Predicting Behavior in Economic Games by Looking Through the Eyes of the Players

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Social scientists often rely on economic experiments such as ultimatum and dictator games to understand human cooperation. Systematic deviations from economic predictions have inspired broader conceptions of self-interest that incorporate concerns for fairness. Yet no framework can describe all of the major results. We take a different approach by asking players directly about their self-interest—defined as what they want to do (pleasure-maximizing options). We also ask players directly about their sense of fairness—defined as what they think they ought to do (fairness-maximizing options). Player-defined measures of self-interest and fairness predict (a) the majority of ultimatum-game and dictator-game offers, (b) ultimatum-game rejections, (c) exiting behavior (i.e., escaping social expectations to cooperate) in the dictator game, and (d) who cooperates more after a positive mood induction. Adopting the players' perspectives of self-interest and fairness permits better predictions about who cooperates, why they cooperate, and when they punish noncooperators.

Keywords: ultimatum game, dictator game, emotions, cooperation, affect

For almost 3 decades, social scientists have studied human cooperation using economic games. The most famous is the ultimatum game. Two anonymous players are randomly assigned to the role of the proposer or the responder. The proposer is given money—say, $10—and decides how much or little to give the responder. The responder can either accept or reject the offer. Acceptance means that the responder takes the offer and the proposer keeps the remainder. Rejection means that both players receive nothing.

The Nash equilibrium solution (Osborne, 2003) is straightforward. Proposers should maximize their gain by making the smallest possible nonzero offer (e.g., $0.01), which the responder should accept because "something is better than nothing." Güth, Schmittberger, and Schwarze (1982) conducted the first empirical tests of these predictions and documented two subsequently well-replicated deviations. First, proposers offered far too much—often half of the total. Second, responders rejected far too frequently—often refusing offers that were 20% of the reward. To determine whether the rejections would disappear with larger stakes, Hoffman, McCabe, and Smith (1996a) conducted an ultimatum game with $100 and found that responders still rejected unfair offers, albeit less often. Other experiments run in emerging economies with relatively low per-capita incomes, such as Indonesia, and using stakes as high as three times a player's monthly salary, showed that some responders still rejected low offers (Cameron, 1999; Slonim & Roth, 1998).

Yet other experiments have been run in preindustrial (agrarian and hunter–gatherer) societies. Henrich et al. (2001) examined the results of economic games played by members of 15 small-scale societies across the globe. Every society violated at least one economic prediction, and deviations varied widely across societies. The average size of ultimatum-game rewards ranged from 26% of the total amount in the Machiguenga society of Peru to 58% in the Lamelara society of Indonesia. Likewise, rejection rates varied from 0% in the Achuar society of Ecuador to 40% in the Gnau society of Papua New Guinea.

Different Views of Human Nature

Researchers have focused on testing two explanations for these observed patterns of behavior. Weg and Zwick (1994) suggested that proposers realized that small offers might be rejected, so they maximized their expected profits by offering approximately half of the reward. In contrast, Güth (1988) and Straub and Murnighan (1995) suggested that players had a taste for fairness. They wanted to be treated fairly, they wanted to treat others fairly, and they retaliated against those who behaved unfairly.

To disentangle these hypotheses, researchers explored an array of ingenious manipulations. Some manipulations decreased cooperation. If proposers "earned" their role by scoring higher than responders on a knowledge test, proposers offered smaller amounts (Hoffman, McCabe, Shachat, & Smith, 1994). If proposers knew that responders were unaware of the size of the reward, proposers offered less and responders were more likely to accept (Kagel, Kim, & Moser, 1996; Pillutla & Murnighan, 1995; Straub & Murnighan, 1995). And when proposers felt greater anonymity, they offered less (Hoffman, McCabe, & Smith, 1996b). Other manipulations increased cooperation. When a neutral third party oversaw the decision and increased the sense of accountability, proposers became more generous (Straub & Murnighan, 1995).

Kahneman, Knetsch, and Thaler (1986) proposed a critical experiment known as the dictator game. In this game, two players are randomly assigned to the role of the allocator or the receiver. The allocator gets an amount of money and can give as much or as little as he or she wishes, and the receiver cannot reject it. This game provides a sharp test between the explanations for ultimatum-game behavior. If ultimatum-game proposers cooperated to maximize their expected profits, they should keep everything in the dictator game. But if ultimatum-game proposers cooperated out of a taste for fairness, they should divide the reward equally in the dictator game. Finally, if ultimatum-game proposers wanted to achieve both goals, they should split the difference and offer something, though less than half. Some dictator-game proposers kept everything, some shared the reward equally, and some offered something, though less than half (Bolton, Katok, & Zwick, 1998; Fishman, Kariv, & Markovits, 2007; Forsythe, Horowitz, Savin, & Sefton, 1994; Haley & Fessler, 2005; List, 2007). Results suggested that ultimatum-game players had a variety of motives.

These individual differences required a broader framework, and theorists began to develop more general notions of self-interest and fairness by relaxing assumptions in economic theory about utilities and beliefs and invoking psychological explanations, such as a distaste for inequality (Bolton & Ockenfels, 2000; Charness & Rabin, 2002; Fehr & Schmidt, 1999), a concern for reciprocity (Rabin, 1993), a desire for spite (Levine, 1998), and a personal sense of shame (Tadelis, 2008).

What Happens When Players Define Self-Interest and Fairness?

An alternative approach is to view self-interest and fairness through the eyes of the players, not the theorists. A player might wish to maximize financial gains, behave fairly, or strike a compromise between these goals. We take this participant-centered approach (a) by asking players how happy they imagine feeling if they made a set of possible offers (a hedonic rating procedure used by Haselhuhn & Mellers, 2005; the offer[s] associated with the greatest anticipated pleasure is assumed to maximize self-interest) and (b) by asking players what they believe is the "right" thing to do. This measure of fairness makes no assumptions about the causes of the judgment—which could be the automatic product of visceral affective reactions or the deliberative product of ethical theories, cultural norms, or social calculations about the reactions that others might have (e.g., the threat of sanctions in the ultimatum game). This measure also allows for the possibility that participants in the ultimatum and dictator games might define fair behavior in diverse ways: as an equal split, as an offer slightly less than half, or even as a winner-takes-all stance. After all, some might reason, neither player earned the reward. Being chosen as the allocator is simply lucky, and if one wins a lottery, one is certainly not obliged to share the winnings with others who bought losing tickets.

These definitions of self-interest and fairness parallel two broader constructs—what people want to do and what they believe they ought to do, respectively. Humans are often conflicted by multiple goals (Krantz & Kunreuther, 2007), sometimes described as multiple selves (Bazerman, Tenbrunsel, & Wade-Benzoni, 1998; Elster, 1979; Higgins, 1997; Milkman, Rogers, & Bazerman, 2008; Schelling, 1984). Bazerman and colleagues (Bazerman et al., 1998; Milkman et al., 2008) have identified factors that tip the balance toward one self or the other, such as the timing of outcomes (the near vs. distant future), the method of preference elicitation (joint vs. separate evaluations), the cognitive load (high vs. low), and the repeated nature of the decision (repeated choices vs. a single, isolated event). We will explore the implications of these findings in the General Discussion. Now we turn to our hypotheses.

Offers in Ultimatum and Dictator Games

Many decisions force us to confront the fact that what we really want is not what we believe we should be doing. When this happens, we often look for ways to avoid tradeoffs that require uncomfortably explicit "how much of x will I sacrifice for y" judgments (Luce, Payne, & Bettman, 1999, 2001; Tetlock, Peterson, & Lerner, 1996) that bring into play clashing conceptions of how to relate to other people (e.g., communal sharing vs. market competition; Fiske & Tetlock, 1997). Tradeoff avoidance can take many forms, including deferring choices (Dhar, 1997; Shafir & Tversky, 1992), relying on reason-based rules (Shafir, Simonson, & Tversky, 1993), and basing choices on single attributes (Tversky, Sattah, & Slovic, 1988).

In the spirit of March's (1994) role-based models of choice, we propose that players resolve their conflict by asking themselves, "What kind of situation is this? What kind of person am I? What does a person such as I do in a situation such as this?" The tension between roles or selves may lead players to ask themselves, "Should I maximize my anticipated pleasure by treating the situation as though it were a struggle for survival in a competitive market, or should I treat it as though it were a test of my commitment to norms of fairness and communal solidarity?" Doing one or the other may be far more satisfying than striking a balance between the two because, as Fiske and Tetlock (1997) argued, people see no coherent compromise position between these two mutually exclusive models of social relations. Compromise should

feel unsatisfying within both relational models. We predict, therefore, that players will generally avoid compromises. Instead, they will select the action linked to whichever social identity is more important at the moment.

The psychological importance of one social identity versus another depends, in part, on the player and, in part, on the rules of the experimental game. In the ultimatum game, the desire to do the right thing becomes more salient because angry responders may retaliate against greedy proposers. There are costs for unfair behavior. In the dictator game, the desire to do what one wishes may be more salient because there is no risk of punishment from aggrieved recipients. Indeed, under anonymity, one could argue from a microeconomic point of view that all offers should be guided by what players want.

Ultimatum-Game Rejections

What motivates the decision to reject money in the ultimatum game? We know that anger is correlated with the tendency to reject (Bosman, Sonnemans, & Zeelenberg, 2001; Pillutla & Murnighan, 1996). Moreover, we know that when responders reject unfair offers, specific regions of the brain associated with negative emotions, including the bilateral anterior insula cortex, are more likely to be activated (Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003). Indeed, de Quervain et al. (2007) have shown that punishing defectors in economic games activates the same brain circuits that are involved in reward processing—and to a degree this correlated with propensity to punish. These neuroeconomic results suggest that people may punish both because they feel they should and because they want to do so.

From this standpoint, the offers that responders believe will make them feel bad will often be the same offers that responders believe are unfair. If so, the negative hedonic feelings about small offers ("want" self) and the normative beliefs about inequality ("ought" self) may converge. Therefore, we simply predict that the number of offers associated with negative anticipated affect (which could reflect sadness or anger) will be correlated with the number of rejected offers.

Avoiding Cooperation

In the real world, people can escape situations that put them in approach–avoidance conflicts. For example, if they believe a phone call will be a request for a donation they do not wish to make, people may not answer it. If they do, they can also hang up before a request is actually made. Similarly, if people think a panhandler will ask for spare change, they can cross the street and make it more difficult for the panhandler to make the request. Players might feel similar forms of awkwardness in economic games—but those games do not typically have escape routes. Recently, a few studies have introduced escape options, and researchers have found that they are quite popular, casting doubt on the notion that allocators who share in the dictator game are really interested in cooperating.

Dana, Cain, and Dawes (2006) have shown that some dictator-game players opt out when given the opportunity. They gave allocators $10 and asked them how much, if anything, they wanted to offer their partners. After selecting an offer, allocators learned they could either make their original offer or secretly exit the game by paying the experimenter $1 in exchange for $9 and a promise that the receiver would not be told about the game. Roughly one third of allocators decided to exit (see also Lazear, Malmendier, & Weber, 2006). We predict that players who experience greater value conflict—those who think the right thing to do differs from the most pleasurable thing to do—are more likely to exit the dictator game than are players who experience less conflict.

Effects of Positive Mood on Cooperation

Past research has demonstrated that positive affect inductions promote a variety of prosocial behaviors. People who experience positive affect are more likely than controls to help others (Bierhoff, 1988; Salovey, Mayer, & Rosenhan, 1991), make concessions (R. A. Baron, 1990), use integrative bargaining tactics (Carnevale & Isen, 1986; Forgas, 1998), and discover mutually beneficial outcomes (Allred, Mallozzi, Matsui, & Raia, 1997). There are, however, limits to these findings. Isen and Levin (1972) reported that people who experienced positive affect are less willing than controls to help another party when helping would harm an innocent third party. Moreover, people who experience positive affect before facing a social dilemma can become more competitive than controls, depending on their goals (Sanna, Parks, & Chang, 2003) or their assumptions about other people (Hertel, Neuhof, Theuer, & Kerr, 2000).

Another consequence of positive affect is cognitive flexibility. People who experience positive feelings may use more information (Ashby, Isen, & Turken, 1999; Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001; Estrada, Isen, & Young, 1997; Isen, 2008; Isen, Daubman, & Nowicki, 1987; Staw & Barsade, 1993). In one study, Carnevale and Isen (1986) induced positive affect in one group prior to a negotiation. The control group received no positive mood induction. Players in positive moods used more integrative reasoning and succeeded in reaching a better outcome for both parties. They also made better predictions about the other party's payoff matrix, a fact not divulged during the negotiation. If positive affect is associated with better perspective taking, positive affect might make it more enjoyable for players to make others happy. That is, players may derive greater pleasure from sharing the reward with others. We will test this hypothesis by measuring anticipated pleasure as well as dictator-game offers after a positive mood induction and by asking whether anticipated pleasure mediates the relationship between positive mood and dictator-game offers.

To summarize, we conducted three experiments. The first investigates whether (a) offers in ultimatum and dictator games are predictable from the offer associated with the most salient social identity—the want self or the ought self—rather than a compromise between the two, (b) offers players think they should make are more salient in the ultimatum game, (c) offers players want to make are more likely in the dictator game, and (d) the propensity to reject offers in the ultimatum game is associated with the number of offers expected to evoke negative emotions. The second study examines whether the value conflict that players experience between what they want and what they believe they ought to do predicts exiting behavior in the dictator game. The third study explores whether positive affect changes wants by increasing the anticipated pleasure one feels about sharing and whether antici-

pated pleasure mediates the effect of positive mood inductions on dictator-game offers.

Experiment 1

This experiment examines the following four hypotheses: (a) The most prominent social identity, not compromises between conflicting social identities, determines ultimatum- and dictator-game offers; (b) the ought self carries greater weight in the ultimatum game; (c) the want self is more important in the dictator game; (d) rejections of ultimatum-game offers are tied to both selves (i.e., reflected in negative anticipated emotions).

Method

Participants.   In this experiment, 137 University of California, Berkeley, undergraduates (primarily juniors and seniors) taking introductory marketing or organizational behavior courses in the business school served as participants. Students received course credit and payment for their participation.

Stimuli and procedure.   Participants played the ultimatum and dictator games with stakes of $10. Sessions included at least eight participants to ensure anonymity. Prior to the onset of the games, participants learned they would play two games.

Participants first predicted the pleasure they would feel about offers, and then they played the games, in which they made decisions in three roles that were randomly assigned in different orders. Those roles were (a) the proposer in the ultimatum game, (b) the responder in the ultimatum game, and (c) the allocator in the dictator game. Pilot research indicated that pleasure ratings and offers (both ultimatum- and dictator-game offers) did not depend on the order of these tasks (i.e., ratings then offers or offers then ratings).[1] Participants learned they would be paid on the basis of their decision in one of the three roles. At the end of the experiment, participants waited while the experimenter assigned them to a randomly selected game, role, and partner. Payments depended on the decisions they made in that game and role.

The experimenter explained the rules of each game, which included the rule that offers were restricted to even-dollar amounts. Before making their decisions, players read,

> Tell us how you would feel about your payoff if you received each of the 11 possible even-dollar offers using a scale from −8 (Extremely Unhappy) to 8 (Extremely Happy). Use any numbers you wish to express how you would feel about your outcome.

In the ultimatum game, proposers read,

> You will propose a division of the money by selecting an allocation from a list of 11 possibilities. Your partner, X, will decide which options are acceptable. If you select an accepted allocation, the money will be divided accordingly. If you select a rejected allocation, neither of you will get anything.

Responders were told,

> The other player will decide how to divide the money by selecting an allocation from a list of 11 possibilities. Before you know what your offer will be, you must decide whether each one is acceptable or not. If your partner, X, offers an allocation you accepted, the money will be divided accordingly. If X offers an allocation you rejected, neither of you will get anything.

In the dictator game, allocators read,

> You will propose a division of the money by selecting an allocation from a list of 11 possibilities. If you allocate $Y to yourself, your partner, X, will get $10 − $Y.

Last but not least, players responded to the question "What is the fair or right thing to do?" This question was asked last because we did not want participants to think we expected them to behave fairly. After completing the tasks, participants returned their packets. The experimenter paired each player with another, selected a game and a role, determined the outcomes, and calculated payments. Finally, participants received their payments in white envelopes to maintain anonymity.

Results

The left side of Figure 1 shows the distribution of offers that maximized players' anticipated pleasure. These pleasure-maximizing offers are assumed to reflect self-interest (i.e., "This offer will make me happiest. I want to be happy. When I do what I want, I maximize my self-interest."). To create this distribution, we counted the number of times each offer was associated with the greatest anticipated pleasure. These counts were converted to percentages after dividing by the total number of players. If a player reported that he or she would be happiest with more than one offer, we divided the tally for that player by n, where n is the number of pleasure-maximizing offers for that person. Then we distributed fractions across offers. For example, if a player said that both $9 and $10 would make him or her happiest, we added [1/2] to the total for $9 and [1/2] to the total for $10. Many players expected to be happiest from a single offer, but most believed that multiple offers would make them happiest. The average number of pleasure-maximizing offers was 2.5. No offers above $5 maximized anticipated pleasure.

Figure 1 shows that 35% of players predicted the greatest happiness if they offered $0. But another 15% predicted the most enjoyment from a $5 offer. Remaining pleasure-maximizing offers fell between these offers. Players whose pleasure was maximized with these offers felt they would be happiest if they offered their partner something—but less than what they would take for themselves.

The right side of Figure 1 presents the distribution of offers that participants perceived as fair. These offers never exceeded $5. The overwhelming majority (80%) viewed $5 as the right thing to do, but there were some dissenters. Fourteen percent said it was fair to keep everything. In an open-ended question, we asked players about the reasons for their decisions. One player explained, "Since

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[1] We conducted a study in which participants took the role of either the ultimatum-game proposer or the dictator-game allocator. All players made offers and judged their anticipated feelings. The order of tasks was varied. Undergraduates (55, 61, and 55 in each group) at the University of California, Berkeley, served in the experiment. Participants received payments on the basis of their decisions. For the two sets of offers, as well as the judged feelings, we conducted analyses of variance (ANOVAs) with task order as a between-subjects factor and offer as a within-subject factor (11 levels based on $1 units ranging from $0 to $10). No significant order effects appeared in the ANOVAs.
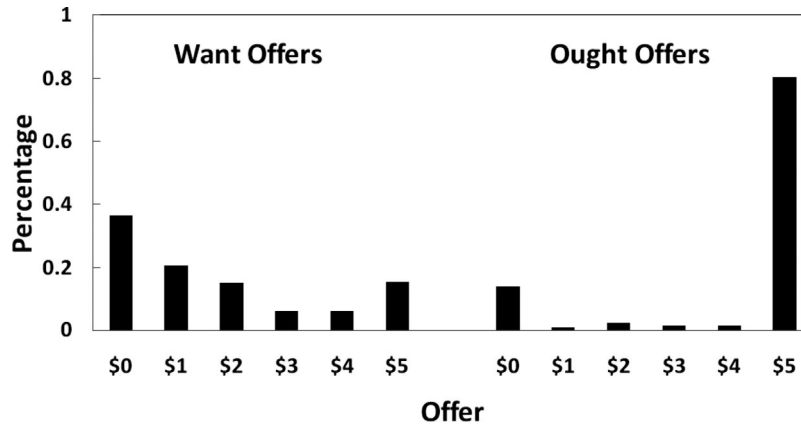
Figure 1.   Percentages of players who maximized their pleasure at each monetary offer are shown on the left, and percentages of players who believed each monetary offer was fair are shown on the right. Offers ranging from $6 to $10 neither maximized pleasure nor were perceived as fair. Figure 1 shows that some players did not feel the most pleasure from maximizing their financial gains; many expected to be happiest by sharing. Similarly, not all players believed they should split the reward equally; some thought it was fair to take everything.

it's a game and I am playing by the rules, I have no reservations about taking it all."

Figure 1 shows that perceptions of self-interest and fairness vary greatly across players. Some define self-interest in a fashion that theorists have called fair—players are happiest when they offer $5. Others define fairness in ways that theorists have called self-interested—players think it perfectly fair to keep everything. The next experiment will show that these individual differences have important behavioral consequences when players are given additional choice options.

Figure 2 presents the actual ultimatum and dictator game offers in the left- and right-hand panels, respectively. No offers exceeded $5. On the left, 63% of proposers offered $5. Either a desire to be fair or a fear of punishment kept cooperation rates high. On the right, cooperation declined. Only 39% of allocators offered $5. The average dictator-game offer was significantly lower than the average ultimatum-game offer. Means were $2.56 and $4.10,

respectively, $t(135) = 7.47$. This a priori test is one-sided, with an alpha level of .05. Remaining tests are conducted in the same way.

We hypothesized that players satisfied either their ought self or their want self when making their offers. To test this hypothesis, we categorized each monetary offer according to the self that was satisfied (ought, want, both, compromise, or unidentified). Monetary offers that affirmed ought selves were those that matched the offer judged to be the right thing to do. Monetary offers that satisfied want selves were those that matched a pleasure-maximizing offer. Monetary offers that confirmed both selves were both fair and pleasure-maximizing. Finally, monetary offers identified as compromises were those that fell between the offer identified as fair and the offer(s) reported to maximize pleasure.

The first row in the upper section of Table 1 shows that 39% of ultimatum-game players satisfied their desire to do what they believed they ought to do. These players did what was right at the cost of reducing anticipated pleasure. An additional 11% of players
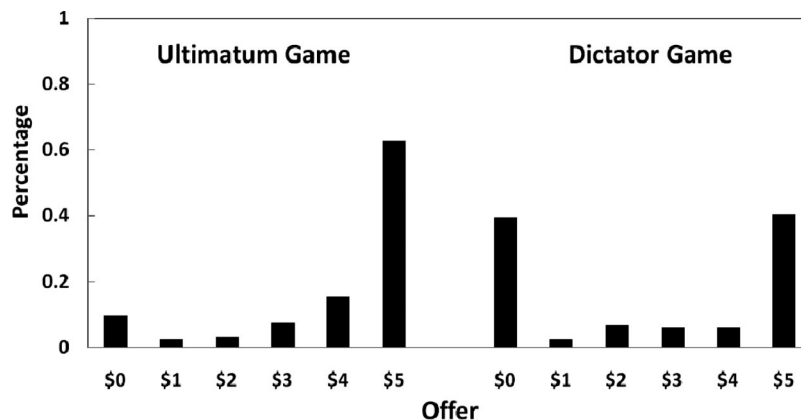

Figure 2.   Percentages of players who made monetary offers ranging from $0 to $5 in the ultimatum game and dictator game are shown on the left and right, respectively. No monetary offers exceeded $5. The vast majority of players cooperated in the ultimatum game, but this number dropped in the dictator game.

Table 1
Percentages of Monetary Offers and Selves Satisfied by Those Offers

Game and self satisfied by offer	Monetary offer						
	$0	$1	$2	$3	$4	$5	Total
Ultimatum game							
Ought	1	0	1	0	1	36	39
Want	4	1	1	1	3	1	11
Both	3	0	0	0	1	21	25
Compromise	0	1	0	5	7	0	13
Unidentified	1	0	1	1	4	5	12
Dictator game							
Ought	0	0	1	0	1	23	25
Want	27	1	3	1	1	0	33
Both	11	0	0	0	0	13	24
Compromise	0	1	3	5	4	0	13
Unidentified	1	0	0	0	0	4	5

satisfied their desire to do what they wanted, as shown in the second row. These players maximized self-interest at the cost of fairness. As shown in the third row, 25% of players experienced no conflict between wants and oughts—a single offer satisfied both goals. The majority of ultimatum-game players (75%) made offers that were consistent with their want and/or ought selves.

The lower section of Table 1 presents similar results from the dictator game. Twenty-five percent of players satisfied their ought selves. Another 33% satisfied their want selves, and 24% satisfied both selves. Again, the majority of players (82%) made offers consistent with want and/or ought selves.

In the dictator game, 23% of players offered $5 and satisfied their ought selves; they behaved fairly at the cost of self-interest. Another 27% offered $0 and satisfied their want selves; they maximized their self-interest at the cost of fairness. Thirteen percent offered $5 and satisfied both selves. The majority of dictator-game players (82%) made offers that were consistent with their want or ought selves. When players experienced conflict between their selves, they tended to select one identity rather than striking a balance. Compromising was not terribly popular. The far column on the right shows that 13% of players in both games balanced their wants against their oughts.

Our first hypothesis states that when players experienced conflict between selves, they tended to select one social identity over another rather than striking a compromise between the two. Table 1 shows that, when conflict occurred, 50% of ultimatum-game players (39% + 11%) satisfied a single social identity rather than striking a balance between the two, and only 13% compromised. This difference was statistically significant, $\chi^2(1) = 29.1$. In the dictator game, 58% of players (25% + 33%) satisfied a single self, and 13% compromised between selves. Again, the difference was statistically significant, $\chi^2(1) = 41.9$. The results support our first hypothesis. It was far more common to affirm a single social identity than to compromise between the two.

Table 1 also provides a test of the second hypothesis. In the ultimatum game, 39% of proposers made the offer believed to be fair (and not believed to be most pleasurable). Only 11% did what they wanted to do and not what they believed they ought to do. To test whether ultimatum-game players selected more ought offers than want offers, we compared these rates and found a significant difference in the expected direction, $\chi^2(1) = 15.28$. In the ultima-

tum game, proposers selected the offer they believed was right more often than the offer that made them happiest.

Our third hypothesis stipulated that, in the dictator game, players would be more likely to do what they wanted than what they believed they should do. Table 1 shows that 33% of allocators selected offers that they wanted to make, and 25% made offers they believed were fair—a difference that was not significant. Contrary to our hypothesis, allocators did not differ in their choice of want offers versus ought offers. Many dictator-game players still focused on fairness.

Table 1 shows that there are two types of cooperators—conflicted and unconflicted. Conflicted cooperators offered $5 and believed it was fair, but fairness did not make them happiest. Unconflicted cooperators offered $5, believed it was fair, and expected to feel the happiest by making that offer. These players wanted to treat others fairly, and they derived the most enjoyment from doing so. There were 36% and 21% conflicted and unconflicted cooperators in the ultimatum game, respectively, and 23% and 13% conflicted and unconflicted cooperators in the dictator game, respectively.

We also find two types of noncooperators—conflicted and unconflicted—in the dictator game. Both groups offered $0. Conflicted noncooperators (27%) did what they wanted to do, although they did not believe it was fair. These players might have felt pangs of guilt and might be more likely than unconflicted noncooperators to respond to experimental cues that primed prosocial behavior. For unconflicted noncooperators, what they wanted to do was what they believed was fair.

To sustain cooperation, players must be willing to punish those who violate norms of cooperation. Responders are, in principle, the protectors of those norms. Figure 3 shows rates of rejection for offers ranging from $0 to $5; virtually no responders rejected offers greater than $5. This figure demonstrates that the majority of responders refused offers of $0, $1, and $2, but the majority accepted offers of $3, $4, and $5. The average number of rejections was 2.8. Gray bars display the percentage of players who anticipated negative feelings if they received that offer. The average number of offers associated with negative affect was 2.8. The majority of players expected to feel unhappy with offers of $0, $1, or $2, and negative feelings diminished as offers grew larger.
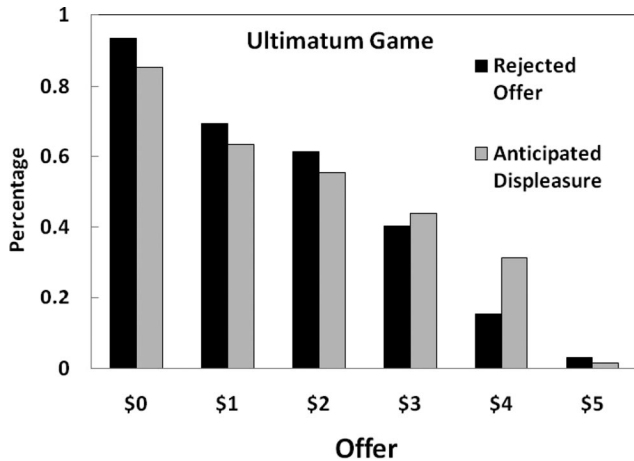
Figure 3. Percentages of players who rejected offers from $0 to $5 (black bars) and percentages of players who anticipated displeasure if they received those offers (gray bars) in Experiment 1.

We tested whether the number of rejected offers correlated with the number of offers players anticipated would feel bad (offers not wanted). For each player, we compared these numbers and found that the correlation was relatively low but statistically significant ($r = .23$), $t(135) = 2.32$. Our fourth hypothesis was supported: The number of rejections was significantly related to the number of offers associated with negative feelings.

In sum, Experiment 1 demonstrates that players in economic games diverge in their perceptions of self-interest (want offers) and fairness (ought offers). Not all players want to maximize profits—some believe they will be happiest if they share the reward equally. And not all players believe that equality is just—some think that being selected to play the role of the allocator is like winning the lottery and that one's lottery winnings need not be shared. Any formal framework of self-interest and fairness should allow these constructs to vary and even, on occasion, overlap.

We hypothesized that when players' wants differed from their oughts, they would tend to select one goal over another, rather than striking a compromise. We predicted, on the basis of the work on relational models and taboo tradeoffs (Fiske & Tetlock, 1997), that players would find it more satisfying to affirm one social identity (such as the materialistic want self) or the other (the communal-sharing ought self) than to strike a balance between the selves. This hypothesis was supported: Only a small percentage of players sought compromise ground.

As predicted by our second hypothesis, relatively more players affirmed their ought selves than their want selves in the ultimatum game. However, contrary to our third hypothesis, there was no difference in the rate at which players affirmed their want selves relative to their ought selves in the dictator game. Finally, our fourth hypothesis was supported; the number of offers that responders rejected was significantly correlated with the number of offers that they anticipated would make them feel bad.

Experiment 2

In this study, we introduce an exit option to the dictator game, similar to what was done by Dana et al. (2006). Allocators decided how much or little to give their partner. But before the money was transferred, allocators were given a second option. If they wished, they could pay the experimenter $1 and take $9 along with a promise that the receiver would not be told about the dictator game. This modification allowed us to test the hypothesis that the value conflict between multiple selves predicted exiting behavior.

Method

Participants. In this experiment, 118 undergraduates from the University of California, Berkeley, served as participants. They came from the same populations as described in Experiment 1. All participants received both course credit and payment based on their decisions.

Stimuli and procedure. Participants played the dictator game, and instructions resembled those in Experiment 1. All players served as allocators, although they believed that participants could be assigned to either role. As in Experiment 1, participants rated their anticipated pleasure with the 11 possible payoffs on a category scale that ranged from -8 (*Extremely Unhappy*) to 8 (*Extremely Happy*). Allocators then decided how much or how little to give to an anonymous partner. After this decision, allocators faced one more choice. If they wished, they could remove themselves from the game: They could either give the receiver their offer or pay the experimenter $1 and keep the rest in exchange for a promise that the receiver would not be told about the game. Players made their decision. Finally, they answered the question "What is the fair or 'right' offer to make?" Again, participants received payments in white envelopes to ensure anonymity.

Results

The distribution of want offers and ought offers closely resembled those in Experiment 1 (and shown in Figure 1). Want offers ranged from $0 (39%) to $5 (22%). Ought offers clustered around $0 and $5; 10% said $0 was fair, but 85% thought $5 was the right thing to do. Figure 4 presents dictator-game offers. As in Experiment 1, offers ranged from $0 or $5, with an average of $2.78.

Figure 4. Relative frequencies of dictator-game offers in Experiment 2, shown as a function of exiting behavior. Monetary offers were uncorrelated with exiting.

This figure also shows the percentage of players who exited after selecting each offer. Almost half of the allocators (48%) chose to exit, and exiting occurred across all initial offers. There was no relationship between exiting and the size of the original offer.

Figure 5 shows the relative percentage of players who exited at each level of conflict, as defined by what players believed they ought to do minus what they wanted to do. This value conflict predicted the tendency to take the $9 and the promise. The correlation between conflict and decision to exit was .35, $t(116) = 3.89$. A binomial logit model showed that both want offers and ought offers predicted exiting. Coefficients were .26 and −.39 for wants and oughts, respectively, $\chi^2(1) = 11.8$ and $\chi^2(1) = 4.8$, respectively. The solid line in Figure 5 shows the relationship between exiting and conflict. The predicted probability that a player with a conflict (c) would exit the dictator game was $1/[1 + e^{-(-.78 + .33c)}]$. This part of the S-shaped function is quasilinear, so the predictions appear as a straight line. Exiting is an attractive way of avoiding awkward tradeoffs.

We asked players who exited why they took the escape route. Some said, "I didn't want the other person to feel bad (about my low offer)." Others said, "I would have felt guilty (about not giving more)." We also asked players who did not exit why they kept their initial offer. This time, answers differed depending on the size of the initial offer. Those who offered $0 said, "I didn't want to waste $1," whereas those who offered $5 said, "I would have felt guilty (if I had snuck off with $9)."

To summarize, Experiment 2 showed dictator-game offers to be uncorrelated with decisions to exit the game, but as hypothesized, player-defined measures of the clash between self-interest and fairness predicted exit behavior. We also suspected that value conflict would predict exiting in other games with larger material temptations. Players most likely to exit were those who sacrificed fairness for self-interest. We know this not by inference; we know this because the players themselves told us. A player-centered perspective makes previously unpredictable patterns of behavior more sensible and predictable.
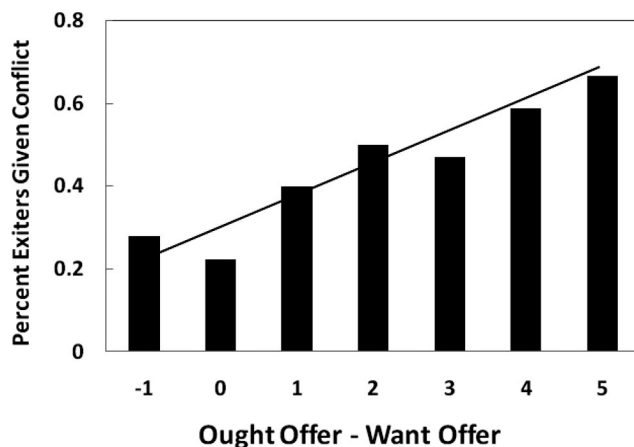

Figure 5. Percentages of players who exited (black bars) at each level of conflict (ought offer vs. want offer) in Experiment 2. The prediction line is based on a binary logit analysis that is explained in the text. The value conflict between motives predicted exiting in the dictator game.

Experiment 3

Finally, we turn to the possible role of incidental emotions in dictator games. We hypothesized that positive affect inductions would cause players to anticipate more pleasure from making others happy, as proposed in earlier work (e.g., Isen, 2008; Isen & Levin, 1972), possibly because positive affect would enable the player to consider the partner's point of view (e.g., Carnevale & Isen, 1986). This change in self-interest would lead to a change in offers, yielding greater dictator-game cooperation.

Method

Participants. A total of 124 students participated in the experiment, with approximately 40 players in each condition. All participants received course credit and payment based on their decision.

Stimuli and procedure. Participants played the dictator game in one of three conditions—a control condition and two positive affect conditions. All players were allocators, although they believed that participants were randomly assigned to both roles. First, players in the positive affect conditions experienced the induction. Then they read instructions about the rules of the dictator game. Before making their offers, they rated the pleasure they anticipated if they made each of 11 possible allocations. After completing both tasks, participants received payments according to their decisions.

We used two methods of inducing positive affect. One technique, developed by Isen (e.g., Isen, 1987), was to give a gift of a small plastic bag containing 10 pieces of individually wrapped hard candy tied with a piece of red yarn. Participants received a candy bag (with instructions to put it with their things and have it later) as an expression of appreciation for their participation. The other technique, developed by Gross and Levenson (1995), was to show a 10-min Robin Williams comedy routine. After participants saw the comedy, they filled out a brief survey about humor in advertising. They answered a series of questions about their own TV viewing, what programs they enjoyed, and what they believed was the appropriate age group if the comedy routine were to be shown on network TV. The survey was designed to make participants believe the comedy routine was unrelated to the dictator game. No significant differences due to method of positive mood induction appeared in the dictator-game offers or the ratings of anticipated pleasure, so in each case, data were pooled.

Results

Figure 6 shows the distribution of offers that maximized anticipated pleasure in the control condition and the positive affect condition with white and black bars, respectively. This distribution was constructed the same way as that described in Experiment 1 (see Figure 1, left panel). In the control condition, 43% of players anticipated the most happiness if they kept everything, and only 10% predicted the greatest enjoyment from sharing the reward equally. After the positive mood induction, 33% of players anticipated the most pleasure from an offer of $0, and 21% of players predicted the most pleasure from $5 offers. Positive mood inductions shifted pleasure-maximizing offer(s) toward greater equality and fairness, $\chi^2(5) = 8.39$.

Figure 7 presents the distributions of dictator-game offers in the control and positive affect conditions with white and black bars,
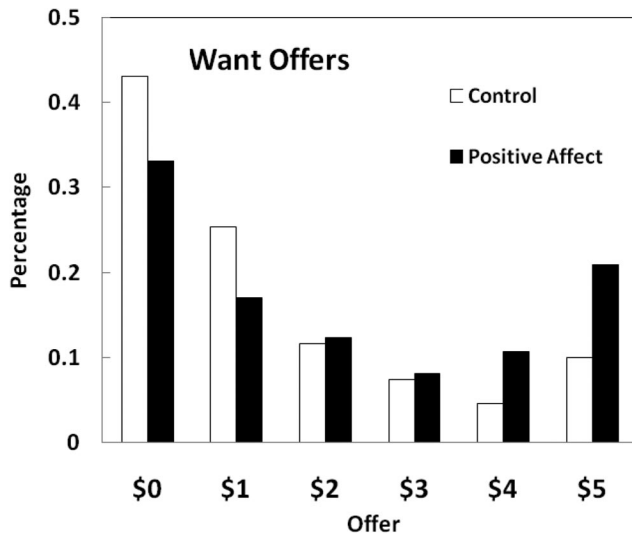
Figure 6. Relative frequencies of offers that players wanted in the positive affect condition (black bars) and the control condition (white bars) in Experiment 3. Anticipated pleasure mediated the effect of positive mood induction on dictator-game offers.

Figure 8. Schema for the mediation hypothesis. The effect of positive mood induction on dictator-game offers was assumed to be mediated by anticipated pleasure. The coefficients for Paths *a, b,* and *c* reflected the strength of the pathways between variables and are explained in the text.

respectively. In the control condition, 36% of players offered $0, and approximately the same percentage (38%) offered $5. After a positive mood induction, only 12% of dictator-game players offered $0, and 66% split the reward equally. The average offer increased from $2.58 in the control condition to $3.91 in the positive affect condition, $t(175) = 4.46$. Positive affect made dictator-game players significantly more likely to share their reward equally.

We hypothesized that changes in players' self-interest would mediate the influence of the positive mood induction, as shown in Figure 8. Effects of the independent variable (positive mood induction) on the dependent variable (dictator game offers) were
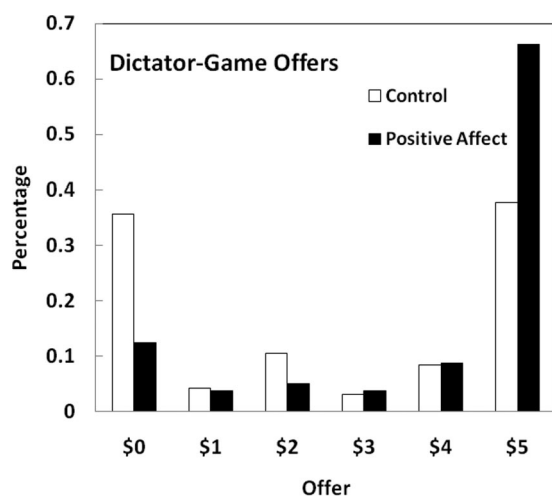
assumed to be mediated by changes in what gave players pleasure. To test this conjecture, we performed a mediation analysis (R. M. Baron & Kenny, 1986). Evidence for mediation requires the following three conditions: (a) Positive mood induction is significantly correlated with what players want (Path *a* in Figure 8); (b) positive mood induction is significantly correlated with dictator-game offers (Path *c*); and (c) after controlling for the effect of positive mood induction, there is still a significant relationship between what players want to offer and the offers they actually make (Path *b* in a regression that also includes Path *c*).

The three conditions were satisfied. Positive mood induction was significantly correlated with anticipated pleasure; the regression coefficient was 0.78, $t(176) = 2.99$. Positive mood induction was also significantly correlated with dictator-game offers with a regression coefficient of 1.34, $t(176) = 4.39$. Finally, after predicting dictator-game offers from players' wants and controlling for positive affect induction, anticipated pleasure remained a statistically significant predictor with a coefficient of 0.30, $t(175) = 3.51$.

Mediation implies that the effects of positive mood induction on dictator-game offers should be reduced when anticipated pleasure is taken into account (relative to the direct effect of positive mood induction without anticipated pleasure). Partial mediation occurs if positive mood induction still has some effect on dictator-game offers, and complete mediation occurs if positive mood induction has no effect on dictator-game offers, after controlling for anticipated pleasure. The coefficient for positive mood induction was indeed smaller after taking anticipated pleasure into account (1.10 vs. 1.34), though the coefficient was not zero. Sobel (1982) provided a *z* test to evaluate the reduced effect of positive mood induction (via Paths *a* and *b*) on dictator-game offers. The test statistic was 1.66; players' wants mediated the effect of positive mood on dictator-game offers, though other factors also mediated this relationship.

To recap, Experiment 3 showed that allocators in the positive mood condition were significantly more cooperative when they experienced an incidental positive mood induction. Furthermore, the anticipated pleasure of offers mediated the relationship between positive mood and dictator-game offers. Positive affect made prosocial behavior and the happiness of others more enjoy-

Figure 7. Relative frequencies of dictator-game offers in the positive affect conditions (black bars) and neutral condition (white bars) in Experiment 3. Positive affect increased cooperation.
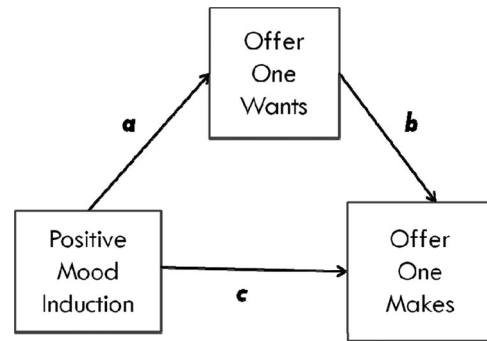
able. For most players, positive moods made the want self and the ought self better aligned.

General Discussion

Most theories of economic games take a top-down, deductive approach to predicting behavior and rely on theorists' definitions of self-interest and fairness. By contrast, we take a bottom-up, exploratory approach—and simply ask players which offers they want (i.e., those with the greatest anticipated pleasure) and which offers they ought to give (i.e., those that are fair). These measures reflect self-interest and fairness, but they can also be viewed as separate selves within a player. What a player wants to do and what he or she believes is right may represent distinct, sometimes clashing, voices in the minds of players, and those clashing voices have behavioral consequences.

When players told us what they wanted, we discovered that not all players maximized their self-interest with financial gains. Some players wanted to share the reward equally. Moreover, when players told us what they believed they ought to do, we discovered that not all of them believed that fairness was an equal split of the reward. Some believed that keeping everything was acceptable and fair within the context of the experiment. These striking individual differences suggest that any formal framework should allow fairness and self-interest to vary greatly and, on occasion, even overlap.

Some players experienced tension between their want selves and their ought selves. These players apparently tried to avoid tradeoffs by selecting a single offer that affirmed their more important social identity. In the ultimatum game, this identity tended to be the ought self. In the dictator game, the want self and the ought self were equally influential. But the choice appeared to matter; those who allowed their want self to dominate tended to offer less than those who allowed their ought self to take control.

For other players, the want self and the ought self were consistent. Offers satisfying these goals converged, and players presumably felt no value conflict. Some of them were unconflicted noncooperators who offered $0. Others were unconflicted cooperators who gave their partners $5. Unconflicted cooperators are players who think that sharing is the right thing to do, and furthermore, they experience the most enjoyment from sharing. Andreoni (1990, 1995) called these players impure altruists. Conflicted cooperators are pure altruists who do not even experience pleasure from the act of cooperating; their cooperation is selfless. Interestingly, pure altruists were more likely than impure altruists to secretly opt out of the dictator game and avoid the expectation to cooperate.

Our results also reveal a remarkably simple way of increasing the percentage of impure altruists (i.e., unconflicted cooperators). Dictator-game players who experienced an unrelated positive mood induction prior to their game were more likely to derive pleasure from sharing the reward equally. Perhaps these players were better at taking the perspective of others, and in the process they derived more enjoyment from making others happier. Although the full mediational story has yet to be told, it is clear that a positive mood induction caused the want self to move closer to the ought self. This change in the want self mediated the increase in dictator-game cooperation. After a positive mood induction, allocators gave their partners over 50% more than did those in the control condition ($3.91 vs. $2.58). Past research has shown that positive mood induction can increase the tendency for people to donate to good causes (e.g., Isen, 1970). This is presumably one of the many reasons pleasurable events are often a major component of fund-raising.

The multiple-selves framework sheds light on other empirical findings in the literature on economic games. Bardsley (2006) and List (2007) conducted dictator games with a new set of instructions. Participants served as either allocators or receivers. Players in both roles received a baseline payment of $5. In the first condition, allocators were given an additional $5 and were told that they could give the receiver any amount they wished between $0 and $5. The average offer was $1.33, and 71% made positive offers. In a second condition, allocators were given an additional $5 and were told they could either give to their partner or take from their partner any amount they wished ranging from $0 to $5. This time, allocators took an average of $2.48 from their partners, and only 10% of the allocators offered positive sums. Instructions in the second condition shifted players' ethical definitions of what was right. The status quo (i.e., neither taking nor giving) may have been viewed as fair because the instructions sanctioned both giving and taking. These instructions may have justified the middle option: "I am not a thief, but also not a fool."

Parallel lines of research on wants and oughts in consumer choice may have implications for behavior in economic games. Milkman et al. (2008) showed that at least four factors could shift the relative potency of ought and want selves.

1. The timing of outcomes matters. Research in consumer choice demonstrates that the options people think they should select are more likely to be chosen when implementation occurs in the distant future. Milkman, Rogers, and Bazerman (2010) found that decisions to buy more want foods (e.g., ice cream) relative to should foods (e.g., vegetables) hinged on the requested timing of the online grocery order. As people lengthened the time between their request and their delivery (from 2 to 5 days), purchases included relatively fewer want foods. If the parallels hold in economic games, one should expect that the introduction of delays in expectations about payments should increase the influence of oughts relative to wants.

2. Joint versus separate evaluation matters. "Should" items are more likely to be chosen when options are evaluated jointly (as in choices) than when they are evaluated separately (as in ratings; Bazerman, Moore, Tenbrunsel, Wade-Benzoni, & Blount, 1999; Irwin, Slovic, Lichtenstein, & McClelland, 1993). Bazerman, Loewenstein, and White (1992) examined MBAs' job preference, which was based on what they would receive and what others would receive. In one condition, participants evaluated a pair of hypothetical job offers and selected the one they preferred more. In another condition, participants evaluated job offers separately, rating them on a case-by-case basis. Typical jobs included A: $85,000 for self and $95,000 for other MBAs, or B: $75,000 for self and $75,000 for other MBAs. Participants who made joint evaluations preferred Job A over Job B, but those who made separate evaluations rated Job B as more favorable than Job A. If parallel effects hold, ultimatum- and dictator-game players may be more cooperative if they rate the favorability of offers one by one than if they choose between a fair and an unfair offer.

3. Cognitive load matters. People are more likely to select want snacks over should snacks when they are distracted. Shiv and

Fedorikhin (1999) showed that, relative to those who memorized a two-digit number, participants who memorized a seven-digit number and were offered a snack tended to select chocolate cake more often than a fruit cup. If parallel effects hold, ultimatum- or dictator-game players who are distracted by cognitive load tasks may be more likely than those who are not distracted to take what they want and ignore what seems fair.

4. Isolated events versus repeated chances (i.e., that provide the opportunity to postpone good behavior until later) matter. Choices differ depending on whether decision makers view the event as a single incident or the first in a series, with the rest coming sometime in the future. Khan and Dhar (2006) showed that want goods were more likely than should goods to be selected when participants believed their choice would be repeated in the future. If parallel effects hold, ultimatum- or dictator-game players who believe they will have more future chances to play the games may be more likely than those who believe the game is an isolated event to select what they want to do over what they believe they ought to do.

It is also worth acknowledging that want and ought selves can be manipulated as well as measured. O'Connor et al. (2002) used a priming paradigm to explore the explanatory usefulness of multiple selves to account for rejections in ultimatum games. They proposed that responders feel conflicted between wants and oughts and that primes can push them toward one self versus the other. Responders might want to punish greedy proposers, but they also might think they should keep the money—however small—to maximize their financial gains. In O'Connor et al.'s study, all responders were told that they had been offered $1. But before deciding whether to accept or reject the offer, responders were asked a question that served as a prime. Half of the responders were asked a question that primed wants ("What do you want to do?"), and the other half were asked a question that primed oughts ("What should you do?"). O'Connor et al. found more rejections when responders were primed to think about what they wanted to do than when they were primed to consider what they should do. It would be useful to combine approaches and manipulate, as well as measure, players' multiple selves.

In closing, players in economic games are human beings who are guided by conflicting beliefs and goals—and who often stray from the predictions of traditional microeconomic theory. Not only is there a tension between self-interest and fairness but there are profound individual differences in what these constructs mean. Just like beauty, self-interest and fairness are in the eye of the beholder. By factoring these perspectives into our models, we can deepen our understanding of who cooperates, who punishes non-cooperators, and who will escape social scrutiny of their decisions.

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