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Laura Klaming,* Jelle van Veenen,** and Ronald Leenes***

I. INTRODUCTION

Online dispute resolution ("ODR") is an alternative to traditional dispute resolution in which two or more parties negotiate by electronic means in order to reach an agreement. The main advantages of ODR are that it is less expensive and less time-consuming than most traditional procedures. People who resolve their disputes online do not have to travel or attend meetings; instead, they can simply negotiate from their computers at home. Skeptics of ODR argue that it is less powerful than face-to-face negotiation because the absence of non-verbal cues interferes with an understanding of the other party's interests, which in turn decreases the likelihood of obtaining an integrative agreement.1 Another problem inherent both in online and offline negotiations is that because negotiations are complex and negotiators have limited information-processing capacities, it is often difficult to reach an optimal outcome. One of these cognitive limitations is negotiators’ limited perception of potential solutions for a conflict. Negotiators typically believe their opponents’ interests are diametrically opposed to their own. The existence of these fixed-pie perceptions has been identified as a major cause of ineffective conflict resolution and seem to be relatively resistant to change.2 In contrast to what negotiators typically believe, most conflict situations contain potential for solutions that benefit both parties instead of favoring one party at the expense of the other. Integrative agreements can be reached if opposing negotiators realize that they might have different priorities. Researchers have therefore suggested that a reduction in fixed-pie perception increases the likelihood of

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achieving an integrative agreement.\(^3\) The remaining question is how this can be achieved in practice.

A. Integrative Negotiation and Negotiation Techniques

Integrative negotiation occurs when negotiators collaborate and engage in problem-solving behavior in order to obtain a beneficial agreement for both parties.\(^4\) The alternatives to an integrative outcome include obtaining no agreement at all, making a compromise which only partially reflects each party's interests, or reaching an agreement that allows one party to obtain his objectives at the expense of the other party. The two parties involved achieve these suboptimal outcomes if they engage in distributive bargaining. This type of negotiating typically includes competitive behaviors, as both parties try to maximize their own payoff without realizing that a win-win solution is possible.\(^5\)

The key to integrative negotiation is to identify the interests of the other party, thereby realizing that those interests may not be opposed to one's own interests.\(^6\) Once parties obtain this insight, splitting the pie is no longer difficult; however, getting to this point is the difficult task. Negotiation literature has proposed several negotiation techniques to aid bargainers in decreasing their fixed-pie perceptions and achieving an integrative agreement.\(^7\) These strategies include "expanding the pie," "logrolling," "non-specific compensation," "bridging,"\(^8\) and "cost cutting."\(^9\) While these techniques have the common goal of generating integrative agreements, the manner in which they attempt to achieve this result differs. The "expanding the pie" technique includes adding resources in such a way that there are more possible solutions, so both parties can achieve their objectives.\(^10\) The "logrolling" strategy refers to both parties exchanging information about their preferences on the resources to be divided.\(^11\) Ideally, sharing their preferences encourages parties to concede issues that are of less priority. A "non-specific compensation" strategy directs parties to provide incentives independent of the resources that have to be divided in order that one party may obtain his objectives

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4. See generally Lewicki et al., supra note 3, at 71-101; Fisher et al., supra note 3, at 40-80.


6. See Fisher et al., supra note 3, at 3-16.

7. See, e.g., Lewicki et al., supra note 3, at 84-86; Fisher et al., supra note 3, at 9-14.

8. Since bridging turned out to be difficult to implement in an experimental context, it was not included as a negotiation strategy in the present study, and it is therefore not discussed in more detail in this paper.


10. Lewicki et al., supra note 3, at 84; Pruitt, supra note 9, at 168.

and pay off the other party for conceding.\textsuperscript{12} And “cost cutting” is a technique in which one party achieves her objectives but reduces the other party’s costs in exchange for “going along” with the outcome.\textsuperscript{13} An employee may, for example, be more willing to remain with his employer after a disadvantageous relocation if he receives assistance with finding a new apartment or receives a reimbursement for his travel expenses.

Another technique used in negotiation is knowing one’s best alternative to the negotiated agreement (“BATNA”). A party’s awareness of his BATNA may lead him to the realization that disagreeing may be disadvantageous. Research has demonstrated that people become more interested in reaching settlements than trying to maximize their own benefits when credible threats of disagreement exist.\textsuperscript{14} While the BATNA does not by itself influence this perception, an individual may put more effort into finding a solution when a possible settlement is better than that individual’s BATNA. With regard to ODR, some of these negotiation techniques are already used in order to facilitate online negotiations. For instance, “logrolling” is applied in the “family_winner”\textsuperscript{15} and “Smartsettle”\textsuperscript{16} negotiation systems.\textsuperscript{17}

The theoretical assumptions underlying the above negotiation techniques are that they require both parties to engage in a meaningful exchange of information about their interests, leading to more integrative agreements. More specifically, to obtain an integrative agreement, negotiators must understand the interests and priorities of the other party. An enhanced understanding of the opponent’s priorities is achieved if negotiators use a negotiation strategy.\textsuperscript{18} Negotiators who fail to comprehend their opponent’s interests will obtain a suboptimal outcome or no agreement at all. While these assumptions apply to both online and offline negotiations, negotiation strategies are particularly meaningful in ODR in order to provide negotiators with resources to overcome some of the disadvantages of ODR. As previously described, the absence of non-verbal cues, as well as other

\textsuperscript{12} LEWICKI ET AL., supra note 3, at 85.
\textsuperscript{13} Id.; Pruitt, supra note 9, at 168.
\textsuperscript{14} E.g., Fiecke Harinck & Carsten K. W. De Dreu, Negotiating Interests or Values and Reaching Integrative Agreements: The Importance of Time Pressure and Temporary Impasses, 34 EUR. J. OF SOC. PSYCHOL. 595, 596 (2004); Yannick Gabuthy et al., Does Resorting to Online Dispute Resolution Promote Agreements? Experimental Evidence, 52 EUR. ECON. REV. 259, 262 (2008).
\textsuperscript{17} Both “family_winner” and “Smartsettle” (www.smartsettle.com) are negotiation support systems that help negotiators to identify their priorities, and use this information to explore settlement options and suggest optimal negotiation outcomes. While Smartsettle can be used for various types of conflicts, family_winner assists people who want to get a divorce in dividing their belongings. The system lets disputants assign importance values to all belongings. These values indicate the degree of significance of certain issues. This information is used to present various settlement options, all of which involve a different trade-off. Family_winner demonstrates to the disputants that there are various ways of dividing their belongings. Smartsettle is a similar system that can be used for various kinds of conflicts, including complex multi-issue negotiations. It encourages negotiators to individually set their priorities and preferences on the conflicting issues. The system also offers a blind-bidding mechanism. The offers that negotiators make are not disclosed to the opposing party. Instead, the system shows whether offers are compatible. Blind bidding reduces the need to engage in positional bargaining, and allows negotiations to be completed in a lower number of rounds.
\textsuperscript{18} LEWICKI ET AL., supra note 3, at 84-86.
constraints in online communications, such as the time interval between reactions in asynchronous ODR, may make it more difficult to understand the other party’s preferences and ultimately obtain an integrative agreement.

While the ideas described in the negotiation literature are theoretically appealing, researchers have put little effort into empirically validating the effectiveness of these negotiation strategies with regard to their alleged merit. The question remains whether negotiators benefit from utilizing a negotiation strategy both in an online and offline environment. The present study aimed to implement the above-mentioned negotiation techniques in an online negotiation environment and to analyze their effectiveness in both reducing fixed-pie perceptions and increasing the likelihood of obtaining an agreement. The following section addresses the causes of fixed-pie perceptions and to what extent the negotiation techniques fit within this framework.

B. Information Availability and Information Processing in Negotiations

Because negotiating is a complex task that requires the negotiator to have insights into his own preferences, as well as the other party’s interests, people may hold onto their fixed-pie perceptions because this simplifies the negotiation situation. Research has demonstrated that fixed-pie perceptions are the result of both a failure to exchange information about preferences and a failure to process information about preferences.19

Failing to exchange information about each other’s preferences causes negotiators to rely on inaccurate and incomplete information about the opponent’s interests. Both the negotiator’s unwillingness to disclose information about his own preferences and his failure to ask for the other party’s preferences influence the lack of information available during a negotiation. This behavior is associated with the negotiator’s attempt to gain a competitive edge, as well as his distorted belief that he already knows the preferences of the opposing party.20 Additionally, when there is a power imbalance between negotiators, bargaining situations are sometimes characterized by a lack of trust and willingness to cooperate, which is likely to stifle information exchange about the preferences of both parties.21 Negotiators engage in distributive behavior mainly because they simply do not realize that a conflict situation contains potential for a win-win solution. According to the differentiation-before-integration hypothesis,22 individuals are likely to switch from distributive behavior to integrative behavior after they reach an impasse and realize that by engaging in distributive negotiating, they might fail to obtain an agreement.

In addition to deficits in the exchange of information, research demonstrates that negotiators are often reluctant to process information about interests and pre-
ferences, which leads to fixed-pie perceptions and poor negotiation outcomes. This error is the result of the complexity of a negotiation situation and the cognitive effort such a situation requires of the negotiators. People generally tend to form impressions in a quick and effortless way. Processing information in a way in which negotiators thoughtfully consider one another’s interests demands much more effort. Adhering to one’s initial belief that the other party’s interests are opposed to one’s own requires less effort than adjusting one’s expectations. In addition to a reluctance to put more effort into understanding the opponent’s priorities, people tend to hold onto their earlier beliefs and seek information that is consistent with, rather than conflicting with, these beliefs. Because cognitive resources are limited, focusing on achieving a favorable outcome often conflicts with comprehending the opponent’s preferences. Thus, solely exchanging information without accurately processing it may result in a reliance on faulty beliefs that consequently leads to a failure in perceiving integrative potential.

Several researchers proposed that information exchange can be enhanced by increasing negotiators’ prosocial motivation. Focusing on a favorable outcome for both parties instead of maintaining an egoistic motivation creates trust and stimulates information exchange. In addition to exchanging information about preferences, negotiators need to systematically and thoroughly process the information available during a negotiation. In order to achieve this, people’s non-directional motivation needs to be improved. Non-directional motivation refers to an individual’s “motivation to form an accurate and reasonable impression, rather than one predisposed toward any particular conclusion.” Researchers suggest that this motivation can, for example, be activated by increasing an individual’s interest or personal involvement in a task or by addressing an individual’s feeling of accountability for decisions and outcomes. In these situations, people have an increased need to be accurate, which results in a more systematic and thorough processing of information. The desire for accuracy decreases an individual’s fixed-pie perception and leads to a higher likelihood of achieving an integrative agreement.

Taken together, previous studies suggest that negotiations can be improved if negotiators exchange and process information about their interests and the other party’s interests. It is plausible that “expanding the pie,” “logrolling,” “non-specific compensation,” “cost cutting,” and knowing one’s BATNA encourage negotiators to exchange information about their preferences, thereby enabling

23. See, e.g., Pinkley et al., supra note 2, at 101-02, 104-07, 109-11; De Dreu et al., supra note 2, at 976-77, 979.
27. See, e.g., De Dreu et al., supra note 2, at 977-78, 979-80, 983-84; Van Kleef et al., supra note 26, at 511, 514-15, 517-20, 523-24.
28. De Dreu et al., supra note 2, at 977.
29. See id. at 977, 979-80, 983-985; Van Kleef et al., supra note 26, at 511, 514-15, 517-20, 523-24.
30. See De Dreu et al., supra note 2, at 977.
them to perceive integrative potential and find a creative solution for the dispute. Several researchers have, however, demonstrated that in addition to information exchange, negotiators need to be motivated to process this information in a thorough and systematic way in order to decrease their fixed-pie perceptions. Because the focus of the negotiation strategies lies with information exchange rather than thorough information processing, it is important to explore the effectiveness of these techniques regarding both a decrease in fixed-pie perceptions and an increase in the likelihood of obtaining an agreement. It is possible that, as a result of their focus on information exchange, rather than information processing, these negotiation strategies have limited impact. Further research exploring the usefulness of the strategies therefore not only has practical implications, but will also contribute to knowledge of the mechanisms that underlie these negotiation techniques.

II. EXPERIMENTS

To explore whether providing negotiators with a negotiation strategy contributes to a decrease in fixed-pie perceptions and an increase in the likelihood of obtaining an agreement, we conducted two experiments. In both studies, participants negotiated several issues in an online environment. We discuss the methodology, the most important findings, and their implications in the following sections.

A. Experiment 1

We conducted the first experiment to test whether people revise their fixed-pie perceptions when they receive one of the following negotiation strategies: (1) "expanding the pie," (2) "logrolling," (3) "non-specific compensation," (4) "cost cutting," or (5) knowing one's BATNA. We included a control group to measure whether negotiators who receive a negotiation strategy revise their fixed-pie perceptions to a greater extent than negotiators who do not receive any specific negotiation technique. Based on the above literature review, we hypothesized:

Hypothesis 1: Negotiators revise their fixed-pie perception during the course of a negotiation.

Hypothesis 2: Negotiators who receive a negotiation strategy (experimental conditions) are more likely to revise their fixed-pie perceptions than negotiators who do not receive a negotiation strategy (control condition).

We further tested whether the probability of reaching an agreement increases when people receive a negotiation strategy. Our underlying assumption is that when people revise their fixed-pie perceptions, they are more likely to obtain an agreement. We therefore tested the following hypotheses:
Hypothesis 3: Negotiators who receive a negotiation strategy (experimental conditions) are more likely to obtain an agreement than negotiators who do not receive a negotiation strategy (control condition).

Hypothesis 4: A decrease in fixed-pie perception leads to an increase in the likelihood of obtaining an agreement.

1. Method

Eighty-eight graduate students of Tilburg University in the Netherlands participated in the experiment. Four participants were removed from further analyses because they failed to fill in their fixed-pie perception after the negotiation; therefore, we were able to analyze the results of eighty-four participants, forty-eight (57.1%) of whom were male and thirty-six (42.9%) of whom were female. The mean age was 22.2 years (SD = 2.7 years). The majority of the participants were economics (40.5%) and law (39.3%) students.

The experiment took place in a room equipped with four computers. After logging onto the computer, subjects answered questions about their gender, age, field of study, and year of study. Then they received the negotiation materials (instructions, information about the conflict, a payoff schedule) and one of the negotiation strategies (none, "expanding the pie," "logrolling," non-specific compensation," "cost-cutting," and BATNA). Subjects were randomly assigned to either the control condition or one of the experimental conditions and received additional instructions depending on the condition to which they were assigned. Participants were not allowed to communicate during the completion of the negotiation task. We informed them that the negotiation would continue for seven rounds, after which it would be terminated regardless of whether or not they had obtained an agreement. Participants were told that if they failed to reach an agreement with the other party, they would obtain no points. We informed the subjects that one iPod would be allotted among all participants and two additional iPods would be awarded to those who reached the highest number of points. Not obtaining an agreement would therefore decrease their chances of winning an iPod. This incentive ensured that participants would take the negotiation task seriously, try to maximize their points, and try to reach an agreement.

The negotiation task used in the present experiment mirrored negotiation tasks used by prior researchers. The task involved a buyer and seller negotiating the price, warranty, and delivery time of a computer (see Table 1). The negotiation took place by computer. Participants were told that they wanted to purchase a computer and should use their payoff schedule in order to obtain a deal most favorable to them in terms of points on the three issues to be negotiated. They had to negotiate with the computer's seller, who was not an actual person but whose actions were electronically dictated. Participants were not informed that they were negotiating with a computer rather than a real person. As can be seen in the payoff schedule, the best deal for the buyer was 9-9-9, for a total outcome of

31. SD means "Standard Deviation."
32. See, e.g., Thompson & Hastie, supra note 2, at 103-05, 112-13; Thompson, supra note 2, at 164-66, 171-72; De Dreu et al., supra note 2, at 978-79.
1,000 points, while the least favorable outcome was 1-1-1, for a total outcome of 0 points. Participants were only provided with their own payoff schedule and did not know the preferences of the other party.

Table 1. Negotiator's payoff schedule for computer negotiation task (adopted from Van Kleef, De Dreu & Manstead, 2004).

<table>
<thead>
<tr>
<th>Level</th>
<th>Price of computer</th>
<th>Warranty period</th>
<th>Delivery time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Payoff</td>
<td>Warranty</td>
</tr>
<tr>
<td>1</td>
<td>1500</td>
<td>0</td>
<td>1 month</td>
</tr>
<tr>
<td>2</td>
<td>1450</td>
<td>65</td>
<td>2 months</td>
</tr>
<tr>
<td>3</td>
<td>1400</td>
<td>130</td>
<td>3 months</td>
</tr>
<tr>
<td>4</td>
<td>1350</td>
<td>195</td>
<td>4 months</td>
</tr>
<tr>
<td>5</td>
<td>1300</td>
<td>260</td>
<td>5 months</td>
</tr>
<tr>
<td>6</td>
<td>1250</td>
<td>325</td>
<td>6 months</td>
</tr>
<tr>
<td>7</td>
<td>1200</td>
<td>390</td>
<td>7 months</td>
</tr>
<tr>
<td>8</td>
<td>1150</td>
<td>455</td>
<td>8 months</td>
</tr>
<tr>
<td>9</td>
<td>1100</td>
<td>520</td>
<td>9 months</td>
</tr>
</tbody>
</table>

The different negotiation strategies were operationalized as follows. In the "expanding the pie" condition, a fourth bargaining chip—a printer that was offered to negotiators for a special price—was added in order to create more possible solutions. Participants assigned to the "logrolling" condition were provided with information about the seller’s preferences during the course of the negotiation. In the "non-specific compensation" condition, the seller offered to the buyer distinct presents that were of varying value, e.g., a gift certificate for a book or a CD. Subjects assigned to the "cost cutting" condition were told that the seller would deliver and assist in the installation of the computer if the buyer accepted the longer delivery time. In the BATNA condition, negotiators were told that not obtaining an agreement would force the buyer to buy the computer at an increased price rather than the special offer price. These pieces of information were repeated over the course of the negotiation to ensure that participants understood and used the information.

Moreover, participants received more information as the negotiation proceeded. For example, in the second negotiation round, subjects assigned to the "logrolling" condition were informed that the delivery time was of the highest priority for the seller. In the third round, they were told that the price was of the lowest priority for the seller. In the fourth, fifth, and sixth rounds, they received information about the number of points that the delivery time, price, and warranty were worth for the seller.
Table 2. The payoff schedules for negotiator (buyer) and opponent (seller) for computer negotiation task (adopted from Van Kleef, De Dreu & Manstead, 2004).

<table>
<thead>
<tr>
<th>Level</th>
<th>Price of computer</th>
<th>Warranty period</th>
<th>Delivery time</th>
<th>Printer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Payoff</td>
<td>Warranty</td>
<td>Payoff</td>
</tr>
<tr>
<td><strong>Buyer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1500</td>
<td>0</td>
<td>1 month</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1450</td>
<td>65</td>
<td>2 months</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>1400</td>
<td>130</td>
<td>3 months</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>1350</td>
<td>195</td>
<td>4 months</td>
<td>120</td>
</tr>
<tr>
<td>5</td>
<td>1300</td>
<td>260</td>
<td>5 months</td>
<td>160</td>
</tr>
<tr>
<td>6</td>
<td>1250</td>
<td>325</td>
<td>6 months</td>
<td>200</td>
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<td>7</td>
<td>1200</td>
<td>390</td>
<td>7 months</td>
<td>240</td>
</tr>
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<td>8</td>
<td>1150</td>
<td>455</td>
<td>8 months</td>
<td>280</td>
</tr>
<tr>
<td>9</td>
<td>1100</td>
<td>520</td>
<td>9 months</td>
<td>320</td>
</tr>
</tbody>
</table>

| **Seller** | | | | | | | | |
| 1     | 1500  | 160  | 1 month | 320   | 9 weeks | 520 | Type A | 120|
| 2     | 1450  | 140  | 2 months | 280   | 8 weeks | 455 | Type B | 105|
| 3     | 1400  | 120  | 3 months | 240   | 7 weeks | 390 | Type C | 90 |
| 4     | 1350  | 100  | 4 months | 200   | 6 weeks | 325 | Type D | 75 |
| 5     | 1300  | 80   | 5 months | 160   | 5 weeks | 260 | Type E | 60 |
| 6     | 1250  | 60   | 6 months | 120   | 4 weeks | 195 | Type F | 45 |
| 7     | 1200  | 40   | 7 months | 80    | 3 weeks | 130 | Type G | 30 |
| 8     | 1150  | 20   | 8 months | 40    | 2 weeks | 65  | Type H | 15 |
| 9     | 1100  | 0    | 9 months | 0     | 1 week  | 0   | Type I | 0  |

Participants were informed that the seller (the computer program) would make the first offer and that they had to either accept it or place a counteroffer. Because of the seller’s preferences, the following strategy was programmed and used by the seller: 1-1-1, 2-1-1, 3-3-1, 4-4-1, 4-5-1, 5-5-1, 6-5-1. This strategy is logical as the seller’s highest priority was delivery time, followed by warranty and price. With this strategy, the seller made the highest concessions on price, followed by warranty and delivery time. The negotiation continued until the buyer made an offer that equaled or exceeded the seller’s offer or until the seventh negotiation round was complete. If, for example, the buyer demanded 4-3-1 (which equaled 860 points for the seller) in round three, the seller would have accepted this offer because the seller (the computer program) would have demanded 4-4-1 (which equaled 820 points for the seller) in the next round. The buyer’s demand of 4-3-1 exceeded the seller’s subsequent demand of 4-4-1 in terms of number of points.

We measured overall efficiency of the distinct negotiation techniques by assessing participants’ fixed-pie perceptions before and after the negotiation, as well as by whether or not they reached an agreement. We measured fixed-pie perceptions by asking subjects to distribute a total of ten points among the three issues according to their beliefs about the opponent’s priorities. If a subject had a fixed-pie perception, he would believe that the opponent’s interests were opposed to his own—i.e., the buyer would find a low price most important and believe the seller

33. Note that the fourth issue (printer) is only provided to participants assigned to the "expanding the pie" condition.
would find a high price most important. Therefore, if a subject’s highest priority was price, followed by warranty and delivery time, he would have a fixed-pie perception if he believed that price was most important to the seller, followed by warranty and delivery time. In this example, he might attribute five points to price, three points to warranty, and two points to delivery time. A subject who perceived integrative potential instead might attribute two points to price, three to warranty and five to delivery time.

A fixed-pie perception measure was created by dividing the scores on the buyer’s payoff matrix by 100 and converting them into absolute scores. This resulted in: 5-3-2. Subsequently, the seller’s points on each issue, i.e., the participant’s estimation of the seller’s priorities, were subtracted from the buyer’s points on each issue. This resulted in three scores. Negative scores were multiplied by -1. Subsequently, all three scores were added up. While a score of 0 indicated a perfect fixed-pie perception, a score higher than 0 indicated that the subject perceived integrative potential. The score did not, however, indicate the degree to which an individual perceived integrative potential; a higher score did not necessarily indicate greater perceived integrative potential. The above described examples would result in (5-5)+(3-3)+(2-2)=0 and (5-2)+(3-3)+(2-5)=6. While the first score in this example indicates a fixed-pie perception, the second score indicates that the individual perceives integrative potential, without specifying the degree to which he perceives integrative potential.

In addition to examining participants’ fixed-pie perceptions before and after the negotiation, we assessed whether participants obtained an agreement. Table 2 gives an overview of the opponent’s payoff schedule (which was not provided to participants). Joint outcomes, i.e., the profit that both parties made together, were measured by adding the points of the buyer and the seller on all three issues. If participants failed to reach an agreement, this automatically resulted in a score of 0 points. The highest possible joint outcome was 9-5-1 which resulted in a total of 1,360 points. If negotiators settled for a compromise—by assuming a middle ground position on each issue, i.e. 5-5-5—this resulted in a joint outcome of 1,000 points. Thus, when participants realize that their opponent’s priorities are not opposed to their own, they are able to obtain a better outcome than when they simply meet halfway.

2. Results

Of the eighty-four participants, twenty-seven (32.1%) had a fixed-pie perception before the negotiation and fifty-seven (67.9%) perceived integrative potential before the negotiation. The percentage of people who had a fixed-pie perception before the negotiation was lower than expected, given previous research findings which show that most negotiators typically have a fixed-pie perception. The low number of people with fixed-pie perceptions in our first experiment is probably due to the fixed-pie measure we used. Asking subjects to distribute a total of ten points among the three issues according to their beliefs about the opponent’s priorities is likely to result in a score higher than 0—indicating that the individual

34. De Dreu et al., supra note 2, at 976 (citing Pinkley et al., supra note 2; Thompson & Hastie, supra note 2).
perceives integrative potential. It may be, however, that participants who received a score higher than 0 using our fixed-pie measure did actually have a fixed-pie perception. Hence, the fixed-pie measure used probably did not accurately detect all people with a fixed-pie perception. As expected, the proportion of participants with a fixed-pie perception before the negotiation was equal across all six conditions, including the control condition.

After the negotiation, fourteen (16.7%) subjects were found to have a fixed-pie perception as opposed to seventy (83.3%) who perceived integrative potential. More precisely, of the eighty-four participants, nineteen (22.6%) had improved from having a fixed-pie perception before the negotiation to perceiving integrative potential after the negotiation, six (7.1%) had no fixed-pie perception before and had a fixed-pie perception after the negotiation, and the remaining fifty-nine (70.2%) had not changed their perception. Overall, the decrease in fixed-pie perception was statistically significant ($\chi^2 = 4.81, df = 1, p < .05$). This finding indicates that during the negotiation, people revised their fixed-pie perception and correctly perceived integrative potential. Thus, the results support Hypothesis 1.

In order to test Hypothesis 2, we assessed whether respondents who received a negotiation strategy were more likely to experience a decrease in fixed-pie perception than those who did not receive a negotiation strategy. The findings do not support Hypothesis 2, as there was no significant difference between those who received a negotiation strategy and those in the control group in terms of perceiving integrative potential after the negotiation ($\chi^2 = 6.59, df = 5, p = .25$). This finding suggests that negotiators who receive a negotiation strategy are not more likely to revise their fixed-pie perception than negotiators who do not receive a negotiation strategy.

Table 3. Fixed-pie perception before and after the negotiation, frequency of agreements obtained, and mean and median of points obtained across the six conditions.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Fixed-pie before</th>
<th>Fixed-pie after</th>
<th>Agreement</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>1230</td>
<td>1225</td>
</tr>
<tr>
<td>Expanding the pie</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>1195</td>
<td>1225</td>
</tr>
<tr>
<td>Logrolling</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>1232</td>
<td>1225</td>
</tr>
<tr>
<td>Non-specific compensation</td>
<td>6</td>
<td>1</td>
<td>10</td>
<td>1198</td>
<td>1225</td>
</tr>
<tr>
<td>Cost cutting</td>
<td>3</td>
<td>3</td>
<td>10</td>
<td>1238</td>
<td>1247.5</td>
</tr>
<tr>
<td>BATNA</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>1166</td>
<td>1157.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27</strong></td>
<td><strong>14</strong></td>
<td><strong>53</strong></td>
<td><strong>1208</strong></td>
<td><strong>1225</strong></td>
</tr>
</tbody>
</table>

Fifty-three (63.1%) subjects reached an agreement, while the remaining thirty-one (36.9%) subjects failed to reach an agreement. In thirty-one (58.5%) of these fifty-three cases where an agreement was reached, the deal was made by the buyer and in twenty-two cases (41.5%) by the seller (the computer). In the majority of

35. A $\chi^2$ (chi-square) test for independence is used to determine the relationship between two categorical variables. It compares the frequency of cases found in the various categories of one variable across the different categories of another variable. The degrees of freedom (df) are calculated by: (rows - 1)(columns - 1). The test result is statistically significant if the $p$-value is smaller than .05.

36. If an overwhelming majority of the deals (e.g. ninety percent or higher) were made by either the buyer or the seller, that would have suggested that there was a problem with our methodology.
the cases where an agreement was obtained (60.4%), it was reached in the last round of negotiation. Participants who obtained a deal were found to make higher concessions in the last round than in the preceding rounds, which may indicate that knowing that the negotiation would be interrupted after the seventh round regardless of whether or not they had obtained an agreement influenced their negotiation behavior. Apparently, time pressure led to more cooperative behavior.

The results further demonstrate that subjects who received a negotiation strategy did not obtain an agreement more often than subjects in the control condition ($\chi^2=4.25$, $df=5$, $p=.51$). The results therefore do not support Hypothesis 3. Apparently, whether or not a negotiator receives a negotiation strategy, and if so, which negotiation strategy he is provided, does not increase the likelihood of obtaining an agreement. In addition, our results do not support Hypothesis 4, where we predicted that a decrease in fixed-pie perception would lead to an increase in the likelihood of the parties obtaining an agreement. In fact, there was no significant link between whether or not someone obtained an agreement and fixed-pie perception after the negotiation ($\chi^2=.01$, $df=1$, $p=.92$). Surprisingly, this finding suggests that obtaining an agreement does not depend on whether or not a person perceives integrative potential.

If an agreement was reached, the negotiators obtained on average 1,208 points (Md.$n=1,225$ points, SD=53 points). The results demonstrate a statistically significant difference in the number of points obtained in the distinct conditions ($\chi^2=13.66$, $df=5$, $p<.05$). As can be seen in Table 3, participants who received the “cost cutting” strategy obtained a higher number of points than all other groups, while participants assigned to the BATNA condition obtained a lower number of points than all other groups, including the control group. The only statistically significant difference in number of points obtained was between the “cost-cutting” and the BATNA condition ($U=14.5$, $N=20$, $p<.05$). This finding suggests that receiving the “cost cutting” strategy may lead to higher joint outcomes, i.e., outcomes where both parties maximize their respective payoffs, than receiving the BATNA condition. However, because there was no significant difference between the control condition and the “cost-cutting” condition or between the control condition and any other experimental condition, we cannot conclude that subjects who received a negotiation strategy obtained a higher number of points than subjects who did not receive a negotiation strategy.

Taken together, the results demonstrate that while negotiators more often perceived integrative potential after the negotiation, this change in perception is due

37. The Kruskal-Wallis test was used as an alternative to one-way ANOVA because the independent variable (number of points) is not normally distributed. See generally David S. Moore & George P. McCabe, Introduction to the Practice of Statistics (W.H. Freeman & Co. 3d. ed. 1999). This test is used to test for differences between three or more independent groups (here all six different conditions) on a continuous measure (here the number of points). $\chi^2$ indicates the value of the test statistic and $df$ stands for the degrees of freedom, which are calculated by subtracting 1 from the number of groups. Id. The test result is statistically significant if the $p$-value is smaller than .05. Id.

38. The Mann-Whitney U test was used as an alternative to an independent samples t-test because the independent variable (number of points) is not normally distributed. Id. This test is used to test for differences between two independent groups (here the “cost-cutting” and the BATNA condition) on a continuous measure (here the number of points). Id. The Mann-Whitney U test compares medians. U indicates the value of the test statistic and $N$ indicates the number of subjects. Id. The test result is statistically significant if the $p$-value is smaller than .05. Id.
to the negotiation itself rather than a particular negotiation strategy. Utilizing a negotiation strategy did not cause a noteworthy decrease in fixed-pie perceptions, nor did the use of a negotiation strategy lead to a greater number of agreements. We discuss the findings and their implications in more detail in the following section.

3. Discussion

One of the most important findings of the first study is that fewer participants had a fixed-pie perception after the negotiation as compared to before the negotiation. This difference was statistically significant, suggesting that people are able to revise their fixed-pie perceptions in the course of a negotiation. Apparently, negotiators had an improved understanding of the seller’s preferences after the negotiation. The fact that negotiators who received a negotiation strategy and negotiators who did not receive a negotiation strategy both improved their perceptions of potential integrative solutions suggests that a revision in fixed-pie perception is the result of the negotiation itself rather than a negotiation strategy. It therefore seems that the negotiation strategies did not sufficiently motivate bargainers to engage in more thorough and systematic processing of the opponent’s interests which is, according to previous research, an essential prerequisite for a reduction in fixed-pie perceptions. However, more research with a larger sample size is necessary to further explore this finding and make valid conclusions about the effectiveness of negotiation strategies in an online environment.

In contrast to previous research findings, we did not find that a reduction in fixed-pie perception resulted in an increased likelihood of obtaining an agreement. Moreover, whether or not participants received a negotiation strategy had no influence on the likelihood of obtaining an agreement. These observations are surprising in light of previous research findings, and they lend support to the assumptions that the sample was too small and that more research with a larger sample is necessary to be able to draw valid conclusions. It is also possible that the surprising findings are due primarily to the fact that the negotiation took place by computer. It may be that, in general, it is easier to obtain an agreement with the opponent when negotiating face-to-face. Furthermore, it is likely that negotiation strategies work better in face-to-face than in online negotiations. An important question for future research is therefore whether the findings of the present study apply to face-to-face negotiations.

Another interesting finding of the first study relates to the proportion of subjects who reached an agreement. In total, two-thirds of the participants obtained an agreement, and the majority of the participants obtained an agreement in the seventh, and last, negotiation round. Before the negotiation, we informed the participants that the negotiation would not exceed seven rounds and that they could increase their chances of winning an iPod if they obtained an agreement. The finding that the majority of the participants who obtained an agreement did so in the last round strongly suggests that participants were highly motivated to obtain an agreement in the last round to increase their chances of winning an iPod—rather than because of an increased perception of integrative potential. This assumption is further supported by the finding that participants who obtained an agreement were not significantly less likely to have a fixed-pie perception after the negotiation as compared to participants who had not obtained an agreement.
Apparently, obtaining an agreement is a function of intending to increase one’s odds of winning an iPod rather than the result of a reduction in fixed-pie perceptions.

To further validate this assumption, we analyzed the number of points participants were willing to concede across the six offers. We found that participants conceded more points in the last as compared to the preceding rounds of the negotiation. This strongly suggests that knowing that the sixth offer is the last one had an influence on the behavior of the participants. This finding is in line with previous research on the effect of time pressure on negotiation behavior.39 Proximity to a deadline, in this case the seventh negotiation round, makes moving toward an agreement more urgent and leads to decreased resistance to making concessions. In a follow-up experiment, participants should therefore not be informed about the number of rounds in order to exclude this effect on their behavior.

The findings of the first experiment furthermore shed light on the distinctiveness of the negotiation strategies used. The “expanding the pie,” “non-specific compensation,” and “cost cutting” strategies are very similar to each other. When using these three negotiation techniques, resources are added to the initial issues to facilitate reaching an agreement. Thus, the aim of the three techniques is identical while the manner in which it is achieved differs. Consequently, these three strategies might be grouped together in a follow-up experiment to further enhance comprehension. A smaller number of conditions will produce more useful results due to the increase in the number of subjects per condition.

Taken together, the findings of the first experiment revealed several interesting results. Some of the findings were not, however, in accord with previous research findings, probably due to the relatively small sample size as well as certain problems in the experimental setup—like differentiating between similar negotiation strategies and informing all participants about the number of negotiation rounds. We therefore decided to conduct a second experiment with a larger sample and several changes in the experimental setup.

B. Experiment 2

We designed the second experiment to test whether people revise their fixed-pie perceptions when they receive one of the following negotiation strategies: (1) “adding resources,” (2) “logrolling,” and (3) knowing one’s BATNA. Based on the research findings of the first experiment, we hypothesized that:

Hypothesis 1: Negotiators revise their fixed-pie perception during the course of a negotiation.

Although the results of the first experiment did not confirm the assumption that negotiation strategies are more effective in reducing people’s fixed-pie per-
ceptions, based on the assumption that this unexpected result was primarily due to the small sample, we again hypothesized that:

Hypothesis 2: Negotiators who receive a negotiation strategy (experimental conditions) are more likely to revise their fixed-pie perceptions than negotiators who do not receive a negotiation strategy (control condition).

As in the first experiment, we included a control group to measure whether negotiators who receive a negotiation strategy revise their fixed-pie perceptions to a greater extent than negotiators who do not receive any strategy—the underlying assumption being that a decrease in fixed-pie perception results in an increase in the likelihood of obtaining an agreement. Therefore, we again tested the following hypothesis:

Hypothesis 3: Negotiators who receive a negotiation strategy (experimental conditions) are more likely to obtain an agreement than negotiators who do not receive a negotiation strategy (control condition).

As previously mentioned, the “expanding the pie,” the “non-specific compensation,” and the “cost-cutting” strategies are very similar, so we decided to group them together as the “adding resources” condition. We operationalized this strategy by providing the negotiator with additional incentives, e.g., a gift certificate for a book or a CD. The “adding resources” condition is therefore equivalent to the “non-specific compensation” condition from the first experiment. We renamed the strategy because it is composed of three strategies that are distinguished in the literature but, by our understanding, are very similar to each other. The “logrolling” condition of the second experiment was operationalized in the same way as in the first experiment—by providing subjects with information about the other party’s interests. However, the BATNA condition was operationalized differently in the second experiment than in the first experiment.

In the first experiment, the BATNA participants were merely informed that failing to obtain an agreement would force the buyer to buy the computer at an increased price rather than the special offer price. Essentially, these negotiators had to imagine a future negative alternative outcome. In the second experiment, participants assigned to the BATNA condition were told that the negotiation would have seven rounds, after which it would be terminated. Therefore, their BATNA was that not obtaining an agreement would result in no points, meaning that they would not take part in the lottery for an iPod. As such, the participants in the second experiment were provided with a real, tangible alternative.

Another difference between the first and second experiments is that in the first experiment, all participants were aware that the negotiations would be concluded after seven rounds. In the second experiment, the participants who received the “adding resources,” “logrolling,” or control conditions were not informed that the negotiation would only last for seven rounds. The BATNA condition in the second experiment also conceptually differed from the other two conditions in this experiment because in the BATNA condition, participants were not provided with information regarding the content of the negotiation, i.e., additional incentives or information about the other party’s interests; instead, the BATNA
participants were only informed about the length of the negotiation, i.e., that the negotiation would be terminated after seven rounds.

Given the findings of the first study, we assumed that the three negotiation strategies would lead to different outcomes—with the “adding resources” and “logrolling” strategies leading to a greater reduction in fixed-pie perceptions than the BATNA strategy, but with the BATNA strategy leading to more agreements. This assumption is based on the first experiment which found no link between a reduction in fixed-pie perceptions and an increased likelihood of obtaining an agreement. Despite the findings of the first experiment, we still believed that, given the methodological changes in the second experiment, the “adding resources” and the “logrolling” strategies would reduce people’s fixed-pie perceptions and influence the likelihood of obtaining an agreement. In contrast to the “adding resources” and “logrolling” strategies, we assumed that the BATNA strategy would influence the likelihood of obtaining an agreement as a result of an external motivation to obtain a valuable outcome—meaning that BATNA participants who obtained an agreement would not be more likely to have revised their fixed-pie perception than people who did not obtain an agreement. Hence, we theorized that fewer people in the BATNA condition would reduce their fixed-pie perception, but nevertheless, more people in this condition would obtain an agreement because they wanted to participate in the lottery for an iPod and knew that they only had seven negotiation rounds to obtain an agreement. This assumption is in line with the findings of the first experiment, as well as previous research findings on the influence of time pressure on negotiation behavior. These findings established that time pressure makes moving towards an agreement more urgent, and it therefore makes reaching an agreement more likely. Based on such previous research, we formulated the following hypotheses:

Hypothesis 4: More participants in the BATNA condition obtain an agreement than participants in the “adding resources” and the “logrolling” conditions.

Hypothesis 5: More participants in the “adding resources” and the “logrolling” condition reduce their fixed-pie perception than participants in the BATNA condition.

These hypotheses suggest that the link between reducing fixed-pie perceptions and reaching an agreement is weaker than previous research indicates. More specifically, we believe that while a reduction in fixed-pie perceptions may lead to more agreements it is not, as previously assumed, a basic prerequisite for obtaining an agreement. Instead, people who fail to fully perceive integrative potential may still be able to reach a settlement if they are motivated in other ways—for example, if they realize the potentially disadvantageous consequences of failing to settle.

40. See, e.g., Carnevale & Lawler, supra note 39, at 637; Gino & Moore, supra note 39, at 374.
I. Method

Two hundred ninety-eight law students of Tilburg University participated in the study in exchange for course credit. Three participants were removed from further analyses because they failed to fill in their fixed-pie perception after the negotiation, which resulted in a total of 295 participants. Of these 295 participants, 91 (30.8%) were male and 204 (69.2%) were female. The mean age was 23.4 years (SD = 3.9 years).

The second experiment proceeded in substantially the same way as the first experiment. However, unlike in the first experiment, participants were not informed about the number of negotiation rounds. Only participants in the BATNA condition received this information.

We measured the effectiveness of the distinct negotiation techniques by assessing participants’ fixed-pie perceptions before and after the negotiation, as well as their ability to reach an agreement. In contrast to the first experiment, we used a different measure to assess participants’ fixed-pie perceptions (hereafter “fixed-pie measure 2”). Subjects were asked to rank, one through three, the importance of the computer’s price, warranty, and delivery time based on their beliefs of the opponent’s priorities. As in the first experiment, the buyer’s highest priority was price, followed by warranty and delivery time. A person who has a fixed-pie perception believes that the other party’s interests are opposed to his own, i.e., he thinks that the opponent also finds price most important, followed by warranty and delivery time. Such a perception would make the participant rank the three issues in the following order: price, warranty, delivery time. Subjects who indicated this rank order were thus categorized as having a fixed-pie perception, whereas all other subjects were categorized as perceiving integrative potential.

In addition, for the sake of thoroughness and in order to compare the results of both experiments, we also used the same fixed-pie measure that we used in the first experiment (hereafter “fixed-pie measure 1”). So, in addition to asking subjects to rank the three issues, we asked them to assign ten points to the three issues according to their beliefs about the opponent’s priorities. Since we believe that fixed-pie measure 2 is more accurate than fixed-pie measure 1, we determined that a participant had a fixed-pie perception if he ranked the three issues according to the same priority as they are ranked in their own payoff schedule (price, warranty, delivery time). We included the fixed-pie measure 1 primarily to be able to compare the results of the second study to the results obtained in the first experiment. We decided to include a second measure for fixed-pie perceptions in order to simplify the test for participants and thus minimize the possibility of error. Ranking issues is an easier task than distributing points. In fact, ranking precedes the distribution of points. While fixed-pie measure 2 identifies all participants who rank price first, warranty second, and delivery time third as having a fixed-pie perception, fixed-pie measure 1 only detects those people who rank the issues in this order and additionally distribute exactly five points to price, three points to warranty and two points to delivery time. Any other distribution of points may result in a score higher than 0 (reflecting perceived integrative potential), but may still reflect the same rank order (e.g., when distributing six points to price, three points to warranty and one point to delivery time). In this scenario, fixed-pie measure 1 would categorize the participant as having integrative potential, despite the fact
that his rank order indicated a fixed-pie perception. We believe that fixed-pie measure 2 is more accurate because it appropriately identifies a larger number of people with a fixed-pie measure than the fixed-pie measure 1, which only included the distribution of points. We therefore determined that a participant had a fixed-pie perception if fixed-pie measure 2 indicated that he had a fixed-pie perception, regardless of what fixed-pie measure 1 indicated.

In addition to analyzing the participants’ fixed-pie perceptions before and after the negotiation, we measured the number of participants who obtained an agreement. Table 2 gives an overview of the opponent’s payoff schedule (which was not provided to participants). We again measured joint outcomes by adding the points of the buyer and the seller on all three issues. As in the first experiment, the highest possible joint outcome was 9-5-1, which resulted in a total of 1,360 points. If negotiators settled for a compromise—by taking a middle ground on each issue, i.e., 5-5-5—this resulted in a joint outcome of 1,000 points.

2. Results

Of the 295 participants, 114 (38.6%) had a fixed-pie perception before the negotiation as measured by fixed-pie measure 1, compared to 203 (68.8%) who had a fixed-pie perception before the negotiation as measured by fixed-pie measure 2. The two fixed-pie measures were found to have a statistically significant correlation with each other ($\chi^2=33.88$, $df=1$, $p<.05$, $\phi=.34$), which suggests that they both measure fixed-pie perceptions. As expected, the number of participants with a fixed-pie perception using fixed-pie measure 2 was considerably higher. The findings of other studies concerning the proportion of people who enter a negotiation with a fixed-pie perception\textsuperscript{41} are similar to the findings provided by fixed-pie measure 2, which strongly suggests that this is a more accurate measure of fixed-pie perceptions than fixed-pie measure 1 in this context. Therefore, we used fixed-pie measure 2 for all subsequent analyses. As expected, the proportion of participants with a fixed-pie perception, using either fixed-pie measure, was equal across all four conditions, including the control condition.

As opposed to the 203 (68.8%) participants who had a fixed-pie perception before the negotiation, seventy-five (25.4%) participants had a fixed-pie perception after the negotiation. The decrease in fixed-pie perception was found to be statistically significant ($\chi^2=8.9$, $df=1$, $p<.05$). This finding indicates that during the negotiation, people revised their fixed-pie perception and correctly perceived integrative potential, just as they had in the first experiment. Thus, the results support Hypothesis 1.

In order to test Hypothesis 2, we subsequently tested whether respondents who received a negotiation strategy were more likely to experience a reduction in fixed-pie perception than those who did not receive a negotiation strategy. The findings do not support Hypothesis 2, as there was no statistically significant difference across the conditions in terms of perceiving integrative potential after the negotiation ($\chi^2=2$, $df=3$, $p=.57$). This finding is in line with the finding of the first experiment and suggests that negotiators receive a negotiation strategy are

\textsuperscript{41} See Thompson & Hastie, supra note 2, at 106-10, 114-15; Pinkley et al., supra note 2, at 104-05, 109-10.
not more likely to revise their fixed-pie perception than negotiators who do not receive a negotiation strategy.

Table 4. Fixed-pie perception before and after the negotiation, frequency of agreements obtained, and mean and median of points obtained across the four conditions.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Fixed-pie before</th>
<th>Fixed-pie after</th>
<th>Agreement</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measure 1</td>
<td>Measure 2</td>
<td>Measure 1</td>
<td>Measure 2</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>47</td>
<td>10</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Adding resources</td>
<td>29</td>
<td>52</td>
<td>7</td>
<td>22</td>
<td>30</td>
</tr>
<tr>
<td>Logrolling</td>
<td>31</td>
<td>53</td>
<td>12</td>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>BATNA</td>
<td>29</td>
<td>51</td>
<td>11</td>
<td>21</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>114</td>
<td>203</td>
<td>40</td>
<td>75</td>
<td>109</td>
</tr>
</tbody>
</table>

With regard to the likelihood of obtaining an agreement, we found that 109 (36.9%) subjects reached an agreement, while the remaining 186 (63.1%) subjects failed to reach an agreement. In 64 (58.7%) of these 109 cases, the deal was made by the buyer, and in 45 (41.3%) cases, the deal was made by the seller (the computer). In 49.5 percent of the cases where an agreement was obtained, it was reached in the last, i.e., seventh round. This is lower than the proportion of negotiators who obtained an agreement in the last round of the first experiment (60.4%). Furthermore, the proportion of participants who obtained an agreement in the second experiment is considerably lower than in the first experiment (63.1% vs. 36.9%), presumably because negotiators were not informed about the number of negotiation rounds unless they were assigned to the BATNA condition. Taken together, these results therefore suggest that known proximity to a deadline has a positive effect on the likelihood of obtaining an agreement.

As can be seen in Table 4, subjects who received any negotiation strategy obtained an agreement more often than subjects in the control condition ($\chi^2=7.75, df=3, p<.1$).\(^{42}\) The results do therefore support Hypothesis 3. In the first experiment, we did not find support for this hypothesis, probably due to the problems in the experimental setup in the first experiment, as well as the smaller sample. Hence, receiving a negotiation technique improves negotiations in terms of leading to more agreements. As expected, negotiators who knew their BATNA more often achieved an agreement than negotiators who received either no strategy or one of the other two negotiation strategies. As previously mentioned, it seems that time pressure improves negotiations by increasing the likelihood of achieving an agreement. This finding supports Hypothesis 4.

Interestingly, there was no significant relationship between whether or not someone obtained an agreement and fixed-pie perception after the negotiation ($\chi^2=.23, df=1, p=.64$). This means that negotiators who perceived integrative potential after the negotiation were not more likely to obtain an agreement than

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\(^{42}\) The result is significant at the .1 level ($\chi^2=7.75, df=3, p=.052$).
negotiators who still had a fixed-pie perception. This finding is consistent with the finding of the first experiment and suggests that obtaining an agreement does not necessarily depend on whether or not a person perceives integrative potential.

In order to further explore the relationship between fixed-pie perception and reaching negotiation agreements, we analyzed the differences between the experimental groups in more detail. When analyzing all participants assigned to the experimental conditions, regardless of whether they obtained an agreement, there was no significant difference in fixed-pie perceptions after the negotiation across the three groups ($\chi^2=1.67$, $df=2$, $p=.43$). Hence, all three negotiation techniques had an equal effect on the reduction of fixed-pie perceptions, i.e., the proportion of people who had no fixed-pie perception was equal across the three experimental conditions. In contrast, when considering only participants who obtained an agreement, the difference in fixed-pie perception across the three groups became significant ($\chi^2=4.71$, $df=2$, $p<.1$). Of those negotiators who obtained an agreement, more participants in the BATNA condition still had a fixed-pie perception after the negotiation than participants in the “adding resources” and the “logrolling” conditions. This finding is in line with Hypothesis 5 and may be attributed to the fact that participants assigned to the “adding resources” and “logrolling” conditions received additional information which allowed them to reassess their assumptions about the seller’s preferences and perceive integrative potential, whereas participants assigned to the BATNA condition only received information about the length of the negotiation. Moreover, because subjects assigned to the BATNA condition were more likely to obtain an agreement, but were still more likely to have a fixed-pie perception than participants assigned to the other two experimental conditions, this experiment suggests that the probability of obtaining an agreement does not depend on whether or not a negotiator perceives integrative potential.

Regardless of which condition they received, if negotiators reached an agreement, they obtained an average of 1,200 points. Despite the fact that negotiators who did not receive a negotiation strategy obtained on average a smaller number of points than negotiators who received a negotiation strategy, this difference was not statistically significant ($\chi^2=2.63$, $df=3$, $p=.45$). We therefore cannot conclude that subjects who received a negotiation strategy obtained a higher number of points than subjects in the control condition, or that negotiators assigned to the BATNA condition obtained a higher number of points than participants assigned to either of the other experimental conditions. Consequently, receiving a negotiation strategy did not improve the quality of agreements reached.

Taken together, the results show that there is some overlap between the findings of the first and the second experiments. The results of the second experiment demonstrate that the “adding resources” and “logrolling” strategies were more effective in decreasing people’s fixed-pie perceptions than knowing one’s BATNA. In addition, while the “adding resources” and the “logrolling” strategies decreased fixed-pie perceptions to a greater extent, knowing one’s BATNA was

43. Median (Mdn.) = 1,225 points; SD = 72 points.
44. Mean (M) = 1,185 points; Mdn.=1,180 points.
45. “Adding resources” strategy: M=1,198 points, Mdn.=1,225 points; “logrolling” strategy: M=1,206.7 points, Mdn.=1,225 points; “BATNA” strategy: M=1,202.5 points, Mdn.=1,225 points.
more effective in terms of obtaining an agreement. The findings of the second experiment and their implications are discussed in more detail in the following section.

3. Discussion

In accordance with the first experiment, one of the most important findings of the second experiment is that participants, regardless of the condition to which they were assigned, reduced their fixed-pie perceptions over the course of the negotiation. In contrast to what we expected, this effect was again due to the negotiation itself rather than the negotiation techniques. The effectiveness of the various negotiation techniques in terms of reducing negotiators’ fixed-pie perception therefore seems to be limited. Since fixed-pie perceptions decreased across all conditions, it seems that the negotiation itself had at least some effect on negotiators’ understanding of their opponent’s interests. As previously described, besides exchanging information about interests, thorough processing of information available during a negotiation is essential in order to lead to a reduction in fixed-pie perception. Therefore, a possible explanation for the finding that the negotiation techniques did not lead to a decrease in fixed-pie perceptions is that while the techniques might have contributed to some awareness of the opponent’s interests, the strategies might not have motivated negotiators to process this information more systematically. Since a considerable number of participants still had a fixed-pie perception after the negotiation, a decrease in fixed-pie perception might be more effectively achieved by some other means. This need for an alternative method for reducing fixed-pie perceptions is also supported by the finding that people who did not receive a negotiation strategy experienced a reduction in fixed-pie perception at the same rate as those who received a negotiation strategy. Providing negotiators with a negotiation strategy like those proposed in the negotiation literature and explored in our two experiments is not necessarily an effective method for reducing fixed-pie perceptions.

As previously described, increasing people’s non-directional motivation—people’s motivation to form an accurate and reasonable impression—has a positive effect on more systematic and thorough processing of information, which in turn results in a decrease in fixed-pie perceptions. Therefore, developing negotiation strategies that enhance this type of motivation is likely to be more effective than merely focusing on information exchange. Since information processing is likely to be impacted in online negotiations due to the lack of social presence, developing this type of negotiation techniques may be particularly challenging, but especially necessary, for ODR.

The results of the second experiment demonstrate that negotiation techniques are effective in leading to more agreements. The finding that negotiators who received a strategy were more likely to obtain an agreement shows that the techniques facilitate negotiators’ awareness that obtaining an agreement is typically more favorable than failing to reach an agreement. Still, a thorough understanding of the opponent’s preferences is not necessary to achieve an agreement. This might be explained by the integration-before-differentiation hypothesis which states that negotiators often start with distributive negotiation behavior and switch to integrative behavior if they fear that they might not obtain an agreement. Participants who were not provided with a negotiation strategy were apparently less
conscious than participants who received a negotiation strategy that failing to obtain an agreement is less advantageous. So, it seems that the negotiation strategies' effectiveness lies in their potential for helping negotiators realize that obtaining an agreement is desirable, and not in motivating them to engage in more information exchange and processing in order to comprehend the other party's preferences.

With regard to the adaptations in the second experiment's setup and the differences between the results of the different experiments, two conclusions can be drawn. First, it seems that asking participants to rank the issues according to their beliefs about the opponent's interests is a more accurate and therefore more reliable measure of participants' fixed-pie perceptions than asking them to distribute points according to their beliefs about the other party's preferences. The second task actually includes the first task, and because of its complexity, seems to entail more potential for error. The second conclusion relates to the fact that in the second study, participants were not informed about the number of negotiation rounds. Knowing the number of negotiation rounds and therefore being exposed to time pressure had a positive effect on negotiation behavior in terms of increasing the likelihood of achieving an agreement. This finding is in accordance with the integration-before-differentiation hypothesis. The time pressure seems to have increased negotiators' awareness that obtaining an agreement is more beneficial than failing to reach an agreement, which in turn led to a change in negotiation behavior from more distributive behavior to more problem-solving behavior. An important limitation of the present research needs to be mentioned with regard to the differentiation-before-integration hypothesis. Although the findings of both studies seem to indicate that a switch from distributive to integrative negotiation behavior took place, this was actually not explored in more detail since participants' fixed-pie perceptions were measured before and after the negotiation and not at different points in time during the negotiation. It therefore seems valuable to include a measurement of negotiators' fixed-pie perceptions at several stages during the negotiation in order to be able to accurately predict if and when a switch in negotiation behavior occurs. Nevertheless, the present findings show that time pressure is an important variable in negotiations.

III. CONCLUSION

Researchers in the field of integrative negotiation have largely ignored exploring the effectiveness of integrative negotiation techniques that have been proposed in the literature on fixed-pie perceptions and the likelihood of achieving an agreement. The present research shows that while negotiators are able to revise their fixed-pie perceptions over the course of a negotiation, whether or not they are provided with a negotiation strategy has no effect on perceiving integrative potential. We may therefore conclude that, in contrast to what has been proposed in the negotiation literature, these strategies do not sufficiently contribute to more thorough and systematic processing of information about interests. It is possible that negotiation strategies are more effective in decreasing fixed-pie perceptions in offline negotiations since they emphasize information exchange rather than information processing. The latter is essential and may be more difficult to activate in online than face-to-face negotiations. More thorough information processing may be partially achieved by inherent characteristics of face-to-face negotiations that
are absent in ODR. Physical presence, immediate reactions, and non-verbal cues may enforce a sense of responsibility, at least to some extent. Increasing negotiators’ interest and involvement in a task, as well as addressing their feeling of accountability for decisions and outcomes, motivates them to more thoroughly process information that becomes available during the negotiation. Assuming that negotiators engage in more thorough information processing in offline rather than in online negotiations implicates two interesting research questions for future research—first, whether it is true that negotiation strategies are more effective in decreasing fixed-pie perceptions in offline rather than online negotiations, and second, how can more systematic information processing be activated in ODR.

Nevertheless, the findings demonstrate that the negotiation strategies in our online experiments had an effect on the likelihood of obtaining an agreement. Moreover, it seems that a decrease in fixed-pie perceptions is not necessary in order to obtain an agreement. The potential of the negotiation techniques therefore seems to lie in their ability to increase negotiators’ awareness of the importance and desirability of obtaining an agreement rather than in facilitating a better understanding of the opponent’s interests. Furthermore, the findings of our experiments support previous research findings on the importance of time pressure on negotiation behavior. Clearly, more research on the effect of various negotiation techniques on negotiation behavior, e.g., the effect of different negotiation techniques on the quality of agreements obtained, could prove beneficial. In addition, a step-by-step exploration of negotiation behavior would be valuable in analyzing if and when a switch from distributive to integrative negotiation behavior takes place and why this switch occurs if not because of an increased perception of integrative potential.

With regard to implications for online negotiations, the findings of the present experiments imply that increasing negotiators’ awareness of the desirability of achieving an agreement can enhance their tendency to engage in negotiation behavior that is directed towards obtaining an agreement. Motivating negotiators to engage in problem-solving behavior can be achieved by different means. Inducing time pressure can have a positive effect. However, from previous research, we know that the positive effect of time pressure is restricted to certain situations and circumstances.46 For example, if negotiators want to find a solution that meets both party’s interests, time pressure enhances cooperative behaviors; but when negotiators have an individualistic orientation, time pressure leads to suboptimal outcomes.47 Nevertheless, setting deadlines encourages settlement and therefore seems to be a valuable negotiation strategy. The positive effect of setting deadlines may be stronger in ODR than face-to-face negotiations. In contrast to offline negotiations, disputants who negotiate online are limited in revealing their willingness to settle. Additionally, it may be easier to implement time pressure in ODR than face-to-face negotiation. Clearly, ODR practice would benefit from more research on the potential benefits of time pressure.

We found that providing negotiators with incentives independent from the resources that have to be divided, as well as providing them with information about the opponent’s preferences, led to more agreements. In order to increase the

47. Id. at 638, 656.
number of agreements in online negotiations, providing negotiators with their BATNA was found to be most effective. From a practical point of view, the findings of the present studies have important real-world implications. First, both parties to a negotiation should implement negotiation strategies into online negotiation systems because our experiments show that utilizing a negotiation technique leads to more agreements. Negotiation techniques implemented into ODR systems should focus on motivating negotiators to obtain an agreement rather than decrease fixed-pie perception because our findings indicate that a decrease in fixed-pie perception does not lead to more agreements. Second, encouraging negotiators to determine their BATNA at the beginning of a negotiation, e.g., by increasing their awareness that not obtaining an agreement may be disadvantageous, is an essential first step in any online negotiation system. As described above, inducing time pressure has positive effects on the likelihood of settling in ODR. Third, providing negotiators with a negotiation strategy such as "logrolling" seems to be more effective in combination with information about the BATNA rather than by itself since knowing one’s BATNA increased the likelihood of obtaining an agreement more than "logrolling" or "adding resources." Consequently, online negotiation systems that allow negotiators to determine their BATNA, to exchange information about preferences, and to pay off the other party for conceding are more likely to lead to agreements than ODR systems that do not implement a negotiation strategy or combination of strategies. In sum, the findings of our two experiments demonstrate that negotiation strategies, and especially knowing one’s BATNA, increase the likelihood of obtaining an agreement and that an understanding of the opponent’s preferences are not necessary in order to obtain an agreement.