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DOI

[10.1006/obhd.1994.1076](https://doi.org/10.1006/obhd.1994.1076)

Publication date

1994

Document Version

Final published version

Published in

Organizational Behavior and Human Decision Processes

[Link to publication](#)

Citation for published version (APA):

de Dreu, C. K. W., Carnevale, P. J. D., Emans, B. J. M., & van de Vliert, E. (1994). Effects of gain-loss frames in negotiation: Loss aversion, mismatching, and frame adoption. *Organizational Behavior and Human Decision Processes*, 60(1), 90-107. <https://doi.org/10.1006/obhd.1994.1076>

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Effects of Gain-Loss Frames in Negotiation: Loss Aversion, Mismatching, and Frame Adoption

CARSTEN K. W. DE DREU

University of Groningen, The Netherlands

PETER J. D. CARNEVALE

University of Illinois at Urbana-Champaign

AND

BEN J. M. EMANS AND EVERT VAN DE VLIERT

University of Groningen, The Netherlands

Extending research and theory on negotiator frame—the conceptualization of outcomes as gains or as losses—this study assumes that (a) negotiators often have foreknowledge about their opponent's gain or loss frame, and (b) during negotiation, disputants often communicate about their own frame. We considered negotiator cognition and behavior as a function of own frame, foreknowledge about opponent's frame, opponent's communicated frame, and their interactions. As predicted, the opposing negotiator was perceived as more cooperative under other's loss than gain frame. Further, negotiators mismatched their opponent's concessions, in that they made smaller concessions when the adversary had a loss rather than gain frame. Results also supported the "frame-adoption hypothesis" that other's communicated gain frame leads to lower demands and larger concessions than other's communicated loss frame, especially when negotiators have a gain rather than loss frame themselves. As predicted, this frame-adoption effect was attenuated when other's communicated frame was incongruent rather than congruent with the information about other's frame. Together, these findings underscore the relevance of considering negotiator frames from an interpersonal perspective. © 1994 Academic Press, Inc.

Negotiation is a form of social decision making that is considerably influenced by the negotiators' subjective interpretations of the dispute and the issues at stake (Bazerman, 1983; Deutsch, 1973; Kelley & Thibaut, 1978). As a case in point, research shows that negotiation be-

This research was supported by a William Fulbright Scholarship to Carsten de Dreu, and Grant BNS-8809263 to Peter Carnevale. We thank Laurie Weingart, Chris McCusker, Joe Lualhati, and James Naylor and two anonymous *OBHDP* reviewers for their helpful comments on previous drafts of this article. Correspondence and reprint requests should be addressed to Carsten de Dreu, Department of Psychology, University of Groningen, Grote Kruisstraat 2/1, 9712 TS, Groningen, The Netherlands.

havior varies as a function of the *negotiator's frame*, which is defined as the negotiator's conceptualization of his or her own outcomes as either gains or losses. Negotiators code their prospective outcomes on the basis of a reference-outcome, such as the non-agreement outcome or their level of aspiration. Negotiators with a gain frame use a reference-outcome "below" their potential outcomes, so that they code these outcomes in positive terms and evaluate their concessions as decreases in their gains. Negotiators with a loss frame use a reference-outcome "above" their prospective outcomes, so that they code outcomes in negative terms and evaluate concessions as increases in their losses (Bazerman, 1983; Kahneman, 1992).

Kahneman and Tversky (1979; see also Budescu & Weiss, 1987; Taylor, 1991) proposed that people are more aversive of losses than pleased with equivalent gains, and that they perceive losses to loom larger than equivalent gains. Hence, loss-framed negotiators are more aversive to making concessions than gain-framed negotiators (Carnevale & Pruitt, 1992; Kahneman, 1992). Research indeed shows that people who negotiate net profit (gain frame), compared to people negotiating expenses cutting into their gross outcomes (loss frame), have lower demands, make larger concessions, and are more likely to settle (e.g., Bazerman, Magliozzi & Neale, 1985; Carnevale & Pruitt, 1992; Neale, Huber & Northcraft, 1987).

The important contribution of this prior frame research is that it shows that the negotiator's own frame affects his or her own cognition and behavior. In an attempt to extend this research and improve frame theory, the present research took a more interpersonal perspective. We assume that (a) following information search prior to negotiation, negotiators may have foreknowledge about their opponent's reference outcome and concomitant gain or loss frame (cf. Russo & Schoemaker, 1989); and (b) during negotiation, disputants may exchange information about their own frame: they may communicate their frame (cf. Kahneman, 1992; Neale & Bazerman, 1985, 1991). As for the first assumption, to date, no research investigated the impact of a priori knowledge about the opposing negotiator's frame. This study is a first attempt to fill this void. Laboratory and field evidence for the second assumption has been provided by De Dreu and Carnevale (1992, experiment 1) and Gray (1991), respectively, but research only has begun to study the impact of the opponent's communicated frame. Insight in how the negotiator's own frame-related communication and behavior is influenced by their opponent's communicated frame adds a dynamic component to the frame theory (Putnam & Holmer, 1992) and may yield important implications for professional negotiation. That is, knowledge about the influence of other's communicated frame may be used to prevent such influence and to strategically alter the op-

ponent's behavior (Neale & Bazerman, 1991; Russo & Schoemaker, 1989; Ury, 1991).

In this study, we consider negotiator cognition and behavior as a function of own frame, foreknowledge about opponent's frame, opponent's communicated frame, and their interactions. Prenegotiation information about the opponent's gain or loss frame may affect negotiator cognition and behavior. From Prospect Theory (Kahneman & Tversky, 1979), it can be derived that in negotiation other's concessions will loom larger in case of other's loss frame (where other's concessions increase other's losses), than in case of other's gain frame (where other's concessions decrease other's gains). Hence, given the same size concessions, opponents will be perceived as more cooperative when they have a loss rather than gain frame (*Hypothesis 1*). According to the Level of Aspiration Theory (Siegel & Fouraker, 1960) negotiators tend to "mismatch" other's concessions: The larger the other's concessions, the smaller the negotiator's own concessions (e.g., Yukl, 1974; for reviews, see Carnevale & Pruitt, 1992; Wall, 1985). Because the opponent's concessions loom larger in the case of a loss, rather than a gain frame, we also predicted that, given the same size concessions made by the opponent, negotiators demand more and concede less when opponents have a loss, rather than a gain frame (*Hypothesis 2*). As far as we know, there is no theory or research suggesting that the negotiator's own frame would affect the perception of opponent's concessions or cooperativeness. Nevertheless, we explore possible interactions between foreknowledge about the opponent's frame and the negotiator's own gain or loss frame.

As pointed out, negotiators may be influenced by their opponent's communicated gain or loss frame too. Negotiators tend to reciprocate each other's communication (cf. Putnam & Jones, 1982; Putnam, Wilson & Turner, 1990). Through communication negotiators converge toward similar perspectives and definitions of their situations, probably because this stimulates further interaction, including other's concession making (cf. Giles & Smith, 1979; Lewicki & Litterer, 1985). This would suggest that negotiators adopt the frame communicated by their opponent: other's communicated gain frame produces more gain than loss-frame-related communication and induces less concession aversion than other's communicated loss frame.

Research indeed supports this "frame adoption hypothesis" (De Dreu *et al.*, 1992; De Dreu & Carnevale, 1992). Specifically, results show that the opponent's communicated loss frame caused both gain- and loss-framed negotiators to use loss-frame-related language and be competitive in their own offers. In contrast, other's communicated gain frame did not cause loss-framed negotiators to use gain-frame-related language and be cooperative in their offers; other's communicated gain frame only caused

gain-framed negotiators to make cooperative offers. That loss-framed negotiators do not switch to a gain frame that easily may suggest that other's gains are seen as futile in the light of the own losses, making frame adoption less likely.

This evidence was, unfortunately, only marginal significant, so that a new test of the frame adoption hypothesis seems required. We expect to replicate this frame adoption effect. Perhaps more important, however, we expect the impact of other's communicated frame to be moderated by foreknowledge about the other's frame. When other's communicated frame is inconsistent with this foreknowledge about other's frame (i.e., gain-loss or loss-gain), the negotiator likely detects multiple frames, which may attenuate the impact of one specific frame (cf. Kahneman, 1992). Also, as suggested by social influence research (e.g., Chaiken, Liberman & Eagly, 1989), frame-adoption in negotiation may depend on the credibility of the communicator. When other's communicated frame is inconsistent with foreknowledge about other's frame, the quality and credibility of other's communication is put in doubt, which should diminish the impact of other's communicated frame. That is, the communicator might be perceived as more credible when s/he communicates about losses and really has a loss frame, than when s/he communicates about losses but is known to have a gain frame. Decreased perceived credibility may lower the extent to which the focal negotiator is willing to consider other's communication seriously, and hence may decrease the impact of other's communicated frame. Our *Hypothesis 3* therefore was that the frame-adoption effect described above is stronger when other's communicated frame is consistent rather than inconsistent with foreknowledge about other's frame.

METHOD

Design

The experimental design was a $2 \times 2 \times 3$ factorial, involving own frame (gains vs losses), other's communicated frame (gains vs losses), and other's frame (gains, losses, or unknown). The other's frame unknown condition was included to assess a base-rate condition. Main dependent variables were the perception of other's cooperativeness, the negotiator's own demands and concessions, and the negotiator's own communicated frame.

Subjects

One hundred seven male and female psychology undergraduates at the University of Illinois at Urbana-Champaign participated in the experi-

ment to fulfill a course requirement. Subjects were randomly assigned to conditions (N s ranged from 8 to 10).

Overview of the Procedure

Subjects participated in groups of eight, and upon arrival in the laboratory, each was seated in front of an IBM computer. The computer presented instructions, the negotiation task, and a questionnaire. Negotiation offers, messages, and responses to post-negotiation questions were communicated by means of a keyboard.

Subjects were told that they would participate in a negotiation between a buyer and a seller. Subjects then were assigned the role of the seller and they were led to believe that some other participant was assigned the role of buyer. In fact, the buyer was a standardized computer program.

Subjects learned that they had to negotiate the transaction of home appliances, and that the negotiation involved three issues: delivery time, discount terms, and financing. To enhance their motivation, subjects were told that they could earn points that would be converted into lottery tickets, which gave them chances to win 10, 15, or 25 dollars. Finally, subjects were told that the buyer would make the first offer, and that the negotiation would stop when either agreement was reached or time ran out. Non-agreement would result in no points.

Prior to negotiation, subjects played two "sample" rounds to familiarize themselves with the computer. Both own frame and foreknowledge about the opponent's frame (see below) were already induced at this stage; other's communicated frame (see below) was not manipulated at this point; the buyer instead sent a message "practice round," and the subject was asked to do the same. The actual negotiation lasted for a maximum of six rounds, after which the negotiation was interrupted to ask questions. We interrupted after six rounds because prior research showed that this yields valid data for testing the hypotheses. Usually few subjects have settled at this point, so that questionnaire data pertain to perceptions during, rather than following the negotiation task (i.e., subjects were led to believe that after they completed the questionnaire, negotiation would continue). Upon completion of the questionnaire, subjects were told that, because time was limited, the negotiation would not resume. Subjects then were debriefed and dismissed; they were told that every participant in the experiment had an equal chance in the lottery to be conducted upon completion of the study.

Programmed opponent's offers. Whether the program's offer behavior generates contingent or noncontingent responses, and whether it generates cooperative or competitive perceptions can account for substantial variation in the subjects' offer behavior. As a result we designed the offer pattern to be noncontingent and intermediate in the tradeoff pattern and

apparent cooperativeness. Across the six rounds of the negotiation, the programmed buyer sent the following offers: HHH, IGG, HFG, GFG, GFF, and HEF (see Table 1). Data from previous research (De Dreu *et al.*, 1992) indicated that a similar pattern was intermediate in perceived cooperativeness–competitiveness.

Independent Variables

Own frame. The own frame variable was identical to that used in past studies of negotiator frame (Bazerman *et al.*, 1985; De Dreu *et al.*, 1992). In the gain frame condition, the subjects were told that the negotiation would concern how much profit they could make. They were shown an issue chart (see Table 1) that listed nine levels of possible agreement (denoted by a letter from A to I) with a corresponding positive number that represented the profit value at each agreement level. They were told “You can see that the best deal for you is “AAA,” for a total outcome of \$8000 (1600 + 2400 + 4000).”

In the loss frame condition, the subjects were told that the negotiation would concern how much expenses would cut into their Gross Outcomes. They were told that their Net Outcome was \$8000 minus expenses. They

TABLE 1
SUBJECT (SELLER) ISSUE CHART FOR GAIN AND LOSS FRAMES

Delivery time	Discount terms	Financing terms
(a) Issue chart for gain frame		
A \$ 1600	A \$ 2400	A \$ 4000
B \$ 1400	B \$ 2100	B \$ 3500
C \$ 1200	C \$ 1800	C \$ 3000
D \$ 1000	D \$ 1500	D \$ 2500
E \$ 800	E \$ 1200	E \$ 2000
F \$ 600	F \$ 900	F \$ 1500
G \$ 400	G \$ 600	G \$ 1000
H \$ 200	H \$ 300	H \$ 500
I \$ 000	I \$ 000	I \$ 000
(b) Issue chart for loss frame (gross = \$8000)		
A \$ -000	A \$ -000	A \$ -000
B \$ -200	B \$ -300	B \$ -500
C \$ -400	C \$ -600	C \$ -1000
D \$ -600	D \$ -900	D \$ -1500
E \$ -800	E \$ -1200	E \$ -2000
F \$ -1000	F \$ -1500	F \$ -2500
G \$ -1200	G \$ -1800	G \$ -3000
H \$ -1400	H \$ -2100	H \$ -3500
I \$ -1600	I \$ -2400	I \$ -4000

were shown an issue chart (see Table 1) that listed nine levels of possible agreement with a corresponding negative number that represented the expense value at each agreement level. They were told "You can see that the best deal for you is "AAA," for a total expense of \$0 (0 + 0 + 0). At AAA, your net outcome would equal \$8000 (that is, 8000 - 0 = 8000)."

Other's frame. We manipulated other's frame without providing information about the buyer's potential outcomes or priorities. As such, the negotiators in the present study had incomplete information, a feature which is assumed to be characteristic of most negotiations (e.g., Thompson, 1990; Raiffa, 1982). Further, complete information about other's payoffs decreases the negotiator's tendency to mismatch the opponent's concession size (e.g., Liebert, Smith, Hill, & Keiffer, 1968).

To ensure that subjects felt free to communicate themselves whatever frame they wanted, all subjects were told that the study was concerned with communication processes such that one negotiator had more information than the other. They were informed that, as a seller, they would receive information about the buyer's issue chart, whereas the buyer would receive no information about the subject's issue chart. Also they were told that "the buyer doesn't know that you receive information about the buyer's issue chart." Subjects in the *other's gain frame* condition were subsequently shown the buyer's issue chart, but with the actual values replaced by positive signs (see Table 2).¹ It was stressed that more positive signs meant that the buyer would make more gains and profits at that specific contract-level. On each round, this issue chart was presented when the subject waited for the buyer's proposal and messages. Subjects in the *other's loss frame* condition were given the same information, but with negative, instead of positive, signs (see Table 2). It was stressed that more negative signs meant that the buyer would incur more losses and expenses at that specific contract-level. Subjects in the *other's frame unknown* condition were provided with other's issue chart with both values and signs omitted. Only at level AAA were there zeros in the issue chart.

Other's communicated frame. As in prior work on communicated frames, each proposal made by the other party was accompanied by a message. In the other's communicated gain frame condition, these messages all expressed gains, and in the other's communicated loss frame

¹ The way Table 2 presents the pluses (or minuses) may have led subjects to believe that the opponent made exactly the same gains (or losses) at level I-I-I as at level H-H-H. Although not intended, we cannot exclude this possibility. It should be noted, however, that the most important implication would be that the test of Hypothesis 1 became more conservative.

TABLE 2
OPPONENT'S (BUYER) ISSUE CHART FOR GAIN AND LOSS FRAMES

Delivery time	Discount terms	Financing terms
(a) Issue chart for the opponent's gain frame		
A \$ 0	A \$ 0	A \$ 0
B \$ +	B \$ +	B \$ +
C \$ +	C \$ +	C \$ +
D \$ ++	D \$ ++	D \$ ++
E \$ ++	E \$ ++	E \$ ++
F \$ ++	F \$ ++	F \$ ++
G \$ +++	G \$ +++	G \$ +++
H \$ +++	H \$ +++	H \$ +++
I \$ +++	I \$ +++	I \$ +++
(b) Issue chart for the opponent's loss frame (gross = \$8000)		
A \$ ---	A \$ ---	A \$ ---
B \$ ---	B \$ ---	B \$ ---
C \$ ---	C \$ ---	C \$ ---
D \$ --	D \$ --	D \$ --
E \$ --	E \$ --	E \$ --
F \$ --	F \$ --	F \$ --
G \$ -	G \$ -	G \$ -
H \$ -	H \$ -	H \$ -
I \$ 0	I \$ 0	I \$ 0

condition, these messages all expressed losses. The messages are presented in Table 3.

To ensure that the messages did vary on relevant dimensions, we pre-tested a large sample of frame messages. Thirty subjects rated both the gain and the loss messages on (1) Is the message concerned with gains or with losses? (1 = surely gains; 7 = surely losses), (2) How cooperative or competitive is this message? (1 = very competitive; 7 = very cooperative), (3) How persuasive is this message? (1 = not at all; 7 = very persuasive), (4) How natural or artificial is this message? (1 = very artificial; 7 = very natural), and (5) how likely or unlikely is it that this message would be used in a negotiation? (1 = very unlikely; 7 = very likely). The order in which gain or loss messages were presented was varied, but had no effects on the ratings. Within-subjects *t* tests showed that the six gain messages were all strongly concerned with gains (overall $M = 2.65$), and the six loss messages were judged as concerned with losses (overall $M = 6.22$; all $t(29) > 4.24$, $ps < .001$). In contrast, no significant effects were obtained for the paired comparisons of the ratings for cooperativeness ($ts(29) < 1.3$, $ps > .19$), persuasiveness (all $t(29) < 1$, ns), artificiality ($ts(29) < 1.05$, $ps > .30$), or likelihood of usage (all $t(29)$

TABLE 3
 MESSAGES USED TO MANIPULATE OTHER'S COMMUNICATED FRAME

Other's communicated gain frame
1. I cannot accept small gains and profits
2. I cant agree, since your offer implies only small gains for me
3. I really haave to make profit out of this transaction
4. Up to now, my profits and gains are not a lot
5. I'm sorry, but my gains and profits are real dissatisfying
6. Ok, I give up some, but my gains and profits are too small
Other's communicated loss frame
1. I cannot accept big losses and expenses
2. I cant agree, since your offer implies only big losses for me
3. I really haave to cut expenses in this transaction
4. Up to now, my losses and expenses are a lot
5. I'm sorry, but my losses and expenses are real dissatisfying
6. Ok, I give up some, but my losses and expenses are too big

Note. The typos in some of the messages were included in order to increase the credibility of the simulated opponent.

< 1.1, all p s > .28). Inspection of the overall means revealed that the messages were rated as intermediate between competitive and cooperative ($M_{\text{gains}} = 4.15$; $M_{\text{losses}} = 4.00$), as moderately persuasive ($M_{\text{gains}} = 4.32$; $M_{\text{losses}} = 4.30$), as moderately likely to be used ($M_{\text{gains}} = 4.60$; $M_{\text{losses}} = 4.80$), and as rather natural ($M_{\text{gains}} = 4.70$; $M_{\text{losses}} = 4.85$).

RESULTS

Treatment of the Data

We expected main effects for prenegotiation knowledge about the opponent's frame (hypotheses 1 and 2), an interaction between own frame and other's communicated frame (the frame adoption effect), and an interaction between other's communicated and other's given frame (hypothesis 3). Data were, however, always submitted to a full $2 \times 2 \times 3$ (own frame \times other's communicated frame \times other's frame) analysis of variance factorial model. In the sections below we report only significant effects (with $p < .05$ as the critical value), whether predicted or not. Nonsignificant results are reported only when they were expected to be significant.

Manipulation Checks

The adequacy of the own frame manipulation was assessed by asking subjects to what extent they were trying to minimize their expenses (1 = not at all, to 6 = very hard). As expected, gain-framed negotiators gave lower ratings than loss-framed subjects, $M = 3.69$ versus $M = 4.39$,

$F(1,94) = 12.0, p < .001$. An interaction between own frame and other's communicated frame, $F(1,94) = 4.53, p < .05$, further indicated that this difference was present when the other party communicated a gain frame ($M = 3.43$ versus $M = 4.56, p < .05$), but absent when the other party communicated a loss frame ($M = 4.00$ versus $M = 4.3, ns$). This result is consistent with the frame adoption hypothesis that other's communicated frame affects the own gain frame more readily than the own loss frame.

The manipulation of foreknowledge about other's frame was checked by asking subjects whether the buyer was concerned with gains or with losses (1 = entirely concerned with gains, to 6 = entirely concerned with losses). The main effect for other's frame, $F(2,94) = 4.74, p < .001$, showed that, as expected, subjects gave lower ratings on this variable when the other had a gain rather than loss frame ($M = 3.06$ vs $M = 4.05, p < .01$). Ratings were intermediate and not significantly different from the other two conditions when other's frame was unknown ($M = 3.71$).

The ratings on the last question further indicated that the other's communicated frame was manipulated adequately: Subjects believed the buyer to be more concerned with losses when the other communicated a loss instead of a gain frame, $M = 4.23$ versus $M = 3.04, F(1,94) = 19.84, p < .001$.

Perception of Other's Cooperativeness

Hypothesis 1 predicted that negotiators would perceive their opponents as more cooperative when the opponent has a loss rather than gain frame. To test this proposition, we asked the subjects how nice, trustworthy, and cooperative the other party was (all Likert-type scales with 1 = not at all, to 6 = very much). The ratings on these variables were averaged into one index (Cronbach's $\alpha = .57$). Analysis of variance yielded the predicted main effect for other's frame, $F(2,94) = 4.19, p < .025$. Cell means are presented in row 1 of Table 4. As expected, the other party was rated as more cooperative when other's concessions were embedded in other's loss frame, rather than gain frame. Ratings took an intermediate position

TABLE 4
OTHER'S PERCEIVED COOPERATIVENESS AND AVERAGE DEMAND AND CONCESSIONS AS A
FUNCTION OF OTHER'S FRAME

	Other's frame		
	Gain	Loss	Unknown
1. Other's cooperativeness	2.13 ^a	2.63 ^b	2.42 ^{a,b}
2. Average concession	12.0 ^a	10.1 ^b	11.0 ^{a,b}
3. Average demand	5141 ^a	5791 ^b	5524 ^{a,b}

^{a,b} Means not sharing equal superscripts differ per row at $p < .05$.

when other's frame was unknown. It is concluded that hypothesis 1 is supported: information about other's frame indeed biases the perception of other's behavior.

Agreements, Demands, and Concessions

We analyzed two indices of the negotiation behavior other than the number of agreements. The offer data were transformed into two indices tapping average concession and average demand level. Average concession was calculated by summing the contract levels proposed by the negotiator. Thus, a proposal AAA was coded as 3 (1 + 1 + 1), and a proposal ECA was coded 9 (5 + 3 + 1). In addition, average demand was calculated by summing the points associated with each proposal. Thus, proposal AAA represented a demand level of 8000 (1600 + 2400 + 4000), and proposal ECA constituted a demand of 6600 (800 + 1800 + 4000) (see also Table 1). Contrary to the average concession index which treats the negotiation as a single issue, distributive task, the average demand takes into account the different priorities subjects may have among the three issues.

Number of agreements. Subjects reached an agreement when they matched their opponent's last offer on all three issues. The experimental variables had no influence on the number of agreements reached, all $\chi^2 < 1$. As expected, only a very small portion, eight subjects, settled at the sixth negotiation round, just before the negotiation was interrupted for the questionnaire. This implies that the questionnaire data reported above pertain, for the large majority of subjects, to perception *during* the negotiation.

Average concession. Analysis of variance on the average concession yielded a main effect for other's frame, $F(2,94) = 3.32, p < .04$. As predicted in Hypothesis 2, subjects mismatched other's cooperativeness: the average concession was lower when the other party had a loss rather than a gain frame. The average concession took an intermediate position when other's frame was unknown (see also row 2 of Table 4).

Consistent with the Frame Adoption Effect, analysis of variance also yielded the predicted interaction between own frame and other's communicated frame, $F(1,94) = 3.5, p < .05$. As can be seen in row 1 of Table 5, other's communicated gain frame produced higher concessions than other's communicated loss frame in case of an own gain frame; in case of an own loss frame, other's communicated frame had no influence on the average concession.

Average demand. Analysis of variance on the average demand yielded the expected main effect for other's frame, $F(2,94) = 3.30, p < .05$. Consistent with Hypothesis 2, average demand was higher under other's

TABLE 5
AVERAGE CONCESSION AND DEMAND AS A FUNCTION OF OWN FRAME AND OTHER'S
COMMUNICATED FRAME

Other's comm. frame	Own frame			
	Gain		Loss	
	Gain	Loss	Gain	Loss
1. Average concession	12.1 ^a	9.98 ^b	10.8 ^{a,b}	11.0 ^{a,b}
2. Average demand	5109 ^a	5820 ^b	5628 ^b	5454 ^{a,b}

^{a,b} Means not sharing equal superscripts differ per row at $p < .05$.

loss, rather than gain frame; it took an intermediate position when other's frame was unknown (see also row 3 of Table 4).

As predicted in the Frame Adoption Effect, we further observed a significant interaction between own frame and other's communicated frame, $F(1,94) = 4.08, p < .05$. As can be seen in row 2 of Table 5, other's communicated gain frame produced lower demands than other's communicated loss frame when subjects had a gain frame; subjects with a loss frame were not significantly influenced by the other party's communicated frame.

The results for average concession and average demand did not provide evidence for hypothesis 3 that foreknowledge about other's frame moderates the impact of other's communicated frame. It might be, however, that the congruence or discrepancy between other's frame and other's communicated frame is stronger in the beginning of the negotiation. To examine this possibility, we additionally submitted demand level to a 2 (Own Frame) by 3 (Other's Frame) by 2 (Other's Communicated Frame) by 6 (Round) Analysis of Variance with the last variable within-subjects. This revealed a main effect for round, showing that the negotiator's demands declined as the negotiation continued, $F(5,90) = 71.92, p < .001$, and, more important, a three-way interaction between round, other's frame, and other's communicated frame $F(10,178) = 2.11, p < .05$. The latter effect showed that especially in the first four negotiation rounds, lowest demands were placed when the other party communicated a gain frame and had a gain frame, and highest demands were placed when the other party communicated a loss frame and had a loss frame (see also Fig. 1).² This effect is consistent with Hypothesis 3, in that the impact of other's communicated frame is indeed attenuated when other's communicated frame is incongruent with other's frame.

² Analysis of variance using concessions rather than demands as the dependent variable yielded identical effects.

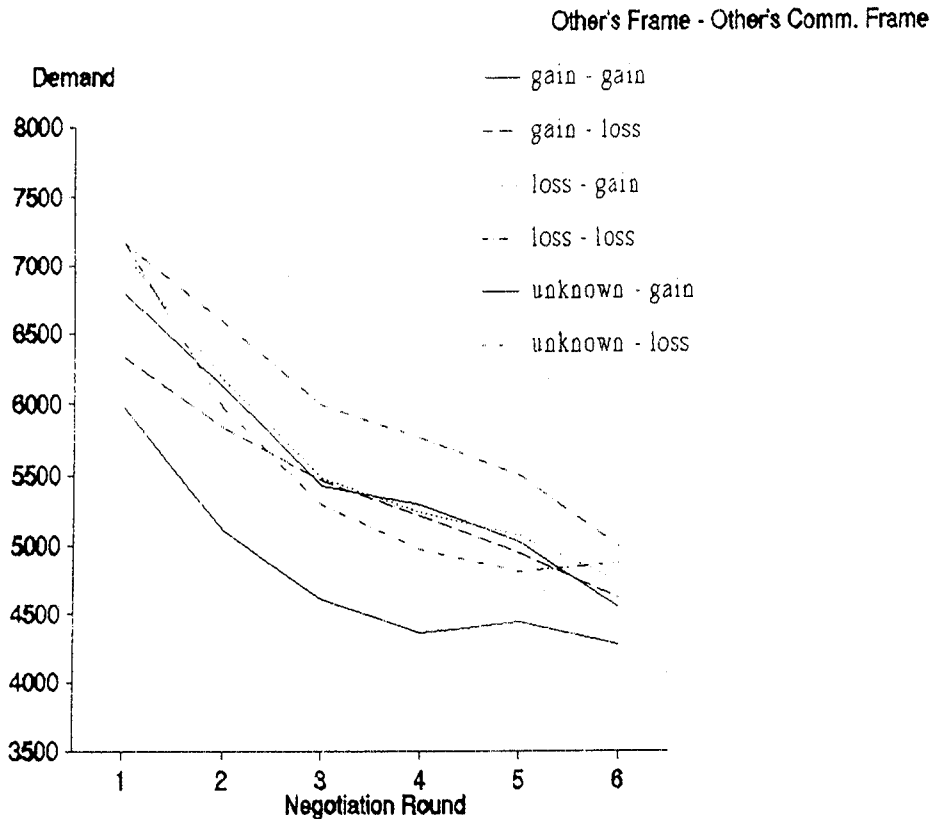


FIG. 1. Demand as a function of Negotiation Round, Other's Frame, and Other's Communicated Frame.

Own Communicated Frame

The number of messages sent by the negotiators ($M = 4.77$) did not vary as a function of any of the independent variables. The frame adoption hypothesis predicts that other's communicated frame influences the negotiators' own frame, especially when negotiators themselves have a gain frame. Two judges who were blind to experimental conditions and hypotheses categorized a message containing words like "my benefits," "my gains," or "my profits," as "own communicated gain frame." When a message contained words like "my losses," "my expenses," or "my costs," they coded it as "own communicated loss frame." (Cohen's κ for interrater agreement = .85). Messages potentially reflecting both frames—e.g., "loss in my profit"—were rare and left out of the analyses.³

We submitted the number of own communicated frame messages to 2 (own frame) by 3 (other's frame) by 2 (other's communicated frame) by 2

³ We also examined how subjects referred to the opponent's outcomes (e.g., your gains, your costs, your losses). This analysis showed that other's communicated frame was reciprocated, and thus that other's communicated frame was perceived accurately.

(message type: own communicated gain or loss frame) Analysis of Variance with the last variable as a within subjects factor. This revealed a significant interaction between own frame and own communicated frame, $F(1,95) = 10.32, p < .01$, showing that gain framed negotiators communicated more often a gain than loss frame ($M = .72$ versus $M = .30, p < .05$), whereas loss framed negotiators communicated somewhat more often a loss than gain frame ($M = 1.06$ versus $M = .65, p < .10$). These data show that negotiator frames are reflected in their communication.

As expected, a significant interaction between other's communicated frame and own communicated frame emerged, $F(1,95) = 5.70, p < .025$. When the other party communicated a gain frame, subjects communicated a gain frame themselves more frequently than a loss frame ($M = .81$ versus $M = .47, p < .05$). Similarly, when the other party communicated a loss frame, subjects communicated a loss frame more often than a gain frame ($M = .89$ versus $M = .56, p < .05$). It is concluded that other's communicated frame substantially influences the way subjects frame their own outcomes.

CONCLUSIONS AND DISCUSSION

The results support our general point of departure that it is important to consider foreknowledge about other's frame, and other's communicated frame as variables affecting negotiator cognition and behavior. This research indeed shows the relevance of assuming an interpersonal perspective on negotiator frames. Several theoretical implications deserve attention.

The first contribution of the present study is that for the first time it is shown that prenegotiation knowledge about other's frame biases perceptions of the other party and influences the negotiator's own demands and concessions. The opponent was seen as more cooperative when information prior to negotiation indicated that the opponent had a loss rather than a gain frame. This observation is important because it extends the fundamental postulate of Prospect Theory that losses loom larger than gains (Kahneman & Tversky, 1979) to interpersonal aspects of negotiation.

Even more important perhaps is that this biased perception of other's cooperation due to variations in other's frame has behavioral implications. That is, negotiators demand more and concede less when the opponent has a loss rather than a gain frame. As such, the present study shows, in line with the Level of Aspiration Theory (Siegel & Fouraker, 1960; Wall, 1985), that the more cooperative the other is perceived, the smaller concessions negotiators make themselves (i.e., mismatching). As far as we know, prior research on mismatching in negotiation always examined the influence of other's concession making on the negotiator's own demands and concessions. The second contribution of this experi-

ment thus is that it shows that the mismatching of other's concessions is rooted in the *interpretation* of other's behavior, rather than the mere perception of the opponent's actual concession making.

Future research should examine the generalizability of the observation that other's frame biases perception of other's behavior, which in turn affects own demands and concessions. There is some speculation that negotiators mismatch other's cooperativeness especially when they are motivated to disregard their opponent's outcomes (Carnevale & Pruitt, 1992; Liebert *et al.*, 1968). It can be argued that the negotiators in the present study had a more or less individualistic goal because their lottery tickets depended on the amount of own outcome. Research thus might examine to what extent other's frame biases the perceptions of negotiators pursuing cooperative goals.

The third contribution is that we improved the understanding of the effects of frame-related communication in negotiation. As in prior research (De Dreu *et al.*, 1992; De Dreu & Carnevale, 1992), other's communicated gain frame induced more gain-frame related communication than other's communicated loss frame, which suggests that negotiators reciprocate another's communication (Putnam *et al.*, 1991), and converge towards similar definitions of the situation (Giles & Smith, 1979; Lewicki & Litter, 1985). More important, other's communicated gain frame induces lower demands and greater concessions than other's communicated loss frame, albeit especially when negotiators have a gain frame rather than a loss frame themselves. These findings primarily bolster the reliability of this so-called frame-adoption effect, which is important because previous research only found marginal significant support.

Foreknowledge about the opponent's frame tends to moderate this impact of other's communicated frame. That is, when other's communicated frame is incongruent with pre-negotiation information about other's frame (gain-loss or loss-gain), effects of other's communicated frame appear to dissipate. This suggests that frame adoption is stronger the more credible the other party is. It finally suggests that in the case of such incongruence, negotiators probably recognize multiple perspectives and are no longer influenced by one specific frame of reference (cf. Kahneman, 1992). Aside from this interaction between other's communicated frame and foreknowledge about the opponent's frame, our data do not support a possible suggestion that foreknowledge about the opponent's frame and other's communicated frame are one and the same thing, or affect behavior for one and the same reason. In fact, both variables appear to be conceptually different (cf. De Dreu *et al.*, 1992). Both variables do affect negotiation behavior, but the first because it affects the perception of the opponent's behavior and the second because it influences the negotiator's own frame.

An important question awaiting further research is to what extent the methods we used to collect data restrict the generalizability of our conclusions. The use of a preprogrammed (computer) opponent made it possible to hold everything constant, so that we obtained a good test of Hypotheses 1 and 2, but also made the negotiation much less dynamic than is usual in most real life situations. Perhaps more important is the use of the computer as an "intermediary." Research suggest that people negotiate in the same way with a "robot" as with a real human being, as long as they are unaware of the former fact (as in the present study) (Hoggatt, Brandstatter, & Blatman, 1978). But there is evidence as well that communication and its content is affected by the presence or absence of a computer as an intermediary (e.g., Spears, Lea, & Lee, 1990). Hence, a particularly important question for future research is whether the frame adoption effect observed here can be directly generalized to face-to-face negotiations.

Another, theoretically perhaps more important question is what assumptions negotiators make about other's frame. The data for the other's frame unknown condition always took an intermediate position between the other's gain and loss frame conditions. This suggests that negotiators have no specific ideas about their opponent's frame. It should be noted, however, that in our other's frame unknown condition, the other party still communicated the frame. This probably affected negotiator's assumptions about other's frame. Future research thus might examine negotiator assumptions about the opponent's frame when no information whatsoever regarding other's frame is given. It would be interesting to see to what extent negotiators rely on their own frame in inferring other's frame.

Taken together, the present study shows that because losses loom larger and are more aversive than equivalent gains, negotiators are influenced by their own frame, a priori information about other's frame, the other's communicated frame, and their interactions. However, an interesting paradox may occur in real life. An opponent with a loss frame may actually make smaller concessions than an opponent with a gain frame due to enhanced concession aversion. But the former's concessions loom larger due the loss frame. Hence, loss-framed negotiators may actually make smaller concessions than those with a gain frame, but it does not show. So it may not be that bad letting the opponent know that one has a loss frame. Our data also show, however, that explicitly conveying a loss frame in one's communication induces a loss frame in the opponent, and enhances other's tendency to mismatch one's larger concessions. As such, it is interesting to note that professional negotiators often try to convince their opponent that they have a loss perspective (Neale & Bazerman, 1991). Our data show that such a strategy might be effective to

the extent that it concerns the (implicit) provision of prenegotiation knowledge about one's frame, but highly ineffective when it concerns the explicit communication about losses and costs: Such communicating a loss frame increases other's concession aversion and may lead to escalation rather than de-escalation of the conflict.

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RECEIVED: November 3, 1992