A multilevel approach to the process of concession-making in price negotiations

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price negotiations, first offers, anchoring, buyer-seller interaction, multilevel approach

Eröffnungsangebote in Verhandlungen können als mächtiger Anker fungieren und letztlich ihr Ergebnis stark beeinflussen. Für ein tiefergehendes Verständnis des Einflusses von Startgeboten verfolgen wir einen prozessorientierten Ansatz und analysieren den Einfluss von Eröffnungsangeboten auf einzelne nachfolgende Zugeständnisse in simulierten distributiven Preisverhandlungen zwischen Käufern und Verkäufern. Unter Verwendung eines Multilevel-Ansatzes, der neu für diesen Forschungskontext ist, zeigen die Ergebnisse einen signifikanten Einfluss von Eröffnungsangeboten auf alle darauffolgenden Zugeständnisse von Käufer und Verkäufer sowie eine Abnahme der Zugeständnisse im Laufe der Verhandlung. Interessanterweise bleiben die eigenen Konzessionen von denjenigen des Verhandlungspartners unbeeinflusst. Die empirischen Befunde verdeutlichen also die besondere Rolle von Erstgeboten als mächtiger Anker und zentraler Einflussfaktor von Verhandlungsergebnissen. Der Planung von Eröffnungsangeboten kommt folglich eine große Bedeutung in der Verhandlungspraxis zu.

First offers are powerful anchors that strongly determine the outcome of a negotiation. To gain deeper insights into the power of first offers, we adopt a process-oriented view and analyze the impact of first offers on single subsequent concessions, in simulations of distributive price negotiations between a buyer and a seller. Using a multilevel approach which is new to this field of investigation, the results show that first offers have a significant influence on all subsequent concessions made by the buyer and seller, and these concessions decrease during the course of negotiation. Interestingly, concessions remain unaffected by the opponent's preceding concession. These results thus demonstrate that the first offer is indeed a powerful anchor, as it influences all single steps required to reach an agreement.

In business-to-business markets, negotiations represent the key mechanism of deal-making. In such negotiations, price regularly is a major issue. Pure price negotiations are distributive in nature (i.e., zero-sum), where both parties (seller and buyer) try to reach the best possible settlement price for themselves (*Pruitt* 1981).

Extensive literature has investigated a number of factors that determine the economic outcome of distributive price negotiations. Probably the most prominent factor is the first offer made by the negotiators. Abundant research could demonstrate that more extreme initial offers (i.e., high offers for a seller and low offers for a buyer) lead to more favorable settlement prices for the party who expressed the extremer offer (e.g., *Chertkoff/Conley* 1967; *Liebert et al.* 1968; *Benton et al.* 1972; *Galinsky/Mussweiler* 2001; *Galinsky et al.* 2005; *Orr/Guthrie* 2005).

The underlying mechanism of the influence is commonly explained by the anchor heuristic (*Tversky/Kahneman* 1974). This heuristic implies that people are influenced in their judgments by numeric stimuli they were exposed to on earlier occasions, and especially in those situations that are characterized by some degree of uncertainty. The anchor effect occurs even if the content of the stimuli is not relevant for the judgments (*Tversky/Kahneman* 1974).

Another well-investigated antecedent of the settlement price is the negotiation strategy in terms of the concession-making behavior. Concessions are new price offers in favor of the opponent (*Pruitt* 1981) and represent the single steps between the first offer and the final agreement, i.e. the outcome in a negotiation. Two theories have been developed to make predictions on the favorability of either strategy: the level of aspiration theory (*Siegel/Fouraker* 1960) and the theory of reciprocation (e.g., *Osgood* 1962; *Esser/Komorita* 1975). Whereas the former postulates that a rather hard negotiation behavior with few and small concessions leads to the best outcome of the negotiation, the strategy of reciprocity follows the idea of a softer strategy, entailing concessions similar to those of the opponent, and leading to a better economic outcome of the negotiation (e.g., *Siegel/Fouraker* 1960; *Chertkoff/Conley* 1967; *Yukl* 1974; *Esser/Komorita* 1975).

Despite extensive research about the effect of first offers and negotiation strategies on economic outcomes, little is known about the process in-between. This paper expands extant research by using a multilevel approach, which enables to take a *process*-oriented view on negotiations. This multilevel approach is new to negotiation research and particularly appropriate to study the *process* of negotiation. It allows investigating the effect of various variables over the course of the negotiation process. Specifically, we will zoom in on the effect of first offers on the course of the negotiation process zooming in on individual concession rounds within that process. Accordingly, we specify a two-level model, where concessions (level 1) are nested within buyer-seller dyads (level 2). We model individual concessions (level 1) that depend on the first offers (level 2) made by both parties. Furthermore, we extend the model by variables that reflect the interactive, dynamic nature of negotiations: time, preceding concession of the opponent, and time to react to the preceding concession of the opponent. This two-level model enables us to investigate the impact of the first offer on every single negotiation round and thus on the level of individual single concessions of both parties. Our study further aims at shedding light on the process of concession-making, in the course of price negotiations.

Theoretical Background

First offers in negotiations

First offers in a price negotiation are the first numerical offers that are mentioned by a seller and a buyer and one of the most important factors that influence the negotiation outcome. Many studies in negotiation research have investigated a positive effect of extremer first offers on the final outcome in negotiations (e.g., *Chertkoff/Conley* 1967; *Liebert et al.* 1968; *Benton et al.* 1972; *Yukl* 1974; *Kristensen/Gärling* 1997; *Galinsky/Mussweiler* 2001; *Galinsky et al.* 2005; *Orr/Guthrie* 2005; *Rosette et al.* 2012; *Gunia et al.* 2013). The first offer effect appears on both buying and selling sides. In a meta-analysis on 18 studies, *Orr* and *Guthrie* (2005) report an average correlation of .497 between the anchor—in most cases represented by the first offer—and the settlement price. The majority of these studies used student samples, but the results could also be confirmed with experienced managers (e.g., *Whyte/Sebenius* 1997; *van Poucke/Buelens* 2002). *Van Poucke* and *Buelens* (2002) report in their study with experienced negotiators that more than 57% percent of the variance of the settlement price can be explained by the negotiators' intended first offers.

Two recent studies replicated the effect of first offers across cultures (*Rosette et al.* 2012; *Gunia et al.* 2013), different power relations, and varied numbers of negotiation issues, providing generalized support of the effect (*Gunia et al.* 2013). Another recent study has found that first offers are even more effective than having a very good power level (*Schaerer et al.* 2014). Moreover, precise first offers are more effective than round offers because they are more plausible and potent (*Loschelder et al.* 2013; *Mason et al.* 2013).

The first offer effect is commonly explained with the anchoring heuristic (*Tversky/Kahneman* 1974). This heuristic describes the phenomenon that previously exposed numeric stimuli influence subsequent quantitative estimations and evaluations (*Tversky/Kahneman* 1974). The anchor heuristic is especially relevant in situations characterized by some degree of uncertainty. Negotiations usually are highly uncertain settings since negotiators regularly are poorly informed about their opponent's reservation prices, costs, or alternatives to negotiate (*Fisher et al.* 2011). Due to this uncertainty, the first offer is used as an anchor to which the negotiators assimilate their subsequent offers, and which in turn affects the agreed price at the end of the negotiation.

However, there remains lack of clarity about the underlying processes of the first offer effect (*Chapman/Johnson* 2002). Originally, *Tversky* and *Kahneman* (1974) explain the effect with an insufficient adjustment to the anchor. For instance, when facing a numerical stimulus, the focus first lies on the numerical value of the anchor and people insufficiently adjust from this value to the final estimate (*Mussweiler/Strack* 1999a). An alternative explanation is provided by numerical priming which postulates that people are primed by a numerical value such that it affects them in their later judgments (*Jacowitz/Kahneman* 1995). A third explanation is offered by conversational inference theory. This theory states that people expect other people to provide only relevant information, such that anchors are close to the true value to be estimated (*Mussweiler/Strack* 1999a).

Perhaps the most elaborated explanation is provided by the theory of selective accessibility (*Strack/Mussweiler* 1997; *Mussweiler/Strack* 1999b), which contends that people consider the information provided by the anchor and test the hypothesis whether this information is relevant for answering the question. This 'hypothesis testing' leads to a selec-

tive cognitive bias. This means that people have a positive testing strategy such that arguments in favor of the (extreme) anchor value are cognitively faster accessible for later estimations than arguments against the anchor value. In a price negotiation, this theory implies that when a buyer is confronted with a high first offer by a seller, the arguments that justify this high selling price are more easily accessible to the buyer.

All these competing theories that aim at explaining the anchor effect of first offers also highlight the importance of this topic and the pile of research that has been conducted in this field. Surprisingly, all these theories have not yet paid attention to the dynamics of the individual concession rounds in the negotiation process. Therefore, it is worthwhile looking into the process of negotiations to acquire additional insights into the power of first offers.

In the past, some research has been conducted on the negotiation process (i.e., the course of negotiations). These studies focus on counter offers that follow from first offers and/or the total concessions magnitude. While in some studies extremer first offers lead to milder counteroffers (*Liebert et al.* 1968; *Yukl* 1974), other studies reveal that the influence of first offers on the magnitude of total concessions is insignificant (*Liebert et al.* 1968; *Yukl* 1974). Other scholars emphasized the trend that extremer offers lead to higher concessions (*Chertkoff/Conley* 1967). In sum, the results from this stream of research are inconclusive. Therefore, based on the previous findings on the anchor effect of first offers, we aim to get deeper insight into the 'power' of this effect on negotiations by looking at the effect of first offers on individual concessions that are made during the course of the negotiation process. Hence, we formulate:

RQ1: *What influence do first offers exert on individual concessions?*

Negotiation process

Most of the early studies on first offers and concessions in negotiations have focused on the (economic) outcome in negotiations, while there are relatively few studies that have paid attention to the process in terms of the single steps of the negotiation. A few studies have examined the offers made by one party and revealed that the offers decrease over the course of the negotiation process (e.g., *Kelley et al.* 1967; *Smith et al.* 1982; *Balakrishnan/Eliashberg* 1995). Fewer studies have investigated the process of concession-making over time (e.g., *Filzmoser/Vetschera* 2008; *Wachowicz/Wu* 2010) reporting a decreasing trend of the concession magnitude. In other words, larger concessions are made at the beginning, while smaller ones are made at the end. Other studies, however, have found opposing results and conclude that bigger concessions are made at the end of a negotiation (*Druckman et al.* 1972). In short, while some studies on the negotiation process do exist, this field is still not well grounded as previous results are inconsistent. This urges us to take a longitudinal lens to investigate this process thereby zooming in on how these the individual concessions evolve:

RQ2: *How do concessions evolve over time?*

Negotiation behavior

Many studies have been carried out to investigate the negotiator's concession behavior with the aim to gain insights into the best negotiation strategy. Two major streams have emerged from this research. First, a research stream that is based on the level of aspiration

theory, which contends that an extreme initial offer and small concessions are more effective because lower concessions lead to higher opponent's concessions due to a decrease of the opponent's aspiration (e.g., *Siegel/Fouraker* 1960; *Chertkoff/Conley* 1967; *Komorita/Brenner* 1968; *Yukl* 1974). In contrast, the other research stream made use of the reciprocity hypothesis (e.g., *Osgood* 1962; *Esser/Komorita* 1975), which posits that people reflect the opponent's behavior (the 'unwritten norm' of reciprocity). In a negotiation context, this means that if one negotiator concedes, the opponent concedes as well. Both theories offer different implications: The former recommends rather tough, while the latter a softer and more cooperative negotiation behavior. Aside from these differences, both theories share one important commonality, which is that the negotiators highly depend on each other and influence each other's concessionary behavior.

In testing these theories, previous studies suffered from an important drawback. They overwhelmingly used an experimental design with a (real) participant negotiating on only one side, while the opponent was automated, using a *fixed* concession plan (e.g., *Chertkoff/Conley* 1967; *Komorita/Brenner* 1968; *Liebert et al.* 1968; *Benton et al.* 1972; *Druckman et al.* 1972; *Yukl* 1974; *Esser/Komorita* 1975; *Smith et al.* 1982; *Kristensen/Gärling* 1997). The mutual dependence of negotiators has thus not been sufficiently presented. It would have been more informative and realistic to investigate concessions in a setting where both sides of the negotiation dyad are free to decide over the magnitude and frequency of their concessions.

In response to this, we aim to acquire a better of understanding of how negotiators behave in terms of concession making, in a dyadic setting where both sides of the negotiation dyad have the freedom to make decisions. We expect that negotiators' behaviors are interdependent, as their concessions depend on their opponent's concessionary behavior. Therefore, we argue that the following question deserves to be explored:

RQ3: *How are individual concessions influenced by the previous opponent's concessions?*

Study Design

We use unexplored data from the study by *Wilken*, *Cornelißen*, *Backhaus*, *and Schmitz* (2010). The dataset consists of N = 119 dyads of one-to-one simulated sales price negotiations between a representative from a buying company (hereafter referred to as *buyer*) and a representative from a selling company (*seller*). The object of negotiation was a custom-built machine that the buyer needed for his own production line.

The participants were graduate students of business administration and randomly assigned to buyer and seller roles. They received basic information (the same for both roles) and role-specific information to be used for argumentation during the negotiation (including reservation prices). The bargaining zone was positive, with a seller's reservation price of 3,364,250 €, and a buyer's reservation price of 4,947,234 €. There were no potential best alternatives to a negotiated agreement (*Fisher et al.* 2011). The seller could not easily sell the machine to another customer, and for the buyer, the search for a new supplier would be time-consuming, with uncertain odds of success. Thus, both roles had an equally strong motivation to settle. It was up to the negotiators who started the negotiation and who made the first offer.

Students were incentivized to achieve a high profit by awarding ten 50 € flight vouchers to those students that achieved the highest negotiation profits. Two hours were allotted to reach

an agreement. A negotiation ended when the buyer offered a contract and the seller accepted it. The negotiations took place online via internet chats and thus anonymity was ensured.

The log files of the chats included all prices offered to the counterpart in the course of the entire negotiation as well as the corresponding point of time at which the offer was made. Consequently, we were able to calculate for both seller and buyer the subsequent concessions they made during the negotiation as well as their reaction time to the opponent's preceding offer. In cases where one party made two offers in a row, we used other party's previous offer as a replacement. The concessions and the reaction time were set to zero in those cases. Furthermore, we calculated the number of concessions that each dyad made as a proxy for "elapsed negotiation time" in the analyses.

Data Analysis and Results

A two-level analysis using the software MLwiN 2.30 (*Rasbash et al.* 2012) was conducted to analyze the concessions and the influence of the various antecedents (i.e. first offers, (elapsed) time of the negotiation, the opponent's concession, reaction time, and the duration of the negotiation. We used a structure for longitudinal growth curves and specified models with the individual concessions rounds (level 1), nested within the negotiation dyads (level 2). Each negotiation dyad consisted of one seller and one buyer who negotiated with each other. An advantage of this multi-level method is that it enables to simultaneously investigate the effects of variables on the individual concession level (level 1) and of variables on the dyad level (level 2). We constructed two separate models: Model A aims to explain the buyer's concessions, and Model B aims to explain the seller's concessions.

Figure 1 depicts the variables in accordance to their level. As antecedents on level 1, we specified the concession number as a proxy for (elapsed) time, the opponent's previous concessions to analyze the interdependencies between the negotiators, and the own reaction time as a measure of reactiveness. On the dyad level we specified the first offer as well as the concession number of each dyad as a proxy for the total duration of the negotiation.

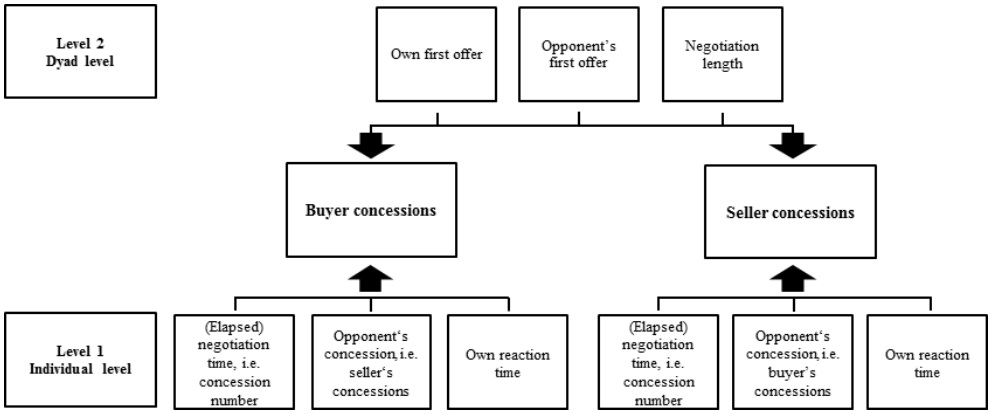


Figure 1. Visualization of the multi-level data structure separated into individual level and dyad level variables.

The mean values, standard deviations, and correlations between the variables are presented in *Table 1*. The results show that the sellers make higher concessions than the buyers and need

more time to react to the opponent's preceding offers. Though for the seller, at least theoretically, the first offer is unlimited, whereas the lower bound for the buyer's first offer is zero, there is no reason to assume that this role-specific result is due to the role-specific case study material, as both parties were equally dependent on each other (no real alternative existed on both sides). The correlations in *Table 1* reveal significant relationships between first offers and average concessions for both buyer and seller, implying that more extreme first offers lead to higher average concessions. Furthermore, there is no significant relationship between the buyer's and the seller's first offers. Consequently, we investigated the influence of the opponent's first offer as well as the influence of own first offers.

Table 1: *Mean values, standard deviations, and correlations between the variables*

Variables	Mean	(s.d.)	1	2	3	4	5	6
1. Concessions number dyad level	6.98	3.85	–					
2. Buyer's first offer	3,198,191.45	869,915.23	–.36**	–				
3. Seller's first offer	5,728,859.15	884,518.05	.21*	.03	–			
4. Buyer average concessions	193,332.24	126,675.47	–.28**	–.59**	–.04	–		
5. Seller average concessions	233,606.65	207,203.87	–.39**	.02	.62**	.23*	–	
6. Buyer average reaction time	196.13	115.85	–.11	.06	.05	–.05	.09	–
7. Seller average reaction time	217.89	127.94	–.11	.04	.18	.01	.23*	.31**

* p <.05. ** p <.01. *** p <.001, two-tailed. N = 704.

Note. We used a two-tailed test for all variables in the model. The average concessions and average reaction times of buyers (sellers) are calculated across all dyads and all concessions made by buyers (sellers).

To provide answers to our research questions, we first estimated basic models with only the main effects (models A1 and B1 in *Table 2*). In addition, we estimated final models in which we specified cross-level interactions (models A2 and B2) between the three lower level variables and the own first offer.

The final models for the buyer and seller are expressed in the following equations:

Buyer's perspective (complete model A2)

$$b\_conc_{ij} = \gamma_{0ij} + \gamma_{1j}\, conc\_no_{ij} + \gamma_{2j}\, s\_conc_{ij} + \gamma_{3j} b\_reac_{ij} + \gamma_{00} + \gamma_{01} own\_fo_j + \gamma_{02} opp\_fo_j + \gamma_{03} dyad\_cn_j + \gamma_{010} conc\_no_{ij} \times own\_fo_j + \gamma_{011} s\_conc_{ij} \times own\_fo_j + \gamma_{012} b\_reac_{ij} \times own\_fo_j + u_{0j} + e_{0ij} \quad (1)$$

Seller's perspective (complete model B2)

$$s\_conc_{ij} = \gamma_{0ij} + \gamma_{1j}\, conc\_no_{ij} + \gamma_{2j}\, b\_conc_{ij} + \gamma_{3j} s\_reac_{ij} + \gamma_{00} + \gamma_{01} own\_fo_j + \gamma_{02} opp\_fo_j + \gamma_{03} dyad\_cn_j + \gamma_{010} conc\_no_{ij} \times own\_fo_j + \gamma_{011} b\_conc_{ij} \times own\_fo_j + \gamma_{012} s\_reac_{ij} \times own\_fo_j + u_{0j} + e_{0ij}, \quad (2)$$

where i refers to individual concessions and j reflects dyads; b_conc = buyer's concessions, s_conc = seller's concessions, conc_no = concession number, b_reac = buyer's reaction

time, s_reac = seller's reaction time, own_fo = own first offer, opp_fo = opponent's first offer, dyad_cn = number of concessions at dyad level. Furthermore, e_{0ij} indicates the concession-level error term, and u_{0j} reflects the variation between the dyads.

We applied grand-mean centering for all dyad-level variables (level 2). Due to the large variance in our concession numbers, we dyad-mean centered (cf. group-mean centering) all variables on the concession level (level 1) by calculating the difference between the mean values of each dyad and the individual values of each buyer and seller (*Hofmann et al.* 2000).

The results of the multilevel model analysis are presented in *Table 2* and show general effects that are similar and symmetrical for the buyer and seller models as well as role-specific effects. To begin with, we find a strong influence of the own first offer on own concessions for buyer (negative: $\gamma = -.406$, $p < .001$) and seller (positive: $\gamma = .452$, $p < .001$). Hence extreme first offers appear to lead to higher concessions throughout the course of the negotiation, as an answer to RQ1. Regarding the opponent's first offer, our results reveal that the seller's concessions are significantly negatively influenced by the opponent's (thus the buyer's) first offer ($\gamma = -.162$, $p < .001$), while the buyer's concessions are significantly positively influenced by the opponent's (thus the seller's) first offer ($\gamma = .076$, $p < .10$), though the latter effect is weaker and only significant on a 10% level.

Table 2: *Results of buyer and seller concessions*

	Buyer's concessions		Seller's concessions	
	Model A1	**Model A2**	**Model B1**	**Model B2**
Concession-Level Variables				
Concession number	–.566***	–.504***	–.462***	–.437***
Opponent's concessions	.032	.038	.007	.004
Own reaction time	.159***	.160***	.164***	.166***
Dyad Level Variables				
Own first offer	–.406***	–.359***	.452***	.406***
Opponent's first offer	.076[x]	.076[x]	–.162***	–.160***
Number of concessions at dyad level	–.428***	–.447***	–.532***	–.536***
Cross-Level Interactions				
Concession number x own first offer		.155*		–.121*
Opponent's concessions x own first offer		–.075 [x]		.227***
Own reaction time x own first offer		–.046		.018
Increase in model fit	$\chi^2 = 190.7^{***}$ df = 6	$\chi^2 = 17.3^{***}$ df = 3	$\chi^2 = 176.5^{***}$ df = 6	$\chi^2 = 45.4^{***}$ df = 3
Explained Variance				
Explained individual-level variance (%)	30.8 %	33.1 %	29.0%	34.9%
Explained dyad-level variance (%)	31.1 %	33.4%	34.5 %	40.0%

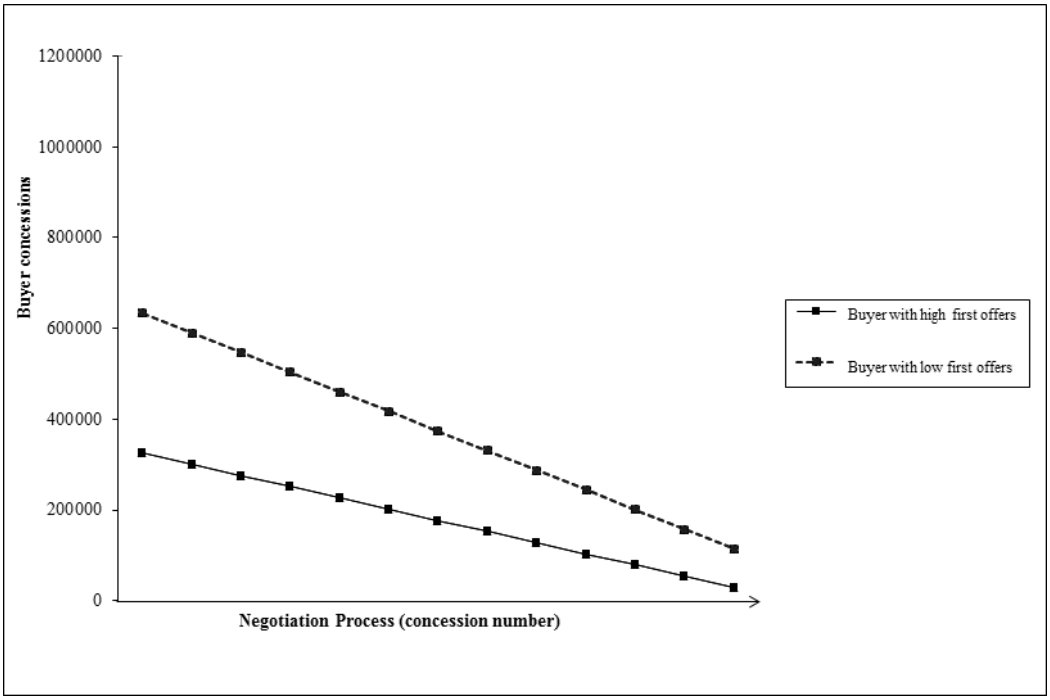
[x] p <.10. * p <.05. ** p <.01. *** p <.001. N = 704.

Note. We report standardized coefficients and used a two-tailed test for all variables in the model.

Furthermore, concessions show a decreasing linear trend over time for both the buyer model A1 ($\gamma = -.566$, $p < .001$) and the seller model B1 ($\gamma = -.462$, $p < .001$). Hence, larger concessions are made at the beginning of the negotiation while smaller appear when the end of the negotiation approaches, as an answer to RQ2. Of the other two level-1 antecedents, only the reaction time indicates significant positive effects for both buyer ($\gamma = .159$, $p < .001$) and seller ($\gamma = .164$, $p < .001$). This indicates that concessions are influenced by the own reactiveness; concessions are higher when the own reaction time is longer.

Interestingly, neither buyer nor and seller concessions are influenced by the preceding opponent's concession (buyer: $\gamma = .032$, n.s.; seller: $\gamma = .007$, n.s.), which suggests that the negotiator's concessionary behavior is independent from the opponent. This result fails to provide a positive answer to RQ3.

In addition, we find two significant cross-level interactions: The buyer's concessions in model A2 are even more influenced by the concession number (i.e., time), when their own first offer was higher ($\gamma = .155$, $p < .05$). The effect is symmetrical for the seller's concessions in model B2 ($\gamma = -.121$, $p < .05$). *Figure 2* illustrates these results.



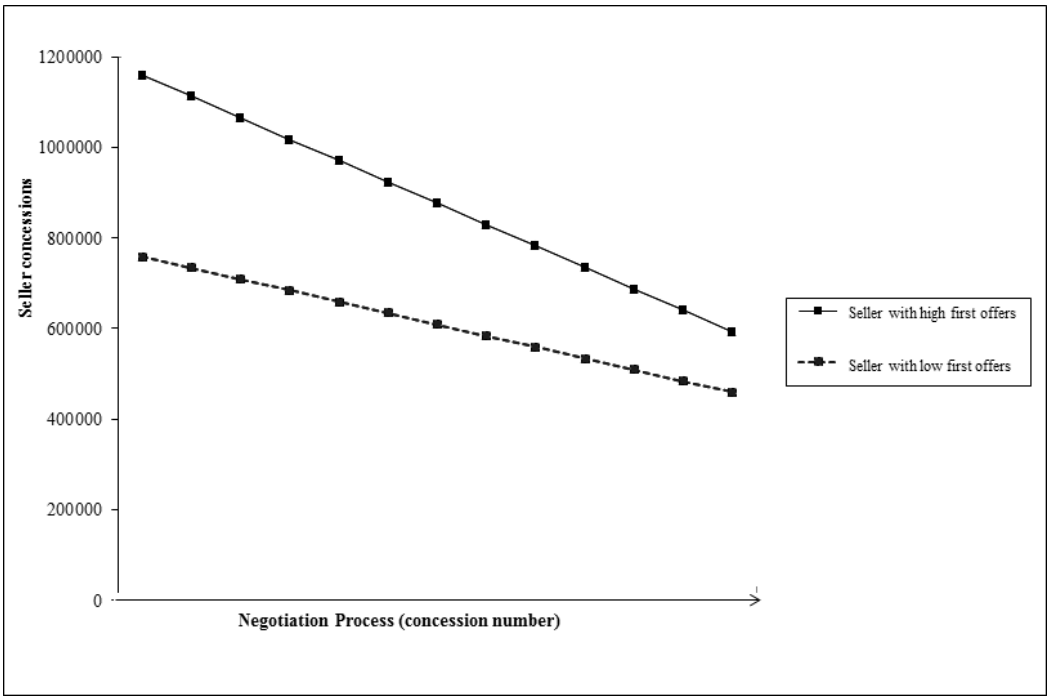


Figure 2. Interaction effects of high and low first offers and concession number on buyer and seller concessions.

As additional insights, we note that the seller's model B2 shows a significant cross-level interaction of the own first offer and the opponent's concessions (γ =.227, p <.001). This interaction indicates that when the first offer is higher, the own concessions are influenced more strongly by the opponent's concession than when the first offer is less extreme. On the dyad level, dyads with higher concession numbers (i.e., dyads that negotiate longer) made smaller individual concessions (buyer: γ = –.428, p <.001; seller: γ = –.532, p <.001). Thus, it seems that in longer negotiations, negotiators split up their concessions into more steps instead of making fewer larger concessions.

The percentage of explained variance shows that the variables in the models account for a considerable amount of variance in the buyer and seller concessions with values between 29.0% and 40.0% depending on the level and model. The comparison of models 1 and 2 for buyer and seller learns that the addition of the interaction effects leads to higher levels of explained variance on both the individual concession and the dyad level where the increase in model fit and explained variance is stronger for the seller concession model (χ^2 = 45.4; p <.001) than for the buyer concession model (χ^2 = 17.3; p <.001).

Conclusion

The study takes a process-oriented view on buyer-seller negotiations and analyzed the concessions between the first offers and the settlement price with a multilevel approach. We expand research on the first offer effect (e.g., *Chertkoff/Conley* 1967; *Benton et al.* 1972; *Yukl* 1974; *Galinsky/Mussweiler* 2001; *Orr/Guthrie* 2005; *Gunia et al.* 2013) and show

that the first offer is a powerful driver of individual concessions (beyond the negotiated price). In this respect, our findings provide a more in-depth understanding of why the first offer is such a strong antecedent of the final negotiation outcome. Our findings contribute to previous research by shedding further light on the positive impact of making an extreme first offer. For instance, our results indicate that even though negotiators with extremer first offers make higher concessions, they still achieve better negotiation outcomes. This means that "bolder" first offers eventually paid off, a result that may be restricted to one-shot negotiations, the focus of our study. In negotiations embedded into long-term business relationships, extreme first offers may emerge less frequently, and if they do emerge, then perhaps with less success. Still, the findings imply that at least in one-shot price negotiations – which we simulated in our study – practitioners should benefit (i.e., increase their negotiation profits) by making extreme (yet well justified) first offers.

Moreover, we introduce a longitudinal perspective on negotiations that has only been used in a few negotiation studies. Using this longitudinal perspective largely confirm the findings of prior studies that concession magnitude changes over the time (e.g., *Filzmoser/Vetschera* 2008; *Wachowicz/Wu* 2010), and that the largest proportion of concessions is made at the beginning of the negotiation. In terms of figures, this result is not much surprising: With continued concessions being made, both negotiators approach each other and get more and more acquainted to each other. As a result, the room for additional concessions becomes smaller.

Our study also delivers a methodological contribution to negotiation research by using a multilevel perspective to analyze the data: individual concession rounds (level 1) nested within negotiation dyads (level 2). We contribute to previous negotiation research that mainly has focused on the negotiation outcome as an aggregate-level variable by providing more detailed insights into negotiation as a process over time at the level of individual concessions.

Interestingly, we could not confirm the interdependencies of buyer and seller in their concessionary behavior. Thus, we could not find support for either the hard bargaining strategy with high initial offers and small concessions (cf. level of aspiration theory; *Siegel/Fouraker* 1960), or the soft strategy (cf. theory of reciprocity; *Osgood* 1962). Previous research on the interdependencies however was limited in using a programmed opponent on one side (e.g., *Chertkoff/Conley* 1967; *Liebert et al.* 1968; *Yukl* 1974; *Esser/Komorita* 1975). Our study used a more valid and realistic case, as both sides were dynamic, and real subjects were bargaining against each other. Studies with the same dyadic designs have reported results similar to ours (e.g., *Brodt* 1994).

Finally, we revealed some role-specific effects: we did not find an impact of the seller's first offer on buyer's concessions. Thus, it turns out that the buyer is less influenced by the anchor of the opponent's first offer than the seller is. Moreover, the significant cross-level interaction of the buyer concessions and own first offer in the seller's model suggests that the seller is more influenced by the buyer than vice versa. These results point towards the different perspectives of sellers and buyers (unbounded first offers for sellers, bounded first offers for buyers; concessions as decreased profits for sellers but increased costs for buyers; see also the earlier discussion related to *Table 1*).

Future research should replicate and generalize these findings. In particular, we suggest running a similar study with trained and experienced negotiators, to better represent selling and buying mindsets. Does such a setting reveal similar role-specific effects? A second

avenue for generalization would be to systematically vary the degree of interdependence (i.e., the power relationship) between the negotiating parties. In such a setting, one would expect a higher degree of reciprocation on the side of the less powerful party. Additional empirical studies could test this prediction. Third, we investigated one-shot negotiations. It would be interesting to observe which concession-making strategies are successful in ongoing business relationships. Last, as many negotiations in practice offer some integrative potential, future research could investigate the process of concession-making in such more complex (multi-item) situations. Single items as well as package offers can be the object of the first offer and any subsequent concession, so it would be interesting to know which of these two (single items; package offers) in isolation, as well as a dynamic combination (i.e., over time), leads to better negotiation outcomes.

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