

ABSTRACT

MEASURING SOCIAL VALUE ORIENTATION: EQUALITY VERSUS COLLECTIVE OUTCOME MAXIMIZATION

by Christopher R. Chartier

Social value orientation (SVO) is an individual difference in how one prefers to allocate outcomes between oneself and others, and is commonly used to predict cooperative behavior. Situations in which one must decide between maximizing collective outcomes or equality in outcomes are frequent in social dilemmas. The triple dominance measure of SVO cannot distinguish between these motivations and labels individuals who possess them as prosocials. A self-report measure of preferences between these two outcome goals was developed and tested in an asymmetric give-some dilemma. Results indicate that the newly developed collective vs. equality scale is a reliable way to distinguish between different types of prosocials and predict their behavior in an asymmetric dilemma. Prosocials were also found to be more cooperative when interacting with ingroup members, suggesting that in certain situations they can be made more prosocial. Implications for our understanding of the SVO construct and its measurement are discussed.

MEASURING SOCIAL VALUE ORIENTATION: EQUALITY VERSUS COLLECTIVE
OUTCOME MAXIMIZATION

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MEASURING SOCIAL VALUE ORIENTATION: EQUALITY VERSUS COLLECTIVE OUTCOME MAXIMIZATION

People are faced with decisions whose outcomes will affect both themselves and others every day. These others could be close friends, colleagues, acquaintances, complete strangers, or society as a whole. At times, the decision that benefits the individual will also benefit others. Frequently though, acting in one's self interest has a detrimental effect on others. The decision to drive to work instead of relying on public transportation or walking is quicker and more comfortable for the individual, but it consumes a limited resource (fuel) and adds to an unfortunately plentiful one (air pollution). Therefore, the individual is better off driving, but if all acted in this way, society as a whole would be much worse off. Such situations are typically referred to as social dilemmas. A social dilemma can be defined as a situation where at least two people must choose between maximizing self interest and maximizing collective interest (Komorita & Parks, 1994). They are encountered frequently, whether we formally recognize them as such or not, in domains as varied as commercial fishing and energy consumption (Allen & McGlade, 1987; Stern & Gardner 1981).

Social Values

Social values are an individual's preference for a certain distribution of outcomes for themselves and others in social dilemma situations. Classic conceptualizations of social value orientation (SVO) outline many possible orientations, but most individuals fall into three convenient categories: (a) someone with an individualistic orientation is said to act solely in pursuit of self gain, (b) someone with a prosocial orientation attempts to maximize collective gain, and (c) someone with a competitive orientation attempts to maximize the relative difference between his/her gains over others (Messick & McClintock, 1968). Other social values such as sadomasochism or aggression are also identified, but seem to occur so rarely, that they are seldom discussed in the literature. Notice that two of these main three orientations, individualists and prosocials, focus on absolute outcomes. That is, the absolute amount gained or lost for either an individual or the collective. The remaining orientation, competitors, focuses on a relative advantage in outcomes for the individual over others. That is, individuals with a competitive orientation care little for how much they receive, so long as it is more than others.

Differences in the level of cooperation in experimental games across SVOs have consistently been found. Prosocials tend to cooperate more than individualists who in turn cooperate more than competitors in Prisoner's Dilemma and related games, as well as Resource Dilemmas (Liebrand, 1984; Van Lange & Liebrand 1989). Differences in SVO also tend to coincide with individual differences in the way one views cooperative vs. uncooperative behaviors. Individuals categorized as competitors or individualists (often combined and referred to as proselves) tend to view cooperation decisions in terms of efficiency or "might", while prosocials view these decisions from a moral standpoint (Liebrand, 1984). There are also differences in what individuals of certain SVOs see as an "intelligent" move or decision in social dilemmas (Van Lange & Liebrand, 1991). Prosocials tend to view cooperation as the more intelligent decision, and those who don't cooperate as unintelligent. The reverse is true of proselves, who view defection as intelligent, and cooperation as a strategic misstep. The importance of social values is not limited to experimental settings involving the exchange of coins or points. Social value orientation is also predictive of some interesting "real world" behaviors such as charitable donations and sacrificing in close interpersonal relationships (Van Lange et al., 1997, Van Lange et al. 2007).

Measuring SVO

Currently, the most popular method of assessing an individual's SVO is the triple dominance measure of social values (Van Lange et al., 1997). Participants are asked to choose between three-options on a series of decomposed games. An example of such a decomposed game would be the choice between Option A: 500 points for the self and 100 points for another party, Option B: 500 point for the self and 500 points for the other party, and Option C: 550 points for the self and 300 points for the other party. The participant imagines that someone else is also completing this measure and that the decision each makes will affect the other. They are then categorized into one of the three categories above if they consistently select options in line with a particular SVO. Here competitors, prosocials, and individualists would select Option A, B, and C respectively. A participant who does not answer at least two thirds of the decomposed games in a consistent manner is considered unclassifiable and removed from further analyses.

This measure is very easy to administer and has become the most prevalent technique for assessing social value orientation.

The reliability of decomposed game measures of SVO has been tested in several ways. Liebrand and Van Run (1985) had participants take a 24 item Decomposed Game measure. The internal reliability of these choices was .93, showing high consistency with this technique. Other researchers had participants take two triple dominance measures of SVO with six months in between. The index of ordinal association between these two times was .74 (Van Lange & Semin-Goossins, 1998). SVO has also been thought to be associated with other individual difference measures such as trust and authoritarianism. It has been found to be only moderately correlated with measures of these constructs though, adding support to the validity of the current measure for assessing SVO (Parks, 1994).

Despite the evidence that the triple dominance measure of SVO is stable and reliable, there is some puzzling evidence that is not so supportive. A study by Parks (1994) failed to predict cooperation levels in either Public Good games or Resource Dilemmas using the technique. Additionally, Parks included several other measures of SVO and none of them correlated significantly with the triple dominance technique, calling into question its validity. There is also the problem of participant attrition due to unclassifiability. These omitted participants can account for up to 35% of all participants in some studies (Au & Kwong, 2004).

Absolute versus Relative Prosocials

The prosocial orientation in particular has garnered considerable interest for several reasons. These individuals generally comprise the largest group categorized in studies using the Triple Dominance measure of SVO, with a median of 46% of all participants (Au & Kwong, 2004). Additionally, their behavior is one which researchers and the general public alike hope to better understand because it is typically cooperative as discussed above. Perhaps understanding their motivations and preferences can help us find ways to encourage prosocial behavior that could have benefits for groups and communities. Recent research has begun to question the simplicity of the three-category conceptualization of SVO especially as pertaining to prosocials. Van Lange (1999) has proposed an “integrative model” of SVO, which posits that prosocials are not motivated to maximize joint gains alone, but also equality in outcomes. However, using the

Triple Dominance technique it is impossible to distinguish motives to maximize joint gain and motives to attain equality because the same choice (Choice B above) achieves these two different goals. Thus, the group of participants which are typically categorized as prosocials may very well be made up of individuals who attempt to maximize joint outcomes and other individuals who attempt to maximize equality in outcomes. An “integrative” prosocial may exist, but the current measurement technique simply does not allow for valid testing of the concept.

There is evidence which suggests that attempting to maximize joint outcomes and attempting maximize equality in outcomes are in fact separate constructs, and not inextricably linked, though they could frequently coincide. First, a study by Knight & Dubro (1984), which used a regression and clustering approach to measuring SVO, did not find a cluster of individuals preferring a combination of both joint and equality maximization. Participants were presented with every possible own-other combination made up within the range of 0 to 6 cents (e.g. 2 cents for you and 4 cents for the other). All 49 possible combinations were then rated on desirability scales. For each participant, a multiple regression equation was generated predicting these desirability ratings from the number of cents for own gain, the number of cents for other’s gain, and the difference between the two (inequality in outcomes). This approach did find distinct clusters of equality maximizing individuals and joint maximizing individuals as well as other mixed orientations such as individualism plus superiority. It was not the case that the technique was incapable of detecting the integrative model prosocial, it simply didn’t.

Similarly, Eek & Garling (2006) found that the prosocials in their study (as measured using triple dominance DGs) actually preferred equality in outcomes over joint outcomes when given the choice. There is another piece of evidence that supports the notion that these two maximizations are separable constructs. Preference for equality is not limited to prosocials. Individualists have also shown some consideration for equality in experimental games (Van Den Bergh et al., 2006).

The Current Work

So, as discussed above, the triple dominance measure makes no distinction between equality maximization and collective maximization, a distinct set of individuals who attempt to maximize the two in unison has not been found using regression and clustering methods,

prosocials actually seem to prefer equality to joint outcomes, and equality considerations are not limited to prosocials. It seems clear that a new measure which both distinguishes between preferences for equality maximization and collective outcome maximization would provide a more accurate and detailed account of the prosocial orientation. To that end, the current project is an attempt to create such a measure. What follows is a description of the construction of this scale using self-report Likert scale items to assess each of these dimensions of SVO, as well as empirical data supporting its predictive validity.

Study 1

In order to test whether traditional prosocials did in fact prefer equality to joint maximization, new decomposed game items pitting these two motivations against each other were developed. These items were similar to the current DGs except they had an additional option. Twelve self report, Likert scale items were also developed, two of which were adapted from the equity scale used by Abele and Diehl (2008). These items were designed to measure preference for equality.

Method

Participants

Participants were 40 economics students participating in a coordination study in exchange for pay as well as 10 psychology students participating in a sequential decision making study for credit.

Procedure

Participants took the triple dominance measure of SVO, as well as the 6 extra decomposed game items that had 4 options (see Appendix A). They then took the 12 new measure items to be tested (Appendix B), followed by the social dominance orientation and communal orientation scales.

Results and Discussion

Extra Decomposed Games

As predicted, participants who were classified as prosocials using the 9-item measure preferred the equality maximizing options over the joint maximizing ones. Twenty of the participants were classified as prosocials, and they averaged 4.95 out of 6 equality maximizing choices and only .65 joint maximizing choices. Additionally, prosocial choices on the initial DGs were significantly correlated with only equality maximizing choices on the subsequent DGs, $r=.872$, $p<.001$.

Item Analysis

The initial equality preference scale had twelve items with an initial Cronbach's $\alpha = .768$. Two items were removed for having very low or negative correlations with the scale total ($-.258$ and $.063$ respectively). Four items were also removed for correlating very highly with a theoretically independent measure of absolute motivations. The resulting 6 item scale (Appendix C) had a Cronbach's $\alpha = .707$. These results showed strong internal reliability for the relative scale. The new scale correlated only moderately with SDO and CO as anticipated ($-.38$ and $.29$ respectively). Scores on this scale were then compared to choices on the 9 decomposed games. As expected, scores on this equality preference scale were significantly positively correlated with prosocial choices, and significantly negatively correlated with both individualistic and competitive choices (Table 1).

Study 2

The purpose of study 2 was to further test the reliability of the equality preference scale as well as test items for a new scale which directly measured preferences between equality and collective outcome maximization. Furthermore, participants engaged in a basic dictator game to test the hypothesis that prosocials generally preferred equality over collective outcome maximization. In order to place the goals of equality or collective outcome maximization at

odds, we introduced coin-worth asymmetry such that the coins were worth more to either the dictator or the recipient.

Method

Participants

Participants were 322 Miami University Introduction to Psychology Students. They participated in mass survey in partial fulfillment of a course requirement.

Materials and Procedure

Participants once again took the 9-item decomposed game measure of social value orientation. They also took 6 extra decomposed games which were once again designed to place preferences for equality and the collective outcome at odds. The choices were slightly modified from study 1 to make the collective maximizing choices potentially more attractive (Appendix D). Participants also took a series of Likert scale items which included the equality preference scale and the new collective vs. equality items being tested (Appendix E). These new items were written with the goal of directly pitting preferences for equality maximization and collective outcome maximization against each other to force a choice between the two. One of these items was taken from the social dominance orientation (SDO) scale, which was designed to measure one's preference for inequality among social groups, although the item in question appears equally applicable to inequality among individuals (Pratto, Sidanius, Stallworth & Malle, 1994). Participants were also asked to allocate coins between themselves and another person on an imaginary dictator game. There were 100 coins to be distributed and the participant could allocate them however they saw fit between themselves and this other person. Half of the participants were asked to imagine that the coins were worth 5 cents to themselves, but 10 cents to this other person (disadvantaged position). The other half of participants were told that the coins were worth 10 cents to themselves, but only 5 cents to this other person (advantaged position). This asymmetry in the value of the coins created a conflict between equalizing each person's outcomes and maximizing the total joint gain. All materials were given in random order and mixed within other survey studies involved in mass testing from other researchers.

Results and Discussion

Global Dictator Game Analysis

The results of the dictator game strongly supported the notion that prosocials tend to prefer equality in outcomes. Participants were classified as either prosocial or proself based on their responses to the nine item decomposed game measure. Combining individualists and competitors into one category is a common practice, and was done here since there should be no difference in behavior between the two in this task. 130 (47%) of the participants were classified as prosocial and 102 (37%) were classified as proself, with 43 (16%) of the participants being unclassifiable due to inconsistent responding.

An ANOVA on coins kept for oneself revealed a main effect of social value orientation, $F=51.22$, $p < .01$. Prosocials kept significantly fewer coins ($M=50.50$) than proselfs ($M=69.62$). There was also a main effect of condition, $F=33.53$, $p < .01$. Participants for whom the coins were worth more than the other person kept fewer coins ($M=52.32$) than those for whom the coins were worth less than the other person ($M=67.79$). These effects were qualified by a significant two way interaction between condition and social value orientation, $F=5.136$, $p < .05$. Although prosocials kept fewer coins for themselves than proselfs did across both conditions, the difference was much larger in the advantaged condition (see Figure 1). This suggests that the prosocials were motivated very strongly to achieve equal outcomes for themselves and the other player, as opposed to being motivated primarily by the attempt to maximize collective outcomes.

Extra Decomposed Games

Once again prosocials showed a strong preference for the equality maximizing options over the collective maximizing ones. Of the 130 prosocials analyzed, 91 (70%) consistently (4 out of 6) chose the equality maximizing option on the extra decomposed games. Only 21 prosocials (16%) chose at least 4 of the collective maximizing options, while 18 (14%) were unclassified due to inconsistent responding. This further division of prosocials did however yield interesting patterns of behavior in the dictator game. Among prosocials there was a main effect of condition, such that participants in the disadvantageous condition kept significantly

more coins for themselves ($M=56.022$) than those in the advantageous condition ($M=42.24$), $F=10.368$, $p < .01$. This effect was moderated by a significant interaction between condition and classification based on the extra decomposed games, $F=7.590$, $p < .01$. When coins were worth more to the participant, those classified as collective maximizers kept more for themselves ($M=45.63$) than equalizers (38.85). However when coins were worth less to the participant, collective maximizers kept fewer coins for themselves ($M=47.62$) than equalizers ($M=64.43$).

Collective vs. Equality Item Analysis

A principal component factor analysis with varimax rotation was conducted. A scree plot suggested two dominant factors, which accounted for 31.67% of the variance. Items loading high on these factors seemed to tap into preferences for collective maximization over equality maximization or vice versa. Two items were removed from the subsequent scale for not loading heavily on either of the two dominant factors. The resulting 9 items were tested for internal reliability. Four additional items were removed for having very low or negative correlations with the scale total. This process resulted in a 5 item scale (Table 2) with a modest level of internal consistency, Cronbach's $\alpha = .619$. Participants were then classified as either collective maximizers or equalizers by virtue of a median split of the scores on this scale. This categorization revealed neither a main effect on coins kept in the dictator game, or the predicted interaction with condition in the dictator game ($p's > .5$).

One possible explanation for the lack of an interaction between coin worth asymmetry and our collective versus equality median split is that the collective entity in this study was too vague and weak. Perhaps prosocials who enjoy maximizing collective outcomes only prefer to do so when the collective entity is of social importance. In the dictator game used here, the other was simply a stranger with no association to the participant. This may also explain the tiny amount of participants choosing to maximize collective outcomes in the decomposed games. Perhaps the small number of participants who did consistently make collective maximizing choices on the decomposed games saw the other person as closer or more important to them. De Cremer & van Dijk (2002) have shown that the collective interest can be made more valuable to individualists by making identification with the group salient, but did not observe this effect among prosocials. They used a step level public good game in their study, and the prosocials

were donating at a level which would reach the provision point regardless of which group identity condition they were in. It seems likely that making the group identification salient to them did not have an impact due to a ceiling effect. Such a manipulation should theoretically also extend to prosocials when more variability in their responses is allowed for.

Study 3

The purpose of study 3 was to explore the potential for differential behavior in a social dilemma scenario between equalizers and collective maximizers. Furthermore, we tested whether manipulating group membership could cause prosocials to value collective outcomes more, much like De Cremer and Van Dijk (2002) showed with individualists. In order to test if a level of social importance must be present to trigger the motive of collective outcome maximization, a minimal-group paradigm was used to create the most basic of in-groups for half of the participants. It was hypothesized that collective maximizers will give more coins when they are in the disadvantageous position, while equalizers will give more coins when they are in the advantageous position. Furthermore, we hypothesized that this effect would be stronger for collective maximizers interacting with an ingroup member.

Method

Participants

Participants were 228 undergraduate students at Miami University. They participated in exchange for partial fulfillment of a course requirement as well as payment based on their decisions and the decisions of other participants. They were assigned to a 2 (ingroup or control partner) x 2 (advantageous or disadvantageous position) x 2 (collective maximizer or equalizer) between subjects factorial design. Participants were randomly assigned to the first two factors, while the third factor was assessed by the SVO measure described below.

Procedure

All Participants completed the triple dominance measure of SVO together with surveys from other researchers as a part of the department's mass testing sessions. Students who were categorized as prosocials (121) during mass testing were invited to the lab for the experimental session. Of these 121 potential participants, 83 came to the lab and participated in the full study.

Participants were welcomed to the lab by a research assistant and placed at individual computer workstations. These workstations were within cubicles, and participants were unable to see other participants during the session. They first completed a series of computer-based questionnaires. The collective vs. equality maximization measure was taken first. Next, participants completed 40 personality questions that were used as part of the minimal-group cover story. Responses on these items were not be analyzed.

At this point, all of the participants were given predetermined feedback that they had been classified as a "green" person by virtue of their responses to the personality questionnaires. All participants were given the same classification, and asked to wear a small green wristband for the remainder of the study. Half of the participants were also told that they had been paired with another participant in the session, and that they were also a green personality type. The control participants were simply told that they had been paired with another participant.

Participants then read a detailed set of instructions describing the dilemma scenario which they engaged in with their counterpart. They played a one round variation of the "give-some" dilemma with asymmetry in coin value. Each participant was given an endowment of 30 coins to either keep for him or herself or donate to the other participant. Coins were worth 10 cents to the advantaged participant, but only 5 cents to the disadvantaged participant. The particular coin worth asymmetry of this game dictates that each coin donated by the disadvantaged participant adds to the collective outcome, but decreases the equality in outcomes between the two participants. Conversely, every coin donated by the advantaged participant takes away from the collective outcome but increases the level of equality between the two participants. To ensure that participants understood the differing impacts of their donation options, they were shown a series of outcomes based on several possible donation amounts for themselves and the other participant (Appendix F). Participants were told that they would be playing one round of this game and that their outcomes would depend both on their decision as well as the decision made by the other participant.

Participants were then informed of the outcome of the game, thanked, debriefed fully, and paid according to their outcomes in cash.

Results

Collective vs. Equality Scale

The collective vs. equality scale once again showed moderate internal consistency, Cronbach's $\alpha = .617$. A median split on participants' total scores on the collective vs. equality scale was conducted to categorize participants as either collective maximizers or outcome equalizers.

Giving

A 2 (ingroup or control partner) x 2 (advantageous or disadvantageous position) x 2 (collective maximizer or equalizer) between subjects ANOVA on coins given revealed main effects of partner's group membership, $F(1,67) = 4.845, p = .031$, and SVO, $F(1,67) = 6.372, p = .014$. Participants who believed they were playing with an ingroup member gave more coins to their partner ($M = 16.07, SD = 9.28$) than control participants ($M = 12.93, SD = 7.41$). Equalizers gave more coins to their partner ($M = 16.63, SD = 8.50$) than collective maximizers ($M = 12.00, SD = 8.24$). More importantly, the predicted interaction between SVO categorization and position was significant, $F(3,67) = 4.190, p = .045$. To explore the interaction, several linear contrasts were performed. These results revealed that collective maximizers gave significantly more coins when they were in the disadvantageous position than the advantageous position, $t(67) = 2.17, p = .033$. There was no effect of position for equalizers. Additionally, collective maximizers in the ingroup condition gave significantly more coins than those in the control condition, $t(67) = 2.13, p = .037$. There was no effect of partner's group membership for equalizers. Mean coins given for all conditions can be seen in figure 2.

Frequency Analyses

The vast majority of participants (97.5%) chose one of five apparently salient amounts of coins to give to their partner (0, 10, 15, 20, or 30). Due to this, the data were also analyzed as response frequencies. These analyses revealed a similar pattern to the ANOVA results. Responses were coded as 0 if 0-5 coins were given, 1 if 6-10 coins were given, 2 if 11-19 coins were given, 3 if 20-24 coins were given and 4 if 25-30 coins were given.

An overall chi-square for position and SVO on coins given was significant, $\chi^2(12, N = 75) = 32.46, p < .01$, suggesting differences in the pattern of frequencies shown in Table 3 across conditions. Separate chi-square analyses within each SVO category show that for both collective maximizers, $\chi^2(4, N = 35) = 10.75, p < .05$, and equalizers, $\chi^2(4, N = 40) = 13.76, p < .01$, there are differences in the pattern of frequencies across positions. Examination of Table 3 suggests that this is because equalizers gave more coins when in the advantageous position while collective maximizers gave more coins when in the disadvantageous position.

Discussion

The pattern of results supported the hypothesis that collective maximizers will give more when doing so increases the collective outcome, such as when coins have more value for others than for oneself. There was however no support for the hypothesis that equalizers will give more when coins have more value for themselves than for others. When analyzed as response frequencies, the data support both primary hypotheses; that collective maximizers will give more when coins are worth more to others, while equalizers will give more when coins are worth more to themselves. Furthermore, these results suggest that increasing a feeling of social identity can increase cooperation among prosocials who value collective outcomes.

General Discussion

The primary purpose of this research was to introduce a distinction between prosocials who prefer to maximize absolute joint outcomes and prosocials who prefer to minimize relative differences in outcomes. Consistent with this proposed theoretical distinction, those prosocials who were identified as collective maximizers, using a newly developed scale, behaved more cooperatively when doing so increased collective outcomes, and more selfishly when

cooperation would decrease collective outcomes. Equalizers on the other hand, were seemingly unaffected by our coin value manipulation, and consistently chose cooperation levels very near an even split in game coins, but not final outcomes.

Van Lange (1999) proposed an integrative model of social value orientation in which the prosocial orientation is conceptualized as one that concurrently seeks to maximize collective outcomes and minimize differences in outcomes. He used a variation of the ring measure of SVO (Liebrand & McClintock, 1988) which asked participants to make 24 choices between possible own-other outcomes. These choices were then used to calculate the weight each participant assigned to their own outcomes, the other's outcomes, joint outcomes, and differences in outcomes. In support of the integrative model, he found that prosocials do assign more weight to both equality in outcomes and joint outcomes than proselves.

The present results are not inconsistent with these findings, but suggest an alternative explanation. While Van Lange proposes that higher weighting of equality in outcomes and joint outcomes occur together at the level of the individual, the present work presents the possibility that this pattern is the result of different individual prosocials attempting to maximize joint outcomes *or* equality in outcomes. This possibility is supported by the differential behavior of these two types of prosocials across our two positions. Collective maximizers are apparently willing to forego equality in outcomes to maximize absolute joint gains.

It is important to note that the present research used an interdependent decision making scenario in which maximizing collective outcomes and maximizing equality in outcomes required different decisions. Although situations where this incompatibility between these two goals are present in many social dilemmas modeled by games such as public good games or resource dilemma games, the implications have been largely ignored. The continuous public good game provides an instructive example. Suppose three players have been endowed with \$10 each by the experimenter. They each must decide how much of this endowment to keep in their personal account or contribute to the public account. Every dollar placed in the personal account is kept by that player. Every dollar contributed to the public account is doubled by experimenter, and the account is divided equally among the three players. If two of the players contribute all of their endowment, the third player can maximize both the collective outcome and equality in outcomes between the three players by also contributing their entire endowment to the public account. Here, the two goals are compatible. If however, two players contribute nothing to the

public account, and instead place their endowments in their personal accounts, the third player must choose between these two goals. Contributing their full endowment to the public account is still the decision which maximizes collective outcomes, but doing so would cause very unequal final outcomes. Contributing nothing to the public account would equalize outcomes, but would result in a suboptimal collective outcome. Here we can see that pursuing the different ends of maximizing collective outcomes or equality in outcomes cannot always be achieved through the same means. The presence of such situations makes the proposed theoretical distinction among prosocials between collective maximizers and equalizers, along with the accompanying measure, an important one.

A possible explanation for the lack of a position effect among equalizers involves expectations about the behavior of the interaction partner. Achieving a maximal collective outcome involves no prediction about the behavior of your partner. If you are in the disadvantageous position, every coin donated increases the final collective outcome, regardless of your partner's decision. Achieving an equal final outcome, on the other hand, is impacted by what one believes the other player is going to do. For example, a participant who wants to maximize equality in outcomes and is placed in the disadvantageous position may be inclined to simply give 10 coins and keep 20 (equalizing the outcomes based on their decision). If however, they expect their partner to give them all of their coins, they would in turn need to give more than 10 to counteract this. This may have caused uncertainty for those attempting to equalize final outcomes based not only on their decision, but the decision of their partner. This uncertainty may explain why the equalizers in this study consistently gave at a level that was not significantly different than an even split of their endowment coins. Experimentally manipulating the expectations that participants have about the likely decision of their partner may be one way to partially eliminate this confound.

The lack of a position effect among equalizers may also be the result of all scale items being framed in terms of collective outcomes. Agreeing with each of the five items of the scale is an endorsement of collective outcomes over equality. Endorsing the equalizing of outcomes was only possible through disagreement with the items as they are currently written. We are constructing additional items for which agreement with the item expresses an endorsement of equalizing outcomes. This might allow for more complete and accurate measurement of preferences between these two goals from both perspectives. Future work on this measure may

also benefit from a slightly different approach. The current items were written with the explicit goal of forcing a choice between equalizing and collective maximizing, much like the choice faced when allocating resources between individuals for whom their value is asymmetric. A set of scales that independently measures these two constructs (preferences for equalizing and collective maximizing), as opposed to the current forced choice method, could be developed. If this scale was predictive of behavior in situations where these two goals stood at odds, that would be even stronger evidence that prosocials can and should be further distinguished into these two proposed types.

A secondary purpose of this research was to explore the impact of group identification on cooperation levels among prosocials. Individuals typically behave more cooperatively toward others that they share a group membership with (e.g. Tajfel, Billig, Bundy, & Flament, 1971). In the social dilemma literature, previous studies have shown that highlighting common group identity increases cooperation among proselves, but have failed to demonstrate any positive impact of identification on prosocials' cooperation (De Cremer & Van Vugt, 1999; De Cremer & Van Dijk, 2002). In their studies, participants played a one round public good game with group members that they believed had either the same academic major as them or a different academic major. They found that prosocials playing with others who shared their academic major did not contribute more to the public good than those playing with others of different majors. The present results suggest that prosocials, who are very cooperative to begin with, can be made even more cooperative in an interdependent context when a common group identity is made salient. Furthermore, although the group identification by social value orientation interaction was not significant in our study, the impact of group identification appears to be stronger among collective maximizers than equalizers, suggesting that the effect is stronger for those who place value on absolute collective outcomes.

The present research also has important implications for the “overassimilation” effect commonly observed among prosocials (Kelley & Stahelski, 1970). When confronted with a non-cooperative interaction partner, prosocials tend to react by behaving even less cooperatively than proselves, hence the term *overassimilation*. This effect has been explained in terms of a reaction to fairness violations. Since equalizers seem particularly concerned with fairness in outcomes, it is likely that such overassimilation would be very common among them. Conversely, since collective maximizers seem to pursue absolute joint gain over fairness, one could reasonably

expect them to show no such pattern of over-assimilation. Similarly, in a social dilemma that allows for the costly sanctioning of defectors, it is likely that sanctions would be utilized to a higher degree by equalizers than collective maximizers. In both of these examples, punitive behavior (defection or sanctions) can equalize outcomes across group members, but lead to collectively suboptimal results.

The present research raises important questions about the motivations underlying the behavior of prosocials in mixed motive situations. This first attempt at classifying prosocials as collective maximizers or equalizers has yielded interesting differences in cooperation across two decision making positions. This distinction should help clarify our theoretical understanding of social value orientation as well as allow for more accurate predictions of cooperation in both experimental games and applied settings.

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Table 1

*Correlations Between Equality Scale and Triple
Dominance Choices*

Prosocial	.424**
Individualistic	-.358**
Competitive	-.161*

** $p < .01$

* $p < .05$

Table 2

Collective vs. Equality Scale

- If inequality in a group leads to greater total group benefits, it is acceptable.
 - Tax money should be used in a way that creates the most total improvement for society, instead of being used on those who are the worst off.
 - The success of a team should be measured strictly by their results, and not how equally the effects of those results are spread across team members.
 - A group or society should attempt to increase the total income of its members instead of attempting to increase the income of those who have the least.
 - People shouldn't donate to charity with high operating costs, because only a fraction of their donations goes directly to those in need.
-

Table 3

Frequencies of Levels of Coins Given Across SVO and Position

Level	Collective Maximizer		Equalizer	
	Advantageous	Disadvantageous	Advantageous	Disadvantageous
Zero	6	1	3	1
One	6	9	1	8
Two	1	4	1	5
Three	4	1	11	3
Four	0	3	3	4

Figure Captions

Figure 1. Coins kept across SVO and position.

Figure 2. Coins given by collective maximizers and equalizers across position and partner's group membership.

Figure 1.

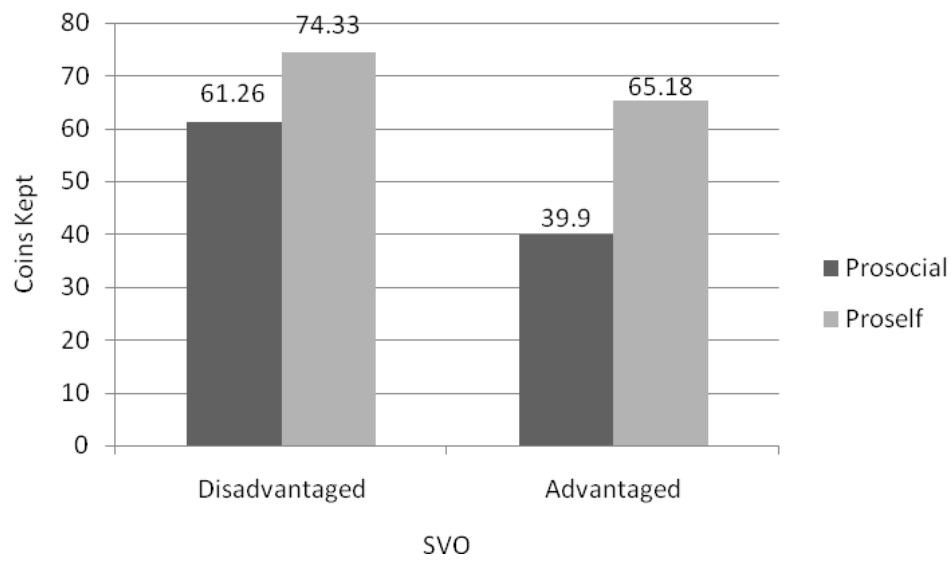
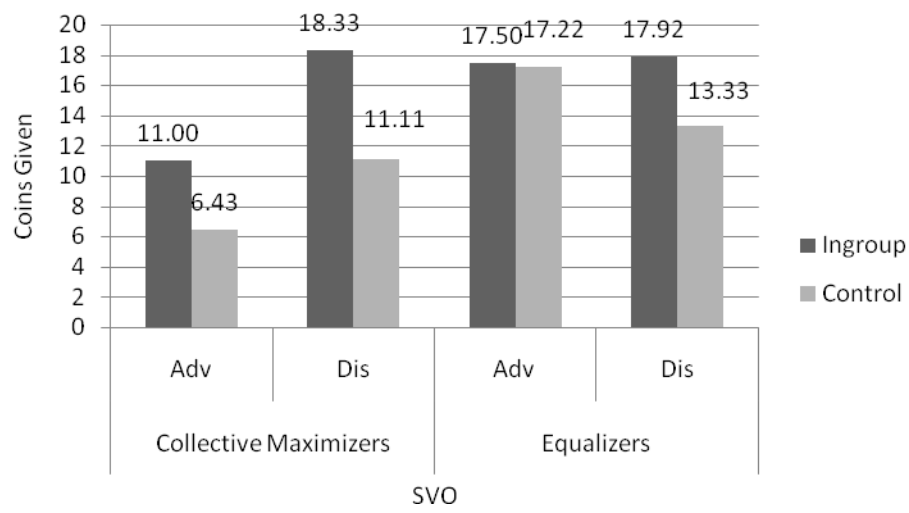


Figure 2.



Appendix A

For each of the six choice situations, circle A, B, C, or D depending on which column you prefer most:

1.		A	B	C	D
	You get	480	540	480	500
	Other gets	80	280	480	470
2.		A	B	C	D
	You get	560	500	500	490
	Other gets	300	500	100	520
3.		A	B	C	D
	You get	520	520	580	550
	Other gets	520	120	320	500
4.		A	B	C	D
	You get	500	560	490	470
	Other gets	100	300	490	520
5.		A	B	C	D
	You get	560	500	490	540
	Other gets	300	500	90	470
6.		A	B	C	D
	You get	500	500	490	470
	Other gets	500	100	300	540

Appendix B

Equality Scale

For each of the statements below, please use the following scale to indicate how much you agree or disagree with it.

I disagree strongly : 1 : 2 : 3 : 4 : 5 : 6 : 7 : I agree strongly

- ☐ I enjoy it when everyone gets the same amount.
- ☐ It upsets me when I am given less than others.
- ☐ My main concern when interacting with another person is fairness.
- ☐ I value equality between others and myself.
- ☐ When interacting with another person, I would rather “win” than have us both do well.
- ☐ I enjoy getting more than others.
- ☐ It is important for all members of a group to put in an equal amount of work. (Abele & Diehl, 2008)
- ☐ When working with others, I attempt to achieve an equal result for all of us.
- ☐ I value obtaining better outcomes than others.
- ☐ It is important for all members of a group to get equal outcomes. (Abele & Diehl, 2008)
- ☐ It upsets me when others get less than I do.
- ☐ Inequality is simply a fact of life. (Pratto, Sidanius, Stallworth & Malle, 1994)

Appendix C

Final Equality Scale

- ___ I enjoy it when everyone gets the same amount.
- ___ It is important for all members of a group to put in an equal amount of work. (Abele & Diehl, 2008)
- ___ When working with others, I attempt to achieve an equal result for all of us.
- ___ It is important for all members of a group to get equal outcomes. (Abele & Diehl, 2008)
- ___ It upsets me when others get less than I do.
- ___ Inequality is simply a fact of life.

Appendix D

1.		A	B	C	D
	You get	480	540	480	510
	Other gets	80	280	480	480
2.		A	B	C	D
	You get	560	500	500	500
	Other gets	300	500	530	100
3.		A	B	C	D
	You get	520	550	580	520
	Other gets	520	520	320	120
4.		A	B	C	D
	You get	500	560	490	490
	Other gets	100	300	490	520
5.		A	B	C	D
	You get	560	500	490	530
	Other gets	300	500	90	500
6.		A	B	C	D
	You get	500	500	490	500
	Other gets	530	100	300	500

Appendix E

Test Items

- ___ If inequality in a group leads to greater total group benefits, it is acceptable.
- ___ Traffic lights should be programmed to make everyone wait the same amount of time, instead of making traffic as a whole as efficient as possible.
- ___ Public services should be distributed to those who would benefit the most from them, instead of being distributed equally among everyone.
- ___ Tax money should be used in a way that creates the most total improvement for society, instead of being used on those who are the worst off.
- ___ The success of a team should be measured strictly by their results, and not how equally the effects of those results are spread across team members.
- ___ Inequality is simply a fact of life. (Pratto, Sidanius, Stallworth & Malle, 1994)
- ___ If someone is working alone on a project which you will benefit from, you should help with the work, even if the two of you together can't complete the project in half the time.
- ___ A group or society should attempt to increase the total income of its members instead of attempting to increase the income of those who have the least.
- ___ My main concern when interacting with another person is fairness.
- ___ A group should strive to reduce the gap between those who have the most and those who have the least, even if it causes the group to have less overall.
- ___ I would sacrifice personal gain for collective gain in a group.
- ___ Unequal outcomes for different members of a group or team are never acceptable.
- ___ When I work with others, total group gain is more important to me than how equal everyone's gains are.
- ___ If someone has the opportunity to benefit a group they are a member of by sacrificing their own outcomes, they should.
- ___ People shouldn't donate to charity with high operating costs, because only a fraction of their donations goes directly to those in need.

Appendix F

Outcome Examples

Advantaged Position:

If you give 30 coins, and they give 30 coins...
Your final outcome will be \$3.00 and their final outcome will be \$1.50. (Total \$4.50)

If you give 0 coins, and they give 0 coins...
Your final outcome will be \$3.00 and their final outcome will be \$1.50. (Total \$4.50)

If you give 30 coins, and they give 0 coins...
Your final outcome will be \$0.00 and their final outcome will be \$3.00. (Total \$3.00)

If you give 0 coins, and they give 30 coins...
Your final outcome will be \$6.00 and their final outcome will be \$0.00. (Total \$6.00)

If you give 20 coins, and they give 10 coins...
Your final outcome will be \$2.00 and their final outcome will be \$2.00. (Total \$4.00)

Disadvantaged Position:

If you give 30 coins, and they give 30 coins...
Your final outcome will be \$1.50 and their final outcome will be \$3.00. (Total \$4.50)

If you give 0 coins, and they give 0 coins...
Your final outcome will be \$1.50 and their final outcome will be \$3.00. (Total \$4.50)

If you give 30 coins, and they give 0 coins...
Your final outcome will be \$0.00 and their final outcome will be \$6.00. (Total \$6.00)

If you give 0 coins, and they give 30 coins...
Your final outcome will be \$3.00 and their final outcome will be \$0.00. (Total \$3.00)

If you give 10 coins, and they give 20 coins...
Your final outcome will be \$2.00 and their final outcome will be \$2.00. (Total \$4.00)