How to Dissolve Fixed-Pie Bias in Negotiation? Social Antecedents and the Mediating Effect of Mental-Model Adjustment

ABSTRACT

Fixed-pie bias, defined as the erroneous belief that the other negotiation party's interest is directly opposite to one's own, has been a consistent hurdle that negotiators must overcome in their efforts to achieve optimal negotiation outcomes. In this study, we explore the underlying cognitive mechanism and the social antecedents of fixed-pie bias reduction in negotiation. Using data from a negotiation simulation with 256 participants, we found that mental-model adjustments made by negotiators could effectively decrease fixed-pie bias. More interestingly, we also found that negotiators were less likely to reduce fixed-pie bias when negotiating with an ingroup member than with an outgroup member, but only under a high accountability condition. Finally, we found that mental-model adjustment mediated the effects of the above-mentioned social antecedents (ingroupness and accountability) on reduced fixed-pie bias. We discuss the theoretical and practical implications of these findings.

Key Words:

Mental Model, Negotiation, Fixed-pie Bias, Group Membership, Accountability

Negotiation is one of the most important processes for resolving social conflicts (Lewicki, Saunders, & Barry, 2009). In many situations, however, even when it is possible to integrate each party's interests, negotiators fail to achieve win-win outcomes (see Thompson, Wang, & Gunia, 2010). One major impediment to realizing integrative opportunities in negotiations is *fixed-pie bias*, or the erroneous belief that the other party's interest is directly opposite to one's own (De Dreu, Koole, & Steinel, 2000; Thompson & Hastie, 1990; Thompson, Neale, & Sinaceur, 2004). Many negotiators have fixed-pie bias at the beginning of negotiations (Thompson & DeHarpport, 1994). In addition, those who perceive negotiations as a fixed-pie situation suppress efforts to seek joint benefits (Halevy, Chou, & Murnighan, 2012; Pinkley & Northcraft, 1994) and as a result, reduce the potential for optimal outcomes in negotiations (De Dreu et al., 2000). Therefore, in order to achieve satisfactory negotiation results, negotiators need to reduce fixed-pie bias throughout the negotiation process (De Dreu, 2003).

We know little, however, about how to reduce fixed-pie bias, as well as the mechanisms by which such reductions would take place. Previous research has mainly focused on what shape negotiators' perceptions, biases, or mentality. This focus leaves the implicit assumption that a negotiator's cognition is relatively fixed in a given negotiation situation (Jochemczyk & Nowak, 2010; Thompson et al., 2004). Nevertheless, negotiation is actually a social-interaction process in which parties constantly define and redefine their interdependence (Lewicki et al., 2009; Walton & McKersie, 1965). That is, negotiators seek, collect, and absorb information, thereby updating their understandings of the negotiation situation (e.g., De Dreu et al., 2000). Some scholars accordingly have conceptualized negotiators as active learners who can adjust their cognitions during negotiations (Loewenstein & Thompson, 2006). In this context, it is important to understand the antecedents and consequences of negotiators' cognitive adjustments.

In this paper, we investigate the reduction of fixed-pie bias in negotiations by focusing on negotiators' mental-model adjustment. *Mental models* are cognitive representations that encompass the "understanding of the self, negotiator relationships, attributions about the other, and perceptions and knowledge of the bargaining structure and processes" in a specific situation (Bazerman, Curhan, Moore, & Valley, 2000, p. 287). During a negotiation, negotiators may adjust their mental models by collecting, exchanging, and analyzing information (Halevy, Cohen, Chou, Katz, & Panter, 2014; Liu, Friedman, Barry, Gelfand, & Zhang, 2012a). Hence the concept of *mental-model adjustment*, which reflects the extent to which negotiators adapt their cognitive representations from the beginning to the end of a negotiation (Liu & Dale, 2009), is central to our discussion. When people collect new information and comprehend it, they can adapt their perceptions of the situation and behaviors (e.g., Halevy et al., 2014; Schulkin, 2009). We argue that, by integrating the mental model literature and negotiation research, mental-model adjustment is a cognitive mechanism that can dissolve negotiators' fixed-pie bias.

Furthermore, based on De Dreu and Carnevale's (2003) motivated information-processing model of negotiation, we propose that mental-model adjustment depends on two important social conditions: ingroupness of the other party and accountability. De Dreu and Carnevale (2003) theorize that how negotiators process information is influenced by two types of motivations: social motivation and epistemic motivation. *Social motivation*, defined as the desire to attain a fair and cooperative relationship between oneself and the other party (De Dreu & Carnevale, 2003; Deutsch, 1973; Gelfand, Major, Raver, Nishii, & O'Brien, 2006), influences what kind of information (cooperative vs. competitive) is likely to be collected, evaluated, or processed. One important factor that influences social motivation is group membership (Tajfel & Turner, 1986). Negotiating with an ingroup member drives a higher level of social motivation

than negotiating with an outgroup member (Harinck & Ellemers, 2006; Kramer & Brewer, 1984; Thompson, 1993). *Epistemic motivation*, defined as the desire to develop an accurate and clear understanding of the world (Kruglanski, 1989), determines the extent to which the information processing is systematic and accurate (De Dreu & Carnevale, 2003; Kruglanski, Webster, & Klem, 1993). One factor that influences epistemic motivation is *accountability*, or the social pressure to justify one's views and decisions to others (Semin & Manstead, 1983). Negotiators with low accountability have a higher level of epistemic motivation to process information comprehensively than those with high accountability (e.g., Gelfand & Realo, 1999).

In summary, we predict that mental-model adjustments will decrease negotiators' fixed pie bias and that the effect is itself influenced by two important social conditions: the ingroupness of the other party and accountability (see our hypothesized model in Figure 1). Our study contributes to the negotiator cognition literature by investigating negotiator cognitive adjustment in a motivated information-processing framework. It extends recent work by Liu, Friedman, and Hong (2012b), which shows that social motivation (e.g., ingroupness) and epistemic motivation (e.g., accountability) together influence the static elements in negotiation, such as pro-relationship mindset and perceived interest compatibility at the beginning of a negotiation. In this study, we use a more dynamic perspective to examine the joint effect of ingroupness and accountability on negotiators' cognitive adjustment (e.g., mental model adjustment and fixed-pie bias reduction) throughout the negotiation process, and we also explore whether mental-model adjustment serves as the mediating path for such an effect. In other words, we examine both the social conditions that help reduce negotiators' fixed-pie bias and the underlying cognitive mechanism. Our study also extends another recent work by Liu et al. (2012a), which shows that individual differences (e.g., need for closure and concern for face)

influence negotiators' mental-model adjustment. By applying motivated information-processing model of negotiation (De Dreu & Carnevale, 2003), our research highlights that social contexts (e.g., ingroupness and accountability) may also influence mental-model adjustment during negotiation.

In addition, by examining the effects of social conditions on the changes of negotiator cognition, our study also contributes to the mental-model literature (Cannon-Bowers, Salas, & Converse, 1993; Mohammed & Dumville, 2001; Mohammed, Ferzandi, & Hamilton, 2010). Although some studies have demonstrated that the *similarity* of mental models among social actors is beneficial to team work (e.g., Mathieu, Heffner, Goodwin, Salas, & Cannon Bowers, 2000; Smith-Jentsch, Mathieu, & Kraiger, 2005) and to negotiation (Swaab, Postmes, Neijens, Kiers, & Dumay, 2002), little is known about what motivates people to change their mental models, the exact mechanism through which mental-model similarity might be achieved (Liu et al., 2012a; Waller, Gupta, & Giambatista, 2004). Our study can enrich our knowledge about the social conditions in which mental-model adjustment is likely to take place.

Insert FIGURE 1 about here

As an initial effort, we test our hypotheses using a sample of Chinese participants. Previous research has shown that Chinese tend to make clear distinctions between in- and out-group members in conflict resolution (e.g., Chen & Li, 2005; Leung & Bond, 1984; Triandis, 1995) and that accountability influences Chinese in social interactions (e.g., Briley, Morris, & Simonson, 2000; Liu et al., 2012b). Therefore, we surmise that the ingroupness of the other party and accountability would affect Chinese negotiators' mental-model adjustments and fixed-pie bias changes. In addition, we investigate the external validity of the effects of accountability in

the Chinese cultural context, because most previous studies have been conducted in the United States and other western cultures (Morris & Gelfand, 2004). Understanding the interactions among ingroupness, accountability, and mental-model adjustment in the Chinese context would inform research in other cultural contexts with similar social conditions (e.g., Gelfand & Realo, 1999).

Theory and Hypothesis Development

Mental Model in Negotiations

A mental model is a cognitive representation that helps an individual to make sense of, predict, and interpret a specific situation (Johnson-Laird, 1983). Mental-model research has been prolific in the team literature (e.g., Klimoski & Mohammed, 1994; Mohammed & Dumville, 2001; Mohammed et al., 2010). Both laboratory simulations (e.g., Mathieu et al., 2000; Mathieu, Heffner, Goodwin, Cannon-Bowers, & Salas, 2005) and field studies (e.g., Lim & Klein, 2006; Rentsch & Klimoski, 2001; Smith-Jentsch et al., 2005), for example, have reported that sharing similar mental representations of reality and knowledge structures among team members contributes to better team performance (see DeChurch & Mesmer-Magnus, 2010).

Scholars recently have suggested that mental models may also provide a useful tool to study the cognitive processes in negotiation (Bazerman et al., 2000; Liu & Dale, 2009; Liu et al., 2012a; Van Boven & Thompson, 2003). According to Johnson-Laird and Byrne (1991), as the end result of perception and comprehension, mental models underlie reasoning. Negotiators rely on mental models to formulate their behavioral strategies and test the strength of these strategies by checking whether other models refute these decisions (Halevy et al., 2012). In addition, as a joint decision-making process, negotiation requires parties to constantly persuade each other to adopt mutually agreeable solutions that resolve incompatible interests (e.g., Lewicki et al., 2009).

In other words, negotiation is a process of attempting to change others' minds, while adapting one's own mind at the same time, at the negotiation table (Jochemczyk & Nowak, 2010).

Mental-Model Adjustment and Fixed-Pie Bias Reduction

When people update their analysis of the situation and absorb new information from exchanges with the other party, they are likely to adopt a more comprehensive view of the situation and adjust their mental models accordingly (Schulkin, 2009). Mental-model adjustment reflects cognitive adaptation at the micro level of social exchange (Cosmides & Tooby, 1992). Schulkin (2009) argued that cognitive adaptation, or the adjustment of mental models, reflects a process of self-corrective inquiry, in which people question existing knowledge and recognize others' views, beliefs, and desires.

In the context of conflict resolution, negotiators exposed to the arguments of the other party are likely to adjust their own understanding by incorporating the other party's frame (Pinkley & Northcraft, 1994). As negotiators share information and raise the salience of the issues important to each other, they may change or adjust their mental models based on newly acquired knowledge in the negotiation. As a result, mental-model adjustment stimulates learning about the negotiation situation and the other party and prevents a closed way of thinking (Liu et al., 2012a). Some indirect evidence shows that employees' mental models of conflict resolution are shaped by their recent work experiences, such as those featuring hostility, ostracism, and abusive supervision (Halevy et al., 2014, study 4). In other words, people can adjust their mental models during the process of conflict resolution. Moreover, Liu et al. (2012a) showed that mental-models can change in both intra- and inter-cultural negotiations, especially for those with a low need for closure or with a high concern for face.

We propose that mental-model adjustment is beneficial for negotiators to decrease fixed-pie bias. In the broader literature on social cognition, fixed-pie bias is a stereotype that, according to Lippmann (1922, pp. 3-4), may infiltrate social life as dogged "pictures in our heads" and serve the purpose of cognitive "definiteness and consistency" (p. 81), but often distorts complex realities. Such cognitive bias systematically leads individuals to simplify decision making while missing important opportunities for more comprehensive and rational reasoning (Fiske & Taylor, 2013). Although stereotyping is often the default form of social judgment and is difficult to change due to the need for self-confirmation (Thompson & DeHarpport, 1994; Adler & Gundersen, 2008), it is still possible to adjust perceptions through intentional efforts or alternative ways of thinking (Fiske, 1993; Fiske & Neuberg, 1990). For example, people may decrease their stereotypical thinking regarding another group by intentionally taking the perspectives of that group (e.g., Galinsky & Moskowitz, 2000).

Previous negotiation research has indicated that all negotiators have fixed-pie bias, more or less, when negotiation starts, but that this bias can diminish during the negotiation process (Thompson & Hastie, 1990), depending on whether negotiators are willing to make cognitive adaptations (De Dreu et al., 2000; De Dreu, 2003). Thompson and DeHarpport (1994), for example, found that some negotiators still had high fixed-pie bias even after they were provided with complete information about the other party's interests. These researchers discussed that such negotiators most likely sought and interpreted information "in a biased and selective manner that confirms, rather than disconfirms, their expectancies" (Thompson & DeHarpport, 1994, p. 342). In other words, these negotiators did not efficiently adapt their minds during the negotiation process, and therefore, their fixed-pie perception remained high. Consonant with this argument, Adler and Gundersen (2008) explained that some individuals tend to change their

view of the facts to confirm expectations, rather than adjust perceptions to consider new and disconfirming information. In another study, Trötschel, Hüffmeier, Loschelder, Schwartz, and Gollwitzer (2011) suggested that negotiators who are willing take others' perspectives are more likely to adapt their thinking and thus achieve better negotiation outcomes. Moreover, De Dreu (2003) found that after negotiation, negotiators in a low time-pressure condition had less fixed-pie bias than those in a high time-pressure condition. He explained that low time pressure allows negotiators to carefully process information and effectively adjust their understanding, whereas high time pressure makes negotiators' minds freeze and become fixed.

Based on these discussions, we predict that the extent to which negotiators adjust their mental models is positively related with the reduction of fixed-pie bias. Negotiators who effectively adjust mental models, the negotiation process provides constructive mechanisms to diffuse fixed-pie bias, which can clarify meaning, build reciprocity, and create comfort (Liu, Chua, & Stahl, 2010). By contrast, those who cannot effectively adjust mental models may stick with the initial fixed-pie bias (Thompson & Hastie, 1990). Therefore, we propose that:

> *Hypothesis 1: Mental-model adjustment is positively related to the reduction of fixed-pie bias.*

Social Antecedents that Motivate Mental-Model Adjustment in Negotiation

Effective mental-model adjustment depends on efficient information processing during negotiation (Bazerman et al., 2000; Liu & Dale, 2009). According to the motivated information-processing model proposed by De Dreu and colleagues (De Dreu, Beersma, Euwema, & Stroebe, 2006; De Dreu & Carnevale, 2003; De Dreu et al., 2000), two types of motivation jointly influence information processing in negotiation: social motivation and epistemic motivation. We apply this model to examine how these two types of motivation may together influence mental-model adjustment during the negotiation process (De Dreu & Carnevale, 2003).

Ingroupness and Social Motivation.

Social motivation affects which type of information is likely to be processed in negotiation. While individuals with a high level of social motivation pay particular attention to cooperative and relational information, individuals with a low level of social motivation focus on competitive information (De Dreu et al., 2000; Van Lange, 1999; Weingart, Bennett, & Brett, 1993). Ingroup members are usually connected by common traits, common goals, a common fate, or the presence of an external threat; in contrast, outgroup members are those with whom one has no connection, or those with whom one does not share common goals or a common fate (Campbell, 1958; Tajfel & Turner, 1986; Triandis, 1995). According to social-identity theory (Tajfel & Turner, 1986), when one's group identity is salient, an individual is likely to feel more obligated to meet the needs of other ingroup members and achieve ingroup harmony, and correspondingly, the person tends to cooperate with other ingroup members (e.g., Leung & Bond, 1984). In this context, ingroupness influences social motivation in negotiation.

Previous discussions have suggested that social motivation may be a double-edged sword as it regards information exchange during negotiation. On the one hand, compared with negotiators who interact with an outgroup member, those who interact with an ingroup member may trust each other more (Harinck & Ellemers, 2006), and thus may be more willing to exchange true information. On the other hand, the familiar and relation-laden ingroup condition may sabotage complete and effective information exchange during negotiation (Fry, Firestone, & Williams, 1983; Pruitt & Rubin, 1986). Specifically, the cooperative tendency and the focus on relationships in ingroup situations may create a cognitively comfortable situation (Gelfand et al., 2006; Liu et al., 2012b). In such situations, negotiators often take for granted, and therefore make wrong assumptions about, the type and amount of information that need to be exchanged in order

to explore integrative solutions. Thus the ingroup condition may be detrimental for mutually beneficial decisions in negotiation, which often require intensive information exchange, focused decision making, and creativity (e.g., Fisher & Ury, 1981). A meta-analysis conducted by De Dreu, Weingart, and Kwon (2000) identified the dual effects of social motivation on information exchange during negotiation. Examining 28 previous studies, they found that negotiators were less competitive, focused more on problem-solving, and achieved higher joint gains when they had a high level of social motivation rather than a low one, but only when resistance to yielding was high. When resistance to yielding was low, there were no differences between prosocial and proself negotiators.

In short, ingroupness may promote social motivation during negotiation, but ingroupness itself may not be sufficient to predict the amount or intensity of information processing during negotiation, and thus the extent of mental-model adjustment (De Dreu et al., 2006). Therefore, besides social antecedents that may influence social motivation, it is also important to consider factors that may influence epistemic motivation (De Dreu & Carnevale, 2003).

Accountability and Epistemic Motivation. Epistemic motivation determines the extent to which negotiators are driven to process information systematically (De Dreu et al., 2006; c.f., Kruglanski, 1989). When their epistemic motivation is low, people engage in effortless thinking, rely upon heuristic cues, and use short-cuts or stereotypes to make decisions (Thompson & DeHarpport, 1998), but when their epistemic motivation is high, they can seek accurate information and engage in systematical reasoning (De Dreu et al., 2006).

Accountability is the social pressure to justify one's views and decisions to others (Semin & Manstead, 1983), which may damage negotiators' epistemic motivation. Negotiators often must bargain on behalf of their organizations rather than on their own behalf (Wall & Blum,

1991). Accountability requires negotiators to explain negotiation processes and outcomes to constituents, who have the power to allocate rewards (Carnevale, Pruitt, & Seilheimer, 1981). To gain social approval, negotiation representatives are likely to rely upon social norms to treat the other negotiation party (Gelfand & Realo, 1999; Lerner & Tetlock, 1999). In a cross-cultural comparison study, for example, Gelfand and Realo (1999) found that accountability increased negotiators' tendency to use tactics accepted by their own cultures. In other words, accountability enforces social norms and motivates people to behave in a culturally and socially appropriate manner (Gelfand & Realo, 1999; Tetlock, 1992). As a consequence, to deliver satisfactory outcomes to their constituents, negotiators with high accountability often prepare for the negotiation with a clear set of goals, strategies, and objectives (Pruitt & Carnevale, 1993). This preparedness means that negotiators in high-accountability conditions tend to consciously behave in a more normative way (Gelfand & Realo, 1999), thus decreasing negotiators' epistemic motivation to process information systemically.

Ingroupness, Accountability, and Mental-Model Adjustment. Based on the motivated information-processing model (De Dreu & Carnevale, 2003), we argue that accountability and ingroupness of the other party jointly influence mental-model adjustment during negotiation. Specifically, when negotiating with ingroup members in high accountability conditions, negotiators tend to negotiate in a more normative way in treating ingroup members because they are concerned not only with being accountable to constituents but also with their personal ingroup identification. As a result, ingroup members in high accountability conditions may be more likely to compromise their own interests for the sake of the other party's needs (Morgan & Sawyer, 1967; Pruitt & Rubin, 1986), and focus more on relationships rather than tasks or interests (Fry et al., 1983; Halevy et al., 2012, 2014). They are thus less likely to think "outside

of the box" or more cognitively lazy and reluctant to explore potential integrative solutions (Amanatullah, Morris, & Curhan, 2008; Harinck & Ellemers, 2006; Weingart, Hyder, & Prietula, 1996). Recent research has shown that Chinese negotiators who interact with ingroup members in high accountability conditions often take a pro-relationship mindset when negotiating, and thus achieve less-than-optimal outcomes (Liu et al., 2012b). In contrast, when outgroup members are in high accountability conditions, they tend to treat outgroup members in a more normative way by being extra concerned with their own interests, resisting the other party's persuasion, and focusing more on the task (Gelfand & Realo, 1999). All of these tendencies can lead negotiators to logroll and carefully collect and analyze information during negotiation (Liu et al., 2012b), and thus integrate and adjust their perspectives accordingly.

When accountability is low, negotiators' epistemic motivation is not weakened. Under such a natural condition, negotiators in an ingroup condition may seek and process information equally effectively as those in an outgroup condition. Several studies have reported that when epistemic motivation was not manipulated, prosocial negotiators did not differ from proself negotiators in terms of making concessions and achieving joint gains (De Dreu et al., 2000, 2006). Based on these discussions, we predict that ingroupness and accountability interact in affecting mental-model adjustment.

> *Hypothesis 2: Ingroupness and accountability interact in affecting mental-model adjustment, such that ingroup dyads engage in less mental-model adjustment than outgroup dyads in the high accountability condition. At the same time, there is no difference between the two types of dyads in mental-model adjustment in the low accountability condition.*

We further argue that ingroupness and accountability interact in affecting the reduction of fixed-pie bias. Under high accountability conditions, negotiators seize socially endorsed norms and adopt stereotypical ways to negotiate (Gelfand & Realo, 1999). Such a "seize and freeze"

method of negotiation may have divergent effects on fixed-pie bias, depending on the other party's group membership. When ingroup members face high accountability pressures, they may care too much about their relationship with the other party while missing the opportunity to explore the other party's real needs; this may prevent them from effectively adjusting their original fixed-pie bias (De Dreu et al., 2000; Gelfand et al., 2006). In contrast, when outgroup members are in high accountability conditions, they tend to focus on the negotiation task itself and look for different ways to obtain economic gains. Such exploration helps them reduce their fixed-pie bias.

Nonetheless, when accountability is low, negotiators' epistemic motivation is not weakened. Under such a natural condition, prosocial negotiators do not differ from proself negotiators in terms of effectively seeking and processing information. Existing studies have shown that when negotiators' epistemic motivation was not manipulated, there were no differences between prosocial negotiators and proself negotiators in adjusting fixed-pie bias (De Dreu et al., 2000). Based on these discussions, we predict that ingroupness and accountability jointly influence the reduction of fixed-pie bias.

> *Hypothesis 3: Ingroupness and accountability interact in affecting the reduction of fixed-pie bias, such that ingroup dyads reduce fixed-pie bias less than outgroup dyads in the high accountability condition. At the same time, there is no difference between the two types of dyads in the low accountability condition.*

Mental-Model Adjustment as a Cognitive Neutralizer

We have argued that mental-model adjustment should be expected to dissolve fixed-pie bias (Hypothesis 1). Moreover, we predict that ingroupness and high accountability jointly influence both mental-model adjustment during negotiation (Hypothesis 2) and the reduction of fixed-pie bias (Hypothesis 3). There is also good reason to expect that mental-model adjustment

may partially mediate the joint effects of ingroupness and high accountability on decreasing fixed-pie bias.

In particular, when accountability is high, negotiators in the outgroup condition may exchange and process information more efficiently, and thus adjust their mental models more, than those in the ingroup condition. Mental-model change may lead negotiators to achieve mutual understanding of the situation and thus decrease the self-centeredness of their initial view (Liu et al., 2012a). As a consequence, under such a condition, negotiators in the outgroup condition would have a lesser fixed-pie perception after a negotiation than those in the ingroup condition. Put differently, when accountability is high, ingroupness would have a strong negative effect on mental-model adjustment and thus a strong negative effect on the reduction of fixed-pie bias.

By contrast, when accountability is low, negotiators in both the ingroup condition and the outgroup condition may comprehensively exchange and process information, so that the two groups would not differ much in terms of mental-model adjustment. Consequently, under such a condition, negotiators in the ingroup condition would reduce fixed-pie bias to a similar extent as those in the outgroup condition. Put differently, when accountability is low, ingroupness would have a weak effect on mental-model adjustment and thus a weak effect on the reduction of fixed-pie bias. Based on these arguments, we hypothesize that:

Hypothesis 4: Mental-model adjustment partially mediates the interactional effects between ingroupness and accountability on the reduction of fixed-pie bias.

Method

Research Design and Negotiation Task

The research design was a 2 X 2 factorial, with the ingroupness of the other party (ingroup vs. outgroup) and accountability (high vs. low) as between-dyad factors. We recruited 256 undergraduate students from universities in China to participate in this study. The average age was 21.85 years, and 55% were female.[1]

We adopted an integrative negotiation task used in previous studies (Gelfand & Realo, 1999; Liu et al., 2012b). The negotiation was about a brochure printing contract that involved four issues. To meet a client's urgent demand for printing advertising brochures, two employees, one from the Client Services Division and the other from the Production Division, needed to reach agreements on four issues (see details in the Appendix). For each of the four issues, negotiators could choose from five alternatives, each bringing them certain payoff points. Two issues (paper quality and the number of colored pages) were distributive, which means that buyers and sellers had completely opposite interests (i.e., one party's gain was the other party's loss). There was integrative potential for the other two issues (i.e., the number of copies and the billing date).

Procedures

Participants were invited to the laboratory, where they were assigned to eight-person groups. Upon arriving at the laboratory, participants were asked to fill out a short grouping survey, which they were told was the basis upon which grouping decisions would be made for the next step of the study. Then the experimenter separated the eight participants into two groups with four members in each, claiming that the grouping was based on the grouping survey (see details in the manipulations section). In addition, in each four-member group, two members were randomly assigned to the Services Division, whereas the other two members were assigned to the

[1] There were no gender differences between the sub-samples, with both of them having 45% females, but one sample (M = 22.80, SD = .90) was older than the other (M=21.85, SD = 1.26, t (250) = 14.02).

Production Division. Next, the two groups worked on a brainstorming task and competed with each other, after which participants drew lots to decide their roles (representative or manager) in the following negotiation task (see details in the manipulations section below). Finally, all participants negotiated with a person from the other division; but those in the ingroup conditions negotiated with a person from their own 4-member group, while those in the outgroup conditions negotiated with a person from the other 4-member group (also see the details in the manipulations section below). After reading the negotiation role material, but before negotiating, each participant filled out a pre-negotiation survey; after the negotiation, each participant filled out a post-negotiation survey.

Manipulations

We manipulated the ingroupness of the other party in multiple ways, using a modified version of the minimal-group paradigm employed in previous studies (Chen, Brockner, & Katz, 1998; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). First, we told participants that they were grouped based on the social networks and personal preferences they reported in the grouping survey, thereby giving them a sense of belonging to their assigned group (Chen et al., 1998). Second, to highlight group boundaries, we seated participants with their fellow group members, away from participants in the other group, and we let the two groups use stationery with distinct colors (red vs. blue). Third, we also reinforced group boundaries through enhancing within-group interactions, in particular, by asking participants in the same group to finish a brainstorming task together before negotiations (Wright et al., 1997). After the three manipulation steps, participants in the ingroup condition negotiated with a person from their own group, while participants in the outgroup condition negotiated with a person from the other group.

Following previous studies (Carnevale et al., 1981; Gelfand & Realo, 1999), we used two procedures to manipulate accountability. First, within each 4-member group, the 2 members from the same division drew lots to decide who was the "manager" of the division and who was the representative negotiator. Afterwards, each member was sent to a different room to negotiate, and everyone was told that he or she was the representative negotiator whereas the other member was the manager. By doing so, the member would believe in the existence of the "manager" (Gelfand & Realo, 1999). In the high accountability condition, participants needed to write and submit a report to the "manager" of their division after the negotiation to justify their negotiation process and outcome, while participants in the low accountability condition did not need to do so. Second, participants in the high accountability condition were told that the number of points that they would get would be decided by their "manager," who would evaluate their reports and allocate points earned from the negotiation. In contrast, participants in the low accountability condition were told that their manager would not evaluate the performance, that the negotiation processes and outcomes were confidential, and that their points from the negotiation were independent of managers' judgments.

Measures

Manipulation Checks. Participants answered manipulation-check questions in the pre-negotiation survey. The group membership manipulation check items were: (1) The one I will negotiate with is an ingroup member; and (2) The one I will negotiate with is an outgroup member (reverse). The accountability manipulation check items were: (1) After negotiation, my manager will formally evaluate me based on the agreements I reach; (2) My manager will scrutinize the negotiation process after negotiation; (3) I need to justify the negotiation process

and outcomes to my manager; and (4) I feel that my manager is more powerful than me. All of the items were answered on 6-point scales (1 = strongly disagree, and 6 = strongly agree).

Mental-Model Adjustment. Following previous studies on team mental models (e.g., Mathieu et al., 2000) and negotiation mental models (Liu et al., 2012a; Van Boven & Thompson, 2003), we used paired judgments to measure negotiators' mental models. In a pilot study with 64 undergraduate students, we asked participants to report at least 10 elements that they perceived to be important in the printing-contract negotiation situation. These participants reported 786 elements in total (an average of 12.28 elements per person). The first author coded these elements and summarized them into 17 concepts. The top 11 concepts accounted for 81.2% of the total amount and were mentioned by most participants. We then decided to use these 11 concepts to measure mental models in the main study. The 11 concepts consisted of key task issues and social-relational issues in the negotiation scenario, including (1) paper quality, (2) the quantity of brochures, (3) number of colored pages, (4) billing date, (5) competition, (6) win-win, (7) the interests of our department, (8) the interests of our company, (9) the relationship with the other party, (10) my face, and (11) the other party's face. The paired judgments required participants to evaluate the pairwise correlations among these 11 concepts. Since there were 55 one-on-one pairs among those 11 concepts [55 = (11x10)/2], we presented these 55 pairs to participants in random order. Participants were asked to rate how the two concepts in each pair were related on a 9-point scale: ranging from -4 (most negatively related, i.e., a high degree of one requires a low degree of the other) to 0 (no relations at all) to +4 (most positively related, i.e., a high degree of one requires a high degree of the other). Participants filled out the mental-model survey twice: once before the negotiation (to capture their pre-negotiation mental model) and once after the negotiation (to capture post-negotiation mental model). By calculating the

similarity between negotiators' pre- and post-negotiation mental models, we could investigate the cognitive adjustments they made during the process of negotiation, in particular, how they formed new links among elements of their original mental models. These adjustments reflect negotiators' updated analysis and understanding of the negotiation, including issues being bargained over, the relationship with the other party, and knowledge about themselves.

Following the practice in Liu et al. (2012a), we used the Quadratic Assignment Procedure (QAP) within UCINet (Borgatti, Everett, & Freeman, 2002) to create an index of mental-model adjustment (c.f., Mathieu et al., 2000) for each negotiator. The QAP analysis provides an index of convergence and association between two networks (i.e., mental models in our study). In our case, we used the QAP correlation between a negotiator's pre-negotiation mental model and his or her post-negotiation mental model to capture adjustments in mental model. Since the QAP correlation reflects the extent of similarity between two mental models, the higher the QAP correlation, the less mental-model adjustment. To avoid confusion, we used [1-QAP correlation] as the mental-model-adjustment index, such that a higher index score indicates more mental-model adjustment (e.g., Liu et al., 2012a).

Fixed-Pie Bias Reduction. We measured fixed-pie bias using the approach suggested by previous research (De Dreu et al., 2000; Thompson & Hastie, 1990). Specifically, participants were presented with a blank profit schedule, where they were asked to estimate the number of points they thought the other party would get for each of the contract levels specified. Participants could use their own profit schedules to make inferences. Fixed-pie bias was measured as the sum of the absolute difference between the estimates and the real payoff points of the other party's on the two integrative issues (number of copies and billing date). Participants' fixed-pie perception ranged from 0 to 14,000 points, with 0 representing perfect

integrative perception and 14,000 representing perfect fixed-pie bias. In other words, the larger the number, the greater was the fixed-pie bias.[2]

Each participant reported fixed-pie bias twice: once before the negotiation (pre-negotiation fixed-pie bias) and once after the negotiation (post-negotiation fixed-pie bias). We calculated the reduction of fixed-pie bias by subtracting the post-negotiation fixed-pie bias from the pre-negotiation fixed-pie bias. Therefore, the higher this number, the more fixed-pie bias was reduced.

Control Variables. To exclude alternative explanations and establish the incremental validity of the hypothesized effects, we controlled for several key variables. First, we controlled the similarity between two negotiators' pre-negotiation mental models, because this may influence the degree to which mental-model adjustment can occur (Liu et al., 2012a; Mathieu et al., 2000). Second, we controlled the similarity between two negotiators' post-negotiation mental models, because previous studies have shown that it influences negotiation outcomes (Liu et al., 2012a; Swaab et al., 2002). The similarity of mental models was numerically calculated as the QAP correlation between the two parties' mental models. Third, we controlled negotiators' expected gains, because such gains reflect aspiration in negotiation and thus may influence negotiators' motivation (Barry & Friedman, 1998; Pruitt, 1981). Last, we also controlled the source of the sample (e.g., different universities), because different characteristics of these universities may influence participants' cognition or framing of negotiation (e.g., Moore, Kurtzberg, Thompson, & Morris, 1999).

Data Analysis

---

[2] Our measure is exactly opposite to De Dreu et al.'s (2000) and Thompson & Hastie's (1990) fixed-pie bias measure. For them, the smaller the number, the greater was the fixed-pie bias. We did the opposite to avoid confusion.

Negotiation is a jointly experienced situation, in which negotiators' perceptions, emotions, and behaviors are interdependent (Gelfand & Realo, 1999; Walton & McKersie, 1965). Pearson product-moment correlations between dyad members' pre-negotiation fixed-pie bias ($r = .23$, $p < .01$), post-negotiation fixed-pie bias ($r = .32$, $p < .01$), the reduction of fixed-pie bias ($r = .20$, $p < .01$), and mental-model adjustment ($r = .27$, $p < .01$) were all significant. The presence of these significant correlations between dyad members' scores warrants an assumption of nonindependence for analyzing dyadic data (Kenny, Kashy, & Cook, 2006). Therefore, we aggregate key variables (e.g., mental model adjustment, fixed-pie reduction) and control variables (e.g., expected gains) into the dyadic level, and all of the hypotheses were thus tested at the dyadic level.[3] To test Hypotheses 1, 2, and 3, we ran hierarchical regressions by inputting controls and independent variables (and the interactional term) into the regression step by step. Hypothesis 4 presents a mediated moderation framework. Although Baron and Kenny (1986) proposed a multistep approach that has been widely accepted to test mediation, methodologists more recently have pointed out potential shortcomings of such an approach (e.g., MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004), especially in testing mediated moderation (Edwards & Lambert, 2007; Preacher, Rucker, & Hayes, 2007). Bootstrapping is recommended to avoid asymmetric and other non-normal sampling distributions of an indirect effect (MacKinnon et al., 2004). Therefore, in addition to using Baron and Kenny's (1986) approach, we followed the bootstrapping procedures proposed by Edwards and Lambert (2007) to test the mediated-moderation hypothesis (Hypothesis 4).

Results

[3] We also analyzed the data using multilevel modeling, an alternative method suggested by Kenny et al. (2006). We treated gain expectation, mental-model adjustment, and fixed-pie bias reduction as individual-level variables, and other variables (e.g., pre- and post-shared mental model) as dyadic variables. The results were substantially the same as the ones reported here. The detailed multilevel modeling results are available upon request.

Among the 256 participants, two dyads were omitted because of missing values, and another dyad was omitted because of an unusable report of fixed-pie bias. Our final sample size was 250, and all of these dyads reached agreements. We first conducted manipulation checks to assure that our manipulations worked successfully. Both the ingroupness manipulation-check questions and the accountability manipulation-check questions achieved satisfactory reliability estimates (the Cronbach's Alphas were .84 and .83, respectively). We compared the average score of each manipulation scale using a two-way ANOVA (ingroupness X accountability). The ANOVA of the ingroupness manipulation revealed that participants in the ingroup condition felt that the other party was an ingroup member (M = 4.38, SD = 1.18) more strongly than those in the outgroup condition (M = 2.59, SD = 1.22), $F(1, 247) = 135.86$, $p < .001$, $\eta^2 = .36$. Neither accountability nor the interaction between ingroupness and accountability had any significant effect on this score ($F < 1$). In addition, the ANOVA of the accountability manipulation showed that participants in the high accountability condition felt significantly more accountable for the negotiation processes and results (M = 5.17, SD = .68) than those in the low accountability condition (M = 3.79, SD = 1.31), $F(1, 247) = 103.38$, $p < .001$, $\eta^2 = .29$. Neither ingroupness nor the interaction between accountability and ingroupness had any significant effect on this score ($F < 1$). These ANOVA analyses suggested that our manipulations were effective. Table 1 shows the means, standard deviations, and correlations of variables.

Insert TABLE 1 about here

Hypothesis 1 predicted that mental-model adjustment is positively related to the reduction of fixed-pie bias. We used hierarchical regression to test this hypothesis (see Model 1 in Table 2). The regression results showed that mental-model adjustment was positively and

significantly related to the reduction of fixed-pie bias (β = .25, ΔR^2 = .06, p < .01), even after all control variables were taken into account. Therefore, Hypothesis 1 was supported.

Hypothesis 2 proposed that the negative effect of ingroupness on mental-model adjustment exists only in the high accountability condition, and not in the low accountability condition. To test this hypothesis, we also used hierarchical regression analysis. Specifically, mental-model adjustment was treated as the dependent variable, and its predicting variables were entered in the following order: (1) all control variables, (2) two main predictors— ingroupness (ingroup vs. outgroup) and accountability (high vs. low), and (3) the two-way interaction (see Model 2 in Table 2 for results). Neither ingroupness (β = -.12, p > .30) nor accountability (β = -.07, p > .50) had a significant main effect on mental-model adjustment, but as predicted, there was a significant interaction effect between ingroupness and accountability (β = .28, ΔR^2 = .03, p < .05) on mental-model adjustment. Figure 2 plots the interaction effect. It shows that, under low accountability conditions, negotiators in the ingroup condition (M = .57, SD = .03) did not differ from those in the outgroup condition (M = .52, SD = .03) in mental-model adjustment, t(64) = .71, n.s.; but when facing high accountability pressures, dyads in the ingroup condition (M = .48, SD = .03) had less mental-model adjustment than those in the outgroup condition (M = .55, SD = .03), t(57) = -1.97, p < .05. Therefore, Hypothesis 2 was supported by our data.

Insert TABLE 2 & FIGURE 2 about here

Regarding the prediction about the reduction of fixed-pie bias, Hypothesis 3 proposed that the negative effect of ingroupness on the reduction of fixed-pie perception exists only in the high accountability condition and not in the low accountability condition. Hierarchical regression

analysis (see Model 3 in Table 2) indicated that neither ingroupness (β = -.10, p > .50) nor accountability (β = -.19, p > .20) had a significant main effect on the decrease of fixed-pie perception. As expected, there was a significant interaction effect between ingroup and accountability (β = .28, ΔR^2 = .03, p < .05) on the reduction of fixed-pie bias. As Figure 3 shows, under low accountability conditions, the difference in the reduction of fixed-pie bias between negotiators in the ingroup condition (M = 3662, SD = 828.67) and those in the outgroup condition was not significant (M = 2827, SD = 662.65), t(64) = 1.14, n.s.; however, when accountability was high, dyads in the ingroup condition (M = 2460, SD = 754.89) reduced fixed-pie bias to a lesser extent than those in the outgroup condition (M = 4426, SD =770.62), t(57) = -2.01, p < .05. Therefore, Hypothesis 3 was supported by our data.

Insert FIGURE 3 about here

Next, we examined whether mental-model adjustment mediates the relationship between social conditions (group membership and accountability) and negotiation outcomes (Hypothesis 4). According to Baron and Kenny (1986), a mediation path can be established when (1) the mediator has an effect on the outcome variable, (2) the independent variable(s) has/have an effect on the mediator, (3) the independent variable(s) has/have an effect on the outcome variable, and (4) the mediator still has an effect on the outcome variable when the independent variable(s) is/are controlled. Since our tests of Hypotheses 1, 2, and 3 already fulfilled requirements 1, 2, and 3, the next step was to test whether mental-model adjustment is still significantly related to fixed-pie bias when the interaction term of ingroupness and accountability is entered into the regression (see Model 4, Table 2). As we expected, mental-model adjustment was significantly and positively related to the decrease of fixed-pie bias (β = .23, p < .01) when ingroupness,

accountability, and their interaction term were all entered into the regression model; and after the mediator (mental-model adjustment) was entered into the regression, the coefficient of the interaction term decreased from .28 ($p < .05$) to .22 ($p > .10$).

Next we adopted the General Path Analytic Framework (GPAF) proposed by Edwards and Lambert (2007) to further test this mediated-moderation hypothesis. This method combines moderation and mediation testing and also uses bootstrapping to decompose a comprehensive model into specific "stage" effects; this method can clearly show how mediation is moderated or how moderation is mediated. Table 3 presents the bootstrapping results, which clearly demonstrated the magnitudes of (1) the path from mental-model adjustment to decreased fixed-pie bias (P_{YM}), (2) the path from ingroupness to mental-model adjustment (P_{MX}), (3) the path from ingroupness to decreased fixed-pie bias (direct effects, P_{YX}), (4) indirect effects ($P_{YM}P_{MX}$), and (5) total effects ($P_{YX} + P_{YM}P_{MX}$) for both low and high accountability conditions, and the differences between the two groups. Consistent with our regression analysis to test mediation, Table 3 shows that the indirect effects of ingroupness on decreased fixed-pie bias through mental-model adjustment were significant for both low ($P = .03$, $p < .05$) and high ($P = -.06$, $p < .01$) accountability conditions, providing evidence that mental-model adjustment was the mediator between ingroupness and reduced fixed-pie bias. More importantly, the strength of this mediation varied based on accountability (group difference = -.09, $p < .01$). On the basis of these results, we concluded that Hypothesis 4 was supported by our data.

Bootstrapping results provided further evidence to support Hypotheses 1, 2, and 3. Specifically, the path from mental-model adjustment to decreased fixed-pie bias (P_{YM}) was significant and positive for both low ($P = .19$, $p < .01$) and high ($P = .14$, $p < .01$) accountability conditions, and there was no significant group difference in the strength of this path (group

difference = -.05, n.s.). These results confirmed Hypothesis 1 that mental-model adjustment would decrease fixed-pie bias. In terms of the path from ingroupness to mental-model adjustment (P_{MX}), the strength of this path differed on the basis of accountability (group difference = -.55, $p < .01$). When accountability was low, ingroupness was not significantly associated with mental-model adjustment ($P = .15$, *n.s.*), but when accountability was high, ingroupness was negatively associated with mental-model adjustment ($P = -.40$, $p < .01$). Thus, Hypothesis 2 was supported. Finally, the strength of the path from ingroupness to decreased fixed-pie bias (P_{YX}) also depended on accountability (group difference = -.52, $p < .01$). As Hypothesis 3 predicted, when accountability was low, ingroupness did not influence the reduction of fixed-pie bias ($P = .11$, *n.s.*), but when accountability was high, ingroupness was negatively related with reduced fixed-pie bias ($P = -.40$, $p < .01$). Figure 4 summarizes these findings.

Insert FIGURE 4 about here

Post-hoc Analysis of Mental-Model Adjustment

Our major argument is that mental-model adjustment mediates the effects of social conditions (ingroupness and accountability) on the reduction of fixed-pie bias. Another theoretically important and interesting question is what specifically was adjusted in negotiators' mental models under the conditions of ingroupness and accountability. To address this question, we conducted the following post-hoc analysis.

The notion of element centrality is key to our post-hoc analysis. *Element centrality* refers to the extent to which an element is central in a mental model. In our study, negotiators evaluated the correlations among 11 elements (from -4 to +4). Following previous research in the social-network literature (Wasserman & Faust, 1994), we used UCINet to calculate a centrality score by

summing up the absolute values of each element's correlations with all the other elements; we then used that sum as the indicator of element centrality. Based on the element-centrality scores, we generated a centrality index for distributive negotiation terms (average of the centrality scores of two distributive issues—"paper quality" and "color page"), a centrality index for integrative terms (average of the centrality scores of two integrative issues—"number of copies" and "billing date"), a centrality index for competition (the centrality score of "win-win" minus the centrality score of "compete"), a centrality index for other-concern (average of the centrality scores of "relationship" and "the other party's face"), and a centrality index for interests (average of the centrality scores of "my company's interest" and "my department's interest").

To examine whether and how ingroupness and accountability affected particular traits of participants' mental models, we conducted ANCOVAs, with Time (pre- vs. post-negotiation) as a within-subject IV and Ingroup and Accountability as two between-subject IVs. There were significant three-way interactions for (1) the centrality index for distributive negotiation terms ($F(1, 118) = 4.08$, $\eta^2 = .03$, $p < .05$), and (2) the centrality index for integrative terms ($F(1, 118) = 7.33$, $\eta^2 = .06$, $p < .01$). To describe the three-way interactions easily, we first generated two change indices (Change Index = Post centrality - Pre centrality) for distributive terms and integrative terms, respectively, and then conducted a two-way ANCOVA (Ingroup X Accountability). The interaction effects were significant for both distributive terms ($F(1, 117) = 3.86$, $p < .05$) and integrative terms ($F(1, 117) = 6.29$, $p < .05$). The patterns showed that under high accountability conditions, negotiators in the ingroup condition were less likely to increase the centrality of both distributive and integrative terms than those in the outgroup condition (see Figures 5a and 5b). Such patterns provide further evidence that accountability drove negotiators in the outgroup condition (but not those in the ingroup condition) to adjust their mental models.

Insert FIGURE 5 about here

Discussion

Contribution to Research and Practice

We obtained several interesting findings from the current study. Specifically, we hypothesized and found that when negotiating with ingroup members under high accountability pressures, negotiators showed less mental-model adjustment (Hypothesis 2), perhaps because the combination of those two conditions made negotiators more close-minded and inattentive to new information that may have led to integrative solutions in negotiation. Similarly, we found an interaction effect of ingroupness and high accountability, such that the combination of the two made negotiators reduce their fixed-pie bias to a lesser extent (Hypothesis 3). Further, we found that mental-model adjustment during the negotiation process helped neutralize the negative impact of ingroupness and high accountability on dissolving fixed-pie bias. This means that the interaction effect of ingroupness and accountability on the reduction of fixed-pie bias was mediated by mental-model adjustment (Hypotheses 1 and 4).

These findings provide some important theoretical implications to the current negotiation and mental model literature. First, by showing the connection between mental-model change and fixed-pie bias reduction, we have extended the literature on negotiators' cognition to demonstrate that negotiators may adjust their fixed-pie bias throughout the negotiation process and that mental-model adjustment can explain such a change. Most of the previous negotiation research implicitly assumed that negotiators' cognition is static throughout the negotiation process (Jochemczyk & Nowak, 2010; Thompson et al., 2004). As a consequence, although we know that fixed-pie bias is significantly detrimental to integrative outcomes in negotiations (e.g., De

Dreu et al., 2000; Thompson & Hastie, 1990) and that mental models may contribute to such a bias (e.g., Halevy et al., 2012), we still have little understanding of the cognitive mechanism leading to the reduction of fixed-pie bias. Building on the emerging literature on mental-model change and cognitive adaptation (e.g., Liu & Dale, 2009; Liu et al., 2012a; Schulkin, 2009), we theorized and found that mental-model adjustment is positively related to fixed-pie reduction. This finding suggests that if negotiators actively collect information and adapt how they perceive the negotiation elements, they can reduce the erroneous judgment that the other party's interest is directly opposite to their own.

Second, by integrating the motivated information-processing theory in negotiation with the mental-model research, we have identified the social conditions that drive mental-model adjustment in negotiation. In particular, we found that negotiators' mental models were more fixed when they were negotiating with ingroup members under high accountability conditions. In other words, while mental-model adjustment is undermined by ingroupness and high accountability pressure, it transforms into a cognitive neutralizer that prevents the formation of fixed-pie bias in other conditions. These findings extend recent research by Liu et al. (2012a), who find that individual differences (e.g., need for closure and concern for face) and cross-cultural conditions (intra- vs. inter-cultural) may influence negotiators' mental-model adjustment. Our study suggests that more malleable social conditions (e.g., ingroupness and accountability) may also influence mental-model adjustment.

These findings not only lend support to the motivated information-processing theory (De Dreu et al., 2000, 2006; De Dreu & Carnevale, 2003), but also contribute to this theory by directly examining mental-model adjustment as the underlying social-cognitive mechanism of information processing. Hence our findings provide a new intervening mechanism to diffuse the

negative impact of fixed-pie perception, by encouraging negotiators to be more flexible, open-minded, and aware of the cognitive traps created by ingroupness and high accountability conditions.

Finally, our study contributes to the broader social-cognition adaptation literature. Fiske and colleagues (Fiske, 1993; Fiske & Neuberg, 1990; Fiske & Taylor, 2013) found that people could be consciously aware of their own stereotypes, while being intentionally flexible about social categorization and paying attention to a specific context, thereby reducing detrimental and stereotypical decisions. By contrast, some research has shown that stereotyping is often the default form of social judgment and is difficult to change due to the need for self-confirmation (Adler & Gundersen, 2008; Thompson & DeHarpport, 1994). Therefore, a critical question is under which conditions people can make cognitive adaptations. Fiske (1993), for example, found that power can be a moderator on mental-model change, because compared to the powerful, who have no incentive to adjust their stereotypes, the powerless are more likely to be cognitively flexible in an effort to gain some control over the complex decision making by the powerful. By providing additional contingent factors (i.e., ingroupness and accountability) that influence cognitive change, our study suggests that the motivated information processing theory is helpful to identify the boundary conditions for cognitive adaptation.

Our study also has important practical implications. We found that fixed-pie bias is more likely to occur when a person is negotiating with an ingroup member under high accountability pressures, possibly because the combination of those two conditions makes the person adhere to stereotypical thinking and hasten to finish the negotiation task. Being aware of that fixed-pie-inducing situation, negotiators should be more willing to listen to the other party, learn about the situation, and question one's existing knowledge, thereby overcoming cognitive biases, such as

fixed-pie bias, to reach more mutually beneficial solutions in negotiations. Being open-minded and cognitively flexible, therefore, should be included as an effective strategy in negotiation training.

Limitations and Future Research

Our study has several limitations. First, our sample includes only undergraduate students, which may limit the generalizability of our findings to a broader population. It is generally accepted, however, that human cognitive development stabilizes at around 20 years old with no dramatic change afterwards (Salthouse, 1992), and evidence suggests that experts and novices are similar in terms of having judgment errors in negotiations (e.g., Neale, Huber, & Northcraft, 1987; Neale & Northcraft, 1986). Consequently, we can be relatively confident that the college students in our sample have cognitive structures similar to those of business managers. Of course, we call for future studies to replicate our findings using samples that include real-life managers or student negotiators with negotiation experience (Herbst & Schwarz, 2011).

Second, we collected data only in China, a country with a unique culture (Hofstede, 2001). Therefore, our findings should be generalized to negotiators from other cultures with caution. For example, given that China is a collectivistic culture, the ingroupness of the other party may have a greater impact on Chinese negotiators than on negotiators from other cultures (e.g., Leung & Bond, 1984). In addition, previous research has suggested that accountability is more likely to increase competition (rather than relationship-orientation) for Western negotiators than for negotiators from collectivistic cultures (e.g., Gelfand & Realo, 1999; Liu et al., 2012b). Therefore, it is a pending question whether Western negotiators would show a pattern of mental-model adjustment and thus fixed-pie bias reduction that is similar to that of Chinese negotiators. That said, our study adds a Chinese case to theory building in the negotiation literature, in which

theory development and testing have been conducted mainly in Western countries (Gelfand & Brett, 2004). We believe that China is a country with increasing economic and political influence in the world and that the idiosyncratic features of Chinese culture and their implications for theory development should be explored in future research (Tsui, 2007).

Third, we examine only ingroupness and accountability as two social conditions that may influence negotiators' cognitive adjustment in our study. Future research should investigate other antecedents to mental-model adjustment, such as culture and emotions. In an intercultural negotiation study of Japanese and American managers, for example, when Brett and Okumura (1998) asked participants to judge their counterparts' priority of negotiated issues after negotiation, they found that Japanese participants made more accurate judgments than American participants did. In another intercultural negotiation study of American and Greek students, Gelfand and Christakopoulou (1999) found that American students had significantly more judgment errors than Greek students after negotiation. Both studies suggested that in intercultural negotiations, cognitive adjustment is not balanced. That is, when negotiating with people from other cultures, American negotiators tend to make less mental-model adjustment than the other parties do, and thus American negotiators make more judgment errors and less accurate predictions about the other parties' priorities. It would be interesting to further explore how culture influences mental-model adjustment in intercultural negotiations. Consciously learning about one's own and others' bias, intentions, and mental models is a hallmark of culturally intelligent negotiators and effective global managers (Thomas & Inkson, 2009). Future research could focus on the dynamic nature of social interaction in negotiations, especially in cross-cultural settings, to further investigate how and why mental-model adjustment can decrease misunderstandings and lead to more productive outcomes. Questions to be addressed could

include, for example, under what circumstances does mental-model adjustment reduce the cultural stereotypes that cause tension in cross-cultural negotiations? And what are the most critical elements in negotiators' mental models whose change would produce the best outcomes in cross-cultural negotiations? Both of these would be fruitful research questions.

Another similarly interesting direction would be to explore the effects of emotions on mental-model change. Negotiators' emotions not only influence how they perceive conflictual situations, but also convey social meanings to other parties and thus the interactional partners' social judgments (see Van Kleef, De Dreu, & Manstead, 2010). Lelieveld, Van Dijk, Van Beest, Steinel, and Van Kleef (2011), for example, have shown that when one party displays anger toward the offer (rather than the partner), the partner would make more concessions because anger toward the offer may suggest reaching limits; and when one party displays disappointment toward the partner (rather than the offer), the partner would also make more concessions because disappointment toward the partner may solicit empathy. These findings suggest that different types of emotions may distinctively affect negotiators' mental-model change during negotiation, which deserves future investigation.

In addition, the benefits of mental-model adjustment may be broader than the decrease in fixed-pie bias that served as the outcome of interest in our study. Scholars have long discussed how various cognitive biases, such as over confidence (Bazerman & Neale, 1982), fundamental attribution error (Morris, Larrick, & Su, 1999), and anchoring effects (Liu, Friedman, & Chi, 2005; Northcraft & Neale, 1987), are detrimental to optimal negotiation arrangements. Future research could explore whether mental-model adjustment can assuage the negative impacts of those and other cognitive biases on reaching optimal negotiation outcomes.

Conclusion

In this study, we treated negotiator cognition as changeable and investigated the social conditions that affect fixed-pie perception, a typical type of cognitive bias in negotiation. Using a Chinese college student sample, we explored the coalesced effects of two social conditions (ingroupness and accountability) on the reduction of fixed-pie bias. We also identified a cognitive construct (mental-model adjustment) that neutralizes the effects of those two social conditions. Our findings regarding the social antecedents and cognitive neutralizer of fixed-pie bias have expanded the negotiator cognition literature by identifying and elaborating on new interaction patterns and intervening mechanisms. One of the most important practical implications of our study is to alert negotiators to major social inducers of fixed-pie bias and to encourage them to employ more flexible mental models in negotiations. We believe that being heedful of the social triggers and cognitive neutralizer of cognitive bias can effectively bring more integrative outcomes to the notice of negotiators, thereby leading them to better solutions in negotiations. The challenge ahead is to discover and cultivate such opportunities outside the lab and in actual negotiation experiences.

References

Adler, N.J., & Gundersen, A. (2008). *International Dimensions of Organizational Behavior* - 5th Edition. Mason, OH: Thompson, South-Western**.**

Amanatullah, E.T., Morris, M. W., & Curhan, J. R. (2008). Negotiators who give too much: Unmitigated communion, relational anxieties, and economic costs in distributive and integrative bargaining. *Journal of Personality and Social Psychology* 95, 723-738.

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

Barry, B., & Friedman, R. A. (1998). Bargainer characteristics in distributive and integrative negotiation. *Journal of Personality and Social Psychology*, 74, 345–359.

Bazerman, M. H., Curhan, J.R., Moore, D.A., & Valley, K.L. (2000). Negotiation. *Annual Review of Psychology*, *51*, 279-314.

Bazerman, M.H., & Neale, M.A. (1982). Improving negotiation effectiveness under final offer contribution: The role of selection and training. *Journal of Applied Psychology*, *67,* 543-548.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). *UCINet for Windows: Software for Social Network Analysis.* Harvard: Analytic Technologies.

Brett, J.M. & T. Okumura. (1998). Inter- and Intracultural negotiation: U.S. and Japanese negotiators. *Academy of Management Journal*, *41*, 495-510.

Briley, D., Morris, M. W., & Simonson, I. (2000). Reasons as carriers of culture: Dynamic versus dispositional models of cultural influence on decision making. *Journal of Consumer Research*, 27, 157–178.

Campbell, D.T. (1958). Common fate, similarity and other indices of the status of aggregates of persons as social entities. *Behavioral Science*, *3*, 14-25.

Cannon-Bowers, J. A., Salas, E., & Converse, S. A. (1993). Shared mental models in expert team decision making. In N. J. Castellan, Jr. (Ed.), *Current issues in individual and group decision making* (pp. 221–246). Hillsdale, NJ: Erlbaum.

Carnevale, P.J., Pruitt, D.G., & Seilheimer, S. (1981). Looking and competing: Accountability and visual access in integrative bargaining. *Journal of Personality and Social Psychology*, *40*, 111-120.

Chen, Y.R., Brockner, J., & Katz, T. (1998). Toward and explanation of cultural differences in ingroup favoritism: The role of individual versus collectives primacy. *Journal of Personality and Social Psychology*, *75*, 1490-1502.

Chen, X.-P., & Li, S. (2005). Cross-national differences in cooperative decision making in mixed-motive business contexts: The mediating effect of vertical and horizontal individualism. *Journal of International Business Studies*, 36, 622–636.

Cosmides, L. & Tooby, J. (1992). Cognitive adaptations for social exchange. In Barkow, J., Cosmides, L., & Tobby, J. (eds.) *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 163-228). New York: Oxford University Press.

DeChurch, L. A., & Mesmer-Magnus, J. R. (2010). The cognitive underpinnings of effective teamwork: A meta-analysis. *Journal of Applied Psychology*, 95, 32-53.

De Dreu, C. K. W. (2003). Time pressure and closing of the mind in negotiation. *Organizational Behavior and Human Decision Processes*, *91*, 280–295.

De Dreu, C. K.W., Beersma, B., Euwema, M.C., & Stroebe, K. (2006). Motivated information processing, strategic choice, and the quality of negotiated agreement. *Journal of Personality and Social Psychology*, *90*, 927-943.

De Dreu, C. K. W., & Boles, T. (1998). Share and share alike or winner take all? Impact of social value orientation on the choice and recall of decision heuristics in negotiation. *Organizational Behavior and Human Decision Processes*, *76*, 253–267.

De Dreu, C. K. W., & Carnevale, P. J. D. (2003). Motivational bases for information processing and strategic choice in conflict and negotiation. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 35, pp. 235–291). New York: Academic Press.

De Dreu, C. K. W., Koole, S., & Steinel, W. (2000). Unfixing the fixed pie: A motivated information-processing account of integrative negotiation. *Journal of Personality and Social Psychology*, *79*, 975–987.

De Dreu, C. K. W., Weingart, L. R., & Kwon, S. (2000). Influence of social motives on integrative negotiation: A meta-analytical review and test of two theories. *Journal of Personality and Social Psychology*, *78*, 889–905.

Deutsch, M. (1973). *The resolution of conflict: Constructive and destructive processes*. New Haven, CT: Yale University Press.

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, *12*, 1–22.

Fisher, R., & Ury, W. (1981). *Getting to yes: Negotiating agreement without giving in.* Boston: Houghton Mifflin.

Fiske, S.T. (1993). Controlling Other People - The Impact of Power on Stereotyping. *The American Psychologist*, 48, 621-628.

Fiske, S. T. , & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1-73). New York: Random House.

Fiske, S.T. & Taylor, S.E. (2013). *Social cognition: From brain to culture*. 2nd Edition. London: Sage.

Fry, R.W., Firestone, I.J., & Williams, D.L. (1983). Negotiation process and outcome of stranger dyads and dating couples: Do lovers lose? *Basic and Applied Social Psychology*, *4*, 1-16.

Galinsky, A.D., & Moskowitz, G.B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology*, 78, 708-724.

Gelfand, M.J. & Brett, J.M. (2004). *The Handbook of Negotiation and Culture*. Stanford, CA: Stanford Business Books.

Gelfand, M.J., & Christakopoulou, S. (1999). Culture and negotiator cognition: Judgment accuracy and negotiation processes in individualistic and collectivistic cultures. *Organizational Behavior and Human Decision Processes*, *79*, 248-269.

Gelfand, M.J., Major, V.S., Raver, J.L., Nishii, L.H., & O'Brien, K. (2006). Negotiating relationality: The dynamic of the relational self in negotiations. *Academy of Management Review*, *31*, 427-451.

Gelfand, M.J., & Realo, A. (1999). Individualism-collectivism and accountability in intergroup negotiations. *Journal of Applied Psychology*, *84*, 721-736.

Halevy, N., Chou, E.Y., & Murnighan, J.K. (2012). Mind games: The mental representation of conflict. *Journal of Personality and Social Psychology*, 102, 132-148.
Halevy, N., Cohen, T.R., Chou, E.Y., Katz, J.J., & Panter, A.T. (2014). Mental Models at Work: Cognitive Causes and Consequences of Conflict in Organizations. *Personality and Social Psychology Bulletin*, 40, 92–110.
Harinck, F., & Ellemers, N. (2006). Hide and seek: The effects of revealing one's personal interests in intra- and intergroup negotiations. *European Journal of Social Psychology*, *36*, 791-813.
Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations.* Thousand Oaks CA: Sage.
Herbst, U., & Schwarz, S. (2011). How Valid Is Negotiation Research Based on Student Sample Groups? New Insights into a Long-Standing Controversy. *Negotiation Journal*, 27, 147–170.
Johnson-Laird, P. N. (1983). *Mental Models.* Cambridge, MA: Harvard University Press.
Johnson-Laird, P. N., & Byrne, R. M. J. (1991). *Deduction*. Hillsdale, NJ: Erlbaum.
Jochemczyk, L., & Nowak, A. (2010). Constructing a Network of Shared Agreement: A Model of Communication Processes in Negotiations. *Group Decision and Negotiation*, 19, 591–620.
Kenny, D. A., Kashy, D. A., & Cook, W. (2006). *Dyadic data analysis*. New York: Guilford.
Klimoski, R., & Mohammed, S. (1994). Team mental model: Construct or metaphor? *Journal of Management*, *20*, 403-437.
Kramer, R.M., & Brewer, M.B. (1984). Effects of group identity on resource use in a simulated commons dilemma. *Journal of Personality and Social Psychology*, *46*, 1044-1057.
Kruglanski, A.W. (1989). The psychology of being "right": The problem of accuracy in social perception and cognition. *Psychological Bulletin*, *106*, 395-409.
Kruglanski, A.W., Webster, D.M., & Klem, A. (1993). Motivated resistance and openness to persuation in the presence or absence of prior information. *Journal of Personality and Social Psychology*, *65*, 861-876.
Lewicki, R.J., Saunders, D.M., & Barry, B. (2009). *Negotiation (6th Edition)*. New York, NY: McGraw-Hill.
Lerner, J.S., & Tetlock, P.E. (1999). Accounting for the effects of accountability. *Psychological Bulletin*, *125*, 255-275.
Leung, K., & Bond, M.H. (1984). The impact of cultural collectivism on reward allocation. *Journal of Personality and Social Psychology*, *47*, 793-804.
Lelieveld, G.-J., Van Dijk, E., Van Beest, I., Steinel, W., & Van Kleef, G. A. (2011). Disappointed in you, angry about your offer: Distinct negative emotions induce concessions via different mechanisms. *Journal of Experimental Social Psychology*, 47, 635-641.
Lim, B.C., & Klein, K.J. (2006). Team mental models and team performance: A field study of the effects of team mental model similarity and accuracy. *Journal of Organizational Behavior*, *27*, 403-418.
Lippmann, W. (1922). *Public Opinion*. New York: Harcourt, Brace and Company. Google Books (Accessed May 21, 2014).
Liu, L.A., Chua, C.H., & Stahl, G. (2010). Quality of communication experience: Definition, measurement, and implications for intercultural negotiations. *Journal of Applied Psychology*, *95*, 469-487.
Liu, L.A. & Dale, C. (2009). Using mental models to study cross-cultural interactions. In C. Nakata (ed.) *Beyond Hofstede: Culture Frameworks for Global Marketing and Management.* Macmillan's Palgrave.

Liu, L.A., Friedman, R.A., Barry, B., Gelfand, M.J., & Zhang, Z-X. (2012a). The dynamics of consensus building in intracultural and intercultural negotiations. *Administrative Science Quarterly*, 57, 269-304.

Liu, W., Friedman, R., & Hong, Y. (2012b). Culture and Accountability in Negotiation: Recognizing the Importance of In-group Relations. *Organizational Behavior and Human Decision Processes*, 117, 221-234.

Liu, L.A., Friedman, R.A., Chi, S.C. (2005). "Ren Qing" versus the "Big 5": The Role of Culturally Sensitive Measures of Individual Difference in Distributive Negotiations. *Management and Organization Review*, *1*, 225-247.

Loewenstein, J., & Thompson, L.L. (2006). Learning to negotiate: Novice and experienced negotiators. In L.L.Thompson (Ed.), *Negotiation Theory and Research* (pp.77-98), New York, NY: Psychology Press.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of the methods to test mediation and other intervening variable effects. *Psychological Methods, 7*, 83–104.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the produce and resampling methods. *Multivariate Behavioral Research, 39*, 99–128.

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology, 85*, 273-283.

Mathieu, J.E., Heffner, T.S., Goodwin, G.F., Cannon-Bowers, J.A., & Salas, E. (2005). Scaling the quality of teammates' mental models: Equifinality and normative comparisons. *Journal of Organizational Behavior*, *26*, 36-56.

Minsky, M. (1975). A Framework for representing knowledge. In P. H. Winston (ed.), *The Psychology of Computer Vision* (pp. 211–277). New York: McGraw-Hill.

Mohammed, S., & Dumville, B.C. (2001). Team mental model in a team knowledge framework: Expanding theory and measurement across disciplinary boundaries. *Journal of Organizational Behavior*, *22*, 89-106.

Mohammed, S., Ferzandi, L., & Hamilton, K. (2010). Metaphor no more: A 15-year review of the team mental model construct. *Journal of Management*, 36, 876-910.

Moore, D., Kurtzberg, T., Thompson, L., & Morris, M.W. (1999). Long and short routes to success in electronically mediated negotiations: group affiliations and good vibrations. *Organizational Behavior and Human Decision Processes, 77*, 22-43.

Morgan, W. R, & Sawyer, J. (1967). Bargaining, expectations, and the preference for equality over equity. *Journal of Personality and Social Psychology*, *31*, 139-149.

Morris, M.W., Larrick, R.P., & Su, S.K. (1999). Misperceiving negotiation counterparties: When situationally determining barging behaviors are attributed to personality traits. *Journal of Personality and Social Psychology*, *77*, 52-67.

Morris, M.W., & Gelfand, M.J. (2004). Cultural differences and cognitive dynamics: Expanding the cognitive perspective on negotiation. In M.J. Gelfand & J.M. Brett (Eds.), *The Handbook of Negotiation and Culture*. Stanford, CA: Stanford University Press, pp.95-113.

Neale, M.A., Huber, V.L., & Northcraft, G.B. (1987). The framing of negotiations: Contextual versus task frames. *Organizational Behavior and Human Decision Processes*, 39, 228-241.

Neale, M.A., & Northcraft, G.B. (1986). Experts, amateurs, and refrigerators: A comparison of expert and amateur negotiators in a novel task. *Organizational Behavior and Human Decision Processes*, 38, 305-317.
Northcraft, G.B., & Neale, M.A. (1987). Experts, amateurs, real estate: An anchoring-and-adjustment perspective on property pricing decisions. *Organizational Behavior and Human Decision Processes*, *39*, 84-97.
Pinkley, R., & Northcraft, G. B. (1994). Cognitive interpretations of conflict: Implications for dispute processes and outcomes. *Academy of Management Journal, 37*, 193-205.
Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*, 185–227.
Pruitt, D. G. (1981). *Negotiation behavior*. New York: Academic Press.
Pruitt, D.G., & Carnevale, P.J. (1993). *Negotiation in social conflict*. Pacific Grove, CA: Brooks/Cole Publishing Company.
Pruitt, D.G., & Rubin, J.Z. (1986). *Social conflict: Escalation, stalemate, and settlement*. New York: McGraw-Hill.
Rentsch, J.R., & Klimoski, R.J. (2001). Why do "great minds" think alike?: Antecedents of team member schema agreement. *Journal of Organizational Behavior*, *22*, 107-120.
Salthouse, T.A. (1992). Mechanisms of age-cognition relations in adulthood. Hillsdale, NJ: Erlbaum.
Schank, R.C. & Abelson, R. (1977). *Scripts, Plans, Goals, and Understanding*. Hillsdale, NJ: Earlbaum Assoc.
Schulkin, J. (2009). *Cognitive adaptation: A pragmatist perspective*. New York: Cambridge University Press.
Semin, G. R., & Manstead, A. S. R. (1983). *The accountability of conduct: A social psychological analysis*. London: Academic Press.
Smith-Jentsch, K.A., Mathieu, J.E., & Kraiger, K. (2005). Investigating linear and interactive effects of shared mental models on safety and efficiency in a field setting. *Journal of Applied Psychology*, *90*, 523-535.
Swaab, D.I., Postmes, T., Neijens, P., Kiers, M.H., & Dumay, C.M. (2002). Multiparty negotiation support: The role of visualization's influence on the development of shared mental models. *Journal of management Information Systems*, *19*, 129-150.
Tajfel, H., & Turner, J.C. (1986). The social identity theory of intergroup behavior. In S.Worchel and W.G. Austin (Eds.), *Psychology and intergroup relations*. Chicago: Nelson-Hall.
Tetlock, P.E. (1992). The impact of accountability on judgment and choice: Toward a social contingency model. In Zanna (Ed.), *Advances in Experimental Social Psychology*, *25*, 331-376.
Thomas, D. C. & Inkson, K. (2009). *Cultural Intelligence: Living and Working Globally*. San Francisco: Berrett-Koehler. Second Edition.
Thompson, L. (1993). The impact of negotiation on integroup relations. *Journal of Experimental Social Psychology*, *29*, 304-325.
Thompson, L., & DeHarpport, T. (1994). Social judgment, feedback, and interpersonal learning in negotiation. *Organizational Behavior and Human Decision Processes*, *58*, 327-345.
Thompson, L., & DeHarpport, T. (1998). Relationships, goal incompatibility, and communal orientation in negotiations. *Basic and Applied Social Psychology*, *20*, 33-44.

Thompson, L., & Hastie, R. (1990). Social perception in negotiation. *Organizational Behavior and Human Decision Processes*, *47*, 98-123.
Thompson, L., Neale, M., & Sinaceur, M. (2004). The evolution of cognition and biases in negotiation research: An examination of cognition, social perception, motivation, and emotion. In M.J. Gelfand & J.M. Brett (Eds.), *The Handbook of Negotiation and Culture* (pp.7-44). Stanford, CA: Stanford Business Books.
Thompson, L., Wang, J., & Gunia, B. (2010). Negotiation. *Annual Review of Psychology*, 61, 491-515.
Triandis, H.C. (1995). *Individualism and collectivism*. Boulder, CO: Westview.
Trötschel, R., Hüffmeier, J, Loschelder, D. D., Schwartz, K., & Gollwitzer, P. M. (2011). Perspective taking as a means to overcome motivational barriers in negotiations: When putting oneself into the opponent's shoes helps to walk toward agreements. *Journal of Personality and Social Psychology*, 101, 771-790.
Tsui, A. (2007). From homogenization to pluralism: International management research in the academy of beyond. *Academy of Management Journal*, *50*, 1353-1364.
Van Boven, L., & Thompson, L. (2003). A look into the mind of the negotiator: Mental models in negotiation. *Group Processes and Intergroup Relations*, *6*, 387-404.
Van Lange, P. A. M. (1999). The pursuit of joint outcomes and equality in outcomes: An integrative model of social value orientations. *Journal of Personality and Social Psychology*, *77*, 337–349.
Van Kleef, G. A., De Dreu, C. K. W., & Manstead, A. S. R. (2010). An interpersonal approach to emotion in social decision making: The emotions as social information model. *Advances in Experimental Social Psychology, 42*, 45-96.
Wall, J.A., & Blum, M. (1991). Negotiations. *Journal of Management*, *17*, 273-303.
Waller, M.J., Gupta, N., & Giambatista, R.C. (2004). Effects of adaptive behaviors and shared mental models on control crew performance. *Management Science*, *50*, 1534-1544.
Walton R.E., & McKersie, R.B. (1965). *A Behavioral Theory of Labor Negotiations*. New York: McGraw-Hill.
Wasserman, S. & Faust, K. (1994). *Social network analysis: Methods and applications.* New York: Cambridge University Press.
Weingart, L. R., Bennett, R. J., & Brett, J. M. (1993). The impact of consideration of issues and motivational orientation on group negotiation process and outcome. *Journal of Applied Psychology, 78*, *504–517.*
Weingart, L. R., Hyder, E., & Prietula, M. J. (1996). Knowledge matters: The effect of tactical descriptions on negotiation behavior and outcome. *Journal of Personality and Social Psychology*, *70*, 1205–1217.
Wright, S.C., Aron, A., McLaughlin-Volpe, T, & Ropp, S.A. (1997). The extended contact effect: Knowledge of cross-group friendships and prejudice. *Journal of Personality and Social Psychology*, *73*, 73-90.