RUNNING HEAD: Handshaking Promotes Deal-making

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Handshaking Promotes Deal-Making by Signaling Cooperative Intent

Juliana Schroeder[1], Jane L. Risen[2], Francesca Gino[3], & Michael I. Norton[4]

[1]University of California, Berkeley, Haas School of Business

[2]University of Chicago Booth School of Business

[3]Harvard Business School

Abstract

We examine how a simple handshake—a gesture that often occurs at the outset of social interactions—can influence deal-making. Because handshakes are social rituals, they are imbued with meaning beyond their physical features. We propose that during mixed-motive interactions, a handshake is viewed as a signal of cooperative intent, increasing people's cooperative behavior and affecting deal-making outcomes. In Studies 1a and 1b, pairs who chose to shake hands at the onset of integrative negotiations obtained better joint outcomes. Study 2 demonstrates the causal impact of handshaking using experimental methodology. Study 3 suggests one driver of the cooperative consequence of handshaking: negotiators expected partners who shook hands to behave more cooperatively than partners who avoided shaking hands or partners whose nonverbal behavior was unknown; these expectations of cooperative intent increased negotiators' own cooperation. Study 4 uses an economic game to demonstrate that handshaking increased cooperation even when handshakes were uninstructed (vs. instructed). Further demonstrating the primacy of signaling cooperative intent, handshaking actually reduced cooperation when the action signaled ill intent (e.g., when the hand-shaker was sick; Study 5). Finally, in Study 6, executives assigned to shake hands before a more antagonistic, distributive negotiation were less likely to lie about self-benefiting information, increasing cooperation even to their own detriment. Together, these studies provide evidence that handshakes, ritualistic behaviors imbued with meaning beyond mere physical contact, signal cooperative intent and promote deal-making.

Keywords: Handshake; Cooperation; Affiliation; Competition; Negotiation

After years of negotiations between Prime Minister Shinzo Abe of Japan and President Xi Jinping of China, diplomats from both countries arranged for the two leaders of Asia's biggest economies to meet at a 2014 economic summit for a single purpose: to shake hands. The handshake took months of scheduling to arrange, with the news media noting that the "small gesture holds great importance" for future negotiations and would be "parsed for deeper meaning" (Fackler, 2014, p. A12). It was not the first high-profile handshake between world leaders with repercussions. In 2005, President George W. Bush inadvertently insulted Slovak officials by failing to remove his gloves before shaking hands; Bush made sure to not to repeat the faux pas for his farewell handshakes. And in 2013, Iranian President Hassan Rouhani's refusal to shake hands with American President Barack Obama was deemed a "historic non-handshake" that "irreparably damaged negotiations" (Landler, 2013, p. A9).

These examples illustrate how a simple handshake—a short ritualistic gesture that often occurs at the outset of social interactions—can influence deal-making. Because handshakes are social rituals, they are imbued with meaning beyond their physical features. Specifically, we propose that during mixed-motive interactions in which parties have both diverging and converging interests (Schelling, 1980), a handshake signals the intent to act cooperatively instead of competitively. By signaling cooperative intent, handshaking may consequently induce a counterpart to behave more cooperatively; indeed, the mere knowledge that another person is a "hand-shaker" could increase perceptions of that person's cooperative intent.

We explore a class of interactions in which people have a choice to cooperate or to compete. These interactions are characterized by mixed motives (cooperation or competition) and outcome interdependence (the compatibility or incompatibility of people's interests and goals), which are central features of conflict situations (Bornstein, 2003; De Dreu, 2010; Halevy, Chou, & Murnighan, 2012). In such interactions, individuals' beliefs about the other party's social motives can predict their own willingness to cooperate (Deutsch, 1949; Pruitt & Lewis, 1975; Pruitt &

Rubin, 1986). Prior research on mixed-motive interactions considers how individual differences in social value orientation influence outcomes (De Dreu & Van Lange, 1995; Deutsch, 1949; Kelley & Schenitzki, 1972; McClintock, 1977; Messick & McClintock, 1968; Van Lange & Kuhlman, 1994). It has also manipulated social motives via either explicit instructions or incentive schemes (De Dreu & McCusker, 1997; Halevy, Bornstein, & Sagiv, 2008; Halevy, Weisel, & Bornstein, 2011; Sattler & Kerr, 1991). Building on this research, we examine how nonverbal behavior can causally influence perceptions of social motives. In particular, we study a form of nonverbal behavior imbued with symbolic meaning—the handshake—which we propose can affect beliefs about a partner's social motives (their cooperative intent), increasing perceptions of warmth and ultimately influencing cooperative behavior. Even in distributive negotiations or economic games—paradigmatic contexts that often induce desires to compete (Pruitt, 1981)—we expect that the mere act of handshaking can increase cooperation.

Handshakes as Social Rituals

Rituals are an omnipresent component of human social life. Although specific definitions of rituals abound across the social sciences (e.g., Bell, 1997; Boyer & Lienard, 2006; Humphrey & Laidlaw, 1994), most agree that rituals involve at least two defining features: (1) they are composed of specific actions that tend to be structured, rigid, and repetitive (Foster, Weigand, & Baines, 2006; Rossano, 2012; Tambiah, 1979) and (2) their physical gestures are imbued with psychological meaning beyond the instrumental intent of the physical actions (Boyer & Lienard, 2006; (Hobson, Schroeder, Risen, Xygalatas, & Inzlicht, 2017; Legare & Souze, 2012). Consider, for example, the 21-gun salute during an American military funeral, which bestows the highest honor to a fallen soldier, or the Catholic sign of the cross, representing the crucifixion of Jesus; in both cases, physical actions follow a rigid script that is deeply symbolic.

Rituals are often considered social phenomena because they help maintain group cohesion (Watson-Jones & Legare, 2016). Indeed, group rituals have been linked to positive social outcomes

with fellow group members, such as cooperation, social cohesion, and perceived social support (Fischer, Callander, Reddish, & Bulbulia, 2013; Hobson, Gino, Norton & Inzlicht, 2017; Hopkins et al., 2015; Páez, Rimé, Basabe, Wlodarczyk, & Zumeta, 2015; Ruffle & Sosis, 2007; Sosis & Ruffle, 2003). Group rituals are theorized to promote affiliation through bottom-up processing (building on the physical stimulus features of the ritual) as well as top-down processing (integrating the physical features into meaningful psychological appraisals). Whereas bottom-up processing of a ritual can promote affiliation through shared attention and behavioral synchrony, top-down processing can promote affiliation by signaling group membership and specific shared values (Hobson et al., 2017).

Here, we examine the function of a particular type of ritualistic behavior, handshaking, for inferring a stranger's intentions. The handshake is considered a "greeting ritual" because it is commonly used at the start of social interactions and satisfies the two defining features of ritual. First, a handshake is a structured and repetitive physical activity: the gesture of clasping a partner's hand and shaking it up and down. Second, the meaning of the gesture extends beyond the physical behavior. Although the physical and psychological features of a handshake occur together and could each enhance positivity toward a partner through bottom-up and top-down processes, respectively, our theoretical argument builds primarily on the psychological meaning assigned to handshakes. That is, even if the physical features of a handshake promote cooperation through bottom-up processing, we argue that the psychological meaning conveyed by a handshake is sufficient for influencing cooperative behavior and deal-making outcomes. Consistent with this notion of top-down processing, we propose that the knowledge that an interaction partner has engaged in a handshake with a third party is sufficient for an actor to infer that partner's cooperative intent—even when the actor herself does not engage in handshaking with that partner.

Physical Features of Handshakes: Touch, Synchrony, and Mimicry

Physical touch plays a central role in social interaction, conveying warmth, closeness, caring, and intimacy (Edinger & Patterson, 1983). In most cultures, adults use specific forms of

touch to express messages such as flirtation, power, play, and nurturance (Eibl-Eibesfeldt, 1989; Hertenstein, Keltner, App, Bulleit, & Jaskolka, 2006). When observers view two people touching in a photograph, they believe the two interactants have a relationship that involves more intimacy, immediacy, and emotionality as compared to when they view pairs engaged in other common nonverbal behaviors (e.g., standing next to each other, making eye contact, and smiling at each other) (Burgoon, Buller, Hale, & deTurck, 1984). Moreover, interpersonal touch can predict outcomes ranging from maintaining loving relationships (Gallace & Spence, 2010; Harlow, 1958) to tipping at restaurants (Stephen & Zweigenhaft, 1986).

Beyond touch, the act of shaking hands together could be considered a form of synchrony. Synchrony, the coordinated movement of two people in time, has been shown to produce positive emotions, weakening the boundaries between the self and the group (Ehrenreich, 2006; Hannah, 1977) and enhancing cooperation (Wiltermuth & Heath, 2009) and liking (Hove & Risen, 2009). Relatedly, people who mimic the behaviors of their counterparts appear more affiliative and are better liked (Lakin & Chartrand, 2003; Taylor & Thomas, 2008; Van Baaren, Janssen, Chartrand, & Dijksterhuis), which can facilitate negotiation outcomes (Maddux, Mullen, & Galinsky, 2008).

Taken together, like many other forms of touch and shared movement, the physical features of handshakes are likely to promote affiliation. However, we extend these prior findings by considering the symbolic nature of handshakes, predicting that the psychological signal from the ritualistic behavior is consequential for mixed-motive outcomes. As noted above, we suggest that the mere knowledge that a person shook hands—even in the absence of physical touch—will influence perceptions of cooperative intent. Moreover, we predict that the same physical behavior can send a different signal depending on its context. For example, a handshake from a sick person may express careless—or harmful—intent instead of cooperative intent. Finally, our focus on the psychological signal of a handshake (beyond its physical features) suggests that *avoiding* a handshake will also have meaningful consequences in mixed-motive contexts. Although the

avoidance of a handshake is physically unremarkable—more of a non-act than an act—such avoidance can send a message of ill intent. Thus, we expect that the deliberate refusal of a proffered hand will reduce cooperation.

The Psychological Meaning of Handshakes

Handshakes are distinct from other forms of touch and other social rituals in the specific message that they convey. Consider two common origin stories for handshakes: in one, the clasping of hands when making an oath or promise represents a sacred bond; in another, showing hands indicates a lack of weapons, and the up-and-down motion of the shake can dislodge hidden daggers or knives in one's sleeve (Andrews, 2016). Both origin stories share the common theme that a handshake specifically signals a person's good faith. This may provide one explanation why handshakes have historically been considered a critical aspect of good etiquette (for books, see Post, 1934; Reid, 1955); etiquette books and seminars often advertise "proper handshaking" as a component of their curriculum (Mayne, 2017). These anecdotes suggest that handshakes may convey warmth and cooperative intent in mixed-motive situations, but to our knowledge, their consequences have not been examined in this context.

Instead, the consequences of handshaking on first impressions have been evaluated in primarily two settings: in everyday personality assessments, and in the workplace (i.e., interview evaluations). Astrom and colleagues theorized that "good handshakes" (which consist of optimal temperature, texture, strength, vigor, completeness of grip, duration, and eye contact) communicate sociability, friendliness, and dominance, whereas "poor handshakes" communicate social introversion, shyness, and neuroticism (Astrom, 1994; Astrom & Thorell, 1996; Astrom, Thorell, Holmlund, & d'Elia, 1993). Their studies, which were limited to interviews with psychiatric patients, therapists, and clergymen, found small to moderate relationships between features of the handshake, such as gripping style, and personal characteristics, such as extraversion. An empirical study of eight different handshake features yielded only moderate effects of a handshake's firmness

on perceptions of personality (Chaplin, Phillips, Brown, Clanton, & Stein, 2000), suggesting that, despite lay beliefs to the contrary, the specific characteristics of handshakes have relatively little effect on evaluations of the hand-shaker.

In contrast, research suggests that the presence of a handshake (versus its absence) may have a more pronounced effect on evaluation. In a business setting, for example, witnessing two individuals shake hands leads observers to evaluate the relationship more positively as compared to simply seeing the same two individuals standing next to each other (Dulcos, Sung, Argo, Flor-Henry, & Dulcos, 2012). In addition, individuals who follow common prescriptions for shaking hands receive higher ratings of employment suitability in job interviews (Stewart, Dustin, Barrick, & Darnold, 2008). These workplace studies indicate that handshakes, particularly those that follow common social scripts, can have meaningful consequences. However, although employment interviews are evaluative, they are not (typically) competitive, so it is not clear from these prior studies how handshakes might influence outcomes in interactions with the possibility of competition. Therefore, we examine the consequences of shaking hands (vs. not shaking hands) in mixed-motive interactions. Moreover, we explore the underlying mechanisms driving the effect of handshakes, assessing the cooperative signals that handshakes send.

Inferring a Counterpart's Motives

In mixed-motive interactions, people can pursue their own interests or rely on others to maximize collective outcomes (Beersma & De Dreu, 1999; De Cremer, 1999; Halevy et al., 2012), with potential gains if cooperation is achieved, but a risk of exploitation by cheaters. More broadly, many aspects of human life involve this characteristic of social exchange in which one party provides a benefit to the other conditional on the recipient's return benefit (Cosmides, 1985; Cosmides & Tooby, 1989; Deutsch, 1949; Halevy, 2008; Pruitt & Lewis, 1975; Pruitt & Rubin, 1986; Tooby & Cosmides, 1996). The vast magnitude, variety, and complexity of social exchange relations differentiate humans from other animal species, leading scholars to argue that it is

evolutionarily advantageous to be able to detect trustworthy (and untrustworthy) interaction partners (Tooby & DeVore, 1987).

This ability to detect cheaters in social exchanges stems from the psychological capacity to conceive of others as having their own thoughts, intents, beliefs, and emotions ("theory of mind"; Baron-Cohen, 1991; Premack & Woodruff, 1978). Theory of mind enables individuals to infer others' intentions when making a decision to cooperate or compete (McCabe, Smith, & LePore, 2000). As evidence, playing economic games sequentially instead of simultaneously increases cooperation because it yields greater opportunity to understand a partner's intent and signal cooperation (McCabe et al., 2000). Moreover, adults who scored higher on a well-validated measure of theory of mind (the "mind in the eyes task"; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001) cooperated more than adults with lower theory of mind capacity in sequential games (Ridinger & McBride, 2016).

Scholars have theorized that rituals can provide a mechanism by which to identify cooperative parties (Hobson et al., 2017; Watson-Jones & Legare, 2016). Rituals, therefore, may be particularly useful in mixed-motive contexts in which a counterpart's intentions (i.e., to help or harm) are ambiguous. A handshake, as both a ritualistic behavior linked to cooperation and a commonly deployed behavior at the start of interactions which sets the tone for the remainder, may be particularly influential. We test four hypotheses that build from this claim.

Hypotheses

As a social ritual, handshakes have symbolic meaning beyond their physical features. First, we propose that handshakes signal cooperative intent in mixed-motive contexts (H1a). We test this proposition in our pilot study, Study 3, and Study 5. Conversely, avoiding a handshake is predicted to communicate competitive intent (H1b; tested in Study 3). Second, we predict that when people infer cooperative intent from their counterparts' handshaking behavior, their own cooperative intent will increase (H2; tested in Studies 3 and 5).

Third, increased cooperative intent from shaking hands is expected to prompt more cooperative behavior (H3; tested in Studies 2, 4 and 6). We examine three forms of cooperative behavior in three distinct mixed-motive situations: integrative negotiations, distributive negotiations, and economic games. In integrative contexts, where parties' interests are neither completely opposed nor completely compatible, prior research suggests that openly exchanging information is a critical cooperative behavior (Fisher & Ury, 1981; Pruitt, 1981; Raiffa, 1982). In distributive contexts, where parties' interests are opposed, prior research suggests that lying is a more common antagonistic behavior (Pruitt & Lewis, 1975). We explore whether handshaking promotes open information exchange in Study 2, and reduces lying in Study 6. Finally, in an economic game context (the prisoner's dilemma game) in which we manipulate pay-offs to be more integrative or more distributive, Study 4 assesses the effect of handshaking on participants' likelihood of cooperating.

Finally, we predict that these changes in cooperative behavior will influence deal-making outcomes. In integrative contexts, we predict that handshaking will lead to improved joint outcomes (H4a; tested in Studies 1a, 1b, and 2); we base this prediction on prior research indicating that the more negotiators openly reveal their own priorities, the more they make mutually beneficial trades to improve their joint outcomes (De Dreu, Weingart, & Kwon, 2000; Thompson, Mannix, & Bazermann, 1988; Weingart, Bennett, & Brett, 1993; Weingart, Hyder, & Prietula, 1996). In distributive contexts, we predict that handshakes will lead to a more equal distribution of outcomes (H4b; tested in Study 6); if handshakes both convey and elicit sufficient cooperative intent, they should encourage negotiators to more highly value fairness and joint welfare (Giebels, De Dreu, & Van de Vliert, 2000; Kelley & Thibaut, 1978; Van Lange, 1999).

Overview of Present Research

Seven studies use three different mixed-motive contexts to assess the psychological and behavioral consequences of handshaking. A pilot study examines people's lay beliefs about the

relationship between handshaking, cooperation, and negotiation outcomes. Studies 1-3 test the effect of handshakes on integrative negotiation outcomes. We examine the correlation between shaking hands and improved integrative negotiation outcomes in Studies 1a and 1b. We then experimentally assess the effect of the presence vs. absence of a handshake on individuals' cooperative behavior (i.e., open information exchange) and joint outcomes in Study 2.

To test our account that handshakes, as ritualistic behaviors imbued with meaning, serve as a meaningful signal of a counterpart's cooperative intent, Study 3 examines whether merely observing a counterpart shaking hands—but not actually shaking hands themselves—changes participants' assessments of the counterpart's cooperative intentions, as compared to not observing the counterpart's prior behavior or observing the counterpart avoid a handshake. Study 3 also assesses whether our proposed mediator—inferences about counterparts' intentions—drives the effect of handshaking on the negotiator's own behavior.

Study 4 considers a different adversarial context: an economic game. Pairs playing the game have a choice to defect, gaining more for themselves at the expense of their partner, or to cooperate, gaining less for themselves but improving the joint outcome. Study 4 further examines whether the effect of handshaking is robust to social value orientation and incentive structure. To address the issue of experimenter demand, Study 4 also explores whether handshaking affects cooperation not only for individuals who are instructed to shake hands, but who shake hands uninstructed.

Study 5 measures participants' assessments of their partners' intentions following a handshake or no handshake, as well as participants' own behavioral intentions in an economic game. In addition, Study 5 tests whether a countervailing psychological signal of a counterpart's intentions can change individuals' interpretation of, and reaction to, handshaking behavior. Under normal circumstances, handshaking may appear to reflect cooperative motives and avoiding a handshake, competitive motives; but a simple verbal statement that provides an alternative explanation for the same behavior, such as professing "I feel sick," may lead to an entirely different

interpretation—making a handshake seem thoughtless or malicious, and the avoidance of a handshake seem caring.

Finally, Study 6 tests the effect of handshaking in a distributive negotiation. Distributive negotiations represent a strong test of our hypothesis because cooperation requires one party to sacrifice some of their own potential gain. We expect that shaking hands prior to distributive negotiations will lead negotiators to engage in fewer antagonistic behaviors—such as lying—that could benefit themselves, resulting in more equitable outcomes.

Pilot Study: Predicted Consequences of Handshakes

To determine whether people expect handshakes to influence mixed-motive outcomes, we conducted a survey of individuals who were about to engage in a negotiation, asking them to predict how a handshake would influence their negotiation experience, behavior, and outcomes. We predicted that people might believe that handshakes would change their experience or behavior—for instance, by increasing cooperation and formality—but that they would not expect handshakes to meaningfully change their deal-making outcomes. The mere fact that many negotiators fail to shake hands before integrative negotiations (in our own data with advanced MBA students, 43% shook hands) suggests that they may not foresee any material benefit from engaging in this behavior.

The survey asked participants (39 MBA students[1] from a Midwestern business school) who were about to engage in an integrative negotiation to "imagine that you and your negotiation partner shake hands prior to the negotiation. How will this affect your negotiation? Check all the effects that you think would occur." Two of the listed effects pertained to the general behavior of negotiators (will make us cooperate more together; will make us act more formally with each other); two pertained to the negotiation experience (will make the experience more enjoyable; will make the experience more professional); and four pertained to the negotiation outcome (will increase the joint point total; will reduce the joint point total; will increase the point total more for

1 We did not collect participants' demographic information.

the boss than the candidate; will increase the point total more for the candidate than the boss). To compare predictions about the effect of handshaking to predictions about another affiliative factor, we subsequently asked participants to make the same assessment about being friends with their partner: “Imagine that you already know your negotiation partner and are friends with him or her. How will this affect your negotiation? Check all the effects that you think would occur.” The list of possible effects that the participant could select was the same.

A sizable number of participants believed a handshake would make them cooperate more (M = 41.0%, SD = 49.8%). An equal number believed it would make them act more formally (M = 56.4%, SD = 50.2%), $\chi^2(1, 39) = 1.28$, $p = .258$. Only 12.8% (SD = 33.9%) believed the handshake would make their negotiation experience more enjoyable, with the majority instead believing it would make the experience more professional (M = 64.1%, SD = 48.6%). Most important, 71.8% of participants (SD = 45.6%) believed the handshake would have *no* effect on their point outcomes, far more than those who believed it would increase their joint total (M = 23.1%, SD = 42.7%), $\chi^2(1, 39) = 16.66$, $p < .001$. In comparison, more participants believed that friendship with the counterpart (vs. a handshake) would increase cooperation (M = 71.8%, SD = 45.6%), $\chi^2(1, 39) = 6.31$, $p = .012$, and marginally more participants believed friendship would increase the joint point total (M = 46.2%, SD = 50.5%), $\chi^2(1, 39) = 3.63$, $p = .057$.

Overall, these findings indicate that, although many negotiators think handshakes will increase cooperation and formality, they do not think handshakes will affect their negotiation outcomes. Because we contaminated this sample by drawing their attention to the effects of shaking hands, we could not ascertain whether or not these particular negotiators were correct in their predictions. Instead, we turn in the next study to a comparable sample of negotiators doing the exact same integrative negotiation to examine the accuracy of these predictions.

Study 1a & 1b: Correlational Evidence from Integrative Negotiations

Before experimentally testing the effect of handshakes on negotiation outcomes, we first measured the relationship between handshakes and integrative negotiation outcomes in Studies 1a and 1b. Although randomly assigning pairs to shake hands is necessary to determine the *causal* effect of handshakes, such experiments can suffer from a demand artifact: participants might infer that they are supposed to act cooperatively when an experimenter tells them to shake hands. A correlational design allows us to observe the relationship between handshakes and negotiation outcomes without any such experimental demand artifacts. We expected that handshakes would correlate with higher joint outcomes in integrative negotiations. Because strangers may be more likely to shake hands than friends, and friendship may positively influence negotiation outcomes, we further measured whether or not pairs knew each other, intending to control for this in our analyses.

Study 1a Method

Participants. We recruited as many students as possible from two negotiation classes at the same Midwestern United States business school as the participants in the Pilot Study. One hundred six MBA student pairs[2] (i.e., 212 students) completed an integrative negotiation.

Procedure. Participants completed their negotiation in class with a randomly assigned partner. To increase our sample size and generalizability, we sampled across two classes. One class completed the New Car negotiation (Nadler, Thompson, & Morris, 1998; n = 37 pairs); the other completed the New Recruit negotiation (Neale, 2006; n = 69 pairs). After the negotiation, one participant in each pair completed a survey.

Materials. The New Car and New Recruit negotiations require pairs to negotiate the buying and selling of a car and the job offer details for a new employee, respectively. Both negotiations have exactly the same structure: pairs negotiate eight issues with five outcome options for each issue. For instance, in the car negotiation, parties must determine a car price ranging from $50,000 to $58,000 in $2,000 increments, a car color (black, red, blue, green, or yellow), and so on. Each

2 We did not collect participants' demographic information.

party has a point schedule in their confidential information that explains their preferences. Of the eight issues, two are distributive (parties have opposite preferences of the same point magnitude), two are compatible (parties have the same preferences), and four are variable-sum (parties have opposing preferences but different point magnitudes). If negotiators integrate their interests by compromising *across* the variable-sum issues, they can divide more points than if they compromise on *each* of the variable-sum issues individually. Based on the pairs' decisions on the issues, each party achieves a number of points representing the extent to which they achieved their interests in the negotiation.

In addition to reporting the outcome of the negotiation, the survey asked participants whether or not they shook hands with their partner before beginning the negotiation (Yes, No, or Do not remember), whether or not they knew their partner prior to the negotiation (Yes or No), and how much they enjoyed the negotiation (1 = *Not at all*; 7 = *A lot*).[3]

Study 1a Results and Discussion

Because both negotiations have the same integrative structure but different possible point totals, we standardized the pairs' total scores for each of the two negotiations. Of the 106 pairs, three did not report their final score in the survey and were therefore dropped from analyses.

Consistent with our prediction, pairs who shook hands (n = 74) had a higher joint outcome (M = 0.13, SD = 0.92) than pairs who did not shake hands (n = 29; M = -0.33, SD = 1.11), $t(101) = 2.13$, $p = .04$, $d = 0.45$. Negotiation case did not moderate the effect of shaking hands on point totals, $F(1, 99) < 1$. Whether or not pairs previously knew each other did not affect their likelihood of shaking hands, $\chi^2(1, 103) < 1$, marginally improved their joint score, $t(101) = 1.66$, $p = .099$, $d = 0.33$, and did not moderate the effect of shaking hands on point totals, $F(1, 99) < 1$. Shaking hands predicted the joint score even when controlling for knowing each other in a linear regression, $\beta = 0.21$, $p = .04$. (See Appendix Table S1 for full set of regression analyses.) There was also a

3 Because we only collected one participant's opinions in each pair, we could not compare responses for accuracy.

directional but not statistically significant positive effect of shaking hands on how much pairs reported enjoying the negotiation, (handshake vs. no handshake: $M = 5.93$, $SD = 0.96$ vs. $M = 5.62$, $SD = 1.15$), $t(101) = 1.41$, $p = .16$, $d = 0.28$; controlling for enjoyment did not change the effect of shaking hands on point outcomes.

These results reveal a positive relationship between handshakes and joint outcomes in integrative negotiations, despite negotiators' predictions to the contrary in our Pilot Study. However, because we asked pairs to report whether they shook hands after the negotiation was complete, it is possible that pairs who achieved higher joint outcomes were simply more likely to remember shaking hands—regardless of whether they actually did. Instead of relying on self-reports, we obtain a better measure of handshaking behavior by videotaping another group of negotiators in Study 1b.

Study 1b Method

To examine the relationship between handshaking and negotiation outcomes with a new sample and to rule out memory bias as a possible explanation for the results, we videotaped a different group of MBA students completing an integrative negotiation case that they had prepared at home.

Participants. We recruited all of the students attending an advanced negotiation course at a business school in the Midwestern United States. Thirty-five pairs of MBA students (51 males[4]; 70 students overall) completed an integrative negotiation.

Procedure and materials. In the World Premier negotiation (Massey & Nolan, 2010), participants negotiate the production of a play on five issues that involve a combination of distributive, compatible, and variable-sum point distributions. Two research assistants coded participants' videos on three criteria: first, whether or not the pairs shook hands at the start of the

4 We note that some prior research has found that women tend to receive lower ratings for their handshake quality than do men, in part because their handshakes are weaker (Chaplin et al., 2000; Stewart et al., 2008). We therefore tested whether participants' gender or their partners' gender moderated the effect of handshaking on cooperative outcomes in all studies in which we measured gender, but found non-significant results for all studies.

negotiation; second, the total joint points that the pairs achieved; and third, whether or not the pairs shook hands at the end of the negotiation.

Study 1b Results and Discussion

There was no disagreement between the research assistants on their coding (r = 1.0). Pairs who shook hands prior to the negotiation (n = 15) again garnered more joint points (M = 1288.0, SD = 10.8) than pairs who did not shake hands (n = 20; M = 1275.5, SD = 21.4), $t(33) = 2.07$, $p = .047$, d = 0.74, and were directionally (albeit not statistically significantly) more likely to shake hands upon the conclusion of the negotiation as well (handshake vs. no handshake: M = 80.0%, SD = 41.4% vs. M = 55.0%, SD = 51.0%), $\chi^2(1, 35) = 2.38$, $p = .12$. Shaking hands at the beginning of the negotiation (1 = handshake; 0 = no handshake) was associated with higher point totals even when controlling for each participant's gender (1 = female; 0 = male) and whether or not pairs shook hands after the negotiation (1 = handshake; 0 = no handshake); B = 14.53, SE = 6.74, $p = .039$.

Study 1b replicates the result of Study 1a. Across both studies, regardless of the negotiation case or whether pairs knew each other, shaking hands was associated with higher joint negotiation outcomes. Of course, we cannot conclude that handshakes causally improve outcomes from these studies. It is possible, for instance, that people with more cooperative motives are just more likely to shake hands. To test the causal impact of shaking hands on integrative negotiation outcomes, and to examine the psychological reasons why handshakes may influence outcomes, we turn to a laboratory setting in Study 2.

Study 2: Experimental Evidence from an Integrative Negotiation

Extending from the correlational results in Studies 1a and 1b, Study 2 tested the causal effect of shaking hands on negotiation outcomes. We measured verbal and nonverbal cooperative behavior, expecting that people randomly assigned to shake hands would behave more cooperatively, leading to more integrative negotiation outcomes. We selected a paradigmatic integrative negotiation case with three issues in which pairs have identical preferences on one issue

and variable-sum preferences for the other two issues. By openly exchanging true preferences and revealing how much they value one issue as compared to the other issue (i.e., verbally cooperating), pairs can make optimal trade-offs on the two issues and thereby maximize their total points. We measured open exchange of preferences by coding videos of the negotiations, our primary behavioral measure of cooperation.[5] To be as comprehensive as possible, we also examined other potentially cooperative behaviors in the videos (e.g., making concessions) and measured self-reported cooperation via survey methodology after they completed the negotiation. Finally, an independent set of observers watched five-second silent video clips of the start of the negotiation (immediately after the handshake occurred, if one did) and rated how cooperative the negotiators seemed, providing a measure of immediate nonverbal cooperation. These different methods were intended to provide convergent evidence examining how handshakes affect cooperation and negotiation outcomes.

Method

Participants. Based on the effect sizes in Studies 1a-1b, we predetermined a minimum sample size of 60 pairs (30 pairs per condition). We recruited a student and community sample of adults from a university participant pool. One hundred twenty adults (M_{age} = 20.9, SD = 4.9, 64 males) participated for $3.

Procedure. Participants negotiated the job offer details for a new employee using materials from the Job Search negotiation (Fishbach, 2013). To incentivize participants to perform well, the person who received the best score in the study earned an additional $30. After confirming that participants in each pair were unacquainted, we randomly assigned one of them to the role of "boss" and the other to the role of "candidate" in the negotiation.

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5 Unfortunately, we were unable to code for open priority exchange in the videos for Study 1b because participants were taught to negotiate using complete pre-calculated packages and therefore typically revealed their priorities only through full package offers instead of explicitly discussing their preferences for one issue at a time.

We seated pairs at opposite ends of a large table during the negotiation. We randomly assigned half of the pairs to shake hands before sitting down. For these pairs, the experimenter led them toward the table, then said: “It is customary for people to shake hands prior to starting a negotiation.” The experimenter waited until the participants shook hands and then seated them across from each other. In contrast, we seated participants in the no-handshake condition immediately, giving them no opportunity to shake hands. The experimenter told these participants: “It is customary to sit across from your partner when starting a negotiation.” These instructions ensured all pairs would shake hands or not according to their assigned condition, while minimizing experimental demand. (We later explicitly test the effect of being instructed, or not, to shake hands in Study 4.) Pairs negotiated for no more than 10 minutes on video, then completed a survey in separate rooms.

Materials. In the Job Search negotiation, the boss and candidate must decide upon the salary, start date, and office location for the candidate. Both parties prefer the same location but have opposite preferences for salary and start date. Because the candidate cares more (i.e., has higher point magnitude) about salary but the boss cares more about start date, the solution that maximizes integrative outcomes (i.e., the one with the highest joint points) is for the candidate to have the highest salary and the boss to have the earliest start date.

To comprehensively examine cooperative behaviors produced throughout the negotiation, we measured behaviors using three different methods: 1) coding the full duration of negotiators’ videos on predetermined criteria, 2) surveying negotiators’ subjective experience, and 3) asking an independent set of observers to rate five-second silent clips of the videos at the start of the negotiations (immediately after the handshake, if there was one).

Method 1: Coding of the videos. Two research assistants who were blind to the hypothesis coded participants’ videos on six predetermined measures of cooperative behavior: how openly each party exchanged their interests in the negotiation (our predicted mediator of open exchange), the

number of concessions each pair made, the number of lies each pair told each other, whether or not pairs talked after the negotiation ended, whether or not pairs shook hands after the negotiation ended, and pairs' posture toward each other. We predetermined these measures based partly on other measures of cooperation in the negotiation literature and partly on what we were able to clearly code from the videos. Coders agreed on 87% of cases; we resolved discrepancies on any criteria using a third coder who was also blind to the hypothesis. Open exchange of interests was coded at the individual level: 0 = no comparison of how much the boss or candidate cared about the start date and salary issues; 1 = boss expressed strong preference for start date or candidate expressed strong preference for salary; 2 = boss expressed greater preference for start date than salary or candidate expressed greater preference for salary than start date. Open exchange was summed across the two parties, creating a score between 0 and 4. The other measures were coded at the pair-level. Concessions were defined as explicit offers that would bring the party fewer points than a prior explicit offer. Lies were defined as offers made outside the stated boundaries in the case. Talking and shaking hands after reaching agreement were each dichotomous measures.[6] Posture was coded: 1 = leaned away from each other; 2 = no leaning; 3 = leaned toward each other.

Method 2: Surveying negotiators' subjective experience. The survey measured feelings about the negotiation experience with seven questions.[7] To measure self-reported cooperation, two of these questions directly asked participants about how cooperatively they behaved in the negotiation ($r = .52$, $p < .01$): What was your negotiation strategy? (1 = *Very competitive*; 7 = *Very cooperative*); How open were you with your partner about your true underlying interests in the negotiation? (1 = *Not at all open*; 7 = *Very open*). To measure impressions of one's partner, two of these questions asked ($r = .63$, $p < .01$): What was your overall impression of your partner? (1 = *Very negative*; 7 =

6 Although participants were instructed to get the experimenter after the negotiation was complete, twenty out of the sixty pairs stayed in the room and chatted after reaching an agreement—which we caught on video before the experimenter returned to turn off the video camera.

7 Unsurprisingly, since we designed the questions to measure different aspects of how negotiators felt about their partner and the negotiation, all seven items did not have high reliability together: $\alpha = .62$.

Extremely positive); How much did you like your partner? (1 = *Did not like at all*; 7 = *Extremely liked*). Finally, to be comprehensive and test if handshaking also affected participants' negotiation experience, we asked participants the following questions: How much did you enjoy the negotiation process with your partner? (1 = *Did not enjoy at all*; 7 = *Extremely enjoyed*); How did you feel at the start of the negotiation? (1 = *Very uncomfortable*; 7 = *Very comfortable*); How much would you want to negotiate again with your partner? (1 = *Not at all*; 7 = *Extremely*).

Method 3: Observers' ratings of initial nonverbal cooperation. Fifty independent online observers from Amazon Mechanical Turk (M_{age} = 37.0, *SD* = 12.0, 23 males) watched five-second silent videos of all 60 negotiations in exchange for $0.50. After each video, they rated "how cooperative were the negotiators?" on a scale from 0 (Not at all cooperative) to 10 (Very cooperative). These videos did not contain the handshake. Instead, we clipped the five seconds immediately following the pairs' handshake (once they were seated at the table). We yoked the pairs who shook hands with those who did not, thereby creating videos of exactly the same time frame across conditions.

Results

Negotiation outcomes. We conducted a 2 (handshake: present vs. absent) between-pair × 2 (role: boss vs. candidate) within-pair mixed-model ANOVA on the pairs' point outcomes.[8] As predicted, pairs who shook hands achieved higher joint outcomes (*M* = 84.23, *SD* = 2.46) than pairs who did not shake hands (*M* = 82.03, *SD* = 4.01), $F(1, 58) = 6.67$, $p = .01$, $\eta_p^2 = 0.10$ (see Figure 1). Bosses achieved more points (*M* = 43.23, *SD* = 2.68) than candidates (*M* = 39.93, *SD* = 3.81), $F(1, 58) = 20.66$, $p < .01$, $\eta_p^2 = 0.26$, but there was no interaction of role and handshake condition, $F(1, 58) = 0.29$.

8 Each individual could earn up to 48 points, and the highest the pair could earn was 88 points. In addition to the analysis reported in the main text, we examined a different analytic strategy, the Actor-Partner Interdependence Model. Results remained statistically unchanged in this analysis (e.g., the effect of handshaking is $t(58) = 2.57$, $p = .013$).

Figure 1. The effect of shaking hands or not and participants' roles (boss vs. candidate) on total points achieved in an integrative negotiation in Study 2. Error bars represent the standard error around the mean.

Behavior during negotiations. Descriptive statistics for video coding are shown in Table 1. We expected that pairs who shook hands would engage in more cooperative behavior, both verbal and nonverbal, than pairs who did not shake. Consistent with this prediction, pairs who shook hands more openly exchanged their interests on the two variable-sum issues, $t(58) = 3.64$, $p < .01$, $d = 0.96$, our measure of verbal cooperation among pairs most relevant to the integrative goal of creating value. Handshaking had additional verbal cooperative effects: pairs who shook hands lied less, $t(58) = -2.28$, $p = .03$, $d = -0.60$, and were more likely to talk after reaching agreement, $\chi^2(1, 60) = 4.04$, $p = .04$, $\varphi = 0.18$, and nonverbal cooperative effects: pairs who shook hands were more likely to shake hands again after reaching agreement, $\chi^2(1, 60) = 7.10$, $p < .01$, $\varphi = 0.24$, and were more likely to lean toward each other, $t(58) = 4.58$, $p < .01$, $d = 1.20$. However, there was no effect of handshaking on making concessions, $t(58) < 1$.

Table 1
Negotiation behaviors assessed in Study 2 by condition. Values represent Means (Standard Devaiations).

Experimental Condition	Open Exchange of Interests	Con-cessions	Lies	Talked After Deal	Shook Hands After Deal	Posture
Handshake	2.23 (1.63)	3.61 (2.01)	0.48 (0.68)	45.2% (50.6%)	58.1% (50.2%)	2.68 (0.79)

No Handshake	0.97 (0.94)	3.21 (2.42)	1.03 (1.15)	20.7% (41.2%)	24.1% (43.5%)	1.66 (0.94)
	$p < .01$	$p > .10$	$p = .03$	$p = .04$	$p < .01$	$p < .01$

Negotiation survey. We conducted the same 2 (handshake) × 2 (role) ANOVA on each of the seven survey items about negotiators' self-reported cooperation, impression of partner, and experiences. Somewhat consistent with their more cooperative behavior, the pairs who shook hands reported engaging in marginally more cooperative strategies ($M = 3.95$, $SD = 1.60$) than those who did not shake ($M = 3.38$, $SD = 1.63$), $F(1, 58) = 3.58$, $p = .06$, $\eta_p^2 = 0.06$, and non-significantly reported being more open about their interests ($M_{Handshake} = 4.08$, $SD = 1.49$; $M_{NoHandshake} = 3.71$, $SD = 1.84$), $F(1, 58) = 1.29$, $p = .26$, $\eta_p^2 < 0.01$ (see Figure 2). Consistent with other research showing that handshaking improves impressions of one's partner (e.g., Stewart et al., 2008), members of pairs reported having a more positive impression of their partner if they shook hands ($M_{Handshake} = 5.53$, $SD = 0.94$; $M_{NoHandshake} = 5.03$, $SD = 1.18$), $F(1, 58) = 6.44$, $p = .01$, $\eta_p^2 = 0.10$. No other items from the survey differed by experimental condition, $Fs(1, 58) < 1.92$.[9]

Figure 2. Participants' reported experiences in an integrative negotiation as a function of whether or not they shook hands in Study 2. The y-axis represents participants' survey responses on Likert scales from 1 to 7 (with end point labels reported in the paper). Error bars represent the standard error around the mean. * represents $p < .05$.

9 Bosses felt more comfortable at the start of the negotiation, enjoyed the negotiation more, and reported being more open about their interests, $Fs(1, 58) > 4.28$, $ps < .04$, $\eta_p^2 > 0.07$. Only one role by experimental condition interaction emerged, $F(1, 58) = 4.62$, $p = .04$, $\eta_p^2 = 0.07$, such that bosses non-significantly enjoyed the negotiation *less* when they shook hands (handshake vs. no handshake: $M = 4.94$, $SD = 1.69$ vs. $M = 5.52$, $SD = 1.18$), $t(58) = -1.53$, $p = .13$, whereas candidates non-significantly enjoyed the negotiation *more* when they shook hands (handshake vs. no handshake: $M = 4.77$, $SD = 1.09$ vs. $M = 4.28$, $SD = 1.33$), $t(58) = 1.59$, $p = .12$.

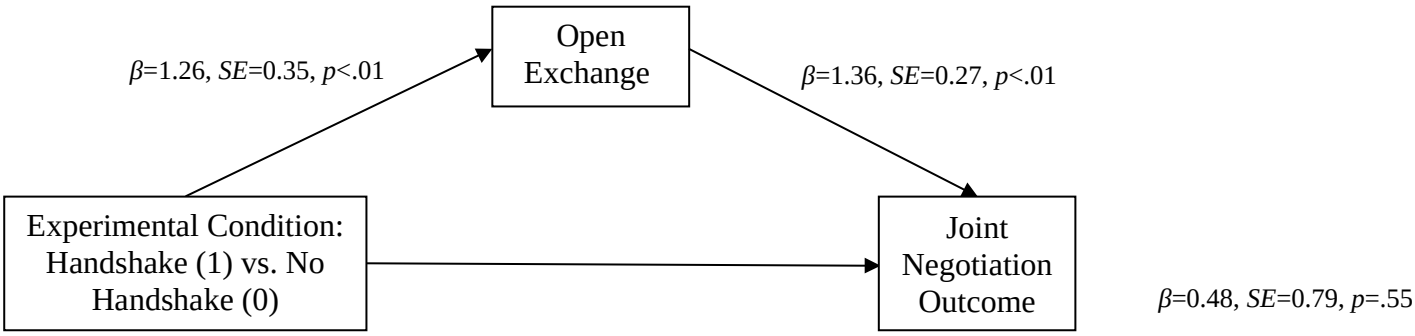
*

*

Observer ratings of five-second silent videos. The purpose of asking observers to rate the videos was to test whether handshaking influenced immediate cooperative nonverbal behavior. We aggregated the 50 observers' ratings of negotiators' cooperativeness to the level of the video. Even though observers could not see which pairs actually shook hands, they believed the pairs who shook hands behaved more cooperatively (M = 6.44, SD = 0.88) than pairs who did not shake (M = 5.10, SD = 1.12), $t(58) = 5.25$, $p < .001$, $d = 1.38$, after watching just five seconds of their nonverbal cues.

Mediation. We predicted that participants' open exchange of their negotiation interests—a cooperative behavior particularly relevant for integrative negotiations—would mediate the effect of handshake on joint point outcomes. The data supported this prediction, revealing that how openly pairs exchanged interests on video fully mediated the effect of handshaking on joint point outcomes, eliminating the effect of the handshake (from $\beta = 2.20$, $p = .01$, to $\beta = 0.48$, $p = .55$) when included in the model (see Figure 3; SPSS Indirect Macro). A 5,000-sample bootstrap test estimated a significant indirect effect of 1.73 (SE = 0.56, 95% biased-corrected CI [0.81, 2.98]). Other variables that differed by condition (e.g., coded behaviors like posture or reported feelings like impression of partner) were not significant mediators. See the Appendix for more detail about other potential mediators as well as the two-step mediation models that we tested.

Figure 3. Mediation model testing primary hypothesis: open exchange of negotiation priorities mediates the effect of handshaking on joint negotiation outcome in Study 2.



Note: Reported coefficients in model are unstandardized.

Discussion

Study 2 provides a first demonstration that shaking hands can causally improve outcomes in a mixed-motive context, in this case by increasing joint utility in an integrative negotiation. By many different measures, shaking hands increased cooperative behavior: Negotiators reported being more likely to use cooperative strategies, acted more cooperatively physically (e.g., leaning more toward each other), and, most relevant for their outcomes, more openly exchanged their true interests in the negotiation. However, at least in this context, the openness with which negotiators exchanged interests played the strongest role in producing better outcomes.

Shaking hands predicted the open exchange of interests coded from videotapes more strongly than it predicted self-reported openness (β = 1.26, p < .01 vs. β = 0.75, p = .26, respectively), and these two measures were only weakly and non-significantly correlated, r = 0.15, p = .27. We note that self-reported openness may not fully reflect behavior for at least two reasons. First, participants likely considered how much they shared information about all three issues in the negotiation case (i.e., location, start date, and salary) when rating their own openness. However, because both parties wanted the same location (Chicago)—and in fact all pairs optimally selected this location—we disregarded behavior regarding the issue of location in our video coding. If both parties believed they were open about their preference for Chicago, this would be reflected in their

self-report score but not in our behavioral coding. Second, self-report variables are unlikely to perfectly predict real behavior due to social desirability concerns (e.g., Arnold & Feldman, 1981). For instance, participants may have been inclined to report being more open than they actually were in the negotiation.

A remaining question from this study is why handshaking increases cooperative behavior. Our theory predicts that handshakes, as a ritualistic greeting behavior, have symbolic value beyond their physical features. In particular, we suggest that handshakes signal cooperative intent. Thus, we predict that even without physically engaging in a handshake, knowing that one's counterpart engaged in a handshake will change people's expectations of their counterpart's behavior, specifically making them expect their counterpart will behave more cooperatively, which then leads them to cooperate more. We test this model in Study 3.

Study 3: Expectations About Counterparts' Motives

We created an online paradigm to better understand individuals' assessments of their counterpart's motives when they observe their counterpart shaking hands or not. This paradigm further allows us to test how people respond to a counterpart whose handshaking behavior is not known, providing a baseline to compare the effects of handshaking or avoiding a handshake. We expected that both a handshake and lack of a handshake would provide meaningful information about a counterpart's motives and therefore that reactions to both of these behaviors would differ from baseline. Specifically, we predicted that people would expect a counterpart to cooperate more if they engaged in a handshake and cooperate less if they avoided a handshake as compared to baseline. Furthermore, we anticipated that expectations about a counterpart's behavior would drive individuals' own behavior in this context.

Method

Participants. We aimed for 100 participants in each of our primary three handshake-conditions and in total recruited 309 adults from Amazon Mechanical Turk (M_{age} = 37.30, *SD* = 11.75, 120 males) to complete the study for $0.80.

Procedure and materials. The experiment design was 3 (handshake condition: handshake vs. no-handshake vs. control) × 2 (role: boss vs. candidate) between-participants. Participants believed they would negotiate a job offer with a partner; we described the negotiation using the same instructions presented in Study 2. We next provided participants with information about their partner: "Your partner is a real person who already completed another negotiation in our laboratory, where they interacted with someone else (who we will call 'Person C,' to keep names confidential) … In the prior study, your partner walked into the room, where Person C was waiting." In the handshake and no-handshake conditions, participants read, "Before the negotiation started, Person C reached out to shake your partner's hand." In the handshake condition, participants read, "Your partner reached out a hand in return and shook Person C's hand." In the no-handshake condition, participants read, "Your partner avoided the handshake." In the control condition, participants read, "Your partner and Person C sat down to start the negotiation." We then assigned participants to their role in the negotiation (boss or candidate), and they learned their point payoffs for the negotiation case and answered a series of attention check questions to ensure they understood (see Appendix).

To measure predictions about partner's likelihood to cooperate, participants answered two questions: 1) What do you think will be your partner's negotiation strategy? (1 = *Very competitive*; 7 = *Very cooperative*) and 2) How openly do you think your partner will share their true underlying interests with you in the negotiation? (1 = *Not at all openly*; 7 = *Very openly*). Participants reported their own cooperation on the same two items: 1) What will be your negotiation strategy? (1 = *Very competitive*; 7 = *Very cooperative*) and 2) How openly will you share your true underlying interests with your partner in the negotiation? (1 = *Not at all openly*; 7 = *Very openly*).

We further measured evaluations of one's partner, but instead of only asking about impressions and liking (as in Study 2), we added a measure of trust as well. We anticipated that trust may be a more important evaluative measure for determining cooperation than just likability. We combined these three items into an index of perceived partner warmth: 1) How much do you trust your partner? (1 = *Do not at all trust*; 7 = *Extremely trust*); 2) How much do you like your partner? (1 = *Do not at all like*; 7 = *Extremely like*); and 3) What is your overall impression of your partner? (1 = *Very negative*; 7 = *Extremely positive*).

As exploratory measures, we tested for planned openness by asking participants 1) if they would be willing to share four pieces of information, 2) to imagine their partner gave them an offer, and 3) to provide a counter-offer (see Appendix for full details and analysis).

Finally, participants reported how much experience they had negotiating (1 = *No experience*; 7 = *A great deal of experience*) and their demographic information.

Results

We first conducted a 3 (handshake condition: handshake vs. no-handshake vs. control) × 2 (role: boss vs. candidate) ANOVA on the index of predictions about the partner's cooperation (r = .703, $p < .001$; see Figure 4). As expected, there was an effect of handshake condition, $F(2, 303) = 57.78$, $p < .001$, $\eta_p^2 = .276$, but no effect of role, $F(1, 303) = 1.84$, $p = .176$, $\eta_p^2 = .006$, and no interaction, $F(2, 303) = 1.19$, $p = .307$, $\eta_p^2 = .008$. Decomposing the effect of handshake condition, participants predicted their partner would be more cooperative when they read that he shook hands with a prior participant ($M = 4.76$, $SD = 1.55$) as compared to the control condition ($M = 3.64$, $SD = 1.56$), $t(306) = 5.18$, $p < .001$, $d = 0.59$, but believed their partner would be less cooperative when he avoided the handshake ($M = 2.42$, $SD = 1.53$) as compared to control, $t(306) = -5.63$, $p < .001$, $d = -0.64$. The difference in predicted cooperation between the handshake condition and no-handshake condition was highly significant, $t(306) = 10.81$, $p < .001$, $d = 1.24$.

We ran the same 3 × 2 ANOVA on our index of partner-warmth (α = .96; see Figure 4); this revealed the predicted effect of handshake condition, $F(2, 303) = 62.05$, $p < .001$, $\eta_p^2 = .291$, but no effect of role, $F(1, 303) = 1.75$, $p = .187$, $\eta_p^2 = .006$, or interaction, $F(2, 303) = 0.29$, $p = .747$, $\eta_p^2 = .002$. Participants believed partners who shook hands were warmer (M = 4.92, SD = 1.21) as compared to partners for whom they had no handshake information (M = 4.37, SD = 1.29), $t(306) = 2.89$, $p = .004$, $d = 0.33$, and as compared to partners who avoided a handshake (M = 2.86, SD = 1.57), $t(306) = 10.79$, $p < .001$, $d = 1.23$. They also believed partners who avoided a handshake were less warm than partners for whom they had no handshake information, $t(306) = -7.92$, $p < .001$, $d = -0.91$.

Finally, we examined the effect of experimental condition on own ratings of cooperation (r = .629, $p < .001$; see Figure 4), which showed a similar but weaker pattern of results. The effect of handshake condition was marginally significant, $F(2, 303) = 2.62$, $p = .075$, $\eta_p^2 = .017$, with no effects of role, $F(1, 303) = 0.06$, $p = .813$, $\eta_p^2 < .001$, or interaction, $F(2, 303) = 1.70$, $p = .185$, $\eta_p^2 = .011$. Participants reported that they would cooperate more in the handshake condition (M = 4.30, SD = 1.69) than in the no-handshake condition (M = 3.76, SD = 1.61), $t(306) = 2.27$, $p = .024$, $d = 0.26$. Cooperation in the control condition (M = 4.12, SD = 1.78) fell in between cooperation in the handshake condition, $t(306) = 0.74$, $p = .459$, $d = 0.08$, and cooperation in the no-handshake condition, $t(306) = -1.53$, $p = .127$, $d = -0.17$, and was only non-significantly different from both conditions.

Figure 4. The effect of handshake condition (handshake vs. control vs. no-handshake) and role (boss vs. candidate) on expected partner cooperation, perceived warmth of partner, and own cooperation in Study 3. The y-axis represents participants' survey responses on 1 to 7 Likert scales (endpoint labels reported in main text). Error bars represent ±1 standard error around the mean.

To test the robustness of the effect of handshake condition on own cooperation, we ran a regression analysis predicting own cooperation that included the independent variables of handshake condition (1 = handshake condition; 0 = no-handshake condition), negotiation experience, participant age, and participant gender (1 = female; 0 = male). In this model, handshaking positively predicted cooperation, $\beta = 0.16$, $p = .017$, age negatively predicted cooperation, $\beta = -0.21$, $p = .003$, and the other predictors were non-significant, $\beta s < .091$, $ps > .195$.

To test whether predicted cooperation or perceived partner warmth mediated the effect of handshaking (1) versus not handshaking (0) on own cooperation (removing the control condition; $n = 206$), we ran a 5,000 sample bootstrap mediation model including both possible mediators in the model (SPSS Indirect Macro). This analysis revealed unique significant indirect effects for predicted cooperation (95% CI [0.29, 1.15]) and for warmth (95% CI [0.61, 1.51]). We further tested a two-step mediation model (SPSS MedThree Macro) with predicted cooperation as the first mediator and warmth as the second mediator; this model was supported (indirect effect of predicted cooperation: 95% CI [0.29, 1.12], indirect effect of warmth: 95% CI [0.09, 0.52], indirect effect of both mediators: 95% CI [0.41, 1.14]). However, we note that the reverse two-step mediation model, whereby warmth was the first mediator and predicted cooperation was the second mediator, was also supported (indirect effect of warmth: 95% CI [0.60, 1.50], indirect effect of predicted

cooperation: 95% CI [0.07, 0.45], indirect effect of both mediators: 95% CI [0.19, 0.76]). In other words, both the predicted cooperative strategy of one's partner and perceived partner warmth are bi-directionally associated with the effect of handshake condition on own cooperation.

Discussion

This experiment suggests one reason why handshaking increases cooperation during an integrative negotiation: it makes people expect their partner will behave cooperatively, increasing perceptions of their partner's warmth. Furthermore, observing a partner's decision *not* to shake hands seems to convey the opposite psychological meaning as observing a decision to shake hands: it makes people infer that their partner will be less cooperative and therefore seem less warm. We note, however, that experimental demand may be a concern because the survey deliberately focused participants' attention on the handshake or avoiding the handshake. To examine whether experimental demand could be accounting for the cooperative consequences of handshaking, we manipulate it directly in Study 4 by assigning half the participants in the handshake condition to instructions and leaving the other half uninstructed.

Study 4: Evidence from an Economic Game

Study 4 tested whether handshakes can influence cooperation in a different adversarial context: an economic game. Because handshakes may have unique meaning in negotiations, it is critical to test our theory in a different mixed-motive setting. In the game we tested in Study 4, players can choose to defect, gaining more for themselves at the expense of their counterpart, or to cooperate, gaining less for themselves but improving the joint outcome.

Beyond examining our predictions in a new setting, this study tested whether handshakes create cooperation even when participants are not instructed to shake, as the correlational results in Studies 1a and 1b suggest. As in Study 2, we manipulated whether pairs engaged in a handshake or not. But, unlike in Study 2, for pairs in the handshaking condition, we provided instructions to one participant to shake hands, and the other received no instructions (instead, they received an

outstretched hand from their partner). If the instruction to shake hands is required to increase cooperation (due to some sort of experimental demand), then we would only see effects for the participant who was explicitly encouraged to shake hands. Instead, we expected that an uninstructed handshake would increase cooperation just as much, if not more, as an instructed handshake because players are more likely to attribute cooperative motives to their partner when the handshake is uninstructed.

Finally, this study provides a direct test of whether explicit incentives to cooperate or compete moderate the effect of handshaking on cooperation. The results of Studies 2 and 3 suggest that handshaking can affect cooperation in integrative negotiations in which there is at least some incentive to be cooperative (by sharing information) because it can improve both parties' outcomes. Here, we can further test whether handshakes can produce cooperation (by reducing defection rates) even when people are explicitly incentivized to compete. We also measured social value orientation to see if handshakes affect the behavior of competitively oriented individuals just as much as they affect altruistically oriented or egoistically oriented individuals.

Method

Participants. We aimed to collect data from 120 pairs, 30 pairs per experimental condition, because we estimated this was the minimum number for adequate power based on the size of the effects we obtained in our previous studies. This number also exhausted the participant pool of the laboratory where we conducted the study. As planned, we were able to collect data from 240 adults (M_{age} = 20.31, *SD* = 3.32, 113 males, 3 gender non-conforming), who participated in exchange for $1 base pay and a possible bonus, depending on their game performance.

Procedure. The experiment design was 2 (incentive: cooperative vs. competitive) between-pairs × 2 (handshake: present vs. absent) between-pairs × 2 (instruction: present vs. absent) within-pairs. We recruited two strangers and brought them into a large laboratory room, seated at opposite

sides of the room. We did not let them introduce themselves. After each person signed the consent form, we explained the game to both participants:

> Today you and your partner will be playing a game. In this game, you'll earn points. Your base pay is $1.00 for this study, but for each point you earn, you [could get bonus pay] beyond your base pay. You want to maximize your points to get the highest payment. At the end of the game, you will be eligible to receive a possible bonus. I randomly select 10% of the teams to get bonuses at the end of the study.

To manipulate the incentive, in the cooperative incentive condition, we further told participants: "To determine your bonus, we will add your points to your partner's points. For example, if you earned 15 points and your partner earned 10 points, you and your partner would earn 25 points total. Each bonus point is worth $0.10 each. So for 25 total points you would earn $2.50 each. To get the most money for the bonus, you should try to maximize both your points and your partner's points." In the competitive incentive condition, we told participants: "To determine your bonus, we will subtract your partner's points from your points. For example, if you earned 15 points and your partner earned 10 points, you would earn 5 points total. Each bonus point is worth $0.40 each. So for 5 points you would earn $2.00. Your partner would earn nothing. To get the most money for the bonus, you should try to maximize your points and minimize your partner's points." We created these financial incentives to match the average individual amount earned in each condition as closely as possible.

We next gave participants a table that showed the point allocations of the game. We told participants they would play an unknown number of rounds in separate rooms. For each round, they would choose whether to "cooperate" or "defect." Their partner would make the same choice. Both players would write their choice on a piece of paper, and the experimenter would reveal the choices after each round.

		You Choose:	
		Cooperate	Defect
Your Partner Chooses:	Cooperate	You get: 3 points Your partner gets: 3 points	You get: 5 points Your partner gets: 0 points
	Defect	You get: 0 points Your partner gets: 5 points	You get: 2 points Your partner gets: 2 points

To manipulate handshake instructions, we next told participants that we would talk to each person privately to ask if he or she had any questions. First, we asked the participant randomly assigned to the uninstructed condition to step outside the room. We asked if he or she had questions, and then told him or her to go back to the room and take a seat. Second, we asked the instructed participant to step outside the room. We asked if the instructed participant had questions. In the handshake condition, we further said, “When you go back in, please walk over to your partner and shake hands before you sit down and start the game.” (In contrast, in the no-handshake condition, we said, “When you go back in, you can return to your seat.”) This ensured that the pairs in the handshake condition shook hands and that those in the no-handshake condition did not shake hands. It also ensured that one person was instructed to shake or not and that the other person received no instructions.

The pairs always played six rounds of the game, which we used to determine whether or not players ever defected (0 or 1) as our primary measure of cooperation. After the game, they completed a survey (described below). We randomly selected 10% of the participants to actually receive their bonus; those selected were paid, and all participants debriefed.

Survey. To determine whether participants’ social value orientation moderated the effect of handshaking on cooperation, we asked participants to complete Van Lange’s (1999) well-validated social value orientation measure. This measure asks participants to make nine choices that each consist of three different point allocations between themselves and their partners. One option is always more egoistic (maximizes own point total), one is altruistic (maximizes the sum of points), and one is competitive (maximizes the difference between own points and partners’ points). The scale is scored by adding the number of egoistic, altruistic, and competitive options participants select across the nine choices. Participants who select six or more of any category of these options are categorized as egoistic, altruistic, or competitive.

The survey next measured partner warmth using the same scale as in Study 3. Finally, it measured self-reported cooperative strategy: 1) How much did you try to cooperate with your partner? (1 = *Not at all*; 7 = *Very much*); and 2) What was your strategy during this game? (1 = *Very competitive*; 7 = *Very cooperative*).

Results

Game outcome. To test whether shaking hands affects cooperation, we conducted a 2 (incentive: cooperative vs. competitive) × 2 (handshake: present vs. absent) × 2 (instruction: present vs. absent) mixed-model ANOVA on the likelihood of defection (see Figure 5). Replicating prior studies, individuals who shook hands were less likely to defect (M = 50.8%, SE = 5.8%) than were individuals who did not shake (M = 67.5%, SE = 5.8%), $F(1, 116) = 4.09$, $p = .045$, $\eta_p^2 = .034$. Unsurprisingly, cooperatively incentivized participants were less likely to defect (M = 50.0%, SE = 5.8%) than competitively incentivized participants (M = 68.3%, SE = 5.8%), $F(1, 116) = 4.95$, $p = .028$, $\eta_p^2 = .041$. There was no interaction of incentive × handshake, $F(1, 116) = 2.62$, $p = .108$, $\eta_p^2 = .022$, suggesting that handshakes were similarly effective for cooperatively and competitively incentivized pairs. Although the incentive × handshake interaction was not statistically significant, to be thorough, we tested the effect of handshaking separately for cooperatively and competitively incentivized participants. Pairs who shook hands were significantly less likely to defect (M = 35.0%, SD = 48.1%) than those who did not shake hands (M = 65.0%, SD = 48.1%) under cooperative incentives, $t(118) = -3.42$, $p = .001$, $d = -0.63$, but not under competitive incentives, $t(118) = -0.39$. Finally, there were no effects of instruction condition, and none of the aforementioned effects were qualified by significant interactions with the instruction condition, $Fs < 0.34$, suggesting that instructing people to shake hands does not make them more likely to be cooperative.

Figure 5. Participants' likelihood of defection based on handshake condition (handshake or no-handshake), incentive condition (competitive or cooperative), and instruction condition (instructed or uninstructed) in Study 4. Error bars represent ±1 standard error around the mean.

Robustness tests. The effect of handshaking on likelihood of defection remained when controlling for participants' social value orientation. We computed whether each participant was competitive, egoistic, or altruistic based on their responses to the social value orientation scale. We first ran a regression on likelihood of defection, including predictors for incentive condition (1 = competitive, 0 = cooperative) and handshake condition (1 = handshake; 0 = no handshake). This analysis revealed that participants were more likely to defect under competitive incentives, $\beta = 0.24$, $p < .001$, and less likely to defect when they shook hands, $\beta = -0.17$, $p = .008$. In a second analysis, we added participants' social value orientation as predictors: competitive orientation (1 = yes; 0 = no), egoistic orientation (1 = yes; 0 = no), and altruistic orientation (1 = yes; 0 = no). In this analysis, the effect of incentive condition became non-significant, $\beta = -0.03$, $p = .578$, but the effect of handshake remained, $\beta = -0.11$, $p = .020$. In a third regression analysis, we tested whether social value orientation interacted with handshake condition. This analysis predicted the likelihood of defection with incentive condition, handshake condition, each of the orientations, and each interaction of handshake condition with orientation included as independent variables. Only one

statistically significant interaction emerged, between egoistic-orientation and handshake condition, $\beta = 0.23$, $p = .025$, such that handshaking had an effect among participants who were not egoistic, $t(174) = -2.78$, $p = .006$, $d = -0.42$, but not among participants who were egoistic, $t(62) = -0.52$.

In sum, these data reveal that shaking hands reduced the likelihood of defection, regardless of whether participants had been instructed to shake hands and even controlling for participants' social value orientation.[10]

Survey responses. We ran the same 2 (incentive: cooperative vs. competitive) × 2 (handshake: present vs. absent) × 2 (instruction: present vs. absent) ANOVA on the index of perceived partner-warmth (three items: trust, impression, and liking; $\alpha = .83$). The predicted effect of handshake on warmth emerged, $F(1, 116) = 5.95$, $p = .016$, $\eta_p^2 = .049$, such that participants who shook hands believed their partners were warmer ($M = 4.77$, $SE = 0.12$) than those who did not shake ($M = 4.35$, $SE = 0.12$). There was also an effect of incentive on warmth, $F(1, 116) = 8.18$, $p = .005$, $\eta_p^2 = .066$, such that participants in the cooperative condition believed their partners were warmer ($M = 4.81$, $SE = 0.12$) than did those in the competitive condition ($M = 4.31$, $SE = 0.12$). There was no interaction of incentive × handshake, $F(1, 116) = 1.89$, $p = .172$, $\eta_p^2 = .016$, and no interactions with instruction condition, $Fs < 1.57$, $ps > .213$, $\eta_p^2 < .013$.

Participants also self-reported how cooperative they were on two items ($\alpha = .73$). Self-reports of cooperation significantly correlated with actual cooperation (i.e., likelihood of defection), $r = -.672$, $p < .001$. Surprisingly, there was no effect of handshake on self-reported cooperative strategy, $F(1, 116) = 1.21$, $p = .273$, $\eta_p^2 = .010$, nor an interaction of handshake and incentive, $F(1, 116) = 1.50$, $p = .223$, $\eta_p^2 = .013$, although there was the expected effect of incentive ($M_{Cooperative} = 5.62$, $SE = 0.19$ vs. $M_{Competitive} = 4.65$, $SD = 0.19$), $F(1, 116) = 13.07$, $p < .001$, $\eta_p^2 = .101$. None of these effects were qualified by interactions with instruction condition, $Fs < 1.29$, $ps > .258$, $\eta_p^2 < .$

10 We further tested the effect of handshaking on an alternative measure of cooperation, the number of total defections across rounds (see Appendix for analyses).

011. Shaking hands apparently did not affect participants' self-reported cooperative strategy even though it did affect their actual cooperation and impressions of their partner.

Mediation. The effect of handshake on likelihood of defection was mediated by participants' perceived partner warmth in a 5,000 sample bootstrap mediation model (SPSS Indirect Macro). The indirect effect was statistically significant, 95% CI [-0.98, -0.14], and including warmth in the model reduced the effect of handshaking from β = -0.70, SE = 0.27, p = .009 to β = -0.40, SE = 0.32, p = .213.

Discussion

This experiment generalizes the effect of handshaking on cooperation in a negotiation to a different mixed-motive task: the decision to cooperate with or defect from one's partner in an economic game. Consistent with findings from prior experiments, pairs who shook hands showed more cooperative behavior by being less likely to defect. The effect of handshaking on defection occurred regardless of whether the handshake was instructed by an experimenter or uninstructed. The effect of handshaking also remained when controlling for participants' social value orientation.

Several new questions emerged from the findings of this experiment. First, although there was no interaction of shaking hands and incentives, the effect of handshaking appears to emerge most strongly when pairs are cooperatively incentivized. We return to test the effect of a handshake in a more competitive context—an antagonistic, distributive negotiation—in Study 6. Second, this experiment did not directly measure how handshakes influence beliefs about a counterpart's cooperative intentions, which we predicted would be a precursor to one's own cooperative behavior. Although the effect of handshaking on defection was mediated by participants' perceptions of their partners' warmth, we turn to Study 5 to further test whether expectations of a partner's intention may more proximally predict one's own behavior. Specifically, our theory suggests that handshakes will only elicit cooperation insofar as they indicate that a partner has cooperative intentions, indicating that there may be boundary conditions to the effect of handshaking.

Study 5: Signaling Cooperative Intent (or Not)

Our prior studies suggest that when a counterpart shakes hands at the start of a mixed-motive interaction, he or she is perceived to have cooperative intent, which can induce cooperation. But is it possible for handshakes to instead seem competitive (or for avoiding a handshake to seem cooperative)? We reasoned that if a handshake is paired with an explanation that could signal malicious intent, such as when the hand-shaker is sick and could be contagious, it might instead reduce cooperation. In this example, the same explanation for a person *avoiding* a handshake could, conversely, convey positive intent (i.e., avoiding a handshake to reduce contagion). If handshaking has an effect because it signals cooperative motives, as we contend, then the effect should be eliminated when the signal is compromised. We therefore predicted that the effect of a handshake on cooperation could be moderated by a countervailing psychological signal of intent.

Method

Participants. We aimed to collect data from 400 individuals, 100 per experimental condition. In total, 405 adults from Amazon Mechanical Turk (M_{age} = 37.36, *SD* = 12.33, 183 males, 2 gender non-conforming) participated in exchange for $0.30 base pay and a possible additional bonus of $0.30 depending on their game performance.

Procedure. The experiment design was 2 (handshake: present vs. absent) × 2 (countervailing explanation: present vs. absent) between-participants. Participants believed they would be playing the prisoner's dilemma game with a partner, which we described using exactly the same instructions presented in Study 4, except that we changed the point structure of the game, as shown below, to increase the base rates of cooperation.

		You Choose:	
		Cooperate	Defect
Your Partner Chooses:	Cooperate	You get: 8 points Your partner gets: 8 points	You get: 10 points Your partner gets: 0 points
	Defect	You get: 0 points Your partner gets: 10 points	You get: 2 points Your partner gets: 2 points

Participants then completed a series of attention check questions to ensure that they understood the game (see Appendix).

We provided participants with information about their partner ("Your partner is a real person who already completed a version of this study in our laboratory, where they interacted with someone else (who we will call 'Person C') … We can tell you a bit about your partner's behavior with Person C so that you can try to make the best possible decision about whether you personally should Cooperate or Defect when you play the game with your partner.") In each of the experimental conditions, participants read that "In the prior study, your partner walked into the room where Person C was waiting. Person C tried to shake your partner's hand before the game began." In the handshake condition, participants then read, "your partner reached out and shook his/her hand," whereas in the no-handshake condition, participants read, "your partner avoided the handshake." When the countervailing explanation was present, participants further read that the partner said, "Oh sorry, I'm actually feeling a bit sick today and I don't know if I'm contagious," information that was absent in the countervailing explanation-absent condition.

After learning about their partner's behavior in the prior study, participants predicted "what [they think their] partner will choose to do in the first round of today's game" (Cooperate/Defect) and reported "whether [they] choose to cooperate or defect in the first round of today's game" (Cooperate/Defect). Next, participants reported the perceived warmth of their partner on the same three-item scale measuring trust, liking, and overall impression described in Study 3. They learned their partner had cooperated, that they would therefore receive the bonus, and that the game was over, and they then reported their demographic information.

Results

In a 2 (handshake: present vs. absent) × 2 (countervailing explanation: present vs. absent) ANOVA on partner's predicted defection (see Figure 6), there was a significant effect of

handshaking, such that participants believed their partner would be less likely to defect when he shook hands (M = 0.19, SD = 0.39) than when he did not (M = 0.50, SD = 0.50), $F(1, 401) = 51.47$, $p < .001$, $\eta_p^2 = .114$, no effect of explanation, $F(1, 401) = 1.67$, $p = .197$, $\eta_p^2 = .004$, and the predicted interaction, $F(1, 401) = 28.70$, $p < .001$, $\eta_p^2 = .067$. Decomposing the interaction, the effect of handshaking was only significant when there was no countervailing explanation ($M_{Handshake}$ = 0.10, SD = 0.30; $M_{No\ Handshake}$ = 0.64, SD = 0.48), $t(199) = 9.56$, $p < .001$, $d = 1.36$, and non-significant when the countervailing explanation was present ($M_{Handshake}$ = 0.27, SD = 0.45; $M_{No\ Handshake}$ = 0.35, SD = 0.48), $t(202) = 1.21$, $p = .229$, $d = 0.17$, indicating that a physical signal of cooperative intent (a handshake) no longer leads individuals to expect cooperation when a countervailing psychological signal is present (sickness). Another way to interpret this interaction is that explanation increases predicted defection when a partner shakes hands (i.e., a hand-shaking partner with a countervailing explanation seems more likely to defect than a hand-shaking partner without an explanation, $t(201) = 3.27$, $p = .001$, $d = 0.46$), whereas it decreases predicted defection when a partner does not shake hands (i.e., a partner who does not shake hands but has an explanation seems less likely to defect than a partner who does not shake hands and fails to offer an explanation, $t(200) = -4.24$, $p < .001$, $d = -0.60$).

A separate 2 × 2 ANOVA on own defection revealed an identical pattern of results (see Figure 6). Participants were less likely to defect when their partner shook hands (M = 0.25, SD = 0.44) than when he did not (M = 0.40, SD = 0.49), $F(1, 401) = 10.90$, $p = .001$, $\eta_p^2 = .026$, but not any less or more likely when there was a countervailing explanation, $F(1, 401) = 0.97$, $p = .325$, $\eta_p^2 = .002$. We found the predicted interaction, $F(1, 401) = 8.25$, $p = .004$, $\eta_p^2 = .020$, such that the effect of handshaking was only significant when there was no explanation ($M_{Handshake}$ = 0.21, SD = 0.41; $M_{No\ Handshake}$ = 0.49, SD = 0.50), $t(199) = 4.37$, $p < .001$, $d = 0.62$, and non-significant when the explanation was present ($M_{Handshake}$ = 0.29, SD = 0.46; $M_{No\ Handshake}$ = 0.31, SD = 0.47), $t(202) = 0.30$, $p = .762$, $d = 0.04$. Another way to understand the interaction is that explanation decreases defection

when the partner does not shake hands, $t(200) = -2.59$, $p = .010$, $d = -0.37$, but directionally increases defection when the partner does shake hands, $t(201) = 1.42$, $p = .158$, $d = 0.20$.

Figure 6. Participants' prediction of partner defection and likelihood of own defection based on whether partner shook hands or not (handshake condition) and whether they provided an explanation for their behavior or not (countervailing explanation condition) in Study 5. Error bars represent ±1 standard error around the mean.

Finally, participants' perceptions of their partner's warmth (α = .91) followed the same pattern as their predicted likelihood of defection and own choice to defect: they believed partners who shook hands were warmer ($M_{Handshake}$ = 4.17, SD = 1.29; $M_{No\ Handshake}$ = 3.37, SD = 1.23), F(1, 401) = 44.78, p < .001, η_p^2 = .909, but this effect was driven by participants in the explanation-absent condition ($M_{Handshake}$ = 4.43, SD = 1.19; $M_{No\ Handshake}$ = 2.90, SD = 1.19), t(199) = 9.10, p < .001, d = 1.29, and disappeared in the explanation-present condition ($M_{Handshake}$ = 0.27, SD = 0.45; $M_{No\ Handshake}$ = 0.35, SD = 0.48), t(202) = 0.41, p = .686, d = 0.58, (interaction F(1, 401) = 37.42, p < .001, η_p^2 = .085). In other words, having a countervailing explanation decreased warmth for hand-shakers, t(201) = -2.92, p = .004, d = -0.41, but increased warmth for non-hand-shakers, t(200) = 5.90, p < .001, d = 0.83. There was also a marginal (and unexpected) main effect of explanation, F(1, 401) = 3.18, p = .075, η_p^2 = .008, such that participants reported slightly more warmth for the explanation-present (i.e., sick) partner (M = 3.87, SD = 1.41) than the explanation-absent partner (M = 3.67, SD = 1.41).

We further tested for moderated mediation using predictions about whether one's partner would defect as a possible mediator for one's own behavior. As expected, predicted partner defection mediated the effect of handshaking on participants' defection only when the explanation was absent, 95% CI [-1.48, -0.78], but not when it was present, 95% CI [-0.47, 0.11]. To be thorough, we tested another possible moderated mediation model using participants' perceptions of warmth in their partner as a potential mediator. This model revealed a similar pattern of results: warmth mediated the effect of handshaking on defection only when explanation was absent, 95% CI [0.79, 1.83], not when it was present, 95% CI [-0.25, 0.35].

Discussion

By providing individuals with an opposing cue to their partner's intentions and hence trustworthiness in a competitive economic game, we counteracted the cooperative effect of handshaking that we observed in prior studies. However, we note that our manipulation was not perfectly parallel across conditions in this experiment; in the "explanation-absent" condition, the partner said nothing, whereas in the "explanation-present" condition, the partner spoke. To remove any possible confounds between conditions, we conducted a pre-registered, conceptual replication of this experiment. In the countervailing explanation-present condition, the partner said, "I'm feeling sick and could be contagious," and in the explanation-absent condition, the partner said, "I'd prefer to sit down to play the game." The results from this experiment were consistent with those from Study 5 (see Appendix for details).

In conjunction, these findings suggest that a handshake's effect on cooperation is context-dependent; it can be interrupted when the same behavior is attributed to an alternative disposition or motive (e.g., touching hands is thoughtless instead of a sign of trustworthiness). Notably, providing an explanation for a partner's behavior also affected how people interpreted the act of avoiding a handshake. For instance, whereas avoiding a handshake may typically seem like a non-cooperative

behavior, avoiding a handshake to protect one's partner against a contagious sickness may instead seem like a cooperative behavior.

Study 6: Evidence from a Distributive Negotiation

In our final study, we examine the effect of shaking hands on a typically antagonistic type of negotiation: a single-issue distributive negotiation. In integrative negotiations and the prisoner's dilemma game (particularly under cooperative incentives), cooperation can be in one's own self-interest. That is, cooperative motives are confounded with egoistic motives because both motives would increase one's own payoffs. In a distributive negotiation, however, each party can only benefit to the detriment of the other party (as in a zero-sum game); being cooperative would likely decrease one's own points. We test whether handshakes can produce cooperation even to one's own detriment. Specifically, we predicted that handshakes would lead to a smaller point discrepancy within the zone of possible agreement (ZOPA), such that outcomes would be more equitable.

Distributive negotiations are not affected by openly discussing one's interests because each side's preferences are in opposition. In these negotiations, negotiators commonly arrive at the bargaining table with competitive rather than cooperative motives; they are focused on their own preferences and how to best keep them hidden so as to reach the most favorable outcomes for themselves. In fact, distributive negotiations often involve asymmetric information that negotiators can choose to disclose, hide—or lie about. We focused in particular on lies that distort the counterpart's perception of the ZOPA. We predicted that handshakes would reduce the number of lies told, which would then reduce the point discrepancy between negotiators. We tested these predictions by running a field experiment with executives completing a distributive negotiation.

Method

Participants. One hundred seventy executives (133 males) who attended a negotiation course in the Executive Education Program at a top business school in the Northeastern United States completed a distributive negotiation. This was the first negotiation exercise the executives

completed in their program. As we know from years of teaching the same program, executives generally have a competitive mindset when engaging in this negotiation and are focused on how to best claim value for themselves.

Procedure. Participants negotiated a sale of real estate property. We randomly assigned participants to the role of "Seller" or "Buyer" in the negotiation. We instructed half of the pairs to shake hands before starting negotiations using similar instructions as in Study 2: "It is common for negotiators to shake hands prior to engaging in discussions at the bargaining table. Please shake your counterpart's hand prior to starting the negotiation." The other half did not receive any further instructions: "Please start the negotiation." After the negotiation, the buyers completed a survey.

Materials. In the Hamilton Real Estate negotiation (Malhotra, 2010), a Seller offers a property for sale to a Buyer. The ZOPA ranges from $41.8 million to $60 million (i.e., from the Seller's reservation value to the Buyer's reservation value). This negotiation contains a key information asymmetry, with important consequences for the ZOPA. The Buyer knows that zoning laws will soon change, allowing him to develop the land as commercial (rather than residential) property, making it considerably more valuable. The Seller believes that zoning laws restricting development to residential property are unlikely to change. In short, the Buyer benefits from the Seller not knowing this information—such that lying about this information is tempting. The only issue the executives were asked to agree upon was the price for the property, making the negotiation a one-issue, zero-sum negotiation.

Because Buyers (not Sellers) have the additional information that makes it tempting for them to lie and thus obtain a larger share of the ZOPA, we only surveyed the Buyers. Buyers represent the critical test of our hypothesis because they have more to lose by cooperating. If handshakes truly increase cooperative motives in both parties, then even the advantaged Buyers will share more of the pie with the Sellers after shaking hands.

Buyers first reported whether they had reached an agreement in the negotiation and, if so, the price at which they agreed to purchase the property from the Seller. In addition, they answered two questions assessing the extent to which they were intentionally misleading during the negotiation (1 = *I was truthful*; 7 = *I was intentionally misleading*): "When discussing the issues of this negotiation with the Seller, in general, how intentionally misleading were you (e.g., lying about what was important to you or about information you had that you did not want to disclose)?" and "When discussing how you intended to use the property if you acquired it from the Seller, how intentionally misleading were you?" We averaged these two items into a composite measure of lying (α = .71).

Results

We first computed the Buyer's profit based on the $18.2 million ZOPA range from $41.8 to $60 million. The percentage of the overall ZOPA that the Buyer captured was our main dependent variable. For instance, if a dyad reached a final agreement of $45M, the Buyer's profit would be $15M ($60M–$45M), or 82% of the ZOPA captured ($15M/$18.2M). As predicted, when pairs shook hands, the percentage of the ZOPA captured by Buyers was closer to the equal split (i.e., 50%) than when they did not shake hands (handshake vs. no handshake: M = 56.6%, SD = 16.5% vs. M = 78.4%, SD = 25.3%), $t(83) = 4.73$, $p < .01$, $d = 1.04$.

In addition, Buyers who shook hands reported being less misleading than Buyers who did not (handshake vs. no handshake: M = 3.29, SD = 1.53 vs. M = 4.19, SD = 1.37), $t(83) = -2.85$, $p < .01$, $d = -0.63$. The effect of shaking hands on the percentage of the ZOPA captured was reduced (from $\beta = -.46$, $p < .01$ to $\beta = -.41$, $p < .01$) when self-reported lying was included in the equation, and lying marginally predicted how much value they captured in the negotiation ($\beta = .17$, $p = .09$). A 5,000 sample bootstrap mediation analysis showed that the 95% bias-corrected confidence interval excluded zero [0.61, 4.01], suggesting a significant indirect effect.

Discussion

Not only can a handshake improve cooperation in integrative negotiations and economic games, increasing joint outcomes for both parties, but it can even improve cooperation in more antagonistic distributive negotiations. In this experiment, the Buyers had a natural advantage over Sellers because they had beneficial information in their case that they could withhold from the Sellers. But the Buyers who shook hands with the Sellers were less likely to lie—even to their own detriment—which made the outcomes more equitable and allowed Sellers to do better. Handshakes can apparently increase cooperation even at one party's own expense.

Lying behavior partially, but not fully, mediated the relationship between shaking hands and point outcomes. We note that we could only collect self-reported lying in this study, which is unlikely to perfectly reflect actual lying behavior in the negotiations. A more objective measure of lying from videotapes of the negotiations (which we were unable to obtain for the current study) may have revealed a stronger effect of lies on point outcomes.

General Discussion

Children in conflict are often told by parents to "shake hands and make up," suggesting a belief in the cooperation-inducing properties of this simple gesture. We show that adults also believe that handshakes signal cooperation, yet they do not expect this subtle nonverbal behavior to actually affect their deal-making outcomes. Contrary to these expectations, two correlational studies and five experiments demonstrate that handshakes can affect real cooperation in negotiations and economic games. Across multiple mixed-motive contexts (integrative negotiations, distributive negotiations, and economic games) with executives, MBA students, and undergraduates, shaking hands signaled a counterpart's cooperative intentions, increasing perceived warmth and cooperation. Handshakes influenced cooperation even when controlling for interactants' social value orientation and their explicit incentives during a negotiation or game. Most compelling, even when cooperation hurt one's own outcome in a distributive negotiation context, shaking hands increased cooperation by reducing lying, resulting in more equitable agreements. Our studies reveal one reason why

handshaking promotes cooperation: it makes people ascribe cooperative motives to their counterpart. Supporting this, when a psychological signal of malicious intent counteracted the signal of a handshake, such as when the hand-shaker was sick, handshakes no longer influenced cooperation. Taken together, these results suggest that the simple ritual of shaking hands can be a powerful gesture to promote cooperation.

Theoretical Implications

These findings contribute to several interdisciplinary literatures. First, our data inform research on how nonverbal cues affect beliefs about social motives. Prior research has found that individuals behave cooperatively in negotiations (and social dilemmas more generally) when they have cooperative goals and expect their counterpart to have cooperative goals too (e.g., Carnevale & Lawler, 1986; De Dreu et al., 1998; Liberman, Samuels, & Ross, 2004; Steinel & De Dreu, 2004). Much of this research examines changes in cooperation resulting from explicit instruction or verbal communication. For example, through conversation, parties can explicitly develop a shared identity that, in turn, encourages cooperation (e.g., Kerr, Garst, Lewandowski, & Harris, 1997; Swaab, Lount, & Brett, 2014). We instead focus on nonverbal communication and cooperation, joining a growing literature examining how nonverbal cues can influence trustworthiness and impressions. Facial expressions, for example, can influence trust (Boone & Buck, 2003; Ekman, 1993; Keltner & Haidt, 1999; Krumhuber et al., 2007; Scharlemann, Eckel, Kacelnik, & Wilson, 2001) and change immediate social attributions in trust-related contexts (Antonakis & Delgas, 2009; Ballew & Todorov, 2007; Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006; Little, Burriss, Jones, & Roberts, 2007; Olivola & Todorov, 2010; Olivola et al., 2014).

Certain coordinated behaviors can also build rapport in conflicts (Drolet & Morris, 1999; Maddux et al., 2008; Moore, Kurtzberg, Thompson, & Morris, 1999). For instance, Drolet and Morris (1999) found that the mere ability to see one's partner (versus only hearing) enables rapport-building, increasing coordination on solutions to mixed-motive conflicts and leading to integrative

outcomes. Maddux and colleagues (2008) found that mimicking the mannerisms of one's opponent in negotiation increases trust and value creation. In Wiltermuth and Heath (2009), performing actions at the same time enhanced cooperation. Whereas prior research considers the physical antecedents of coordination and cooperation, we focus on a specific ritualistic behavior (the handshake) that is imbued with meaning in mixed-motive contexts beyond its physical features. Thus, rather than focus only on bottom-up cues, we consider how top-down processing can also lead to cooperation.

By focusing on the consequences of handshakes, our work connects to emerging experimental research on rituals. A handshake is a type of social ritual because it is a structured, rigid, and repetitive action that carries symbolic meaning to the performer (and recipient). But handshakes are just one of the many types of small acts that shape social interactions; indeed, social interactions are often guided by similar "everyday" rituals (e.g., Durkheim, 1912; Goffman, 1967). Recent research has found positive effects of engaging in rituals, such as improving self-control (Tian, Schroeder, Haubl, Risen, Norton, & Gino, 2018), alleviating grief (Norton & Gino, 2014), improving consumption experiences (Vohs, Wang, Gino, & Norton, 2013), and reducing anxiety (Brooks et al., 2016). We show that a simple greeting ritual—the handshake—can create positive outcomes not just for individuals, but for dyads. Successful social rituals have been shown to increase positive emotions and induce prosociality in groups (Collins, 2004; Xygalatas et al., 2013), and scholars suggest that one of the primary functions of rituals is to create social connection (Hobson et al., 2017). Whereas this previous research suggests that rituals can increase harmony in existing groups, our results further suggest that such rituals can enhance cooperation even in more antagonistic settings, such as distributive negotiations.

In addition to examining the consequences of correctly performed rituals, we also examined the consequences of misperformance. When one person extends a hand to shake and the other avoids the shake, a mismatch occurs in the pair's social scripts. Such a mismatch, our work

suggests, can reduce cooperation and perceptions of a counterpart's warmth. To examine this finding further, we conducted an experiment in an interactive science museum with 73 pairs of strangers who introduced themselves, had a short conversation, and completed a survey evaluating their partner (e.g., liking, trust; see Appendix for full details). Before the conversation began, we instructed one person to either shake hands or not, and the other person to either shake or not, in a 2 × 2 experimental design. Although partners who shook hands had more positive impressions overall than those who did not shake hands, partners were evaluated most negatively in the "mismatched" conditions—in which one person attempted to shake and the other person avoided the shake—as compared to when both were instructed to either shake or not shake hands. Furthermore, evaluations did not differ whether the participant's proffered hand was avoided or the participant himself or herself was avoiding the other person's proffered hand. These data lead to a broader conclusion that mismatches in social behaviors, per se, may create social discord, but more research is needed to understand how misperformed rituals might induce conflict.

Limitations

There are several limitations to the current set of experiments; here, we consider three. First, our studies only measure explicit beliefs, intentions, and behaviors. It is therefore possible that we are missing an earlier stage of the psychological process in which a person reacts intuitively or affectively to the presence or absence of a handshake. Indeed, other psychological models indicate that nonverbal behavior can have affective consequences (both for the perceiver and actor), shaping emotions and consequently influencing preferences (Haidt, 2003; Zajonc, 1980). For example, just from watching a person touch someone on the arm, viewers can discern the specific emotion being conveyed at higher-than-chance levels (Hertenstein et al., 2006), and the effect of touch on one's own or others' emotions have separately been linked with cooperation (Kruas, Huang, & Keltner, 2010). Furthermore, the successful performance of a ritual can dampen negative affect (e.g.,

anxiety, Brooks et al., 2016). Future research could examine how affect might be part of the causal model in which handshakes influence cooperation.

Second, we note that our samples, whether collected online or in person, were primarily United States citizens. The lack of cultural variation in our studies, and particularly the presence of WEIRD participants (Western, Educated, Industrialized, Rich, and Democratic; Henrich, Heine, & Norenzayan, 2010) in our in-person experiments, makes it difficult to generalize outside of our dataset across cultures. To the extent that a handshake holds particular meaning in Western cultures, our effects might not operate the same way in other cultures that have different customs and expectations. More broadly, a probable boundary condition of our effects is the perceiver's understanding of the significance of the handshake.

Third, this paper primarily investigates consequences of the presence versus absence of handshakes in mixed-motive contexts. It does not consider specific features of handshakes, such as the strength of the grip or the sweatiness of the hands (see Astrom et al., 2003; Chaplin et al., 2000; Stewart et al., 2008), nor does it disentangle various aspects of demeanor that could coincide with handshakes, such as smiles and direct eye gaze. It does not directly compare the effect of handshakes to other behaviors that could also influence cooperation, such as hugs, high fives, fist bumps, smiles, and so on. In a variety of domains, other types of touch communicate compassion (Hertenstein et al., 2006), increase trust (Kurzban, 2001), and incite cooperation (Kraus et al., 2010), and are even used among primates to communicate and affiliate with each other (De Waal, 1989). This work suggests that multiple forms of minimal touch, such as a brief pat on the arm, or other positive greetings, such as a wave, could also influence cooperation. Future research could explore the relative value of each aspect of touch. However, our current studies suggest that handshakes in particular may be less effective when they are divided into their constituent parts (e.g., a hand touch vs. a shake), because their signal value as a social ritual might only apply when a handshake is recognized as such.

Future Directions

Our results raise several questions for future research. First, although we explored the consequences of handshakes in several situations, we could not comprehensively consider all of the domains in which they are used. Another common use of handshakes is as an informal means of establishing connection between strangers—as a way, for example, for one person to introduce two new people to each other. Perhaps handshakes serve as a means of starting a new relationship in good faith, which might further increase the likelihood of engaging in behaviors that strengthen the relationship, such as self-disclosure (e.g., Aron et al., 1997; Reis, Clark, & Holmes, 2004). In this way, handshakes could also have implications for creating social networks and forming groups.

Second, the current paper proposes one causal pathway by which handshakes could increase cooperation: via beliefs about the hand-shaker's cooperative (or competitive) intentions. However, other psychological mechanisms could also be involved in this decision-making process. Another mechanism that could be interesting to explore, for instance, is how a person's perceptions of her own actions might influence her willingness to cooperate (e.g., self-perception theory; Bem, 1972). For instance, a person might infer that because she shook hands, she must be feeling cooperative. Social norms could play a role as well; after shaking hands, people may believe that they have given an implicit promise to behave cooperatively.

Related to a deeper understanding of why handshakes produce cooperation, what are the aspects of a handshake that are most necessary to produce prosociality? Our studies indicate that a handshake typically signals cooperative intent, but that this signal can be counteracted by other psychological signals. Furthermore, in at least one of experiments, the effect of handshaking appeared directionally stronger under cooperative incentives than under competitive incentives, raising the question of whether handshakes might have more impact in more cooperative contexts—and if so, why? There could also be aspects of the handshake itself that could fail to signal cooperation. For example, current U.S. president Donald Trump has received media attention for

"ruining the time-honored art of the diplomatic handshake" and using a "grab and yank" handshake technique (Weaver, 2017). When a handshake feels aggressive and competitive, will it still promote cooperation? Handshakes are associated with positive impression formation, but prior research suggests the effect can be stronger when hand-shakers follow specific social norms, such as using a firm and complete grip, shaking for a lasting duration, and making eye contact while gripping (Chaplin et al., 2000). Indeed, intuitively and empirically, people experience limp handshakes as aversive (Stewart et al., 2008). Presumably, the negotiators in our experiments were naturally following such norms, but future research could manipulate a handshake's quality to ascertain the effect of quality on perceived cooperative intent.

Although low-quality handshakes may be viewed as failing to comply with a social norm, more direct manipulations of breaking social norms could shed insight on precursors to conflict. Consider, for example, mismatches in greeting rituals in cross-cultural settings. In Japan, bowing may be more common, whereas shaking hands is common in America. If cooperative motives are deduced from the goodwill associated with any greeting rituals, then returning a proffered hand with a bow would still have positive outcomes; if not, then a handshake returned with a bow may be the same as—or worse than—no greeting ritual at all. Research by Pillutla and Chen (1999) found that individuals' behavior in a social dilemma situation differed depending on whether they learned that others' behaviors were consistent or inconsistent with expectations. Similarly, a fumbled handshake or hug may be particularly costly to reaching a deal.

Finally, there are practical implications of this research worth further exploration. For example, even though shaking hands can have beneficial negotiation outcomes for both parties during integrative negotiations, negotiators do not appear to recognize the impact of this small gesture. This is reflected in their common decision not to shake. In our Studies 1a and 1b, 28% of novice negotiators and 57% of advanced negotiators chose not to shake hands at the start of their integrative negotiation. If negotiators realized that a gesture as simple and easy to execute as a

handshake could affect their own results in the negotiation, perhaps they would be more likely to proffer a hand.

Conclusion

To many, handshakes that occur at the onset of social interactions may seem like inconsequential nonverbal greeting rituals. Yet, as we argue and demonstrate in the present research, the act of handshaking can influence cooperative behavior. In an array of mixed-motive situations ranging from negotiations to economic games, shaking hands signaled cooperative intent, thereby leading people to act more cooperatively. Even in more antagonistic distributive negotiations, a handshake can lead the advantaged party to cooperate more, harming their own outcome to create a more equal distribution of the bargaining zone. Together, these studies demonstrate that handshaking can produce cooperation, consequently influencing deal-making outcomes.

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Appendix

Study 1a

Effect of shaking hands or not on standardized joint points in Study 1a.

	Model 1	Model 2	Model 3	Model 4
Intercept	-.328	-.434	-1.151	-1.145
	(.182)	(.191)	(.566)	(.563)
Handshake (1 = present; 0 = absent)	.456*	.452*	.411+	.412+
	(.214)	(.212)	(.215)	(.214)
Knew partner (1 = knew; 0 = did not know)		.340+		.306
		(.205)		(.206)
Enjoyment of negotiation			.146	.129
			(.096)	(.096)
Observations	102	102	102	102
Adjusted R^2	0.03	0.05	0.05	0.06
Standard errors in parentheses. $^{+}$ $p < .10$, * $p < .05$				

Study 2

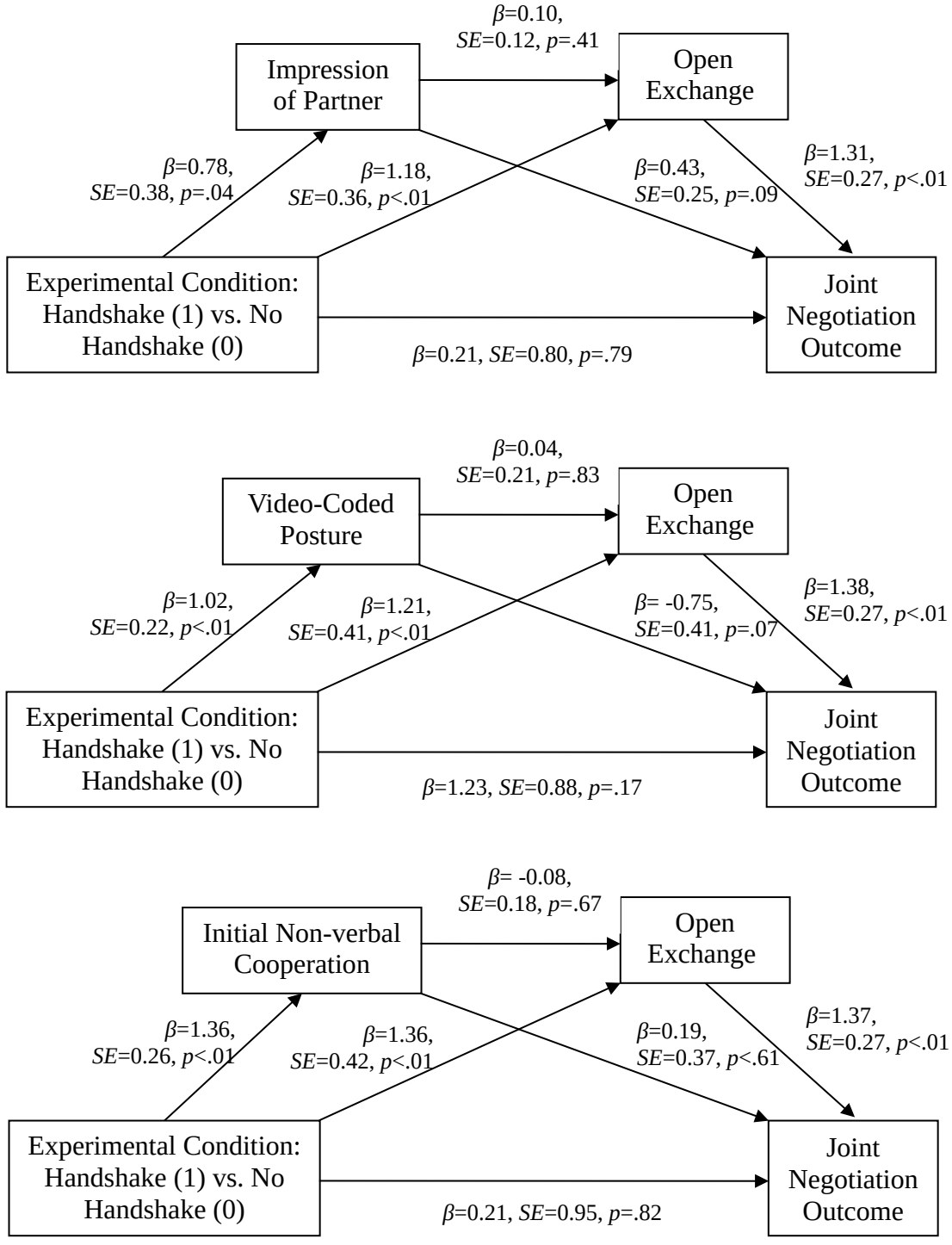
Alternative mediation model. We tested whether self-reported openness also mediated the effect of handshake condition on negotiation point outcomes. In this model, shaking hands was directionally positively related to self-reported openness, $\beta = 0.75$, $p = .26$, and self-reported openness was directionally positively related to joint outcomes, $\beta = 0.16$, $p = .34$. But including self-reported openness in the model did not change the effect of a handshake on joint outcomes. Further, self-reported openness did not correlate with participants' true openness (coded by video), $r = .09$, suggesting it may not have been a completely accurate measure of cooperative behavior.

Two-step mediation models. We next tested for two psychological mechanisms that might explain why handshakes induce cooperative behavior, thereby improving negotiation outcomes. One possibility is that shaking hands creates a more positive impression of one's partner, which induces open exchange of interests and increases joint outcomes. We tested this account in a two-step 5,000 sample bootstrap mediation model (SPSS MedThree Macro; Preacher & Hayes, 2004; shown in Figure S1). The results revealed that, although the indirect effect of open exchange was significant, 95% CI [0.15, 1.11], there was no indirect effect of impressions, 95% CI [-0.05, 0.60],

and no combined indirect effect, 95% CI [-0.02, 0.09], suggesting that more positive impressions of one's partner cannot fully account for increased cooperative behavior in this context.

An alternative account for why handshaking creates open exchange of interests is that because handshaking involves touch and physical coordination, engaging in a handshake (vs. not) may simply make participants more likely to engage in nonverbal coordination throughout the negotiation (e.g., leaning toward each other, displaying cooperative body language). To test this possibility, we conducted the following two-step 5,000 bootstrap sample mediation models: 1) handshake condition increases leaning toward each other, which increases open exchange, which increases points, and 2) handshake condition increases cooperative body language coded from the first five seconds of negotiation, which increases open exchange, which increases points (see Figure 3). In both models, although the indirect effect of open exchange remained statistically significant, 95% CI [0.83, 3.09] and 95% CI [0.68, 3.39], respectively, there was no indirect effect of posture nor cooperative body language, 95% CI [-2.79, 0.04] and 95% CI [-0.82, 1.82], and no combined indirect effects, 95% CI [-0.65, 2.14] and 95% CI [-0.79, 0.44]. This suggests that, although handshakes do increase both nonverbal cooperation (five-second silent video codes and posture) and verbal cooperation (open exchange of interests), nonverbal cooperation cannot completely account for the increase in verbal cooperation.

Figure S1. Models testing serial mediation of partner impression (Panel 1), posture (Panel 2), and initial cooperative nonverbals (Panel 3) on open exchange of interests and on joint negotiation outcome in Study 2. Although open-exchange remained a significant mediator in each of the three models, we do not find support for serial mediation.



Note: Reported coefficients in model are unstandardized.

Multiple mediation model. We entered all of the mediators tested in the two-step models into a single, multiple mediation model with 5,000 bootstrap sample (using SPSS Indirect Macro). The results showed a statistically significant indirect effect of open exchange, 95% CI [0.78, 2.91], $p = .003$, a marginally significant effect of posture, 95% CI [-2.46, 0.003], $p = .08$, no effect of impression, 95% CI [-0.01, 1.34], $p = .17$, and no effect of initial nonverbal cooperation coding, 95% CI [-0.79, 1.72], $p = .75$.

Study 3

Attention check questions. To ensure participants understood the negotiation structure, we presented them with an agreement ("Imagine the final agreement was: $90,000, Dallas, and starting in September") and asked them to compute the number of points they would earn for that agreement. We then asked participants in the job candidate role, "If that was the best offer that you could negotiate, should you accept it or take the job with Jones & Smith?" (I should accept it/ I should take the job with Jones & Smith.) Participants in the boss role were instead asked: "If that was the best offer that you could negotiate, should you hire Jo Cord or instead hire Bertha Zinger?" (I should hire Jo Cord./ I should hire Bertha Zinger.) If participants did not answer any of these questions correctly, we provided them with a message explaining the correct answer and asked them to read the instructions again.

Open information exchange. We asked whether or not participants would be willing to share four pieces of information (1 = *Yes*; 2 = *No*): (1) the reason for their location preference (e.g., "Would you tell your partner that you actually want to be in Chicago, if they ask you about your location preference?"), (2) the reason for their start date preference (e.g., "Would you explain to your partner that the reason why you want them to start in July is so that they can get trained before the current banker leaves, if they ask you about your start date preference?"), (3) their alternative negotiation option (e.g., "Would you tell your partner about Bertha Zinger, if they ask you whether you are considering other candidates?"), and (4) their utility trade-off between having their

preferred location versus preferred start date (e.g., “Would you tell your partner that their start date is more important to you than their salary?”). We were particularly interested in the fourth piece of information in the aforementioned list, participants’ trade-off in preferences, because actual willingness to share this information was the primary predictor of joint outcomes in Study 2.

Unexpectedly, 100% of participants reported that they were willing to share their preferred start date and alternative option, and 83% of participants were willing to share their preferred location. There were no effects of experimental condition on these three measures (which we suspect was simply due to the lack of variance in the measures). However, there was adequate variance on willingness to share trade-offs: 49% of participants were willing to share their utility trade-offs across issues. Although there was no main effect of handshake condition, $F(2, 303) = 1.91$, $p = .150$, $\eta_p^2 = .006$, or role, $F(1, 303) = 1.85$, $p = .175$, $\eta_p^2 = .006$, there was a marginal interaction, $F(2, 303) = 2.92$, $p = .055$, $\eta_p^2 = .019$, such that there was an effect of handshake condition in the predicted direction among bosses, $F(2, 152) = 3.45$, $p = .034$, but not among candidates, $F(2, 151) = 1.33$, $p = .269$. Specifically, bosses were more willing to share their information when their partner shook hands ($M = 0.60$, $SD = 0.50$) as compared to the control condition ($M = 0.40$, $SD = 0.49$), $t(152) = 2.08$, $p = .039$, $d = 0.34$, and as compared to when their partners avoided the handshake ($M = 0.36$, $SD = 0.49$), $t(152) = 2.43$, $p = .016$, $d = 0.39$, but there was no difference in willingness to share between the control and no-handshake conditions, $t(152) = 0.37$, $p = .709$, $d = 0.06$.

Study 4

Results on total number of defections. To be comprehensive, we conducted the same 2 × 2 × 2 ANOVA analysis described in the main text on the total number of defections (in addition to likelihood of defection, see main text for these analyses). We note that the initial decision to defect is highly correlated with number of defections, $r = .813$, $p < .001$, because the game is structured such that if one defection occurs, both players typically defect in the remaining rounds. Consistent

with the analysis we reported in the main text, there was an effect of incentive, $F(1, 116) = 13.00$, $p < .001$, $\eta_p^2 = .101$, such that cooperatively incentivized participants had fewer defections ($M = 1.48$, $SE = 0.25$) than competitively incentivized participants ($M = 2.75$, $SE = 0.25$). The effect of handshake was not significant, $F(1, 116) = 0.25$, $p = .622$, $\eta_p^2 = .002$, but the interaction of instruction × handshake was, $F(1, 116) = 4.86$, $p = .029$, $\eta_p^2 = .040$. Decomposing the instruction × handshake interaction, the effect of handshake was larger for the *uninstructed* participants. Specifically, participants who shook hands had directionally fewer defections ($M_{Shake} = 1.87$, $SD = 2.27$ vs. $M_{No\ Shake} = 2.33$, $SD = 2.05$) when they were uninstructed, $t(118) = -1.18$, $p = .240$, $d = -0.22$, than when they were instructed ($M_{Shake} = 2.18$, $SD = 2.40$ vs. $M_{No\ Shake} = 2.07$, $SD = 1.93$), $t(118) = 0.29$, $p = .770$, $d = 0.05$, although both effects were non-significant. This result is the opposite of what we would expect to find if there was a demand effect of instruction. If anything, receiving instructions seemed to make participants less likely to behave consistently with our predictions.

There was also a marginal interaction of instruction × incentive on number of defections, $F(1, 116) = 2.89$, $p = .092$, $\eta_p^2 = .024$, such that among instructed participants, cooperatively incentivized participants defected less than competitively incentivized participants ($M_{Cooperative} = 1.60$, $SD = 1.88$ vs. $M_{Competitive} = 2.65$, $SD = 2.32$), $t(118) = 2.72$, $p = .007$, $d = 0.50$, but this effect was even larger for uninstructed participants (nearly twice the effect size; $M_{Cooperative} = 1.35$, $SD = 1.66$ vs. $M_{Competitive} = 2.85$, $SD = 2.36$; $t(118) = 4.03$, $p < .001$, $d = 0.74$). There was no interaction of incentive × handshake, $F(1, 116) = 2.35$, $p = .128$, $\eta_p^2 = .020$.

Study 5

Attention check questions. Participants answered the following attention check questions to ensure they understood: 1) If you cooperate but your partner defects, how many points do you earn? (0 points/ 2 points/ 4 points/ 6 points/ 8 points/ 10 points); 2) If you cooperate and your partner cooperates, how many points do you earn? (0 points/ 2 points/ 4 points/ 6 points/ 8 points/ 10 points); 3) If you defect and your partner cooperates, how many points do you earn? (0 points/ 2

points/ 4 points/ 6 points/ 8 points/ 10 points); 4) If you defect and your partner defects, how many points do you earn? (0 points/ 2 points/ 4 points/ 6 points/ 8 points/ 10 points); 5) How much money is each point worth to you? ($0.01/ $0.02/ $0.03/ $0.04/ $0.05); and 6) How many rounds will I play this game with my partner? (1 round/ 2 rounds/ 3 rounds/ I don't know (information not provided)). If participants did not answer any of these questions correctly, we provided them with a message explaining the correct answer and asked them to read the instructions again.

Conceptual Replication of Study 5

To make the "explanation absent" condition more parallel to the "explanation present" condition in Study 5, we edited our scenarios from Study 5 and ran a conceptual replication. Specifically, we used the following four scenarios in a 2 (handshake: present vs. absent) × 2 (countervailing explanation: present vs. absent) experimental design:

- Handshake absent (explanation absent/present): Person C stood to shake your partner's hand before the game began, but your partner avoided the handshake, then said "I'd prefer to sit down to play the game"/ "I'm feeling sick and could be contagious," and sat down to start the game.
- Handshake present (explanation absent/present): Person C stood to shake your partner's hand before the game began, and your partner reached out and shook his/her hand, then said "I'd prefer to sit down to play the game"/ "I'm feeling sick and could be contagious," and sat down to start the game.

The rest of the procedure was the same as described in Study 5, except that participants did not report their own willingness to cooperate or defect but instead just made predictions about whether their partner would cooperate/defect and reported the perceived warmth of their partner. We pre-registered our predictions and analysis plan on OSF (https://osf.io/4j35r/).

We recruited 399 participants total (M_{age} = 35.23, SD = 11.21, 216 males). In a 2 (handshake: present vs. absent) × 2 (explanation: present vs. absent) ANOVA on predicted defection, we found the predicted interaction, $F(1, 395) = 19.07$, $p < .001$, $\eta_p^2 = 0.05$, such that when the explanation was absent, participants believed the partner who shook hands would be less likely to defect (M = 33.33; SD = 0.47) than the partner who did not shake hands (M = 77.00; SD = 0.43), $t(197) = 6.86$, $p < .001$, but when the explanation was present, this effect disappeared, $t(198) = 0.28$, $p = .779$. In

the same 2 × 2 ANOVA on partner warmth (α = .933), the same pattern of results emerged: an interaction, $F(1, 395) = 19.41$, $p < .001$, $\eta_p^2 = 0.05$, such that in the explanation-absent condition, participants rated the partner who shook hands more positively ($M = 3.78$, $SD = 1.15$) than the partner who did not shake hands ($M = 2.76$, $SD = 1.55$), $t(197) = 5.29$, $p < .001$, but not in the explanation-present condition, $t(198) = 0.92$, $p = .359$.

General Discussion Experiment

Two experimenters recruited strangers visiting a museum to participate in an "interaction" study. When two strangers had been recruited, they were taken into separate rooms and given the following instructions in the handshake [vs. no-handshake] condition: "Today you will be getting to know another Museum visitor. You will talk with him or her for about 3 minutes and then answer a short survey. When you enter the room with your partner, you should: 1) Walk over to him or her. 2) Shake their hand [Don't make any physical contact with that person.] 3) Introduce yourself. 4) Start talking about anything you want." Experimenters then asked participants to "repeat back the four things they were supposed to do" to make sure they understood the instructions. If participants asked why they were not allowed to make contact, experimenters responded: "We don't want to worry about germs." Finally, experimenters said, "There is one last instruction for you. Please do not tell your partner anything that we discussed. Your partner cannot know your instructions. Do you promise not to tell your partner anything we discussed?"

When participants interacted, one experimenter surreptitiously observed the interaction to record whether or not participants followed the handshake instructions. After three minutes, experimenters stopped the conversation, separated participants into their own rooms, and asked them to complete a survey. The survey measured the following partner evaluations: 1) How comfortable did you feel starting the conversation with your partner? (1 = *Not at all comfortable*; 7 = *Very comfortable*), 2) What was your overall impression of your partner? (1 = *Very negative*; 7 = *Extremely positive*), 3) How much do you like your partner? (1 = *Do not like at all*; 7 = *Extremely*

like), 4) Overall, how much did you enjoy your conversation during this experiment? (1 = *Did not enjoy at all*; 7 = *Extremely enjoyed*), 5) How pleasant was this experiment? (1 = *Not at all pleasant*; 7 = *Extremely pleasant*), and 6) How smoothly do you think the conversation went? (1 = *Not at all smoothly*; 7 = *Extremely smoothly*). We aggregated these items into a single measure (α = .90).

In total, 80 pairs entered the study, but seven of them did not follow instructions and were therefore dropped, leaving 73 pairs (146 individuals) for analysis (M_{age} = 34.14, *SD* = 13.66, 81 males). In a 2 (Person A: handshake vs. non-handshake) × 2 (Person B: handshake vs. no-handshake) ANOVA on partner-evaluations, an interaction emerged, $F(1, 69) = 4.47$, $p = .038$, $\eta_p^2 = 0.06$, with no main effects, *Fs* < 1.85. Decomposing the interaction, when Person A shook hands, Person B shaking (vs. not shaking) led to higher evaluations (*M* = 5.71 vs. 5.57), but when Person A did not shake hands, Person B not shaking (vs. shaking) led to higher evaluations (*M* = 5.68 vs 5.60). In other words, a match in behaviors led to higher evaluations (*M* = 5.82, *SE* = 0.12) than a mismatch (*M* = 5.46, *SE* = 0.13), $F(1, 71) = 4.25$, $p = .043$, $\eta_p^2 = 0.06$. Overall, however, hand-shakers (*n* = 18 pairs) generally had marginally more positive impressions of each other (*M* = 5.95, *SE* = 0.18) than pairs who did not shake hands (*n* = 55 pairs; *M* = 5.55, *SE* = 0.10), $F(1, 71) = 3.88$, $p = .053$, $\eta_p^2 = 0.05$.