgments about the

offer maker. Second, we sought to examine whether giving offer recipients the option to accept an offer, in addition to the options to negotiate or reject an offer, would affect the precision barrier-to-entry effect observed in our previous studies. Yan and Pena-Marin (2017) recently found that negotiators are more likely to accept round (vs. precise) offers. Notably, these studies examine the role of offer precision *during* a negotiation (i.e., after a few back-and-forth exchanges have occurred), operating under the premise that the involved parties have already decided to negotiate. We examine how offer precision affects negotiation entry to gain a more comprehensive understanding of the precision-barrier effect.

We predicted offer recipients would choose to walk away from precise (vs. round) offers rather than accept or negotiate the offer. We further hypothesized that perceptions of the offer-maker's inflexibility would mediate the precision-barrier effect. Finally, we measured another social attribution that had previously been found to mediate the effects of offer precision on negotiator outcomes: negotiator knowledge. We predicted that this attribution would not mediate the effect on barriers to entry. That is, the inflexibility measure would uniquely explain the precision barrier-to-entry effect.

Methods

Participants and design. A total of 171 U.S. participants responded to an online survey for payment through Amazon's Mechanical Turk platform. Sixteen of these participants failed at least one of two attention check questions (e.g., with instructions to select a certain option on a scale). This left 155 U.S. adults in the final sample (74 females; M_{age} = 36.14, SD_{age} = 11.59). The experiment had a single between-participants factor: first-offer precision (*round* vs. *precise*).

Materials and procedure. The scenario was identical to that of Study 4a, in which participants played the role of a landlord looking to rent out their apartment to renters (expected rent of $2,000 – $2,500 per month).

Precision manipulation. Participants randomly received one of two offers from their counterpart: $2,100 (*round* offer) or $2,117.53 (*precise* offer). As in earlier studies, the offer value was slightly higher (i.e., more economically attractive to the participant) in the precise condition than in the round condition.

Negotiator inflexibility. Participants reported the extent to which they viewed the offer maker as inflexible ("This renter seems like an inflexible negotiator"; "I think it will be difficult to negotiate with this renter"; "I think this renter will be stubborn in their demands"; "This renter seems like a neurotic person"; "This renter seems like an unreasonable person"; $\alpha = .89$). All items were accompanied by seven-point scales ranging from 1 = *not at all* to 7 = *very much so*.

Negotiator knowledge. We asked participants to estimate the offer-maker's knowledge about the offer (e.g., Loschelder et al., 2016; Mason et al., 2013) at the end of the survey: "This renter spent quite a bit of time thinking about the apartment's worth in advance of making their offer", "This renter put considerable energy into researching the value of the apartment", "This renter had good reasons for the price they suggested" ($\alpha = .82$). All items were accompanied by seven-point scales ranging from 1 = *not at all* to 7 = *very much so*.

Negotiation entry. As our main dependent variable, participants chose one of three options: (1) accept this renter's offer ("accept"), (2) enter a negotiation with this renter ("negotiate"), or (3) walk away from this renter ("decline").

Results

Negotiation entry. A multinomial logistic regression revealed a main effect of first-offer precision on negotiation entry choices ($\chi^2 = 6.81$, $df = 2$, $p = .033$). We further conducted binary logistic regressions to assess the likelihood of participants choosing each of the three options. As predicted, participants were more likely to decline negotiating with a precise-offer maker (M = 47.5%) than a round-offer maker (M = 29.3%), $b = .78$, SE = 34., Wald $z = 5.31$, $p = .021$. However, they were not more (or less) likely to accept the offer from a precise-offer maker (M = 2.5%) compared to a round-offer maker (M = 8.0%), $b = -1.22$, $SE = .83$, Wald $z = 2.15$, $p = .14$.

Negotiator inflexibility. Participants perceived renters who made precise offers as more inflexible negotiators ($M = 4.29$, $SD = 1.52$) than renters who made round offers ($M = 3.14$, SD = 1.28), $t(153) = 5.09$, $p < .001$, $d = .82$.

Mediation by negotiator inflexibility but not by negotiator knowledge. A bootstrap analysis with 5,000 resamples (Hayes, 2013, model 4; see Preacher & Hayes, 2004) confirmed our prediction that participants' perception of the offer-maker's inflexibility statistically mediated the effect of offer precision on likelihood to decline ($b = .57$, $SE = .19$, $CI_{95\%}$ [+0.25, +1.03]; CI excludes zero). In contrast, participants' attribution of the offer-maker's knowledge did not statistically mediate the effect of offer precision on the likelihood of offer decline (b = .23, $SE = .16$, $CI_{95\%}$ [-0.051, +0.56]; CI includes zero). This effect suggests that the perception of inflexibility is a distinct explanation to the observed precision-barrier effect.

Discussion

Study 5 found that offer recipients perceive precise-offer makers as overall more inflexible negotiators than round-offer makers. We further demonstrated the robustness of the precision-barrier effect in that offer recipients were more likely to decline to enter a negotiation with a precise- (vs. round-) offer maker, even when they had the option of accepting the offer. In

fact, a mere 5% of participants chose to accept the offer, despite that both the precise and round offer fell well within their expected range of rent. Furthermore, the social attribution of knowledge that previous precision research has found did not mediate the effect of precision on negotiation entry. Taken together, our results suggest that precise-offer makers are seen as less flexible negotiators than round-offer makers, which uniquely deters offer recipients from entering the negotiation.

Study 6: Archival Real Estate Data

The purpose of Study 6 was to test whether the precision barrier-to-entry effect generalizes to real-world markets. To do so, we examined precision in the context of real estate transactions. We predicted precise list prices would act as a barrier-to-entry, increasing the likelihood that a seller has to relist their property at a reduced price. The introductory example about our condo-selling colleague illustrates this logic: Sellers who do not receive enough—or any—offers have to relist their property at a lower price.

Data and Methods

Data. We collected real estate data from *RedFin.com*, a public website that provides real estate search and sales services for homebuyers. *RedFin* funnels its data from the Multiple Listing Service (MLS), a clearinghouse where realtors list properties for sale. Importantly, *RedFin* provides real-time and detailed information on its current listings (e.g., original list price, current list price, square footage, age of property, most recent price reduction)[6]. This detailed information allowed us to directly test our hypothesis that price precision creates a barrier-to-

[6] *Redfin* notes on its website that it "… shows all MLS listings unless the seller requests that his listing not be published to the Internet. If a site is not run by a broker, it will often display only a partial set of listings, obtained through side-deals with individual brokers." This means that our data, which was directly downloaded from *Redfin*'s website, is exposed to the theoretical chance of some missing data. We, thus, account for a variety of relevant control variables to address potential effects of omitted variables; nonetheless, we acknowledge that the limitations of the current data may still expose our analyses to potential self-selection issues.

entry—sellers who use precise list prices will more likely have to relist their property at a lower price due to a lack of interested buyers. Because previous real-world studies have examined *completed* real estate transactions (Janiszewski & Uy, 2008; Thomas et al., 2010), their results speak to more attractive properties that have been successfully sold from seller to buyer. The present *RedFin* dataset, however, can provide a more complete picture because it contains a large and comprehensive set of active properties at a certain moment in time. Thus, it allows us to examine whether precision increases the barrier-to-entry and the relisting likelihood.

Procedure. We downloaded real estate data from six cities that were selected randomly from an online random city generator (https://www.randomlists.com/random-us-cities). We chose to examine a number of random cities across different states to avoid potential idiosyncratic state effects. The randomly selected cities were Indianapolis, IN, Tampa, FL, Austin, TX, Washington, DC, Anaheim, CA, and Newark, NJ. We pulled data on 11,713 properties from these six cities on a single day (April 18th, 2015). Thirty-four listings were excluded from the original sample due to missing information on pricing and/or erroneous original list prices.[7] In line with past research, we further excluded 476 listings that had higher real-time list prices than their original list prices to rule out the possibility of bidding wars (Janiszewski & Uy, 2008); the result are robust to including these listings in the analyses. This left 11,203 listings in the final sample with prices ranging from $1,000 to $30,000,000 ($M$ = $428,000; SD = $868,000; Mdn = $215,000).

Precision of initial list prices. Precision of the list price was operationalized as the proportion of non-zero digits to total digits. To compute list price precision, we followed past

[7] The original list price was judged erroneous if the change to the relisted price was simply an addition or deletion of superfluous trailing zeroes (e.g., 000). Instead of correcting these errors ourselves, we took the more conservative approach of excluding these listings from our analysis.

research (e.g., Mason et al., 2013; Thomas et al., 2010) and first excluded trailing zeros (i.e., ending zeroes) from the total number of digits and then counted the number of precise digits. We divided the number of precise digits by the total number of digits to control for the magnitude of each listing. For instance, for a property listed at $430,000, the number of precise digits is 2 (i.e., "4" and "3") and the level of precision is 2/6 (6 is the total number of digits, including trailing zeros). For a list price of $420,300, the number of precise digits is 4 ("4", "2", "0", "3") and the precision level is 4/6. Importantly, the results reported below are robust to alternative operationalizations of precision (e.g., ratio of all precise digits to round digits, count of all non-zero digits, weighing precision by the number of digit place). Among the 11,203 listings, the average precision was M = .54 (SD = .16); the median precision was Mdn = .50. Thus, approximately half of the digits of original list prices was precise (non-zero), and the other half was comprised of trailing zeros (see Mason et al., 2013 for a similar precision prevalence).

Relisting likelihood. The main dependent variable of interest was whether a property had to be relisted at a reduced price. Our reasoning is that having to relist a property suggests a strong barrier-to-entry because the party likely did not receive any competitive offers. Of the 11,203 listings, approximately 34.1% (3,820 listings) had been relisted at a reduced price since the time the property was originally listed.

Magnitude of price reduction. We also explored the magnitude of the overall price reduction among the properties that were relisted by subtracting the current list price from the original list price. The lack of buyer interest in precise listings might affect the extremity of seller concessions from their original list price.

Control variables. We controlled for other relevant factors that might correlate with both the precision of the list price and/or the likelihood of price reduction: the original list price, the

number of days the property had been on the market, geographic characteristics (three-digit zip code), and property characteristics (type of property, size of property, age of property, lot size, number of beds, number of baths, number of parking spots). Summary statistics for relevant variables are presented in Table 1.

Results

Relisting likelihood. We hypothesized that a precise list price creates a barrier-to-entry and discourages potential buyers from entering a negotiation, forcing precise-offer makers to relist the property at a reduced price. To test this hypothesis, we conducted a binary logistic regression with *relisting likelihood* as the dependent variable that was regressed on *precision level of list price*. As expected, the odds of a property having to be relisted at a reduced price increased by 1.65 for each unit increase in the precision level of list prices (b = .50, SE = .12, Wald z = 16.80, $p < .001$; Model 1 of Table 2). Precision continued to significantly predict the likelihood of price reductions after controlling for the original list price (Model 2 of Table 2), the property's number of days on the market (Model 3 of Table 2), geographic characteristics (three-digit zip code; Model 4 of Table 2), and property characteristics (type of property, size of property, age of property, lot size, number of beds, number of baths, number of parking spots; Model 5 of Table 2), b = .55, SE = .15, Wald z = 13.08, $p < .001$ (see Table 2).

A robustness check with dummy variables representing equal increments of list price precision confirms the linear relationship between *precision level of list price* and *relisting likelihood*, with increasing levels of precision having increasing effects on relisting likelihood. This analysis is presented in Table 3.

Magnitude of price reduction. We explored whether the precision of original list prices predicted the magnitude of price adjustments owners made when relisting them. We regressed

the log-transformed *magnitude of price reduction* variable on *precision level of list price*, controlling for the same variables as before (original list price, days on the market, geographic characteristics, and property characteristics). Results revealed no significant effect of list price precision on the size of adjustments made before relisting a property. Although our exploratory analysis did not reveal any apparent association between list price precision and the magnitude of price cuts, future work could explore the consequences of precision on the magnitude of ensuing price reductions.

Discussion

The results of Study 6 demonstrate the precision barrier-to-entry effect in real-world, real estate transactions. Our analysis of archival data confirmed that price precision predicted the likelihood of sellers having to relist their property, with more precise prices increasing the relisting likelihood. It is difficult to pinpoint the mechanism for the barrier-to-entry effect in the non-experimental, real-world dataset we used here, but our prior experimental studies suggest that more precise-opening sellers had to relist their property because buyers ascribed more inflexibility to them.

General Discussion

Six studies and an archival analysis of real estate data establish a novel and disadvantageous effect of first-offer precision: precise prices create a barrier-to-entry in negotiations and markets. Across these seven studies, prospective negotiators were less likely to enter a negotiation when first offers were precise rather than round. Furthermore, increasingly precise offers linearly increased this barrier-to-entry. Importantly, this was true despite the fact that increasingly precise first offers were economically more advantageous to participants in our studies.

The current studies also document the psychological mechanism behind the precision-barrier effect—perceptions of inflexibility—through correlational and causal mediation approaches. The analyses demonstrated that the precision-barrier mechanism was psychologically distinct from the extremity-barrier mechanism; whereas offensiveness drives the extremity barrier, perceptions of inflexibility drive the precision barrier. Our novel mechanism of inflexibility is consistent with, but also extends, social attribution models of negotiator cognition: When receiving a first offer, negotiators discern what this offer signals about their counterpart. Past research has found that precise offers presented during a negotiation signal to recipients that their counterpart is knowledgeable and competent (Loschelder et al., 2014, 2016a; 2017; Mason et al., 2013). The current studies demonstrate that precise offers presented prior to a negotiation signal that the offer maker is an inflexible negotiator, and thus deters offer recipients from entering the negotiation. In contrast, attributions of knowledge did not mediate the precision-barrier effect. This differential mediation demonstrates that the inflexibility mechanism is distinct from the knowledge mechanism.

Finally, precise prices also acted as barriers-to-entry in real-world settings. We found that sellers who made increasingly precise offers in an online real estate market were more likely to have to relist their property at a reduced price.

Theoretical Contributions

The present paper contributes to and expands a number of literatures. First, it extends the scholarship on negotiations and decision making by introducing and examining a new type of outcome in the literature: negotiation entry. We have highlighted the conceptual and empirical distinction of negotiation entry (whether one decides to enter a negotiation with an offer maker) from negotiation initiation (whether one accepts an offer right away versus initiates a back-and-

forth exchange), and negotiation impasse (when one person walks away from the table after having begun a negotiation).

Our focus on negotiation entry has allowed us to better understand a critical, yet, understudied subject: negotiations that never take place (for an exception see Shalvi, Moran, & Ritov, 2010). Negotiation scholars routinely study negotiations in classroom and laboratory contexts, in which they implicitly assume that people have already decided to enter a negotiation. This implicit pressure artificially lowers the number of impasses observed in the negotiations literature as other scholars have noted (Carnevale & Pruitt, 1992; Loschelder & Troetschel, 2010; Tripp & Sondak, 1992; Tuncel, Mislin, Kesebir, & Pinkley, 2016). It also prevents us from understanding whether and why someone even enters a negotiation in the first place. By introducing the construct of negotiation entry, the current research provides a previously missing phase of the negotiation process, the pre-negotiation phase, and takes a step towards understanding the factors that shape *whether* one will enter a negotiation as well as *with whom* one chooses to negotiate.

Second, our findings contribute to the literature on social attributions and anchor precision. One existing explanation for the anchor precision effect relies on a purely cognitive and non-social mechanism. According to the *scale-granularity* account, precise offers are processed on more fine-grained mental scales, and cause smaller adjustments from the initial anchor (Janiszewski & Uy, 2008). Although smaller steps on a more fine-grained mental scale can explain the distributive anchoring advantage from precise first offers, they cannot explain why precision leads to reduced negotiation entry. We extend the social attribution approach by showing that precise-offer makers are perceived not only as more knowledgeable but also as less flexible than round-offer makers. This can cause recipients of precise offers to not enter a

negotiation. Importantly, negotiators preferred round offers that were financially less attractive than precise offers, demonstrating the strong effect of negative social attributions.

Finally, the present paper contributes to the literature on first offers in negotiations. We show that precise offers constitute a double-edged sword: Although they can help negotiators get a better deal during a negotiation (Loschelder et al., 2014; 2017; Mason et al., 2013), they can also prevent potential negotiators from entering a negotiation at all.

The Precision-Extremity Model of First Offers (*PEMFO*)

We developed the Precision-Extremity Model of First Offers (*PEMFO*; Figure 1) to provide a comprehensive and integrative model that explains when and why first offers create a negotiation advantage versus disadvantage. The model makes predictions for when different aspects of a first offer—extremity and precision—will provide a distributive advantage versus produce an increased barrier-to-entry. All of these effects are based on underlying psychological mechanisms (i.e., selective accessibility, insufficient adjustment, feeling offended, attribution of knowledge, attribution of inflexibility; see Figure 1). We next review the implications of the model separately for extreme and precise first offers.

First-offer extremity. Past research suggests two main reasons for why more ambitious—compared to moderate—first offers produce an anchoring advantage. First, anchors selectively increase the accessibility of anchor-consistent information (Mussweiler & Strack, 2000a; Strack & Mussweiler, 1997). Thus, a more ambitious anchor leads negotiators to generate information that is consistent with an extreme value, resulting in a more favourable outcome for the offer maker (Mechanism 1 in Figure 1). Second, negotiators incrementally adjust away from first-offer anchors when formulating their counteroffers (Janiszewski & Uy, 2008; see Epley &

Gilovich, 2001). This adjustment process is commonly insufficient, causing final outcomes to gravitate toward ambitious first offers (Mechanism 2 in Figure 1).

On the other hand, more recent research has started to examine the disadvantage of extreme offers: This work shows that overly ambitious first offers can backfire and cause a negotiation impasse if the negotiator feels offended by the extremity of the offer (Ames & Mason, 2015; Schweinsberg, et al., 2012). We showed a similar effect in that extreme first offers created a barrier-to-entry in Study 3 (Mechanism 3 in Figure 1).

Overall, first-offer extremity is a double-edged sword. It produces better distributive outcomes on average but also can create barriers-to-entry and impasses by offending one's counterpart.

First-offer precision. Research on precise offers has consistently demonstrated the elevated potency of precise anchors compared to round anchors (reviewed by Loschelder et al., 2018). The most prevalent mechanism explaining the anchor precision effect is the social attribution account of knowledge (Mason et al., 2013), which posits that negotiators attribute more knowledge and competence to precise- rather than round-offer makers (Jerez-Fernandez et al., 2014). Such attributions of knowledge create an anchoring advantage to precise-offer makers as negotiators make smaller adjustments away from the first offer and ultimately reach outcomes that are more favorable to the precise- (vs. round-) offer maker (Mechanism 4 in Figure 1).

In the present paper, we establish a novel precision *dis*advantage by documenting how precise offers create barriers-to-entry into negotiations. We introduce a new social attribution process—inflexibility—and demonstrate that one psychological mechanism that explains the precision-barrier effect is the attributions of inflexibility negotiators make to precise-offer

makers (Mechanism 5 in Figure 1). Furthermore, we show that attributions of knowledge (Mechanism 4) does not mediate the effect of offer precision on negotiation entry.

Overall, first-offer precision is a double-edged sword. It produces better distributive outcomes on average but can also create barriers-to-entry by increasing perceptions that the offer maker is inflexible.

Practical Contributions

The present research also has several important practical implications. First, the results serve as a reminder to negotiators that they need to carefully consider the type of signals they convey with the offers they make. As our colleague from the opening paragraph learned, precise opening offers can leave negotiators sitting alone at a bargaining table with no one to bargain with. Negotiators should therefore be careful not to let their first offers deter interested negotiation partners. This potential loss of interested negotiators can weaken the precise-offer maker's alternatives and thereby lower their distributive benefits (Pinkley, Neale, & Bennett, 1994; Schaerer, Loschelder, & Swaab, 2016).

Furthermore, our results combined with previous precision research suggest that negotiators should carefully consider the timing of their offer strategies—distinct psychological processes may emerge when individuals are evaluating an offer mid-negotiation versus pre-negotiation. For instance, Yan and Pena-Marin (2017) recently found that recipients of a round (vs. precise) offer are more willing to accept, rather than continue to negotiate, the offer because round numbers connote a greater feeling of completion. Thus, both the current findings and those of Yan and Pena-Marin identify a disadvantage of offer precision for negotiators. However, their effects and the current effects differ markedly. Yan and Pena-Marin's results demonstrate that negotiators who receive precise offers during a negotiation continue to negotiate (i.e., they are

more likely to make a counteroffer). In contrast, the current studies explore barriers-to-entry and find that negotiators looking at precise first offers do not even enter a negotiation (i.e., they are more likely to walk away). Thus, Yan and Pena-Marin demonstrate that precision *increases* the probability of *continuing* a negotiation whereas we demonstrate that precision *decreases* the probability of *entering* a negotiation.

A critical factor that distinguishes and helps explain these different disadvantages of precision is the phase of the negotiation. Yan and Pena-Marin focus on the role of offers *during* a negotiation, usually after a few back-and-forth exchanges have occurred. In many real-world negotiations, however, a first offer precedes negotiation entrance—a first offer is presented before the involved parties agree to negotiate—allowing potential negotiators to peruse different offers before committing to a counterpart. The current research focused on the pre-negotiation phase to understand how the precision of an offer affects negotiation entry. We found the precision of an offer to create a barrier-to-entry, however, it did not affect an offer recipient's likelihood to accept an offer (Study 5).

Although our current studies cannot directly speak to the reasons for this divergence in acceptance rates, we can speculate on a few potential explanations based on past research. One possibility is that people's primary concern changes from one phase of a negotiation to the next. Initially, negotiators may be primarily concerned with assessing who would make for a good negotiation partner, which might lead them to reflect more deeply on a particular set of characteristics about potential negotiation partners (e.g., inflexibility, as the current research shows). Once they have committed to try to reach a deal with a particular negotiator, this concern may be eclipsed by their concern for reaching a deal, often preferring offers that provide them with a sense of completion (i.e., round numbers; Yan & Pena-Marin, 2017).

Furthermore, past research suggests that the immediate acceptance of an offer is viewed as unusual. For example, Galinsky, Seiden, Kim, and Medvec (2002) surveyed participants to judge the typicality of three negotiation scenarios in which the buyer (1) immediately accepted, (2) accepted after a delay, or (3) engaged in multiple rounds of negotiations before reaching an agreement. Participants judged the immediate acceptance of an offer as the least typical scenario followed by the delayed acceptance and the negotiation scenario. This suggests that the atypicality of accepting a first offer may partially explain why we do not find a difference in acceptance rates based on offer precision in the pre-negotiation phase, whereas Yan and Pena-Marin do in the mid-negotiation phase.

Taken together, these findings suggest that there are fundamental differences to how individuals process the precision of an offer before and during a negotiation. Thus, a more nuanced understanding of the different stages of a negotiation process is necessary for negotiators to reap the distributive upsides without encountering the downsides of precise offers.

Conclusion

The current studies found that precise offers create a barrier-to-entry in negotiations and markets. In six experiments and a real-world archival study, we demonstrated that this precision barrier-to-entry effect occurs because negotiators who make precise offers are perceived as more inflexible. Furthermore, this barrier-to-entry from offer precision is psychologically distinct from the barrier-to-entry from offer extremity. Integrating the current results with past research, we introduced the Precision-Extremity Model of First Offers (*PEMFO*) to provide a comprehensive model identifying when and why first offers create a negotiation advantage versus disadvantage and when and why a price is too precise or too extreme to pursue.

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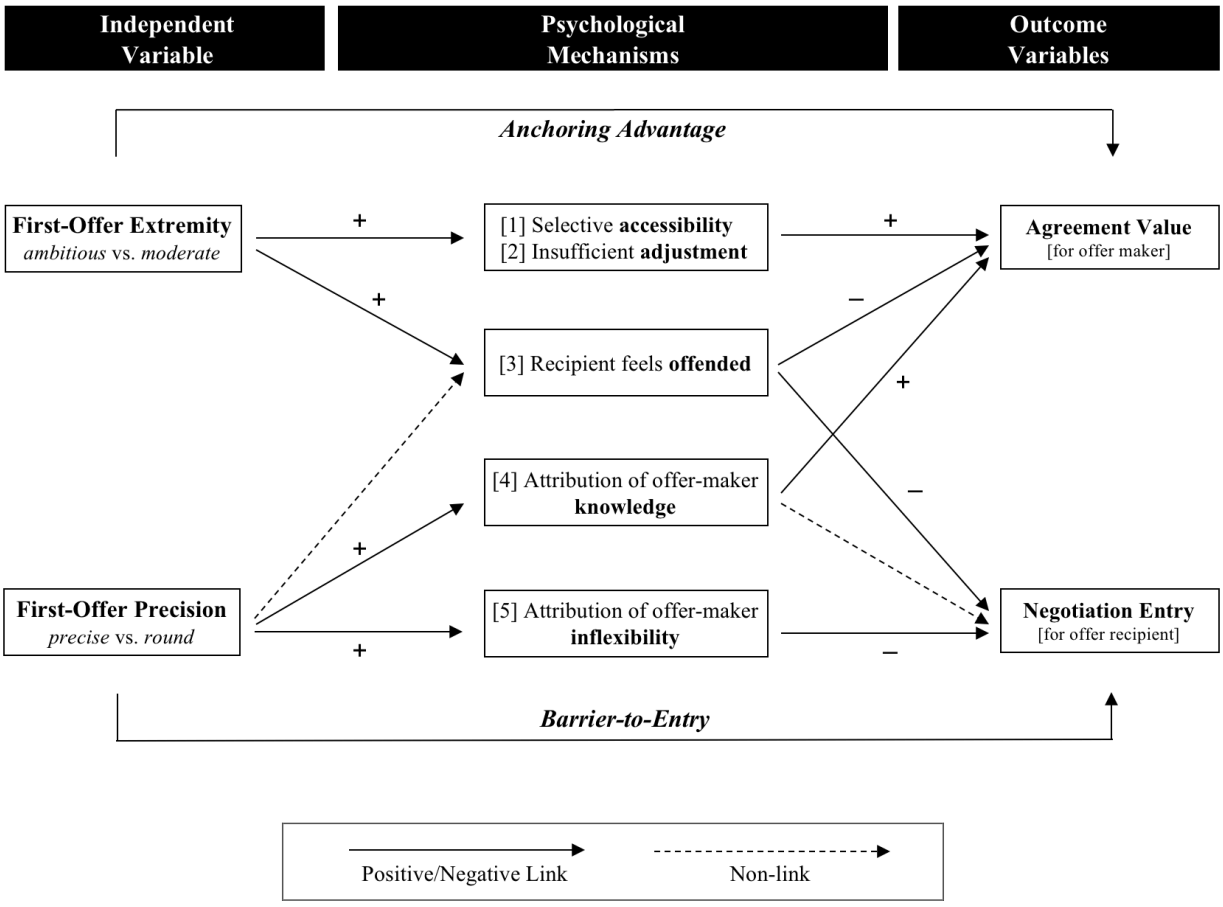

Figure 1. The *Precision-Extremity Model of First Offers (PEMFO).* Mechanisms 1, 2 and 4 have been established in previous studies. Mechanisms 3 and 5 are empirically tested in the present experiments. Whereas the extremity barrier is mediated through offense, the precision barrier is mediated through attributions of inflexibility. The social attribution of knowledge that mediates the effect of precision on agreement value does not mediate the effect of precision on negotiation entry.

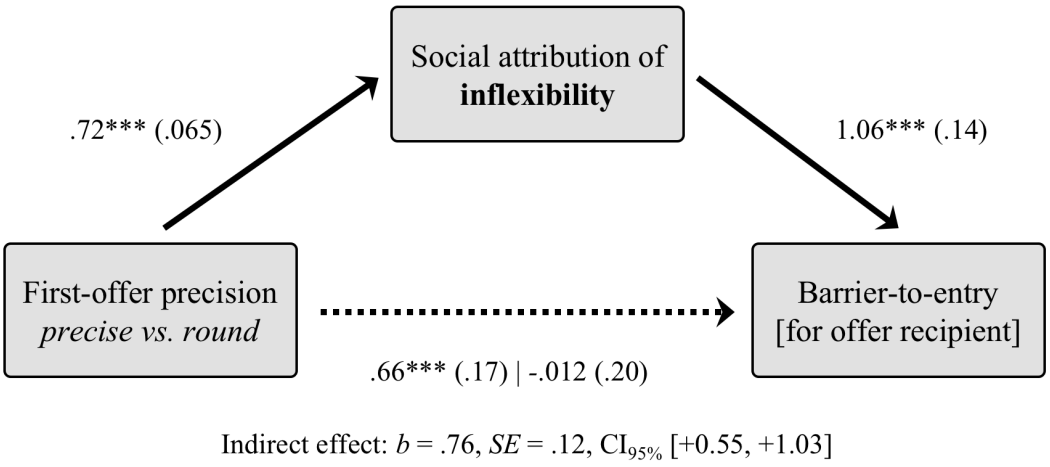

Figure 2. Mediation model summarizing the effects of offer precision on barrier-to-entry as mediated by attributions of inflexibility in Study 4a. Numbers represent unstandardized regression coefficients. Standard errors are in parentheses. (*p < .05, **p < .01, ***p < .001).

Variables	Observations	Mean	St. Dev.	Min	Max
Outcome variables					
Likelihood of relisting	11,203	0.34	0.47	0	1
Magnitude of price reduction	11,203	10,279	54,732	0	2,000,000
Independent variable					
Precision level of list price	11,203	0.54	0.16	0.13	1
Control variables					
Original list price (in $100,000)	11,203	4.28	8.68	0.01	300
Days on market	11,203	117	204	1	3,030
Size of property (in 1,000 sq ft)	9,935	2.20	1.59	0.001	31.54
Age of property (in years)	9,978	45	33	0	217
Lot size (in 1,000 sq ft)	9,618	255	12,541	0.001	783,662
Beds	10,536	3.16	1.85	0	72
Baths	10,126	2.39	1.49	0.5	56
Parking spots	11,203	1.48	4.78	0	423

Table 1. Summary statistics for property listings in Indianapolis, IN, Tampa, FL, Austin, TX, Washington, DC, Anaheim, CA, and Newark, NJ from *Redfin.com* on April 18, 2015. This table excludes listings that had higher real-time list prices than their original list prices and listings with erroneous price reductions.

DV: Relisting likelihood					
Variables	Model 1: Direct effect	Model 2: Original list price added	Model 3: Days on market added	Model 4: Geographic characteristics added	Model 5: Property characteristics added
Precision level of list price	0.503*** (0.123)	0.470*** (0.123)	0.620*** (0.125)	0.606*** (0.126)	0.548*** (0.152)
Original list price (in $100,000)	--	-0.007* (0.003)	-0.007** (0.003)	-0.005 (0.003)	-0.020** (0.005)
Days on market	--	--	0.001*** (0.000)	0.001*** (0.000)	0.007*** (0.000)
Zip code fixed effect	--	--	--	Yes	Yes
Type of property fixed effect					Yes
Size of property (in 1,000 sq ft)	--	--	--	--	0.008 (0.031)
Age of property (in years)	--	--	--	--	0.000 (0.001)
Lot size (in 1,000 sq ft)	--	--	--	--	0.000 (0.000)
Beds	--	--	--	--	0.010 (0.030)
Baths	--	--	--	--	0.003 (0.042)
Parking spots	--	--	--	--	-0.010 (0.015)
Constant	-0.930	-0.885	-1.123	-2.540	-24.030
Chi-square	16.822	23.284	194.169	348.604	938.510
Observations	11,203	11,203	11,203	11,203	8,506

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2. Binary logistic regressions with *relisting likelihood* as the dependent variable and *precision level of list price* as the independent variable. Model 1 presents the direct effect model without control variables. Models 2–5 include the original list price, days on the market, geographic characteristics, and property characteristics as control variables. Note that the drop in number of observations in Model 5 is due to listings with missing values. Regression coefficients are unstandardized and standard errors are in parentheses.

DV: Relisting likelihood	
Variables	Model 5: Property characteristics added
Precision level 2	0.290* (0.125)
Precision level 3	0.358** (0.125)
Precision level 4	0.478** (0.157)
Original list price (in $100,000)	-0.021*** (0.005)
Days on market	0.007*** (0.000)
Zip code fixed effect	Yes
Type of property fixed effect	Yes
Size of property (in 1,000 sq ft)	0.008 (0.031)
Age of property (in years)	0.000 (0.001)
Lot size (in 1,000 sq ft)	0.000 (0.000)
Beds	0.011 (0.030)
Baths	0.003 (0.042)
Parking spots	-0.010 (0.015)
Constant	-24.039
Chi-square	937.037
Observations	8,506

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3. This table shows that increasing levels of precision have increasing effects on *relisting likelihood*. The dummy variables ("Precision level 2", "Precision level 3", "Precision level 4") indicate different precision levels from the original *precision level of list price* variable: "Precision level 1" (≤ 0.25), "Precision level 2" ($0.25 <$ and ≤ 0.50), "Precision level 3" ($0.50 <$ and ≤ 0.75), "Precision level 4" ($0.75 <$ and ≤ 1.00). "Precision level 1" is our reference category.