Emotional Intelligence and Bargaining Behavior

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Abstract

In this experiment, we examined how trait Emotional Intelligence (EI) related to behavior in social bargaining tasks. EI is theoretically related to both higher trait levels of empathy and better emotional regulation. More empathetic people may act more generously toward a bargaining partner. Subjects with better emotional regulation may be better at controlling their emotions in bargaining situations, which may help them make more self-interested choices. We used the Ultimatum and Dictator games to measure whether higher EI individuals behaved more generously or selfishly. These games are played between two people, where one person receives an endowment from the experimenter and decides how much to share with a recipient. The Ultimatum Game allows the recipient to reject offers, which forces the proposer to give his money back to the experimenter. In the Dictator Game, the recipient is unable to reject the proposer's offer. To maximize earnings, the most strategic thing to do in the Ultimatum Game is to make offers closer to even splits to avoid getting rejected by one's partner and to keep the whole endowment in the Dictator Game where there is no threat of retribution. Conversely, if a subject is motivated by fairness, they would make fair offers in both games. We found that subjects with higher EI acted strategically by being fair in the Ultimatum Game and selfish in the Dictator Game. These findings suggest that EI predicts more self-interested behavior in bargaining situations.

Keywords: Emotional Intelligence, Ultimatum Game, Dictator Game

We engage in bargaining behavior every day. Marketers and business owners decide what prices to set that are tolerable to the consumer. We tip people for good service and engage in negotiations when buying and selling cars, houses, and agreeing on salaries. Often such situations operate in a delicate balance between choices that allow for selfish outcomes and ones that are moderated by fairness norms. For instance, why tip a waiter if one will never return to the same restaurant every again?

In other everyday situations, it is expected to minimally respect prosocial norms. For instance, in the opening round of a negotiation, why not offer an egregiously low sum when purchasing a house? While it is naturally recommended to anchor a lower price, it is generally not advisable to offer \$1 as one would insult the counterparty to a point that they would probably walk away from the negotiation. The norms are built around making offers that are within the realm of being “reasonable” as it would be “unfair” to “cheat” the counterparty. It is clear that feeling cheated can elicit strong emotional reactions.

While the relevance of emotion in decision-making has been emphasized for a long time (Smith, 1759), it has only recently been studied rigorously (Phelps, Lempert, & Sokol-Hessner, 2014; Lerner et al., 2015). Bargaining situations likely elicit emotional reactions that may be involved in a range of decisions involving monetary outcomes. In such decisions, people incorporate the emotional effects of losses, affective forecasting errors, and social preferences (Rick & Lowenstein, 2008). Neuroimaging studies have also demonstrated that areas associated with emotional processing such as disgust are implicated in unfair pricing decisions (Knutson et al., 2007). As a result, understanding how emotions affect decision-making can inform how people make decisions in bargaining situations since such situations often involve managing gains and losses in social contexts.

Bargaining Behavior

Bargaining behavior has been studied experimentally through the use of specially designed games which control the incentives and relationships among the players. Many games are used to test and explain game theoretic solutions, a mathematical method for describing strategic interaction among players (Camerer, 2003). Notable examples include the Prisoner's Dilemma, Trust, Public Good, Justice, Dictator, and Ultimatum games. The Ultimatum Game is especially relevant as it demonstrated that people do not always exhibit maximizing behavior in bargaining tasks (Güth, 1982; Thaler, 1988). The game is played as follows: Player A is endowed a sum of money (usually \$10) and decides how much of the endowment to offer another subject, Player B (Güth, 1982). Player B then decides whether to accept or reject the offer. If he rejects the offer, Player A must return the initial endowment back to the experimenter and neither player earns anything. One-shot games are played with a new partner every time. While it would seem rational for Player Bs to accept any offer that they receive as this increases their earnings, subjects tend to reject strongly disproportionate offers (Güth & Tietz, 1990). These findings have suggested that subjects have a "taste for fairness".

Since the proliferation of Ultimatum Game tasks, there have been many attempts to explain this behavior. While it is largely undisputed that people exhibit this behavior, it is unclear what are its underlying motives. In the economics literature, one explanation for reciprocal behavior is that reciprocity stems from inequity-aversion (Fehr & Schmidt, 2000). People not only respond to the total amount they can earn, but also to the proportion of what they earn in relation to others. At a deeper level, inequity aversion and one's concern for fairness is thought to stem from altruism. Moreover, this theory has been reinforced by how people behave in the Dictator Game (Khaneman, Knetsch, & Thaler, 1986). The Dictator Game is similar to the

Ultimatum Game, except Player B can no longer reject an offer. In this case, Player A can claim or share as much or little of the endowment as she pleases with no threat of retribution. In this case, people still demonstrate generous behavior, with many sharing at least some of the endowment (Engel, 2010). Integrating the many results from the Ultimatum and Dictator games has unequivocally demonstrated that people show a concern for the earnings of others in bargaining tasks.

Understanding what causes this concern for fairness is complicated by the fact that small changes in task structure can alter this behavior. For instance, if social outcomes are induced by a third party or an outside force, subjects have a much weaker tendency to reject unfair offers (Blount, 1995). For example, if Player A is not endowed a sum by the experimenter but instead is given the opportunity to lay claim on a common resource, Player B has a much weaker tendency to punish Player A (Larrick & Blount, 1997). Many studies have manipulated the games and explored how emotions, attitudes, and personalities mediate the results to find that the structure of the task greatly influence behavior.

There are notable challenges to determining exactly how and why people show concern for fairness in bargaining tasks. Especially in the case of the Ultimatum Game, it is difficult to piece apart whether people are truly acting altruistically or whether they are simply trying to maximize their earnings. Specifically, it is unclear whether subjects are making their choices out of a concern for fairness or whether they are strategically making fair offers. While a subject may *want* to keep the whole pie to themselves, they may realize that making an increasingly unfair offer would decrease the likelihood of their offer being accepted. The task itself motivates most people to act prosocially as this is congruent with both being fair and strategic.

Altruism and Empathy

One explanation for fairness behavior in bargaining tasks is that it is motivated by altruism. Altruism is defined as sacrificing one's own fitness to enhance the fitness of others (Simon, 1992). Altruistic behavior plausibly has an evolutionary basis. Humans are thought to have evolved mechanisms that facilitate cooperation through altruistic motives (Trivers, 1971). One such example is the capacity to detect cheaters and the tendency to punish gross cheaters. (Trivers, 1971). This mechanism makes a point of distinguishing between positive and negative altruism. Positive altruism is the act of acting prosocially, such as giving resources to others. Negative altruism includes acts that enforce prosocial norms by punishing those who violate those norms. The act of rejecting an unfair offer in a bargaining situation can be viewed as an act of negative altruism. In line with this hypothesis, researchers have found that negative reciprocity was related to the rejection of unfair offers in the Ultimatum Game (Perugini et al., 2002). Both positive and negative altruism are thought to be mechanisms that drives fairness behavior.

It is unclear what mechanisms drive altruistic behavior. It is hypothesized that empathy, the understanding and feeling of the emotions others experience induces the motivation to act altruistically (Batson et al., 2015). This theoretical link allows investigators to test a possible underlying emotional mechanism that drives fairness behavior. Altruism provides a conceptual explanation for fairness behavior, whereas empathy is a clearly defined emotional process that provides a parsimonious prediction for altruism.

To test whether empathy predicts altruistic behavior, experimenters have operationalized measures of empathy and paired them with economic tasks. Common methods of measuring empathy include self-report; such measures have yielded a weak to moderate association

between empathy and altruism (Eisenberg & Miller, 1986). In this meta-analytic review, the investigators had pointed out a major challenge between this association has been the distinction between trait levels of empathy and empathetic activation. Trait empathy are personality driven, stable levels of emotional experience that predispose a person to behave more or less altruistically. Empathetic activation occurs in situations that elicit strong empathetic reactions, such as when experiencing the suffering of others. The reviewers noted that highly controlled, laboratory settings attenuate empathetic reactions, which minimizes the association between empathy and altruistic behavior (Eisenberg & Miller, 1986).

Despite the theoretical link between fairness and empathy, studies have found that their relationship may weak or possibly tenuous. Trait levels of positive and negative attitudes toward reciprocity did not correlate to offers in the Ultimatum Game (Yamagishi, 2012). Another study found that “cognitive empathy”, a construct related to sympathy, theory of mind, understanding others and “putting oneself into another’s shoes”, was not a significant predictor of bargaining behavior (Edele, 2012). In the same study, “affective empathy” or the capacity to experience the feeling of another significantly predicted altruistic sharing. When participants received empathetic induction by watching the suffering of others, their offers in the Dictator Game were substantially higher (Klimecki, 2016). These results suggest that the effects of empathy can be highly situational and manipulated, albeit difficult to assess in a lab environment in the context of bargaining tasks.

Emotion Regulation

In contrast to the hypothesis that emotions and empathy in particular help people act fairly, emotions may also facilitate selfish behavior. People who are better at managing their own emotions may be able to minimize negative affective states that are inconsistent with their

objectives. Emotional regulation strategies include distraction through cognitive load, reappraisal, suppression of negative affect, and controlled muscle relaxation and breathing (Kooze, 2009). Reappraisal consists of reframing an event in light of a broader context, or from a third person perspective, whereas suppression is the process of minimizing negative affect after the emotion has been experienced (Kooze, 2009). Studies had found that emotional reappraisal increases the likelihood that people accept unfair offers in the Ultimatum Game, however, suppression does not have the same effect (van't Wout, Chang, & Sanfey, 2011). The investigators noted that this difference may be because reappraisal uses prior strategic thinking and reduces the emotion experienced. Another study examined the relationship between profit achievement and emotional regulation, with reappraisal correlating to positive earnings and suppression with lower earnings (Yurtsever, 2005). These findings suggest that choosing appropriate emotion regulation strategies is adaptive toward maximizing earnings in bargaining tasks.

Emotional Intelligence

Taking emotional regulation and empathy together, it is clear that there may be several conflicting emotional processes that may affect economic behavior. On the one hand, empathy may facilitate altruistic sharing in bargaining tasks. On the other, emotion regulation may lead people to choose appropriate strategies which maximize their earnings. A construct that is theoretically supposed to integrate both emotional processes in a united framework is Emotional Intelligence (EI; Goleman, 1995). As a result, it is possible that EI mediates fairness, selfishness, or may result in interactions in varying contexts. Testing this relationship would inform if emotion regulation and empathy affect bargaining behavior in a unified framework and can explain why some individuals are more likely to offer fair offers.

EI has been defined as, “The ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth” (Salovey & Sluyter, 1997). As a form of intelligence, this construct seems to encompass multiple aspects of empathy and emotion regulation. Understanding how others feel may help subjects make offers that are acceptable to both parties. In contrast, an enhanced ability to regulate one’s emotions may facilitate better decision-making in bargaining situations. As a result, EI may be a promising way to explain individual differences in bargaining behavior.

EI has been used in many tasks and has positively correlated with adaptive behavior. EI has positively correlated to portfolio performance (El-Chaarani, 2016), developing stronger social relationships, achieving better job performance, and performing better in negotiations (see Yip et al., 2019 for a review). Subjects with high EI capacity negatively correlate to risk-taking when aroused, suggesting that they have better emotional regulation. (Yip et al., 2019). Higher EI individuals effectively vary their states of arousal and return to baseline more quickly (Zysberg & Raz 2018). Subjects who scored higher in Emotion-Understanding, a component of EI, were less affected by incidental anxiety in their decision-making, attenuating the affect heuristic (Yip & Cote, 2013).

As a construct, EI both incorporates the ability to perform tasks which require competency in emotional understanding and regulation, and baseline levels as assessed by traits. This differs from other measures of intelligence, which are typically strict measures of ability to perform certain tasks. Ability EI focuses on the capacity to act on emotional intelligence, largely fits into a cognitive framework and is theoretically meaningful (Mestre et al., 2016). Trait EI, or

behavioral predispositions that promote awareness and understanding of other's emotions have been shown to be unrelated to ability EI (Hughes & Evans, 2018). As such, Trait and Ability EI capture two separate constructs that affect emotional processing.

Ability EI, trait EI, and emotion regulation all converge in an integrated decision-making model (Hughes & Evans, 2018). Traits lead to predispositions toward attitudes, which in turn mediate emotion-related goals. Ability EI and emotional regulation facilitate the attainment of those goals, leading to the expression of behavior. While investigators have proposed that EI simply falls into a larger framework of emotional regulation literature, EI has been demonstrated to predict the kinds of emotion regulation strategies subjects tend to invoke (Mestre et al., 2016). In the end, EI still holds its place in emotion research and seems to fit in a broader subset of intelligences related to emotional and social functioning (Mayer, Caruso, & Salovey, 2016).

Emotional Intelligence and Bargaining Behavior

Since EI seems to effectively measure many aspects of emotional processing, it may be a predictor of bargaining behavior. Moreover, it holds promise in understanding how empathy and emotional regulation can facilitate goals that are directed at maximizing earnings or toward altruistic behavior. On the one hand, EI may indicate a higher trait-level empathy and facilitate goals that increase fairness behavior. On the other, EI may facilitate emotion regulation which would facilitate strategic thinking and allow higher EI subjects to increase their earnings.

Few have studied how emotion regulation and empathy affect behavior in social contexts. However, one study assessed how EI and emotion-regulation knowledge affect prosocial and deviant behavior (Cote et al., 2011). These researchers found that high moral identity and self-control predicts prosocial behavior. This is to say that people who value morals and have better self-control are more likely to act fairly toward others. These researchers also found a significant

interaction between subjects who scored higher on trait selfishness (Machiavellianism), high emotion-regulation knowledge, and antisocial behavior. This is to say that people who are more selfish and are better at regulating their emotions are more likely to take from others in a self-serving manner. The investigators concluded that EI may not exclusively promote prosocial behavior and that emotional intelligence and emotional regulation knowledge may facilitate a subject's ability to act against a social norm in favor of one's self-interest.

However, as the (Cote et al., 2011) study assessed behavior in a social-dilemma situation, it leaves unopened questions as to how people would act in other kinds of bargaining tasks. Specifically, the task gave participants the ability to take resources from a common pool, which increased their individual likelihood of winning a lottery, but in turn minimized the whole group's chances of winning. This study does not investigate how EI interacts and mediates variables in bargaining situations where there is a possibility of punishment by another player. Furthermore, the social-dilemma situation creates a confound in its incentives. Subjects may deem that the probability of getting a return on their investment is sufficiently high enough that they should invest in the common pool. As a result, it is unclear whether higher EI individuals are truly acting prosocially or strategically to maximize their earnings.

A pilot study conducted in the lab also investigated whether EI predicts prosocial or strategic behavior in the Ultimatum Game (Sambrano, 2018). The study operationalized fair giving behavior as Player A when subjects shared more than 20 percent of the endowment with their partner. Its results suggested that fairness behavior mediated the relationship between the rejection of unfair offers and EI. Moreover, there was a positive relationship between EI and the amounts offered as a proposer. Finally, EI was related to higher expected earnings when subjects were proposers because their offers were rarely rejected. Taken altogether, these findings seemed

to suggest that higher EI subjects acted more prosocially. However, this study had a small sample size and few trials where the subject chose to accept or reject offers as Player B. Furthermore, this investigation also contained a confound as to whether EI was related to stronger fairness behavior or whether these subjects were acting strategically as the subjects' fairness behavior were measured by their offer amounts. Since subjects were rewarded with higher earnings by acting prosocially in the Ultimatum Game, it is unclear if this task truly measured fairness behavior.

Previous research has not investigated how higher EI individuals would act if the incentives for prosocial behavior are taken away. One task that is very similar to the Ultimatum Game that takes away all monetary incentives to act fairly is the Dictator Game. In this game, subjects can share as much or as little of their endowment with their partner as they please, with no threat of retribution. Contrasting behavior in this task with behavior in the Ultimatum Game would inform whether EI is related to strategic thinking or prosocial attitudes.

A subject who is keen on maximizing their earnings would change their behavior between the two tasks; they would make fair offers in the Ultimatum Game so they do not get rejected, but in turn they will take advantage of the Dictator Game by not sharing with their partner. Conversely, if a subject is generous in both tasks, one can infer that they are not motivated by the threat of retribution in the Ultimatum Game. Instead, the subject is splitting their endowment because it is the "fair" thing to do. As a result, the investigators employed a new experimental design that explored the relationship between EI bargaining behavior in both the Ultimatum and Dictator games. These results could inform whether EI leads to more self-serving or prosocial, which may generalize to context such as negotiations, auctions, or in business settings.

Methods

The experiment consisted of two behavioral tasks which used the Ultimatum and Dictator Games as well as a questionnaire section which measured the subject's EI, attitudes toward negative reciprocity, and selfishness. The experiment used the Amazon Mechanical Turk (mTurk) platform with 232 participants via a Qualtrics survey link. The subjects were paid \$3 for participating in the half-hour long experiment, along with the earnings of one randomly selected trial, which led to a bonus between \$0 to \$1. We chose the mTurk platform due to its low-cost and effective medium in which to administer the study. According to an analysis conducted by Buhrmeister et. al, the diversity of the participants is as good or better than typical participants recruited for most psychology research (Buhrmeister et al., 2011). They concluded that the quality of the data is generally good and that mTurk is a valid form of participant recruitment.

However, mTurk worker motivation is significantly affected by their level of compensation, with a tendency to work considerably faster when their expected compensation is low (Litman et al., 2014). As a result, studies that use tasks with low earnings can have threats to their data quality. This led to the investigators using strict exclusion criteria to control for data quality. Participants were excluded if they did not consent to the study, if they failed to finish the experiment (1 subject), if they self-reported low engagement (5 subjects), failed attention checks (23 subjects) or if they failed to understand the task (48 subjects).

Subjects were asked to self-report their level of engagement following the behavioral and questionnaire of the experiment. If the participants responded "Not Engaged", they were excluded from further analysis. There was an attention check that assessed if subjects were engaged through simple comprehension questions: which of the animals has four legs, what languages is the study NOT conducted in, and which word has four letters? If participants

answered any of these questions incorrectly, they were excluded.

At the end of each behavioral tasks, subjects were queried to report how much should they offer their counterpart in a bargaining task if they would like to make the most money. If the subjects reported more than 50 percent of an endowed share, they were excluded on the basis that they did not understand the task. As a result of these strict exclusion criteria, 77 participants were excluded, leaving 155 participants for analysis (mean age 39.04 years; 56 females). Among the selection of races, 120 participants reported that their race was white. At least 55.5% of the subjects had a bachelor's degree.

Behavioral Tasks

The experiment used the Ultimatum Game (Güth, 1982) and the Dictator Game (Khaneman, Knetsch, & Thaler, 1986). The order of the two conditions was randomized to minimize possible order effects. Participants were not provided any feedback about whether their proposals were accepted or rejected. Each condition started with a set of instructions explaining the game, followed by a set of comprehension checks in which the subject decided how much of their \$1 endowment to split with their partner. At the end of each condition, the subject completed a behavioral survey that queried the strategy behind their choices.

Each participant gave their digital informed consent to voluntarily participate in this experiment and were notified that their anonymity would be maintained (see Appendix A). The study used deception so that participants thought they were playing with other humans but were actually making and responding to computerized offers. In order to convince participants that they were participating with real people, there was a brief waiting period during which the subject was instructed that they were being matched up with a new partner. If the subjects were acting as Player B, they waited while their simulated partner decided how much to share. The

deception protocol was IRB approved and subjects were debriefed at the end of the survey.

Ultimatum Game. The Ultimatum Game condition consisted of 50 randomized trials, wherein the subject acted as a proposer (Player A) and recipient (Player B) 25 times each. Before starting the task, subjects received instructions and completed a comprehension check to indicate whether they understood the task. Subjects were informed to take the task seriously as one choice would be selected at random as a bonus payment. Secondly, subjects were informed that they would be matched with a new, anonymous partner on each trial.

After viewing examples of the tasks, subjects completed six randomized comprehension check questions. They were asked if their partner was given \$1, and they rejected an offer of \$0.40, how much would their partner make? How much would they make? How much would they make if they accepted the offer? Subjects were also asked to try offering \$0, \$0.50, and \$1 as Player A so that they clearly understood how to use the slider function to make their choices. When selected to be Player A, the subject waited between 1 to 3 seconds to be paired up with a simulated Player B. The subject was instructed that, *“You are given \$1. Now decide how much money to offer your partner. If your partner accepts your offer, you keep the remainder. If your partner rejects your offer, you must give the money back.”* Then the subject chose how much money to offer on a sliding scale from \$0 to \$1, in increments of \$0.10. After deciding how much to share, the subject advanced to the next trial.

When the subject was serving as Player B, they waited between 1 and 12 seconds for the simulated Player A to make their offer. The 25 simulated Player A offers were selected from a distribution of offer amounts described in a meta-analysis (Tisserand, 2014) in order to best replicate human behavior. Moreover, by mimicking similar choices as Player A in previous studies, the investigators sought to minimize possible experimental influences on subject's

behavior when they made offers as Player A. After an offer was presented, the subject was asked, *“Do you accept or reject the offer? (If you reject, you earn \$0 and your partner must give the \$1 back to us.)”* The subject's responded with either Accept or Reject.

At the end of this condition, participants answered a three-question behavioral survey. They were asked to report on a sliding scale how much to offer if they would like to maximize their earnings and how much to offer if they would like to be as fair as possible to their partner. Lastly, they were asked whether their choices were driven by a desire to maximize their earnings or to be fair to their partner.

Dictator Game. The Dictator Game (DG) condition was structurally similar as the Ultimatum Game (UG) and followed the same process of instructions, comprehension check, experiment and behavioral survey at the end. The major difference between the DG and UG conditions was that Player B no longer had the option to reject an offer. In the 25 randomized trials as Player A, the subject simply decided how much of their endowment to split with Player B. Once again, they reported the split on a sliding scale from \$0 to \$1, with \$0.10 increments. In the 25 randomized trials as Player B, the subject was simply informed of how much the simulated Player A chose to share with them. The investigators had subjects play as Player B in the DG condition to maintain the deception that the task was conducted with other people and so that subjects could infer real people typically behave. Simulated Player A offers in the DG condition were also sampled from a meta-analysis of typical DG offers (Engel, 2011). Similar to the UG condition, subjects responded to a behavioral survey where they self-reported their beliefs and whether they were acting selfishly or fairly.

Psychometric measures

To measure how individual differences in emotional intelligence may affect bargaining

behavior, the investigators employed several psychometric questionnaires which measured Emotional Intelligence (EI), trait selfishness, and attitudes toward negative reciprocity. After subjects completed the behavioral tasks, they advanced to the questionnaire portion of the experiment. The order of the surveys was randomized in this stage of the study, and the questions presented within the surveys were randomized to minimize order effects. Responses were measured on a 7-point scale, ranging from Strongly Disagree to Strongly Agree.

To measure EI, the investigators selected the 30-item Trait Emotional Intelligence Questionnaire (TEIQue-SF; Petrides, 2009). The TEIQue questionnaire has been shown to have satisfactory to excellent internal reliability varying between .71 and .91 (Mikolajczak et al., 2007) as well as satisfactory test-retest reliability (.73). TEIQue has a four factor solution: Well-Being, Sociability, Self-Control, and Emotionality, which explained 63.95% of the variance measured (Mikolajczak et al., 2007). We chose to use the short form version of the questionnaire to improve data quality as all the survey components required considerable time invested on the part of the subjects.

To measure trait selfishness, we employed the 20-item Machiavellian Intelligence Questionnaire (Mach-IV; Gunnthorsdottir, McCabe, & Smith, 2001). This questionnaire used subscales which measured views toward morality and tactical reasoning. It employed questions that asked respondents to consider how they should interact with other people as it relates to their goals. The test-retest reliability was reported at .73 (Meyer, 1992).

Lastly, the investigators measured attitudes towards negative reciprocity using the 9-item negative Personal Norms of Reciprocity scale (PNR; Perugini et al., 2002). Overall, the negative PNR factor explained 23.1 percent of variance (Perugini et al., 2002). After completing the psychometric questionnaires, subjects answered demographic questions asking their age,

educational attainment and gender. At the end of the survey, the subjects were debriefed and informed how they will receive payment for their randomly selected trial.

Results

Behavioral Results

To understand EI's relationship to bargaining behavior, we investigated if there was an association between EI and earnings. All analyses were conducted in MATLAB. We first assessed the validity of the TEIQUE questionnaire. The Cronbach's alpha indicated an excellent internal consistency ($\alpha = .94$). The results were symmetrically distributed (see Figure 1). We proceeded to assess EI's relationship to behavior in the bargaining tasks. To do so, we correlated EI with the behavioral data from each game.

Figure 1. EI is symmetrically distributed in the sample.

Ultimatum Game Rejection Behavior. The investigators assessed the relationship between EI and the rejection of “unfair” offers. The investigators operationalized unfair offers as \$0, \$0.10, \$0.20, and \$0.30. Most behavioral results suggest that subjects typically accept offers that are around 40 percent of the endowment in the Ultimatum Game (Tisserand, 2014). As such,

the investigators classified \$0.40 and \$0.50 as being fair. Next, we calculated what proportion of unfair offers were accepted by each subject. In contrast to either main hypothesis, the results of the Pearson correlation indicated that there was no significant association between rejection rates of unfair offers and EI, $r(153) = -.01, p = .26$; (see Figure 2).

Figure 2: There was no significant relationship between the proportion of offers rejected as Player B and EI.

Ultimatum Game Giving Behavior. Next, the investigators assessed the relationship between EI and offers as Player A in the Ultimatum Game. Offers in the Ultimatum Game were negatively skewed, ($M = 0.44, SD = 0.006$; see Figure 3). Additionally, there was very low variability, and the distribution had an abnormally high rate of even split offers in relation to typical UG behavior (Tisserand, 2014). This has implications to the interpretation of the results due to the potential presence of a ceiling effect.

Figure 3. Ultimatum game offers ranged from \$0 to \$1, with subjects overwhelmingly making \$0.50 even-splits.

We assessed the relationship between offer amounts as Player A and EI. We expected that EI would be related to higher offer as this is consistent with both concerns for fairness and maximizing earnings. We started by calculating pooled hypothetical earnings as Player A. To do so, we calculated the likelihood of offers being accepted by taking the proportion of acceptances/rejections for each offer level from \$0 through \$0.60 (see Figure 4). For each trial, the subject's remainder of their offer was multiplied by the likelihood of their offer being accepted. All 25 trials were summed to determine the subject's total expected earnings as Player A. A Pearson correlation between UG earnings as Player A and EI was not significant, $r(153) = -.07, p = .37$ (see Figure 5). This result was surprising as it was inconsistent with both main hypotheses. However, the ceiling effect may be clouding this relationship due to the overwhelmingly large number of even-splits.

Figure 4. The likelihood of an offer being accepted by Player B was higher as the value of the offer increased.

Figure 5. There was no relationship between total earnings in the UG condition as Player A and EI.

Dictator Game- Player A. Next, the investigators assessed if there was a relationship between EI and offers in the Dictator Game. If subjects were acting out of a concern for fairness, we would expect them to make more generous offers. In contrast, if subjects were acting strategically, we would expect them to share little or nothing with their partner. Most offers clustered around \$0 or \$0.50 ($M = 0.28$, $SD = 0.11$; see Figure 6). Offers in the Dictator game had more even-splits than expected; however, were more consistent to expectations from meta-analysis (Tisserand, 2014) compared to UG behavior. We calculated each subject's hypothetical earnings as Player A by summing the remainder of their offer over all DG trials as Player A. The Pearson correlation between DG earnings as Player A and EI was significant, with higher EI subjects making more selfish offers, $r(153) = .18$, $p = .03$ (see Figure 7). This result suggests that EI is more related to strategic behavior toward maximizing earnings than a concern for fairness.

Figure 6. Dictator game offers were bimodal. Most subjects diverged in their choices, with some offering \$0 and others offering even splits.

Figure 7. There was a significant relationship between EI and offers as Player A in the Dictator Game, $r = .18$. Subjects with higher EI made more selfish offers.

Order Effects. The investigators tested if there was any effect to the order that the games were presented. Participants were split according to the first condition they experienced, with 77 UG-first subjects and 78 DG-first subjects. We ran t-tests to assess whether there were any differences between these groups. No order effects were detected for subject earnings as Player A in the UG condition, $t(153) = .47, p = .64$, or in the DG condition, $t(153) = -1.63, p = .10$. There was no detected order effect for Player B earnings in the UG condition, $t(153) = 1.68, p = .09$. There was no detected order effect for the proportion of offers rejected in the UG condition, $t(153) = -1.19, p = .23$. Another potential confound is that there was a difference in EI between the two groups. There was no detected difference in EI, $t(153) = -1.26, p = .21$.

Emotional Intelligence, Selfishness, and Punishment Attitudes

Next, we investigated whether subjects self-reported a strategy that was consistent with their behavior. Immediately after the subject completed the UG and DG conditions, they were

asked to report on a sliding scale what is the fairest way to divide their \$1 endowment with their partner and how much money should they offer their partner if they want to keep as much as they can for themselves? Subjects were also asked whether their primary goal was to make as much money as possible or to be fair toward their partner.

While the behavioral results showed that subjects offered substantially less as Player A in the DG condition relative to the UG condition, subjects acknowledged that the fairest way to split the offers in both conditions was an even-split, with 48.9% reporting this in the UG behavioral survey and 49.7% in the DG behavioral survey. However, when asked about their motivations, participants reported a significant difference in their goals between the two tasks. In the UG condition, 71% reported that their goal was to act fairly toward their partner whereas in the DG game whereas 49.7% reported this motivation, $t(154) = -5.82, p < .001$. Subjects reported that the optimal offer to make in the DG condition ($M = 0.10, SD = 0.18$) was significantly lower than in the UG Condition, $M = 0.18, SD = 0.22; t(154) = 6.05, p < .001$.

Next, we assessed if EI had any influence on self-reported attitudes toward fairness. To perform this analysis, we used a logistic regression analysis to predict motivation. In the UG condition, the results did not indicate an association between EI and self-reported attitudes toward fairness, $t(153) = .86, p = .39$. In the DG condition, logistic regression did not indicate a significant association, $t(153) = -1.82, p = .069$.

In order to understand the relationship of EI and other traits, we compared it with measures of negative reciprocity and trait selfishness. If EI is related to strategic thinking, we would expect that subjects with higher EI would be less likely to punish others when doing so conflicts with their self-interest. We measured attitudes toward negative reciprocity using the PNR scale, which yielded an excellent fit ($\alpha = .93$). A Pearson correlation showed that EI and

negative reciprocity had a strong negative relationship, $r(153) = -.49, p > .001$ (see Figure 8).

Interestingly, a Pearson correlation analysis also showed a moderately negative relationship between attitudes toward negative reciprocity and rejection rates as Player B in the Ultimatum Game, $r(153) = -.24, p = .003$. While the behavioral data did not find a relationship between EI and rejection behavior, the subjects' attitudes toward negative reciprocity and EI suggest that higher EI individuals are less likely to be concerned with punishing others.

Figure 8. There was a strong negative relationship between EI and PNR, $r = -.49$, suggesting higher EI subjects are less likely to punish others.

Next, we assessed the relationship between trait selfishness and EI. Since subjects exhibited behavior that was more consistent with maximizing total earnings, we would expect that EI would be related to trait selfishness. To measure trait selfishness, we used the Machiavellianism (Mach) scale. Cronbach's alpha indicated moderate internal consistency ($\alpha = .$

83). However, running a Pearson correlation analysis found a strong negative correlation between Mach and EI, $r(153) = -.63$, $p = <.001$; (see Figure 9). This finding was inconsistent with the hypothesis that trait selfishness and EI-related strategic thinking are positively related.

Figure 9. There was a strong negative relationship between EI and Machiavellianism, $r = -.63$ suggesting EI and trait selfishness are negatively related.

While this finding was inconsistent with the main hypothesis, further analysis has suggested whether the Mach scale meaningfully measures trait selfishness in the context of bargaining tasks. The Machiavellianism scale did not significantly predict total earnings over all trials, $r(153) = -.06$, $p = .46$). Next, we assessed whether the Mach scale predicts if subjects are more likely to self-report a greater motivation to be selfish. Logistic regression analysis in the UG condition revealed a significant association, $t(153) = -2.36$ $p = .02$. However, in the DG

condition, logistic regression did not indicate a significant relationship, $t(153) = -.51, p = .39$.

One would expect an even stronger association between Mach and self-reported selfishness in the DG task as there is nothing stopping a subject from taking the whole pot. These findings suggest that Machiavellianism lacks construct validity in the context of measuring trait selfishness in these bargaining tasks.

Discussion

The results of this investigation suggest that EI is related to strategic thinking. Higher EI subjects maximized their own personal earnings in the face of strong fairness norms. In both the Ultimatum Game and Dictator Games, an overwhelmingly number of the subjects chose to make even-splits. Subjects with higher EI were better able to recognize the change in the game structure and change their behavior accordingly between the two games. In the UG condition higher EI subjects were as fair as everyone else. Whereas when there was no longer the threat of retribution (e.g., in the DG condition), these subjects were more likely to take more for themselves rather than sharing with their partner leading to higher overall earnings. These findings suggest that those with higher EI leads to more strategic bargaining behavior.

According to EI theory, higher EI subjects should be better able to regulate their emotions (Salovey & Sluyter, 1997). In the face of pressure to conform to fairness social norms, higher EI subjects are better at acting against the norm. This suggests that EI is adaptive toward self-serving goals in social contexts, such as in negotiations. It may be that lower EI individuals are more likely to make an offer that is closer to a value that is the accepted norm of what they are trying to buy or sell. Conversely, higher EI individuals may be better able to regulate their emotions and offer values farther from this value. In doing so, they would be deviating from the fairness norm, but in the process may anchor the negotiations in a way that is more favorable

toward their self-interest.

When incentives align toward prosocial behavior, high EI subjects are likely to act prosocially. In the Ultimatum Game as Player A, these subjects consistently made fair offers. While high EI individuals may be motivated by self-interest rather than an underlying motivation to be fair, they will act fairly when it is strategic for them to do so. Moreover, they are adept at recognizing changes in social context. If social context dictates that it is advantageous to cooperate, they will recognize and take advantage of these opportunities.

The negative relationship between PNR and EI was intriguing. These results suggest that they are less likely to punish others. This may be because punishing an unfair offer would induce an unnecessary cost to themselves. While we found that there was no relationship between the rejection of unfair offers in the UG task, future studies may be able to find an effect by using an alternate experimental design that pieces apart punishment more precisely. One such design is the Justice Game, which is similar to the Ultimatum Game except that it tests several other types of responses to offers. Instead of simply accepting or rejecting offers, subjects also have the choice to equalize their earnings in relation to their partner or reverse the offer such that they now receive Player A's share. One may suspect that EI is related to stronger attitudes toward maximizing personal earnings in this task relative to punishing others. In other words, they would be more likely to act in a self-centered manner than to be concerned with the earnings of their partner in the Justice Game.

Our findings suggest that having a higher capacity for understanding and experiencing the emotion of others does not necessarily predict prosocial behavior. Our results, along with most bargaining tasks show a strong propensity among participants to make fair offers. The altruism-empathy hypothesis suggests that emotion is driving this behavior. However, higher EI

individuals who should have a greater capacity for understanding emotions and feeling empathy do not behave consistently with this theory. This leads to an unopened question: if it is not empathy that is driving fairness behavior, then what is?

An alternative explanation is that fairness norms are driven by social learning and that empathy is not elicited when simply following the norm. Repeated interactions may teach a person to act prosocially in bargaining situations. In the context of this experiment, choosing an equal-split appears to be the default effortless choice, whereas maximizing earnings requires reasoning about the social context of the respective tasks. As a result, acting fairly may not be actually eliciting emotion. Instead, moving away from the norm may require more emotional regulation as it entails effort to reconcile self-interest in social contexts.

One abnormal feature of our data was the presence of large proportions of even-splits in both the UG and DG conditions. There are several possible explanations. The first is that the structure of the instructions and task induced an experimenter demand. Subjects may have interpreted the instructions of the task (*If your partner rejects your offer, you must give the money back*) in a way that encouraged them to make more fair offers. Another explanation is due to the presence of many trials, mTurk workers chose the option that was least effortful in order to expedite the completion of the task. However, what is unclear is why the workers would necessarily choose an even-split; they could as easily decide on a strategy that is more advantageous such as 30 - 40 percent of the endowment in each respective game. Another possibility is that the \$1 endowment was such a low stake that it may have influenced behavior. The cognitive load of computing the relative costs of offering a lower amount with a higher risk of rejection may be too high for the low payoff. As a result, subjects who may have otherwise chosen 30 - 40 percent of the endowment simply chose 50 percent as the difference was not

enough to justify the additional effort.

Future Directions

Future studies should attempt to correct the fairness bias in the results. This can be done by running the study in a lab with real participants with higher stakes. Doing so would encourage subjects to take the task more seriously. Another possibility is to introduce some variability in the endowment and having subjects select their choice by typing in the amount they wish to share. Doing so would induce a more deliberate decision to make an even-split. In eliminating the ceiling effect, this would allow for better interpretations of UG Player A data. Under these conditions, it would be more likely to find a relationship between EI and offer amount which would reinforce the hypothesis that EI is related to strategic thinking.

While this study did not find any relationship between generosity and EI, it is unclear how contextual, hot empathy may affect subjects with higher EI. Subjects may behave differently when they see the needs or suffering of others as opposed to how they act in a tightly controlled experiment using one-shot games with anonymous partners. On the one hand, higher EI subjects may be better at regulating their emotions and be less affected by empathetic context. On the other, their greater capacity for experiencing emotions of others may lead them to be more prosocial. If higher EI subjects still act selfishly in this context, this would provide particularly strong evidence that EI is related to regulating emotions toward making strategic choices in bargaining contexts.

Conclusion

In contrast to the overwhelming tendency to make fair offers, subjects with high EI take advantage of opportunities to maximize their earnings. They are more likely to recognize social context and how it changes their incentives. When there is an internal pressure to conform to the

social norm, they are more likely act more consistently with their own self-interest. In contrast, when there is no fear of retribution, these individuals are more likely to keep more money for themselves. In sum, subjects with higher EI adaptively use their intelligence in self-serving ways.

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Appendix A

Consent Form IRB-FY2016-2
(NIH-funded mTurk)

You have been invited to take part in a research study to learn more about emotion and cognition. This study will be conducted by Dr. Elizabeth A. Phelps, Department of Psychology, New York University, or by a designated member of her research staff.

If you agree to be in this study, you will be asked to complete the following procedures.

Behavioral Task

If you agree to participate in this study, you will be asked to do the following:

1. View and/or respond to visual stimuli on a computer screen;
2. Listen and/or respond to auditory stimuli;
3. Complete some questionnaires related to the study.

Reward and Punishment Task

If you agree to participate in this study, you will be presented with repeated exposures of different stimuli and may be asked to do the following:

1. Make responses according to the stimuli or merely observe them;
2. Understand that during the experiment you may win or lose money;
3. Make responses regarding monetary outcomes for other people;
4. Complete some questionnaires related to the study.

Questionnaire

If you agree to participate in this study, you will be asked to complete some questionnaires related to the study.

Demographics

We will ask you to provide some general demographic information about yourself. This information may include name, date of birth, address, phone number, gender, race, education, etc.

Behavioral Assessments

In this study, we may ask you to allow your behavioral assessments to be recorded. These assessments include:

- Explicit choices between options
- Reaction times
- Ratings of stimuli

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IRB-FY2016-2
APPROVED: 8/2/18-6/28/19

Participation in this study will involve approximately 30 minutes and you will be compensated \$3.00 for completing the task. Additionally, depending on your choices in the task you can earn a bonus between \$0 and \$1.

There are no known risks associated with your participation in this research. Although you will receive no direct benefits, this research may help the investigator understand more about emotion and cognition. Participation in this study is voluntary. You may refuse to participate or withdraw at any time without penalty. If you withdraw before the end of the study, no payment will be given.

The investigator has explained this study to you and answered your questions. If there is anything about the study or your participation that is unclear or that you do not understand, if you have questions or wish to report a research-related problem, you may contact Dr. Elizabeth A. Phelps at:

212-998-8337,
liz.phelps@nyu.edu,
New York University,
6 Washington Place,
Room 890, New York, NY 10003.

For questions about your rights as a research participant, you may contact the University Committee on Activities Involving Human Subjects (UCAIHS), 665 Broadway, Suite 804, New

York University, (212) 998-4808 or ask.humansubjects@nyu.edu.

Any specific information gathered in the study will be disclosed only to the investigator or collaborators. If the results are published, the information remains anonymous and disguised so that no identification can be made. Information not containing identifiers may be used in future research or shared with other researchers without your additional consent.

This research is covered by a Certificate of Confidentiality from the National Institutes of Health.

Researchers with this Certificate will not disclose or use information that may identify you in any federal, state, or local civil, criminal, administrative, legislative, or other action, suit, or proceeding, even if there is a court subpoena.

Exceptions include:

- A federal, state, or local law requires disclosure
- Your explicit approval for the researchers to release your name and/or personally identifiable information.