

Rational Choice Theory and Interest in the “Fortune of Others”

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Abstract

Objectives: We test the relationship between other-regarding preferences (concerns for other people) and intentions to drink and drive and whether these preferences condition the effect of sanction threats on willingness to drink and drive. *Methods:* A sample of university undergraduates played common economic games (dictator and ultimatum games) and responded to a hypothetical scenario about drinking and driving. Ordinary least squares regression models were used with the full sample and then separate samples for those with differing levels of other-regarding preferences (social preferences). *Results:* Net of other factors including sanction threats, demographics, measures of individual propensity, and previous experience with drinking and driving, those with strong other-regarding preferences (as indicated by responses to dictator and ultimatum games) were less likely to state that they would drive while drunk under the conditions described by the scenario. In support of differential deterrence, the self-interested were deterred by sanction threats, but those with stronger other-regarding

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preferences were not deterred by the perceived certainty of sanctions. *Conclusions:* Our findings speak to the importance of more than self-interest in explaining antisocial behavior and thereby expanding the conceptual boundaries of rational choice theory to include more than self-interest.

Keywords

rational choice theory, criminological theory, deviance, drugs

... how selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it, expect the pleasure of seeing it.

Adam Smith, *The Theory of Moral Sentiments* ([1759] 2009:9)

Rational choice theory (RCT) has attained a position of prominence among current criminological theories as evidenced by the number of articles devoted to testing its hypotheses or developing its theoretically/conceptually, the number of different criminal offenses that it has been employed to explain, and its consistent appearance in criminological anthologies. Although some discussions of RCT by criminologists are nuanced and sophisticated (McCarthy 2002), for the most part of criminologists understand RCT theory simply to imply that offending is based upon a self-interested appraisal of the costs and benefits of alternative courses of action, with the action taken being the one with the greatest perceived utility. The current RCT view of human actors, then, is one of the heightened rationality and a narrow regard for one's self-interest, referred to in the economics literature as a *self-regarding preference*.

The historical source of the rational self-regarding actor is Adam Smith ([1776] 1999) who argued that self-interested competition guides the "invisible hand" within a free market economy. Decades later, Becker (1968) resurrected this theme and developed a neoclassical economic theory of crime which applied the traditional expected utility model of choice to offending, suggesting crime is an outcome of an agent's rational consideration of the risks and pains of punishments as well as the gains of crime (see also McCarthy 2002). Rational choice was further developed and popularized in the study of crime through the work of Cornish and Clarke (1986) who established a rational choice perspective of criminal involvement and criminal events targeted toward policy relevant research. While

there may be variation in criminological approaches to RCT, Paternoster and Simpson (1993) acknowledged three common elements: The decision to commit a crime is rational and involves the weighting of perceived costs and benefits, rational choice models should be crime-specific, and the decision to offend is influenced by immediate contextual characteristics. Perhaps the most notable and often unarticulated similarity across criminological rational choice approaches (Becker 1968; Cornish and Clarke 1986) and consistent theories (Hirschi 1986) is their shared assumption of *self-interest*.

While the current criminological model of rational choice is based on the self-regarding preference assumption, many economists have argued two clarifying assumptions are necessary (Fehr and Fischbacher 2002). The first recognizes that people are heterogeneous with respect to their preferences, the second suggests that rationality need not be restricted to narrow self-interested materialism. In addition to being concerned with their own self-interests, people can behave with an eye toward others' interests, highlighting *other-regarding preferences* as deviations from self-interest. Perhaps ironically, the notion of other-regarding preferences was first developed by Smith ([1759] 2009) 17 years before *The Wealth of Nations*, in *The Theory of Moral Sentiments*, where the role of feelings, such as sympathy, altruism, and fairness, were discussed. Smith ([1759] 2009) argued that economic agents were not only motivated merely by their personal payouts but also by the payouts given to others. It seems a rather safe conclusion that while in economics there has been a growing recognition of the importance of other-regarding preferences, the notion that rationality consists solely in self-regarding preferences is still dominant within criminology (Matsueda, Kreager, and Huizinga 2006; Matsueda 2013). In his American Society of Criminology (ASC) Presidential Address, Agnew (2014:1) came to the same conclusion, noting that self-interest is "... perhaps the core assumption of criminology." With the exception of Agnew's (2014) call for more theorizing and research on "social concerns" and crime, there has been very little discussion of the relevance of other-regarding preferences in the criminological literature and few empirical tests of their importance in explaining crime (see Craig 2016 for an exception).

We would like to expand the scope of RCT in this article by arguing that other-regarding preferences have important implications for criminal behavior. If the more self-interested are concerned about themselves and are self-absorbed, we would suggest that those with other-regarding preferences would have closer attachments to others. Consistent with social

control theory (Hirschi 1969), those with strong other-regarding preferences would be at a lower risk of committing crimes since criminal offenses implicate the harming of others' interests, and self-interest has been linked to crime and other rule breaking behaviors by criminologists (Gottfredson and Hirschi 1990). We hypothesize, therefore, that those with stronger other-regarding preferences should be less likely to commit an offense compared with those that are more self-interested, a hypothesis consistent with Agnew's (2014) statement that social concerns have a direct negative effect on crime. A second hypothesis is derived from Fehr and Fischbacher's (2002:C4) observation that "... a selfish person is deterred from behavior opportunistically if the person expects to be punished by the reciprocators." In other words, the self-interested person can be more easily deterred by the opportunistic costs of offending than those who are more other regarding, a hypothesis consistent with Agnew's (2014) statement that social concerns condition the effect of other causes of crime and Loughran et al.'s (2012) notion of differential deterrence.

In this article, we offer a preliminary test of these two hypotheses, and more generally the importance of other-regarding preferences for criminal behavior, with a sample of undergraduate students. While we readily acknowledge that this sample is less than optimal for studying serious offending, we submit that this is merely a starting point for a more general exploration of the role of other-regarding preferences in criminal offending and its relevance for the rational choice perspective in criminology. Before we present our study methodology, we present a brief review of extant empirical research.

Prior Research

Although we know of no prior empirical study that has examined the relationship between other-regarding preferences and crime directly, there have been some studies of relevance focusing on such personality attributes as empathy and what has been termed "social concerns" (Agnew 2011, 2014). For example, Broidy and colleagues (2003) hypothesized that feelings of empathy or concern for the feelings others would be inversely related to delinquent offending and would partially explain the gender difference in offending among juveniles. With a sample of high school students in Philadelphia, and a sample of youths incarcerated in the California Youth Authority, they found both gender differences in the level of empathetic feeling and differences between the high school and incarcerated samples, but the mediating effect of empathy in explaining gender differences in

offending was less strong. Similarly, Jolliffe and Farrington found a relationship between low affective empathy and bullying (2006, 2011) and self-reported violent delinquent offending (2007) for adolescents in England. In a 2004 meta-analysis of 35 studies of cognitive and affective empathy, Jolliffe and Farrington (2004) found that while low cognitive empathy was consistently related to offending (particularly for violent offenses), low affective empathy was not. Schaffer, Clark, and Jeglic (2009), however, found a significant negative relationship between self-reported antisocial behavior and both emotional and cognitive empathy in a student sample. In a meta-analysis of personality traits and antisocial behavior, Jones, Miller, and Lyman (2011) found modest inverse relationships between the traits of tender-mindedness and altruism and both general antisocial behavior and aggression. Hunter et al. (2007) also found support for a relationship between emotional empathy and nonsexual delinquency in a sample of in male juvenile sexual offenders. Most recently, in a sample of undergraduate students, Craig (2016) found empathy to be negatively associated with intentions of credit card fraud, embezzlement, and shoplifting.

While none of these studies directly examined the relationship between other-regarding preferences and offending, they collectively suggest that feelings beyond self-interest do seem to be related to a lower risk of crime. Our intent in this article is not only to show that other-regarding preferences have implications for criminal behavior but also to expand the conceptual boundary of RCT in criminology. We agree with Fehr and Fischbacher (2002) that people are heterogeneous with respect to how self-interested they are and that they can be motivated by concerns for others in addition to their own interests. We also agree with Agnew's (2014:2) observation that "[t]his concern (having other's interests in mind when deciding and behaving) finds little place in criminological theories," RCT included. Drawing from measurement methodology common within the economic literature, we test two specific hypotheses with respect to other-regarding preferences:

Hypothesis 1: There will be an inverse relationship between other-regarding preferences and indicators of offending net of other factors.

Hypothesis 2: The effect of opportunistic factors such as the perceived certainty and severity of punishment will inhibit offending among those who are less other-regarding (more selfish) than those with stronger other-regarding preferences.

Table 1. Descriptive Statistics.

Variable	Mean	Median	SD	Minimum	Maximum
Male	0.45	0.00	0.50	0.00	1.00
Age	19.35	19.00	2.47	17.00	44.00
White	0.57	1.00	0.49	0.00	1.00
GPA	3.31	3.33	0.38	2.00	4.00
Perceived certainty	45.96	45.00	25.62	0.00	100.00
Perceived severity	8.97	10.00	2.00	0.00	10.00
Impulsivity	11.60	12.00	2.83	4.00	20.00
Sensation seeking	21.79	22.00	4.16	8.00	32.00
Driven while drunk	0.17	0.00	0.38	0.00	1.00
Average proportion offered in dictator game	0.35	0.43	0.18	0.00	1.00
Proportion offers in all games $\geq .50$	0.32	0.00	0.47	0.00	1.00
Proportion in dictator $<$ proportion ultimatum	0.62	1.00	0.49	0.00	1.00
Number of dictator games with \$0 offered	0.41	0.00	1.26	0.00	6.00
Log willingness to drink and drive	1.36	0.00	1.58	0.00	4.62

Note: $n = 230$.

Methods

Sample

The data for this study come from questionnaires administered to an introductory social science course at a large public university. The course meets general university core course requirements, so there was a mixture of different majors, although most students were in their freshman or sophomore year. Approximately 270 students were present during the class, there were zero survey refusals, and 230 students fully completed the instrument and were included in our analytic sample.¹ Of all, 45 percent of the respondents were male, the mean and median age was 19 years, the mean grade point average was 3.32, and 61 percent of the respondents were White, where non-White included African Americans (15 percent), Hispanics (10 percent), and Asians (10 percent). The demographic distribution of the sample closely resembles the university demographic distributions for introductory courses. Descriptive statistics for all variables are reported in Table 1.

Measures

Dependent variable. Respondents were asked to read the following hypothetical scenario.

Suppose you drove by yourself one night to meet some friends at a bar in the [specific location]. You meet your friends at 9 p.m. and start drinking with them. By the end of the night (about 2:00 a.m.) you realize that you have drunk enough that you are really sure that your blood alcohol level is above the legal limit. Suppose you live about 15 miles away and you have to be back to campus the next morning. You figure you can either drive home yourself or have someone drive you home knowing you have to leave your car overnight in [specific location] and have to return early the next morning to pick it up.

The content of this scenario, drinking and driving, was selected specifically because it would be a relevant rule breaking situation for the sample of college students. After reading the scenario, respondents were asked to answer a series of questions referencing the described situation including the following, "What do you think the probability is that YOU would drive home this night where 0 means absolutely no chance and 100 means you definitely would drive home?" The dependent variable is the respondent's estimated probability that they would drive while drunk under the conditions described by the hypothetical scenario. This, *willingness to offend*, variable was skewed, and so we took the natural log of the response (after adding a constant of 1).

Independent variables. The key independent variable was an indicator of other-regarding preferences. There is no guidance within the criminological literature as to how to measure this concept, but economists have devised two variations of a behavioral game that captures the preference that an individual may have to forego complete self-interest in favor of the outcomes of others. If a behavioral game includes possible financial payoffs and if a player in that game cares enough about the payoffs to others that they forsake their own personal financial payoffs, economists have argued that this reflects their other-regarding preferences (Camerer 1997; Charness and Rabin 2002; Fehr and Schmidt 1999). Two behavioral games that have been repeatedly used to calibrate other-regarding preferences are the ultimatum (Güth, Schmittberger, and Schwarze 1982) and dictator games (Forythse et al. 1994; Kahneman, Knetsch, and Thaler 1986). These games usually (but not always) are "two-person one-shot" games, meaning that

two people are involved and the game is played only once without interaction or communication. In the ultimatum game, player 1 is given a financial allotment and instructed to offer a division of the money to the second player, player 2. Player 1 can offer any proportion of the allotment from 0 (no money is offered) to 1.0 (the entire allotment is offered). Player 2 is then given the opportunity to either accept or reject the offer, and player 1 knows this. If player 1's offer is accepted, then both players get the amount of money offered. If the offer is rejected, however, then both players receive no money. Under the neoclassical economic assumption of strict self-interest, player 1 should offer the lowest possible positive value (because that's how an agent maximizes their own self-interest) and player 2 should accept anything that is offered because their self-interest makes them realize that whatever they get it is more than they would have if they did not play the game. The dictator game is a variation of the ultimatum game where the rules described above are the same, except player 1 acts as a dictator because regardless of the amount offered, player 2 cannot reject the offer.

There is some ambiguity with respect to what offers in the ultimatum game reflect. While some have suggested that the greater the proportion player 1 offers, the more other-regarding or altruistic they are, it could also reflect strategic thinking or risk aversion on the part of this first player, since low offers may be rejected and no money will be received. Behavior in the dictator game more cleanly reflects other-regarding preferences since player 2 must accept any amount offered by player 1 (List 2007, 2009). In the current study, we ask respondents to play both variations as player 1, using the proportion offered in the dictator game as our measure of other-regarding preferences, and the ultimatum game to judge the validity of dictator responses (offers in dictator games should be less than those for the ultimatum games) as well as in conjunction with offers in the dictator game to measure other-regarding preferences.

Our respondents were given the following instructions: "Suppose you are given a sum of money which you must decide how to share with another person. You must decide how to split the total up, and you may do this any way you like." In the ultimatum game, they were told "once you decide how to split the money, the other person can either *accept* your offer in which case you both get what is proposed, or the other person can *reject* the offer, in which case you both would get USD\$0." In the dictator game, the following instruction was substituted: *Should the other person not like your offer, they cannot punish you in any way and they have no choice, they have to accept your offer.*² In both games, respondents were given six different

monetary allotments \$10, \$50, \$100, \$500, \$5,000, and \$10,000. The games were vignette based and therefore respondents did not receive real cash and were not informed if their offers were accepted or rejected, as the anonymous second player was hypothetical. From responses to the ultimatum and dictator games, we created two indicators of *other-regarding preferences*. The first is based upon the proportion of the allotted value offered in the dictator game averaged across the six monetary values; the greater the average proportion offered, the more the respondent thought about the other player's payout.³ The second measure is a dummy variable coded 1 if all proportions offered by the respondent were .50 or greater in each of the ultimatum and dictator games, indicating that they consistently offered at least one half of the amount provided. Although our primary interest was in other-regarding preferences, in additional analyses, we created two measures of *self-interested preferences*: A dummy variable coded as 1 if the average proportion that the respondent offered in the dictator games was less than what was offered in the ultimatum games (indicating strategically more self-interested thinking), and the second variable was the number of dictator games (of the six) where the respondent offered no money to the other player.

According to our hypotheses, the two measures of other-regarding preferences should have an inverse relationship with a willingness to drink and drive, while the two self-interested preferences should have a positive relationship with willingness to drink and drive.

Control variables. We employed several covariates in our models that have consistently been shown to be related to deviant behavior including drinking and driving. Each model includes the demographic factors of gender (male dummy variable), race/ethnicity (White dummy variable), academic success (Grade Point Average [GPA]), and a dummy variable coded 1 if the respondent had ever driven while drunk in the past to capture any preexisting propensity to drink and drive. In addition, there are one-item measures of the perceived certainty and severity of punishment for drinking and driving under the conditions described by the scenario. The perceived certainty item was, "What do you think is the probability that YOU would be stopped by the police somewhere on the way home?" and the response options were on a continuous 0 to 100 probability scale. For the severity of getting caught for drinking and driving the question was, "On a scale of 0 to 10 where 0 is "it would be no problem for me at all" and 10 is "it would cause so many problems that I can't even think about it," how much of a problem would it be if

you got stopped for drinking and driving under the situation described above, you tested over the legal alcohol limit, and you had your license suspended immediately?"

We included two other covariates that have been shown to be related to deviant behaviors: impulsivity and sensation seeking. Impulsivity and sensation seeking are complementary but different personality dimensions with impulsivity referring to a present time orientation and sensation seeking a preference for risky behaviors (in our data, the Pearson $r = .40$, and both are related to deviance [Caspi et al. 1997; Donohew et al. 2000]). Our impulsivity scale consisted of four items, each of which loaded .55 or higher in a one-factor analysis: "I do things without thinking. I act on impulse a lot. I usually act on the spur of the moment. I often make my mind up quickly" (Cronbach's $\alpha = .80$). We constructed an eight-item measure of sensations seeking where each item loaded .49 or higher: "I would like to explore strange places. I would love to have new and exciting experiences even if they are illegal. I like to do frightening things. I get restless when I spend too much time at home. I would like to take off on a trip with no preplanned routes or timetables. I prefer friends who are excitingly unpredictable. I would like to try bungee jumping. I like wild parties" (Cronbach's $\alpha = .77$).

Analytic Model

To test our hypotheses, we estimated ordinary least squares (OLS) regression models. This was appropriate, given the approximately normal and continuous distribution of the logged intentions to drink and drive. Regression diagnostics were carried out to ensure our analyses did not violate OLS assumptions of normality, homoscedasticity, or multicollinearity (correlation matrix available upon request) and that our results were not driven by outliers. Our model is:

$$\log(\text{intentions to drink and drive}) = \beta_0 + \beta_1 x_1 + \beta_2 \dots + \beta_k x_k + \epsilon_i$$

where the x are the previously discussed independent and control variables. We assume that $\log(\text{drinking and driving})$ is lognormal conditional on all the covariates, and the estimated regression coefficients can be interpreted as the expected change in the log of y with a one-unit change in the x variable, controlling for all other covariates. Readers can take the exponentiated OLS regression coefficient ($\exp b$) to estimate the effect of a one-unit change in x on y .

Table 2. Proportion of Allotment Offered for Different Outcomes of Ultimatum and Dictator Games.

Ultimatum Game Allotment	Mean	Median	SD	Minimum	Maximum
\$10	.49	.50	.13	.00	1.00
\$50	.47	.50	.13	.00	1.00
\$100	.46	.50	.13	.00	1.00
\$500	.46	.50	.14	.00	1.00
\$5,000	.45	.50	.15	.00	1.00
\$10,000	.45	.50	.14	.00	1.00
Average	.46	.50	.12	.00	1.00
Dictator Game Allotment	Mean	Median	SD	Minimum	Maximum
\$10	.38	.50	.21	.00	1.00
\$50	.36	.50	.19	.00	1.00
\$100	.36	.50	.19	.00	1.00
\$500	.35	.40	.20	.00	1.00
\$5,000	.31	.40	.21	.00	1.00
\$10,000	.31	.40	.21	.00	1.00
Average	.35	.43	.18	.00	1.00

Note: $n \approx 230$.

Results

We begin our results with some descriptive statistics for the key independent variables, our measure of other- and self-regarding preferences which can be found in Table 2. The prediction from a classical rational choice perspective is that offers made in the ultimatum game would be minimal (since any offer is profit to player 2), while offers in the dictator game should be 0 (since player 2 cannot reject any offer made). The validity of social preferences can be seen in the fact that in prior research, “low-ball” offers in the ultimatum game are generally rejected by player 2 (they would have nothing rather than accept what they think is an “unfair” offer; Camerer 2003; Güth et al. 1982; List 2009), and the mean, median, and modal offers in the dictator game are rarely 0.

Figure 1 shows the proportion of offers for each monetary allotment for both ultimatum and dictator games. Our results are consistent with previous findings using these behavioral games (Camerer 2003; Engel 2011). First, the proportion offered in the different ultimatum games (where there is a possibility that an offer will be rejected) is consistently higher than those in

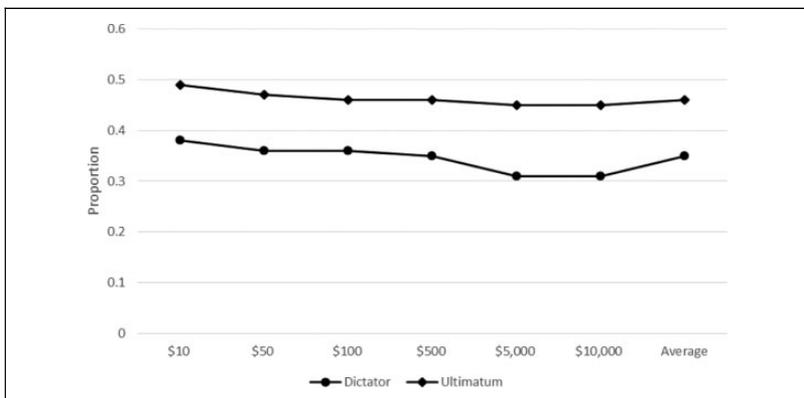


Figure 1. Proportion of allotment offered in dictator and ultimatum games ($n = 230$).

the dictator game. Second, consistent with the economic literature, the average offer decreases the larger the size of the financial allotment. Third, mean offers in the ultimatum game average almost one half of the allotment while this drops to about one third of the total in dictator games. These means are slightly higher than the range typically found in dictator and ultimatum games in the extant literature of 0.30 to 0.40 and 0.40 to 0.50, respectively (Camerer 2003; Engel 2011). Fourth, the median (and modal) average offer is a 50/50 split in the ultimatum game but only a 60/40 split in the dictator game in favor of player 1. Finally, and most importantly for our concerns here, a comparison of the means and standard deviations for both the different dollar amounts and averages indicates that there is a great deal of heterogeneity in the proportion that is offered and therefore substantial heterogeneity in self-regarding and other-regarding preferences.

Table 3 reports the OLS regression coefficients pertaining to the first hypothesis that there is a direct inverse relationship between other-regarding preferences and willingness to drink and drive in response to a hypothetical scenario. In two of these models (models 1 and 2), we measure the positive aspect of other-regarding preferences; the average proportion that player 1 offered across six dictator games that vary in their dollar amount, and a dummy variable that is coded 1 for those who offered greater than or equal to .50 of the money in all of the dictator and ultimatum games. These two indicators reflect a willingness to forgo one's immediate material self-interest in favor of a concern for another's outcome. Although our interest in this article is in other-regarding preferences, we measure the

Table 3. Ordinary Least Squares Regression Coefficients for the Log of Willingness to Drive Drunk in Response to Hypothetical Scenario.

Variables	Model 1	Model 2	Model 3	Model 4
Male	-0.198 (0.198)	-0.161 (0.195)	-0.150 (0.194)	-0.185 (0.203)
Age	0.114** (0.038)	0.109** (0.038)	0.129** (0.039)	0.111** (0.038)
White	-0.410* (0.192)	-0.374 _y (0.193)	-0.348 _y (0.193)	-0.403* (0.193)
GPA	-0.286 (0.247)	-0.277 (0.247)	-0.286 (0.246)	-0.234 (0.247)
Perceived certainty	-0.010** (0.004)	-0.010** (0.004)	-0.009* (0.004)	-0.010** (0.004)
Perceived severity	-0.177** (0.046)	-0.169** (.046)	-0.175** (0.046)	-0.169** (0.046)
Impulsivity	0.103** (0.035)	0.100** (0.035)	0.101** (0.035)	0.105** (0.035)
Sensation seeking	0.047 _y (0.025)	0.044 _y (0.024)	0.046 _y (0.024)	0.044 _y (0.025)
Driven while drunk	0.825** (0.257)	0.824** (0.257)	0.827** (0.255)	0.808** (0.258)
Average proportion offered in dictator game	-1.022* (0.504)	—	—	—
Proportions offered in all games 2: .50	—	-0.390* (0.197)	—	—
Proportion dictator < proportion ultimatum	—	—	0.476* (0.190)	—
Number of dictator games with \$0 offered	—	—	—	0.131 _y (0.074)
Constant ²	0.461 (1.422)	0.287 (1.412)	-0.560 (1.417)	-0.097 (1.410)
Adjusted R ²	.25	.25	.26	.25

Note: $n = 230$. Standard errors are in parentheses.
 $y_p < .10$. * $p < .05$. ** $p < .01$ (two-tailed).

polar end of the self-regarding continuum with two separate indicators of purely self-interested attitudes in models 3 and 4.

Consistent with Hypothesis 1, both indicators of other-regarding preferences are significantly related to a willingness to drink and drive in the expected direction. The higher the average proportion, the respondent offered in the dictator game and those who offered at least half of the dollar amount in all of the dictator and ultimatum games were less likely to express an intention to drink and drive. These relationships hold even when controlling for known correlates of intentions to offend such as age, race, academic success, the perceived certainty and severity of punishment, measures of impulsivity and sensation seeking, and a measure of whether the respondent had ever driven while drunk. Recall that in the ultimatum game respondents should make minimal offers since there is no risk of any offer being rejected. Higher offers, therefore, reflect a greater concern for the outcomes of others and not just one's self. When we turned to our two measures that reflect selfishness, on average offering less in the dictator than in the ultimatum game and the number of dictator games where \$0 was offered, we observed that acting in a strictly self-interested way is positively related to a willingness to drive while drunk, although the number of dictator games where \$0 was offered was only marginally significant. In all four models, the signs of the significant controls are as expected and regression diagnostics revealed no violations to the assumptions of OLS regression.

The second hypothesis stated that opportunistic variables, like the certainty and severity of punishment, would not be related to an intention to offend among those who are other regarding but would be for the more self-regarding (Fehr and Fischbacher 2002). The results testing this hypothesis are reported in Table 4. In these models, we report results separately for two groups of respondents split based upon the average proportion offered in the dictator games: those who offered at least .50 of the allotted money (those with high other-regarding preferences) and those who offered less than a 50/50 split (those who are more self-regarding).⁴ Among those who are more self-regarding, the perceived certainty and severity of punishment both have inverse and significant effects on the respondent's expressed intention to drink and drive. Among those with high other-regarding preferences, however, only perceived severity was statistically significant with perceived certainty not being significantly related to intentions to drink and drive. A coefficient difference test (Paternoster et al. 1998) indicated that the difference between the pair of certainty coefficients was statistically significant ($p < .05$). This result supports a differential effect for deterrence/

Table 4. Ordinary Least Squares Regression Coefficients for the Log of Willingness to Drive Drunk in Response to Hypothetical Scenario by Levels of Other-Regarding Preferences.

Variables	Other-regarding Preferences	
	Low	High
Male	0.186 (0.243)	-0.690* (0.322)
Age	0.091y (0.049)	0.084 (0.062)
White	-0.684** (0.192)	0.007 (0.291)
GPA	0.036 (0.356)	-0.651y (0.338)
Perceived certainty	-0.018** (0.005)	-0.001 (0.006)
Perceived severity	-0.164** (0.056)	-0.159* (0.079)
Impulsivity	0.156** (0.044)	0.032 (0.056)
Sensation seeking	-0.001 (0.033)	0.073* (0.036)
Driven while drunk	0.827** (0.306)	0.922 (0.447)
Constant	0.249 (1.835)	1.231 (2.126)
Adjusted R ²	.30	.22
n	148	82

Note: Standard errors are in parentheses.
 yp < .10. *p < .05. **p < .01 (two-tailed).

opportunistic variables. Another not hypothesized finding was that among those who are more self-regarding the relationship between impulsivity and willingness to offend was positive and significant but was insignificant among the more other regarding. Although this coefficient difference did not meet a traditional level of significance ($p < .10$), it does suggest that those who are more self-interested are more easily influenced not only by the anticipated material consequences of rule breaking but also by immediate temptations.

Conclusions

An RCT in criminology has for the most part followed the neoclassical economics position that human agents are motivated by their own material self-interest. This notion that people are motivated by their own personal concerns can historically be traced to Adam Smith’s *The Wealth of Nations* and was largely introduced into and developed within criminology by Becker (1968) and Cornish and Clarke (1986). What has not been given much attention by criminologists (with the exception of Agnew 2014) is the possibility that agents’ preferences are heterogeneous with respect to one’s

self-interest or self-regarding preferences and that rationality need not imply interest only in one's own narrow materialism. Smith's ([1759] 2009) other classic discussion of human economic motivation, *The Theory of Moral Sentiments*, speaks directly to the issue of a heterogeneity of preferences by arguing that people are concerned with the outcomes that others receive in addition to their own that they have other-regarding preferences too. This notion of the heterogeneity of preferences pertaining to self-interest is a more complex and nuanced understanding of human motivation than that expressed by most versions of RCT in criminology, although it has recently been embraced by many behavioral economists.

We have tested two specific hypotheses derived from the concept of other-regarding preferences. The first was that since concern for others would seem to require a kind of emotional attachment or connection to others reminiscent of social control theory, and that crime is frequently an expression of pure self-interest, that there would be an inverse relationship between other-regarding feelings and rule breaking. Second, drawing on Fehr and Fischbacher's (2002) suggestion that the more self-interested are also likely to be more receptive to opportunistic factors, we hypothesized that those with weak other-regarding preferences would be more strongly affected by the material contingencies of crime (the certainty and severity of punishment) than those who are more strongly other regarding.

Using responses from dictator and ultimatum games as well as those from a hypothetical scenario involving drinking and driving, we tested these hypotheses with a sample of undergraduate university students. Our findings are consistent with both hypotheses. Net of other well-known correlates of offending, intentions to drink and drive were inversely and significantly related to other-regarding preferences as indicated by financial offers in the economic games. The higher the proportion of the financial output that respondents extended to another, the less likely they were to say that they would drive while drunk in response to a hypothetical scenario. In

contrast, a measure of self-interested attitude was as expected, positively and significantly related to a willingness to drink and drive. In addition, when we stratified our sample into those with high versus low other-regarding preferences, we found that "opportunistic factors" like the perceived certainty and severity of punishment were related to an intention to drink and drive among those who were self-regarding but only perceived severity of sanctions influenced those who were other-regarding.

While the dictator and ultimatum games are most often employed in the literature as a means of detecting other-regarding preferences, critics may argue that larger offers in these games may actually be the result of

"impure" more self-serving motives rather than a genuine concern toward increasing the welfare of others (e.g., Andreoni 1990; Dana, Weber, and Kuang 2007). For instance, expectations of indirect reciprocity may influence decision-making such that an individual chooses to make an increased offer in the present based on a future-oriented expectation that their "generous" offer will provide them with benefits at a later time. These perceptions could be spiritual with the assumption that current behavior will later be rewarded on earth (e.g., karma) or in the afterlife or more broadly consistent with a perception that "what comes around goes around." Additionally, larger offers have been suggested to be the result of an individual intending to increase their own positive affect and generate a "warm glow" (Andreoni 1990; Crumpler and Grossman 2008) or to decrease personal negative affect such as feelings of guilt (Battigalli and Dufwenberg 2007) or discomfort (Cialdini et al. 1987). While it is admittedly very difficult to distinguish between "pure" and impure other-regarding preferences, we believe the findings presented in this study are robust for three reasons. First, impulsivity was included within our models which may control for the influence of "future-orientated" expectations of indirect reciprocity. Second, the dictator and ultimatum games within this study were implemented using a survey methodology in which survey responses were anonymous, and the second player was also anonymous. While this methodology varies somewhat from previous experimental research, a strength of this strategy is that it is more likely that respondents were answering the questionnaire in a "cool" state rather in a "hot" affective state. As such, our respondents may be less influenced by emotions such as a warm glow or negative feelings of guilt or discomfort. Finally, the anonymous nature of the study was beneficial because it likely decreased the influence of social desirability bias or respondents seeking to meet experimenter demands (Eckel and Grossman 1996).

We think the results here provide the opportunity for an important and needed extension of the rational choice perspective in the criminology. An RCT in criminological discourse has stood for the proposition that self-interest motivates crime because it is often the easiest way to secure what one wants. We argue here that rationality need not imply narrow self-interest but is entirely consistent with a heterogeneity of preferences such as other-regarding preferences. Coming from a university student sample, our findings need to be replicated with other samples varying in conventionality and the types of offenses examined. Measuring intentions to drink and drive among sober respondents is also a valid limitation of our methodology; however, this limitation applies to both individuals with low and

high other-regarding preferences and does not undermine comparisons between the two groups. Further, while our hypothesis regarding self- versus other-regarding preferences and differential deterrence was supported, we also found evidence that other individual-level factors may be moderated by these preferences such as one's preference for immediate versus delayed gratification. Additional work should be directed at uncovering other factors that may be moderated by preferences for self and others. For example, following on our findings on differential deterrence for the certainty and severity of formal sanctions, it would be interesting to see whether those who are other-regarding are more affected by social sanctions/censure than the more self-regarding. Although we do not have the data to test this moderating effect, it seems reasonable to think that those who care about the outcomes to others might also find social sanctions to be more costly. A better understanding of the heterogeneity in preferences may help shed some light in explaining what kinds of sanctions deter and when.

In spite of the limitations of our article, however, we hope that the field of criminology continues to make good on its promise of being a multi-disciplinary field. While economic ideas have permeated criminology for a while, we criminologists have sometimes not fully appreciated the disagreements that exist in these other disciplines and their implications for our own. We, therefore, join Agnew's (2014) call for more theorizing and research into the role of social concerns in crime and more specifically for more sophisticated understanding of RCT.

Authors' Note of Dedication

After receiving a revise & resubmit for this manuscript, the field of criminology lost a great scholar, friend, and colleague in Ray Paternoster. We, Chae and Theodore, completed the requisite revisions on this manuscript to ensure one of Ray's final works made it to publication. Despite our completing the revisions for this effort, we did not want to deviate from the original authorship order with Ray as first author as this final piece still carries his voice, idea, and goal for a future direction in the development of rational choice theory. We know that many were touched by Ray as students, colleagues, and peers in the discipline, and that we are all deeply saddened by his passing. We hope that our efforts at revising this manuscript to publication honor his memory and the tremendous guidance he has offered each of us as a mentor, teacher, and friend.

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Notes

1. Our analytic sample was decreased to 230 students due to missing information, as 26 students did not answer the perceived certainty and severity items, 3 students did not answer the sensation-seeking items, 6 students did not answer the previously driven while drunk item, and 5 students provided inappropriate (answers greater than the available stake) responses in the dictator and ultimatum games.
2. Respondents answered both ultimatum and dictator game questions, and the ordering of the two games was randomized across questionnaires.
3. We also analyzed the individual dollar values separately and substantive findings were unchanged.
4. Results using the other measure of other-regarding preferences were the same as those reported in Table 4, and the substantive conclusion about the opportunism of the self-interested was confirmed when we used the two self-regarding items to stratify the sample.

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