The endogenous nature of the measurement of social preferences

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Abstract

We present evidence against the standard assumptions that social preferences are stable and can be measured in a reliable, nonintrusive manner. We find evidence that measures of social preferences can affect subsequent behavior. Researchers often measure social preferences by posing dictator type allocation decisions. The Social Value Orientation (SVO) is a particular sequence of dictator decisions. We vary the order in which the SVO and a larger stakes dictator game are presented. We also vary the form of the dictator game. In one study, we employ the standard dictator game, and in the other, we employ a nonstandard dictator game. With the standard dictator game, we find that prosocial subjects act even more prosocially when the SVO is administered first, whereas selfish subjects are unaffected by the order. With the nonstandard dictator game, we find evidence across all subjects that those who first receive the SVO are more generous in the dictator game but we do not find the effect among only the generous subjects. Across both dictator game forms, we find evidence that the subjects who are first given the SVO were more generous than subjects who are given the SVO last. We also find that this effect is stronger among the subjects with a perfectly consistent SVO measure. Although we cannot determine whether the order affects preferences or the measure of preferences, our results are incompatible with the assumptions that social preferences are stable and can be measured in a reliable, nonintrusive manner.

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Keywords: experimental economics, altruism, dictator game, social value orientation, order effects

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1 Introduction

It is commonly assumed that subjects have stable preferences over outcomes. It is also commonly assumed that standard techniques to measure these preferences are reliable and can be performed in a nonintrusive manner. If these two assumptions hold then the order in which we perform measurement of the preferences should not affect the subsequent observations. However, we present evidence which challenges these assumptions. In particular, we find evidence that measures of social preferences can affect subsequent behavior.

It is significant if a systematic violation of these assumptions is found. Measures of preferences are of interest primarily because they are helpful in making predictions regarding behavior. However, if the outcome of a measurement can affect future outcomes, either because preferences are not stable or because the measure is not reliable, then the value of the measure is diminished.

In order to investigate whether the order of the measurement can affect the outcome of the measures, we offer an extremely simple experimental setup: we offer subjects two standard measures but vary the order of their presentation. One might be tempted investigate these order issues with a measure of social preferences and play in a strategic game (for instance, the prisoner's dilemma). However, if the experimenter observed that the relationship between the measure and behavior in the game is affected by the order in which the items are given, this difference is not exclusively attributable to the order of the measures. This is because behavior in a strategic game is not exclusively a function of preferences but also, for instance, expectations regarding the behavior of others. Therefore, rather than directing subjects to play a strategic game, we offer two similar, commonly-used measures of social preferences, and vary the order in which they are presented to the subjects. By doing this, we are confident that the effects which we find are not due to the more complicated features involved in the play of a strategic game.

It has been known for some time that many subjects do not simply maximize their own material payoffs.[1] Specifically, it is often observed that some subjects will sacrifice their own

[1] For an early example, see Deutsch (1958).

material payoffs so that other subjects will receive a better material outcome. Researchers often attempt to infer the nature of these social preferences by posing a series of allocation decisions, often referred to as dictator games.[2] These decisions entail a choice of an allocation of hypothetical or material outcomes distributed between the subject and another subject. One measurement technique is to simply pose a dictator game to a subject. Another measurement technique, which involves a specific sequence of dictator games, is the Social Value Orientation (SVO).

In our experiment, we vary the order of the SVO and a standard, lager stakes dictator game. While we find that SVO outcomes are significantly related to outcomes in the dictator game, we also find that the mappings between these outcomes are related to the order in which they are given. Specifically, we find that the subjects, for whom the SVO indicates prosocial preferences, act even more prosocially in the larger stakes dictator game when the SVO is administered first. By contrast, we find that the subjects for whom SVO indicates selfish preferences are unaffected by the order. We also find that subjects with a perfectly consistent SVO measure are more generous in the dictator game when they are first given the SVO measure.

To better understand these results we run an identical experiment, with the exception that the dictator game exhibits a relative price of each allocation of 1-to-3, rather than the standard 1-to-1. In other words, each \$0.50 kept by the subject reduces the recipient's payoffs by \$1.50. In this case, we find no significant difference between the prosocials who complete the SVO before the dictator game and the prosocials who complete the SVO after the dictator game. However, across all subjects we find that those who first complete the SVO are more generous in the dictator game than subjects who complete the SVO last. Further, we find that this effect is stronger when we restrict attention to those with a perfectly consistent SVO measure.

Given the results of our experiment, we are unable to distinguish between the explanation that the measurement affects the social preferences of the subject or that the measure affects

[2]For more on dictator games, see Forsythe et al. (1994), Hoffman et al. (1994), Eckel and Grossman (1996), Ruffle (1998), and Bolton et al. (1998).

the subsequent performance of another measure. Although we cannot distinguish between these two explanations, we can conclude that, given the assumptions commonly applied to experiments, we should not observe the behavior found in this experiment. The results of our experiment suggest that standard techniques of measuring social preferences can influence subsequent behavior. Further, as we have uncovered a systematic relationship between the treatment, the action of the subjects, and the measure, we therefore describe our results as *endogenous* rather than unstable.

1.1 Social Value Orientation as a Measure of Social Preferences

We use SVO because it is relatively easy to administer and interpret. The specific technique which we use, adapted from Van Lange et al. (1997), consists of 9 items with three possible choices involving material payoffs accruing to the subject and another subject.[3] Each of the nine items has an *individualistic* response, a *prosocial* response and a *competitive* response. The individualistic response is the one in which the material payoffs accruing to oneself are the largest. In other words, selecting the individualistic choice suggests that the subject neither positively nor negatively values the material payoffs accruing to the other subject. The prosocial response is the one in which the sum of the material payoffs accruing to both the subject and the other subject is the largest. In other words, selecting the prosocial response suggests that the subject positively values the material payoffs accruing to the other subject. The competitive response is the one in which the difference between the material payoffs accruing to the subject and the other subject is the largest. In other words, selecting the competitive choice suggests that the subject negatively values the material payoffs accruing to the other subject.

Further, there is much written on the stability of SVO. For instance, Bogaert et al. (2008) suggest that over the 40 years since its introduction by Messick and McClintock (1968), SVO has been widely regarded as providing a stable measure of a personality trait. However, recent work has suggested instances where SVO can be affected by the setting and is thereby a less than perfectly stable measure. Iedema and Poppe (1994) show that the measurement of SVO

[3] See the appendix for a complete description of the SVO items which we use.

can be affected by self-presentation effects. Smeesters et al. (2003) show that priming certain types of behavior can lead to a different mapping from SVO to behavior.[4] While SVO is considered relatively stable, to our knowledge there is no work suggesting that outcomes of SVO can affect subsequent outcomes.

It is obviously problematic that the order of the measurement of preferences might affect the relationship between the measure and behavior related to the measure. A measure is primarily useful to the extent that it can form a basis for making predictions about behavior.[5] When behavior and the measure of preferences are functions not exclusively of preferences then the usefulness of the measure is somewhat degraded.

SVO also appears in the economics literature.[6] However each of these papers uses the ring measure (Griesinger and Livingston, 1973), which is slightly different than the technique which we employ. The ring measure consists of 24 pair-wise items, rather than 9 items with 3 responses.[7] However, similar to the technique which we employ, the ultimate objective is to classify subjects on the basis of their social preferences. Relatively little is known about the relationship between the ring measure and the measure which we employ (Bogaert et al., 2008). However, we opt for the latter as it requires fewer responses and, in our opinion, is more transparent. As a result, we conjecture that the effects which we find would only be strengthened by the use of the ring measure.

Finally, measuring social preferences via dictator games, like SVO, has the advantage that it only considers a situation where strategic issues are absent. Although all decisions would be made in the absence of the feedback of the actions of other dictators, it still remains possible that the subject would anticipate some implicit reciprocal arrangement. Therefore, similar to Carpenter (2005), we employ a triadic design whereby each dictator decides an allocation involving self and another dictator. This other dictator does not decide on an allocation

[4] Also see Au and Kwong (2004), and Hertel and Fiedler (1994, 1998).

[5] SVO has been used to study behavior in games (Parks, 1994; Kramer et al., 1986; Pruyn and Riezehos, 2001), the decision to use public transportation (Van Vugt et al., 1996), proenvironmental behavior (Cameron et al., 1998; Joireman et al., 2001), and volunteerism (McClintock and Allison, 1989).

[6] See Buckley et al. (2001), Buckley et al. (2003), Burlando and Guala (2005), Carpenter (2003), Carpenter (2005), Cornelissen et al. (2007), Kanagaretnam et al. (2009), and Offerman et al. (1996).

[7] Sonnemans et al. (2006) uses a visual representation of the ring whereby the subject selects their location on the *ring* with a single click rather than responding to 24 items.

involving the original dictator but rather on a third dictator.

1.2 Other Measures of Social Preferences

Another commonly used social preference measurement technique was developed by Andreoni and Miller (2002). SVO is similar to this technique in that both pose a series of dictator games however there remain important differences. In Andreoni and Miller, choice is much less restricted than in SVO. Each SVO item has only three possible responses, whereas in Andreoni and Miller each item seeks an allocation of tokens ranging from 40 to 100. As a result, Andreoni and Miller yields less coarse data than does SVO. However, the choice in Andreoni and Miller is less transparent than SVO, as the latter explicitly lists the material allocation of each choice. We are not aware of a study which compares the relative merits of SVO and that proposed by Andreoni and Miller.

Charness and Rabin (2002) pose a series of simple games to learn the specific form of social preferences related to relative wealth and reciprocity.[8] The nature of the social preferences might depend on whether other's payoffs are higher than or lower than the subject's own payoffs, therefore Charness and Rabin vary this aspect of their items. By contrast, in SVO the subject decides among choices where monetary payoffs accruing to oneself are never less than that accruing to the other subject. Also, in contrast to the technique employed by Charness and Rabin, SVO is not equipped to evaluate preferences for reciprocity.

1.3 Endogenous Social Preferences and Behavioral Spillovers

Consider the relationship between our paper and research on endogenous social preferences.[9] For instance, Carpenter (2005) and Canegallo et al. (2008) investigate how the strategic environment can affect preferences.[10] Also, Güth et al. (2008) find that subjects who contribute

[8] Chen and Li (2009) perform a similar type of analysis when considering the type, or identity, of the other subject.

[9] Brosig et al. (2007) examine the stability of social preferences across an extended period of time and find evidence of stability only among selfish subjects. Blanco et al. (2011) do not find evidence of stability of social preferences across simple games. In contrast, de Oliveira et al. (2008) find evidence of consistency between altruistic behavior in the field and in the laboratory.

[10] Schotter et al. (1996) examines the effect of framing on judgements of fairness and is therefore related to endogenous preferences. Eckel and Grossman (2005) find that a strong identity manipulation can induce more

more in a public goods game are significantly more trusting in a subsequent investment game. By contrast, we study whether the decision in a commonly used measure of social preferences can affect subsequent behavior.[11]

Borgloh et al. (2010) is perhaps closest to our paper. The authors describe an experiment where subjects are given an unfamiliar measure of altruism and a familiar measure, where the authors vary the order of the measures. The authors find evidence that the order affects the behavior in the unfamiliar task but not in the familiar task. Likewise, we vary the order of tasks and examine the differences in behavior.

In our view, the our results are best described as *endogenous*. First, we find evidence that social preferences are not merely unstable, but that their measure can systematically affect subsequent behavior. Second, we note that in the research mentioned above, the environment affects either preferences or the measure of preferences. We also note that within this literature, a unique word has not emerged as a description of this behavior. However, the word *endogenous* does appear prominently in many descriptions,[12] and we therefore argue that it is the most appropriate description of our observations.

1.4 Framing Effects and Order Effects

The present paper shares some features with the framing effects literature. For instance, it has been found that the there can be systematic differences in the responses to questions based on how the questions are framed (Tversky and Kahneman, 1981).[13] Like the framing literature, the present paper appears to provide evidence against the assumptions that preferences are stable and can be measured in a reliable, nonintrusive manner. However, unlike the framing literature, the effects which we find persist after the initial "frame" and this persistence seems to be based, at least in part, upon the actions of the subject. Specifically, in Study 1 we find

cooperation in public goods game. Also, see Bowles (1998), Poulsen and Poulsen (2006) and Isoni et al. (2011) for more on endogenous preferences.

[11] There also exists a strand of literature which examines the role of the environment on play in games. See Bednar et al. (2012), Bednar and Page (2007), Crawford and Broseta (1998), Savikhina and Sheremeta (2012), and Van Hyuck et al. (1993).

[12] For instance, see Bowles (1998), Carpenter (2005), and Poulsen and Poulsen (2006)

[13] For more on the framing effects, see Frisch (1993). For evidence that framing effects can occur in subjects where one would expect otherwise, see Gächter et al. (2009).

that prosocial subjects are affected by the order and in both studies we find that the consistent subjects are affected by the order.

Our paper also relates to the order effects literature, which finds evidence that the order of the questions can affect the answers. Research has found that the question order can affect the answers to self-reported health questions (Bowling and Windsor, 2008), identification with a racial or ethnic group (Mallett et al., 2011), self-reported interest in politics and religion (McFarland, 1981), satisfaction with public services (Van de Walle and Van Ryzin, 2011), and even preferences for soft drinks (Welch and Swift, 1992).[14] Although these papers suggest that the order is likely to affect the responses in our setting, they are not helpful in suggesting hypotheses regarding the direction of the effect. Specifically, the literature discusses reasons for the order effects which they identify (fatigue, improved familiarity, priming, saliency, etc.) however none would seem to uniquely suggest a direction of the effect. First, the experiment is relatively brief and simple, and we would therefore not expect fatigue or familiarity to affect the results. Second, we are essentially asking the same question twice: measurement of social preferences via SVO and via the dictator game. As a result, based on the reasons provided in the literature, it is not clear to us in which direction we should expect the change. Does the SVO prime subjects to be selfish or generous? Do selfish actions in the SVO prime subjects to be less selfish or more selfish in the dictator game? Does the consistency of the responses in the SVO affect the dictator game choice? Our experiments suggest that the answer to these questions can depend on the form of the dictator game and the nature of the actions selected by the subject.

2 Study 1

2.1 Overview

We seek to test whether outcomes of a measure of social preferences can affect subsequent measurements. Therefore, we direct subjects to complete the SVO and make an allocation in a standard dictator game, however we vary the order in which these are given to the subjects.

[14] See Schwarz (1999) for an overview.

2.2 Procedure

A total of 95 students enrolled in economics classes at a university in the northeastern United States participated. The study was conducted in 5 classes of 16, 20, 39, 12, and 8 subjects.[15] The responses were entered on paper. The subjects were given course credit for attendance and were told that a randomly selected 25% from each session would be paid the amount earned in the experiment. The subjects completed the SVO and decided on an allocation in a standard $10 dictator game. The allocation of the $10 was presented in $0.25 increments. The subjects were directed to indicate which of the 41 dictator game allocations they most preferred. See Appendix 1 for the format of the dictator game.

The subjects were aware of the triadic design as they were told to make allocation decisions involving themselves ("You") and another subject ("Other1"). Another subject ("Other2") was to make allocations involving Other2 and You. Therefore, the amount accruing to each subject was that which was kept in the You-Other1 allocation decisions plus what Other2 did not keep in the Other2-You allocation decisions. As a result, the amount accruing to each subject was a function of their own actions, and the actions of another subject who was not affected by their actions. In both the SVO and dictator game, the status of You, Other1 and Other2 remained fixed. This description of the triadic design was provided verbally by the same male experimenter and in written form given to each subject. The written instructions are provided in Appendix 1.[16]

The SVO entailed the exact nine items from Van Lange et al. (1997). The subjects were presented with three items on each of three pages. In Van Lange et al., the subjects decided on an allocation of points which carry no financial implications. By contrast, in our experiment subjects are offered a conversion rate of points to money, whereby the subject is effectively deciding on an allocation of a small amount of money. Across all 9 SVO items, the subject

[15] We exluded a single subject because the subject did not complete the study.

[16] The triadic design does not require that each session has a number of subjects which is divisible by three. Within each session, every subject was assigned a subject identification number. After the session, we randomly selected a number between 1 and the number of subjects in the session minus one. We then matched each subject with an Other1 by finding the subject with an identification number which is equal to the original identification number plus the random number. The Other2 was determined to be the subject with the next highest identification number as the Other1. In this way, each subject could be assigned a unique Other1 and Other2, without requiring that the data occur in multiples of three.

could keep as little as \$0.94 and as much as \$1.06. Also across the SVO items, the subject could send as little as \$0.19 and send as much as \$0.94. The subjects were not told these amounts, however they could be easily calculated. The SVO items and the conversion from points to money are given in Appendix 1.

Within each of the 5 classes, approximately half of the subjects answered the SVO items then made a choice in the dictator game. We refer to this treatment as SVO First. Approximately half of each class responded to the dictator game then answered the SVO items. We refer to this treatment as SVO Last. Within each session, we randomly assigned subjects into one of these two treatments.

The subjects completed the experiment without feedback. In other words, each subject completed the experiment without knowing what the other subjects selected. Finally, we note that have data on the gender and age of the subjects.

2.3 Results

In this study, the amount kept by the subjects, which is the sum of the amount kept in the SVO and the amount kept in the dictator game, ranged from \$0.94 to \$11.06, with an average of \$7.09.[17] The total amount accruing to the subjects, which is the sum of what was kept by the subject and what was sent by Other2, ranged from \$2.51 to \$21.93, with an average of \$11.69. Female participants accounted for 37% of the subjects. The average age was 21.8 with a standard deviation of 5.56. Also note that we do not find significant differences in the amount kept in the dictator game or in the SVO classification among the five sessions.

Using the procedure of Van Lange et al. (1997), we categorized 31 subjects (33%) as prosocials, 39 subjects (41%) as individualists and 5 subjects (5%) as competitors. There were 20 subjects (21%) who we could not classify as they did not select a minimum of 6 choices of a particular type. Table 1 summarizes the distribution of subjects according to SVO categorization and the treatment.

[17] See Bohnet and Frey (1999), and Cox and Sadiraj (2012) for other papers with dictator game choices in which some subjects exhibit similar levels of generosity.

Table 1: Number of subjects by SVO categorization and treatment

	Prosocial	Individualistic	Competitive	Uncategorized	Total
SVO First	14	24	3	8	49
SVO Last	17	15	2	12	46
Total	31	39	5	20	95

As one would expect, there is a significant relationship between the SVO measure and choice in the dictator game. According to a Wilcoxon test, the prosocial subjects ($M = 4.67$, $SD = 1.63$) kept significantly less than did the proself (individualists and competitors) subjects ($M = 7.28$, $SD = 2.48$), $W(73) = 714.5$, $Z = 5.07$, $p < 0.001$.

An SVO measure equaling 9 indicates perfect consistency in the set of responses and a measure of 6, 7, or 8 indicates a less than perfectly consistent set of responses. See Table 2 for the amount kept in the dictator game by SVO classification and consistency.

Table 2: Average amount kept in dictator game by SVO classification and consistency of measurement

	Prosocial	Individualistic
SVO of 9	4.31	7.95
	(1.69)	(2.12)
SVO of 6, 7, or 8	5.89	6.12
	(0.45)	(2.11)

Note: Standard deviations in parentheses

Among those classified as prosocial, subjects with a measure equal to 9 (24 subjects) kept a significantly smaller share than those with a measure of 6, 7, or 8, $W(29) = 186.5$, $Z = 4.09$, $p < 0.001$. Also, among the subjects classified as individualistic, those with a measure equal to 9 (26 subjects) kept a significantly larger share than those with a measure of 6, 7, or 8, $W(37) = 190.0$, $Z = 2.12$, $p = 0.034$. Therefore, we are reasonably confident in the relationship between choice in the SVO and choice in the dictator game.

We now compare dictator allocations given the treatment. First, the difference between the amount kept in the SVO First treatment ($M = \$6.04$, $SD = 2.89$) and in the SVO Last treatment ($M = \$6.16$, $SD = 2.40$) is not significant, $W(94) = 2167.5$, $Z = 0.30$, $p = 0.76$. However, significant relationships emerge when one looks within SVO classifications. See

Table 3 for a summary of the amounts kept in the dictator game by SVO classification and treatment.

Table 3: Average amount kept in dictator game by SVO classification and treatment

	Prosocial	Individualistic
SVO First	4.14	7.38
	(2.28)	(2.23)
SVO Last	5.10	7.28
	(0.55)	(2.40)

Note: Standard deviations in parentheses

We run regressions with a dependent variable of the amount kept in the dictator game. Since this variable is bounded, we use tobit regressions, with an upper bound of 10 and a lower bound of 0.[18] We also employ the variable Prosocial which indicates the number of prosocial responses in the SVO. This variable can range from 0 to 9. We use the Prosocial variable because there are only a few competitive subjects.[19] When the analysis includes subjects of each SVO classification, the SVO treatment is not significantly related to the amount kept in the dictator game. As a result, we perform the following analysis while restricting attention to a subset of the subjects. In regressions (1) and (2) we restrict attention to the 31 subjects who were classified as prosocial. In regressions (3) and (4) we restrict attention to the subjects with an SVO prosocial measure of 9. Finally, in regressions (5) and (6) we restrict attention to the subjects with an SVO measure equaling 9. Note that this outcome indicates perfect consistency for prosocials, competitors, and individualists. In regressions (5) and (6), the Prosocial variable essentially becomes a dummy variable. See Table 4 for a summary of the analysis.

[18] Note that Borgloh et al. (2010) also use tobits in order to account for the bounded choice data.

[19] The results are similar, although slightly weaker, if instead we employ a dummy variable indicating that the subject was classified as prosocial by the SVO.

Table 4: Results of tobit regressions with amount kept in the dictator game

	(1)	(2)	(3)	(4)	(5)	(6)
SVO First	-1.02^{*}	-0.897^{*}	-1.42^{**}	-1.27^{*}	-1.48^{*}	-1.47^{*}
	(0.565)	(0.523)	(0.715)	(0.690)	(0.869)	(0.835)
Prosocial	-0.575^{**}	-0.525^{**}	–	–	-0.532^{***}	-0.521^{***}
	(0.261)	(0.240)			(0.0981)	(0.0941)
Female	–	1.221^{**}	–	1.44^{**}	–	1.707^{**}
		(0.556)		(0.720)		(0.859)
Age	–	-0.108	–	-0.0935	–	0.0199
		(0.0726)		(0.0910)		(0.0730)
Observations	31	31	24	24	53	53
Log Likelihood	-56.66	-54.00	-45.51	-43.52	-106.04	-103.96

Note: The tobit regressions were performed with an upper bound of 10 and a lower bound of 0. Note that *** indicates significance at $p < 0.01$, ** indicates significance at $p < 0.05$, and * indicates significance at $p < 0.1$.

We first note that the SVO First coefficient is significant at the 0.1 level in regressions (1), (2), (4), (5), (6), and significant at the 0.05 level in regression (3). The estimates in regressions (1)-(4) suggest that the prosocial subjects who are first given the SVO, are more generous in the dictator game. The estimates in regressions (5) and (6) suggest that all subjects with a perfectly consistent measure on the SVO act more generously in the dictator game.

We note that we did not list the analysis which includes the interaction between the SVO First and Prosocial variables because in these specifications the estimate is not significant. We also note interesting results related to gender and generosity. Regressions (2), (4) and (6) suggest that within these subsets, female participants can be less generous than male subjects. When one performs the analysis for all data points, the female coefficient is no longer significant.

3 Study 2

3.1 Overview

Roughly, Study 1 finds that prosocial subjects act even more prosocially in the dictator game when the SVO items are administered first. We also find that subjects who are first given the SVO and have a perfectly consistent measure are more generous in the dictator game

than are subjects who are given the SVO last and have a perfectly consistent measure. Based on the data available from Study 1, it is not clear to us what drives this result. In the dictator game, unlike the SVO, the subject cannot affect the total amount to be allocated. It is possible that the decisions which increase this total amount by the prosocial subjects in the SVO First treatment predisposes them to be more generous in the dictator game when compared to prosocials in the SVO Last treatment. If this was the case, and if the dictator game was designed so that the dictator game also affected the total amount to be allocated then the results in the SVO Last treatment would converge to that of the SVO First treatment. However, it is also possible that with the standard dictator game, being selfish was too *easy* and so the individualists are not affected by the order. If this is the case, and if the dictator game is designed in a manner in which being selfish is more costly then we expect a divergence of the results of the SVO First and Last treatments of the individualists. In Study 2, we hope to shed some light on the relative merit of these two explanations.

Study 2 follows the same procedure as Study 1 with the exception that, rather than using a standard dictator game, we use a dictator game in which the relative allocation *price* is 1-to-3. In other words, the most selfish allocation is \$10 to self and \$0 to other and the most generous allocation is \$0 to self and \$30 to other. This nonstandard dictator game has the advantages that the amount of total amount to be allocated is a matter of choice and being selfish is relatively more costly.

3.2 Procedure

A total of 90 students in economics classes at a university in the northeastern United States participated. Study 2 was conducted in 4 classes of 21, 42, 16, and 11 subjects. The procedures in Study 2 are identical to that in Study 1 with the exception of the form of the dictator game. Rather than the standard dictator game, in which the trade-off between own payoffs and other payoffs is 1-to-1, the dictator game used in Study 2 has a trade-off of 1-to-3. In other words, to increase the amount kept by \$0.50, the subjects must reduce the amount sent to the other subject by \$1.50. The subject's own payoffs were listed in \$0.50 increments and the other

subject's payoffs were listed in $1.50 increments. The subjects were directed to indicate which of the 21 dictator game allocations they most preferred. See Appendix 1 for the format of this dictator game.

3.3 Results

In this study, the amount kept by the subjects ranged from $0.94 to $11.06, with an average of $8.17. The total amount accruing to the subjects ranged from $1.13 to $42.00, with an average of $17.36. Also note that we do not find significant differences in the amount kept in the dictator game or in the SVO classification among the four sessions. Finally, we do not have data on the gender or age of a single subject. As a result, any analysis employing these variables will contain one fewer observation than the analysis without. Female participants accounted for 34% of the subjects. The average age was 22.4 with a standard deviation of 4.86.

Again using the procedure of Van Lange et al. (1997), we categorized 44 subjects (49%) as prosocials, 34 subjects (38%) as individualists and 4 subjects (4%) as competitors. There were 8 subjects (9%) who we could not classify as they did not select a minimum of 6 choices of a particular type. Table 5 summarizes the distribution of subjects according to SVO categorization and the treatment.

Table 5: Number of subjects by SVO categorization and treatment

	Prosocial	Individualistic	Competitive	Uncategorized	Total
SVO First	21	16	2	5	44
SVO Last	23	18	2	3	46
Total	44	34	4	8	90

Similar to Study 1, we find a significant relationship between choice in the SVO and choice in the dictator game. The prosocial subjects ($M = 6.44$, $SD = 2.79$) kept significantly less than did the proself (individualists and competitors) subjects ($M = 8.28$, $SD = 2.33$), $W(80) = 2069.5$, $Z = 4.78$, $p < 0.001$. As in Study 1, we find that the consistency of the SVO is related to the choice in the dictator game. See Table 6 for the amount kept across both treatments by the consistency of the SVO.

Table 6: Average amount kept in dictator game by SVO classification and consistency of measurement

	Prosocial	Individualistic
SVO of 9	5.97	8.38
	(3.11)	(2.37)
SVO of 6, 7, or 8	7.46	7.94
	(1.57)	(2.53)

Note: Standard deviations in parentheses

Among those classified as prosocial, subjects with a measure equal to 9 (30 subjects) kept a smaller share than subjects with a measure of 6, 7, or 8, $W(42) = 386.5$, $Z = 2.08$, $p = 0.038$. However, in contrast to Study 1, among those classified as individualistic, subjects with a measure equal to 9 (17 subjects) did not keep a significantly different amount than subjects with a measure of 6, 7, or 8, $W(32) = 283.5$, $Z = 0.48$, $p = 0.63$.

Finally, we may ask whether the order matters for the dictator game in Study 2. See Table 7 for the amount kept in the dictator game by SVO classification and treatment.

Table 7: Average amount kept in dictator game by SVO classification and treatment

	Prosocial	Individualistic
SVO First	5.98	8.00
	(3.18)	(2.54)
SVO Last	6.87	8.31
	(2.36)	(2.38)

Note: Standard deviations in parentheses

Unlike in Study 1, here we find evidence that the order treatment is related to the amount kept in the dictator game across all subjects. We perform tobit regressions, similar to the analysis summarized in Table 4, across all subjects. Again note that the tobit regressions employed an upper bound of 10 and a lower bound of 0. Regression (1) excludes the demographic data (gender and age) and regression (2) includes these variables. This analysis is summarized in Table 8.

Table 8: Results of tobit regressions with amount kept in the dictator game

	(1)	(2)
SVO First	-1.455^{**}	-1.573^{**}
	(0.736)	(0.731)
Prosocial	-0.369^{***}	-0.384^{***}
	(0.0969)	(0.0964)
Female	–	1.114
		(0.769)
Age	–	0.0223
		(0.0735)
Observations	90	89
Log Likelihood	−198.27	−194.70

Note: The tobit regressions were performed with an upper bound of 10 and a lower bound of 0. Note that *** indicates significance at $p < 0.01$, and ** indicates significance at $p < 0.05$.

We note that the SVO First variable is significant at 0.05 in regressions (1) and (2). This provides evidence that subjects who are first given the SVO measure are more generous in the dictator game than are subjects who are given the SVO measure last. We contrast the results summarized in Table 8 with that in Study 1. In Study 1 we did not find a relationship across all subjects between the order treatment and behavior in the dictator game.

Next we perform an analysis similar to that summarized in Table 4, where we run tobit regressions on subsets of the Study 2 data. Regressions (1) and (2) are restricted to subjects who were classified as prosocial. In regressions (3) and (4) we restrict attention to subjects with an SVO prosocial measure of 9. Finally, regressions (5) and (6) restrict attention to the subjects with an SVO measure of 9. These results are summarized in Table 9.

Table 9: Results of tobit regressions with amount kept in the dictator game

	(1)	(2)	(3)	(4)	(5)	(6)
SVO First	−0.966	−1.177	−1.34	−2.03	−2.07*	−2.92***
	(0.961)	(0.945)	(1.44)	(1.41)	(1.10)	(1.12)
Prosocial	−1.03*	−0.889*	–	–	−0.427***	−0.432***
	(0.532)	(0.523)			(0.128)	(0.123)
Female	–	1.711*	–	2.73*	–	1.741
		(0.988)		(1.49)		(1.192)
Age	–	0.0148	–	0.162	–	0.221
		(0.0795)		(0.178)		(0.149)
Observations	44	43	30	29	49	48
Log Likelihood	−102.32	−98.47	−72.06	−67.30	−106.89	−101.72

Note: The tobit regressions were performed with an upper bound of 10 and a lower bound of 0. Note that *** indicates significance at $p < 0.01$, and * indicates significance at $p < 0.1$.

First, we note that the SVO First coefficient is not significant in regressions (1)-(4). This implies that, unlike the results in Study 1, here we do not find evidence that the order treatment affects behavior in the dictator game among the prosocial subjects. However, as we do in Study 1, we find a relationship among those with a perfectly consistent SVO measure, between the order treatment and generosity in the dictator game. Indeed, this variable is significant at 0.01 in regression (6).

Again, we note that the interaction terms between the SVO First variable and the SVO outcomes are not significant. We also have performed an analysis similar to that in regressions (1)-(4) but with individualistic subjects. One might have expected the SVO First variable to be significant however we do not find a significant relationship.

4 Pooled Data

Here we analyze the pooled data obtained in Studies 1 and 2. While Study 1 and Study 2 were conducted at different times and on different subjects, their procedures are identical with the exception of the format of the dictator game. In order to account for these differences in the dictator game, we employ the fraction of money kept in the dictator game as the dependent variable. In each of the regressions below, we include a dummy variable, Normal Dictator

game which obtains a value of 1 for the dictator game used in Study 1 and 0 otherwise. We also use the interaction between the Normal Dictator variable and the SVO First variable. In regressions (1) and (2) we perform the analysis on all of the subjects in both studies. Regressions (3) and (4) restrict attention to the prosocial subjects in both studies. Finally, in regressions (5) and (6) we restrict attention to subjects with a perfectly consistent SVO measure. This analysis is summarized in Table 10.

Table 10: Results of tobit regressions with fraction kept in the dictator game

	(1)	(2)	(3)	(4)	(5)	(6)
SVO First	-0.101^{**}	-0.106^{**}	-0.0862^{*}	-0.0946^{*}	-0.168^{***}	-0.195^{***}
	(0.0475)	(0.0477)	(0.0502)	(0.0496)	(0.0645)	(0.0649)
Prosocial	-0.0449^{***}	-0.0453^{***}	-0.0739^{***}	-0.0698^{***}	-0.0516^{***}	-0.0519^{***}
	(0.00638)	(0.00640)	(0.0254)	(0.0250)	(0.00739)	(0.00728)
Female	–	0.0472	–	0.104^{**}	–	0.135^{**}
		(0.0494)		(0.0521)		(0.0684)
Age	–	0.00370	–	−0.00205	–	0.00689
		(0.00471)		(0.00485)		(0.00720)
Normal Dictator	0.0216	0.0258	0.0200	0.0237	0.0505	0.0499
	(0.0477)	(0.0478)	(0.0507)	(0.0500)	(0.0643)	(0.0633)
Observations	185	184	75	74	102	101
Log Likelihood	−86.54	−85.77	−7.24	−5.66	−48.30	−45.48

Note: The tobit regressions were performed with an upper bound of 10 and a lower bound of 0. Note that *** indicates significance at $p < 0.01$, ** indicates significance at $p < 0.05$, and * indicates significance at $p < 0.1$.

We note that the SVO First coefficient is significant across subjects in both studies. In particular, the results of regressions (1) and (2) suggest that subjects who first receive the SVO are more generous in the dictator game than are subjects who receive the SVO last. We also note that, when restricting attention to only prosocial subjects, the SVO First variable is significant only at 0.1. Next we note that the SVO First variable is significant at 0.01 in both regressions (5) and (6).

5 Discussion

In Study 1, we found that prosocial subjects in the SVO First treatment kept significantly less in the standard dictator game than prosocials in the SVO Last treatment. We also found that the subjects with a perfectly consistent SVO measure were more generous than subjects with a less than perfectly consistent measure. In Study 2, we found that, across all subjects, those who were given the SVO measure first were more generous in the dictator game. And similar to that found in the analysis of Study 1, we found that subjects with a perfectly consistent SVO measure were affected by the order. However, we did not find evidence that the prosocial subjects were affected by the order. When we pool the data across studies, we find evidence that subjects who were given the SVO measure first, were more generous in the dictator game, and that this effect was stronger among those with a perfectly consistent SVO measure.

There seem to be two effects related to the order of the measures. First, prosocial subjects are differentially affected by the order in Study 1 but not Study 2. This is consistent with the explanation that prosocials who first complete the SVO have their generosity made salient by their decision to increase the total amount to be allocated. As a result, these subjects are more generous in the dictator game than prosocials who have not yet completed the SVO. However, once both the SVO and the dictator game entail the decision to increase the total amount to be allocated, as it does in Study 2, the effect diminishes. The second effect relates to the generosity exhibited by all subjects, particularly the consistent subjects, who first receive the SVO measure. Indeed, the pooled data suggests that, across both dictator game versions, the subjects who were first given the SVO act more generously than those who were given the dictator game last. This is compatible with the explanation that the measurement of SVO can prompt subjects of all social preferences, particularly those with perfectly consistent SVO measures, to be more generous. This effect can become stronger when being selfish is more costly, as it is in Study 2.

Our results could partially be explained by wealth effects, whereby subjects who have completed the SVO were affected the money earned. However, we point out that SVO accounts for a very small amount of money, and it seems rather implausible that a change in wealth

of $0.12 would affect behavior in a $10 dictator game. Further, the wealth effect argument is not consistent with the differential effects related to the measure of consistency of the SVO measure, since this includes prosocials, individualists, and competitors.

At this point it is natural to wonder why the analysis focused on the endogeneity of the behavior in the dictator game and not that in the SVO. There are two reasons for this. First, the dictator game was more highly incentivized than the SVO and we therefore are more interested in the former than the latter. However, we also note that we are not able to identify the analogous SVO behavior. In other words, we were not able to identify evidence that the order of the measures affected behavior in the SVO.

6 Concluding Comments

In this paper, we describe two studies in which we measure social preferences through choice in the Social Value Orientation (SVO) and choice in a dictator game. In Study 1, we vary the order of the SVO and a standard dictator game. We find evidence that subjects with prosocial preferences act more generously in the dictator game when the SVO items are given first. On the other hand, we do not find evidence that subjects with individualistic preferences are affected by the order of the items. However, we do find that subjects with perfectly consistent SVO measures are affected by the order of the measurement.

To better understand these results, Study 2 performs the identical procedure of Study 1 with the exception that a nonstandard dictator game is used. This nonstandard dictator game exhibits a 1-to-3 trade-off between own payoffs and other payoffs, whereas the standard dictator game has a 1-to-1 trade-off. We find that the order affects behavior in the dictator game, and this effect is larger for subjects with a perfectly consistent SVO measure.

Using pooled data from Study 1 and Study 2, we find that subjects who were first given the SVO, regardless of their SVO measure, are more generous than subjects who were given the SVO last. We also find that this effect is particularly strong for subjects with a consistent response in the SVO measure. We note that the results of Study 1, Study 2 and the pooled data, call into question the assumptions that social preferences are stable and that they can

be measured in a reliable and nonintrusive manner. In particular, we find that measures of social preferences can affect subsequent behavior.

It is worth reflecting on the limitations of the present experimental design. For instance, we cannot determine whether the SVO measurement affects the dictator game choices, the dictator game choices affects the SVO measurement or perhaps both. Such questions of endogeneity are notoriously tricky and would require further study. It is also unclear if the order matters in the measurement of preferences via Andreoni-Miller, Charness-Rabin, or Chen-Li techniques. Finally, SVO only measures social preferences when the subject receives a larger share than the other subject. The significance of this detail is not clear. Hopefully, future work will shed light on these issues.

Appendix 1

- We asked the following 9 items (from Van Lange et al., 1997) in order to measure the SVO of the subjects.
- Each of the 9 items has a prosocial answer, a individualistic answer and a competitive answer.
- Each item is stated in terms of points where 100 points corresponded to \$0.02103.

Question 1	A	B	C
You:	480 points	540 points	480 points
Other1:	80 points	280 points	480 points
Question 2	A	B	C
You:	560 points	500 points	500 points
Other1:	300 points	500 points	100 points
Question 3	A	B	C
You:	520 points	520 points	580 points
Other1:	520 points	120 points	320 points
Question 4	A	B	C
You:	500 points	560 points	490 points
Other1:	100 points	300 points	490 points
Question 5	A	B	C
You:	560 points	500 points	490 points
Other1:	300 points	500 points	90 points
Question 6	A	B	C
You:	500 points	500 points	570 points
Other1:	500 points	100 points	300 points
Question 7	A	B	C
You:	510 points	560 points	510 points
Other1:	510 points	300 points	110 points
Question 8	A	B	C
You:	550 points	500 points	500 points
Other1:	300 points	100 points	500 points
Question 9	A	B	C
You:	480 points	490 points	540 points
Other1:	100 points	490 points	300 points

- The individualistic answers are: 1B, 2A, 3C, 4B, 5A, 6C, 7B, 8A, and 9C.
- The prosocial answers are: 1C, 2B, 3A, 4C, 5B, 6A, 7A, 8C, and 9B.
- The competitive answers are: 1A, 2C, 3B, 4A, 5C, 6B, 7C, 8B, and 9A.
- Van Lange et al. (1997) classifies a subject according to the above labels if six or more items are answered according to the above.

Instructions given to each subject:

Instructions:

You are to be anonymously matched with two other people. We refer to the two others as "Other1" and "Other2."

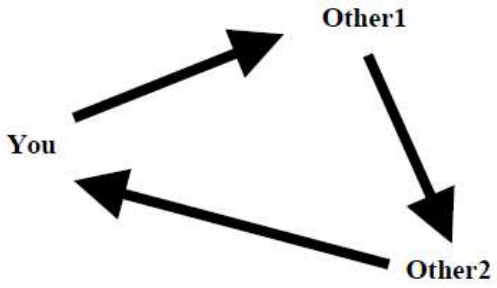
You are to make a series of allocation decisions involving Other1. This means that you are to divide a surplus between yourself and Other1. Whatever you do not keep for yourself goes to Other1.

Other1 is to make a series of allocation decisions involving Other2. This means that whatever Other1 does not keep goes to Other2.

Other2 is to make a series of allocation decisions involving you. This means that whatever Other2 does not keep goes to you.

Therefore the money accruing to you is composed of (i) whatever you do not send to Other1 and (ii) whatever Other2 sends to you.

We depict the relationship by the diagram below:



Note: A randomly selected 25% of the class will actually be paid the amount accruing to them.

Study 1 Dictator Game:

You: $10.00 Other1: $0.00	You: $9.75 Other1: $0.25	You: $9.50 Other1: $0.50	You: $9.25 Other1: $0.75
You: $9.00 Other1: $1.00	You: $8.75 Other1: $1.25	You: $8.50 Other1: $1.50	You: $8.25 Other1: $1.75
You: $8.00 Other1: $2.00	You: $7.75 Other1: $2.25	You: $7.50 Other1: $2.50	You: $7.25 Other1: $2.75
You: $7.00 Other1: $3.00	You: $6.75 Other1: $3.25	You: $6.50 Other1: $3.50	You: $6.25 Other1: $3.75
You: $6.00 Other1: $4.00	You: $5.75 Other1: $4.25	You: $5.50 Other1: $4.50	You: $5.25 Other1: $4.75
You: $5.00 Other1: $5.00	You: $4.75 Other1: $5.25	You: $4.50 Other1: $5.50	You: $4.25 Other1: $5.75
You: $4.00 Other1: $6.00	You: $3.75 Other1: $6.25	You: $3.50 Other1: $6.50	You: $3.25 Other1: $6.75
You: $3.00 Other1: $7.00	You: $2.75 Other1: $7.25	You: $2.50 Other1: $7.50	You: $2.25 Other1: $7.75
You: $2.00 Other1: $8.00	You: $1.75 Other1: $8.25	You: $1.50 Other1: $8.50	You: $1.25 Other1: $8.75
You: $1.00 Other1: $9.00	You: $0.75 Other1: $9.25	You: $0.50 Other1: $9.50	You: $0.25 Other1: $9.75

You: $0 and Other1: $10.00

Study 2 Dictator Game:

You: $10.00 Other1: $0.00	You: $9.50 Other1: $1.50	You: $9.00 Other1: $3.00	You: $8.50 Other1: $4.50
You: $8.00 Other1: $6.00	You: $7.50 Other1: $7.50	You: $7.00 Other1: $9.00	You: $6.50 Other1: $10.50
You: $6.00 Other1: $12.00	You: $5.50 Other1: $13.50	You: $5.00 Other1: $15.00	You: $4.50 Other1: $16.50
You: $4.00 Other1: $18.00	You: $3.50 Other1: $19.50	You: $3.00 Other1: $21.00	You: $2.50 Other1: $22.50
You: $2.00 Other1: $24.00	You: $1.50 Other1: $25.50	You: $1.00 Other1: $27.00	You: $0.50 Other1: $28.50
You: $0.00 Other1: $30.00			

References

Andreoni, J. and Miller, J. (2002) "Giving According to GARP: An Experimental Test of the Consistency of Preferences for Altruism," *Econometrica* 70(2), 737-753.

Au, W. and Kwong, J. (2004) "Measurements and Effects of Social-value Orientation in Social Dilemmas," in R. Suleiman, D. Budescu, I. Fischer and D. Messick (eds.) *Contemporary Psychological Research on Social Dilemmas*, New York, Cambridge University Press, 71-98.

Bednar, J., Chen, Y., Liu, T. X. and Page, S. (2012) "Behavioral Spillovers and Cognitive Load in Multiple Games: An Experimental Study," *Games and Economic Behavior*, 74(1), 12–31.

Bednar, J. and Page, S. (2007) "Can Game(s) Theory Explain Culture? The Emergence of Cultural Behavior within Multiple Games," *Rationality and Society* 19(1), 65-97.

Blanco, M., Engelmann, D. and Normann, H.T. (2011) "A within-subject analysis of other-regarding preferences," *Games and Economic Behavior* 72(2), 321-338.

Bogaert, S., Boone, C. and Declerck, C. (2008) "Social Value Orientation and Cooperation in Social Dilemmas: A Review and Conceptual Model," *British Journal of Social Psychology* 47, 453-480.

Bohnet, I. and Frey, B. (1999) "Social Distance and Other-regarding Behavior in Dictator Games: Comment," *American Economic Review* 89(1), 335-339.

Bolton, G., Katok, E. and Zwick, R. (1998) "Dictator Game Giving: Rules of Fairness Versus Acts of Kindness," *International Journal of Game Theory* 27(2), 269-299.

Borgloh, S., Dannenberg, A. and Aretz, B. (2010) "On the Construction of Social Preferences in Lab Experiments," Working paper, Centre for European Economic Research.

Bowles, S. (1998) "Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions," *Journal of Economic Literature* 36, 75-111.

Bowling, A., and Windsor, J. (2008) "The effects of question order and response-choice on self-rated healthstatus in the English Longitudinal Study of Ageing (ELSA)," *Journal of Epidemiology and Community Health*, 62(1), 81-85.

Brosig, J., Riechmann, T., and Weimann, J. (2007) "Selfish in the end? An investiga-

tion of consistency and stability of individual behavior," Working paper, Otto Von Guericke University Magdeburg.

Buckley, N., Chan, K., Chowhan, J., Mestelman, S. and Shehata, M. (2001) "Value Orientations, Income, and Displacement Effects, and Voluntary Contributions," *Experimental Economics* 4, 183-195.

Buckley, N., Mestelman, S. and Shehata, M. (2003) "Subsidizing Public Inputs," *Journal of Public Economics* 87, 819-846.

Burlando, R. and Guala, F. (2005) "Heterogenous Agents in Public Goods Experiments," *Experimental Economics* 8, 35-54.

Cameron, L., Brown, P. and Chapman, J. (1998) "Social Value Orientations and Decisions to take Proenvironmental Action," *Journal of Applied Social Psychology* 28(8), 675-697.

Canegallo, C., Ortona, G., Ottone, S., Ponzaono, F. and Scacciati, F. (2008) "Competition Versus Cooperation: Some Experimental Evidence," *Journal of Socio-Economics* 37, 18-30.

Carpenter, J. (2003) "Is Fairness Used Instrumentally? Evidence from Sequential Bargaining," *Journal of Economic Psychology* 24, 467-489.

Carpenter, J. (2005) "Endogenous Social Preferences," *Review of Radical Political Economics* 37(1), 63-84.

Charness, G. and Rabin, M. (2002) "Understanding Preferences with Simple Tests," *Quarterly Journal of Economics* 117, 817-869.

Chen, Y. and Li, X.S. (2009) "Group Identity and Social Preferences," *American Economic Review* 99(1), 431-457.

Cornelissen, G., Dewitte, S. and Warlop, L. (2007) "Social Value Orientation as a Moral Intuition: Decision-making in the Dictator Game," Working paper, Universitat Pompeu Fabra and Katholieke Universiteit Leuven.

Cox, J. and Sadiraj, V. (2012) "Direct Tests of Models of Social Preferences and a New Model," *Economic Inquiry*, forthcoming.

Crawford, V. and Broseta, B. (1998) "What Price Coordination? The Efficiency-enhancing Effect of Auctioning the Right to Play," *American Economic Review* 88(1), 198-225.

de Oliveira, A., Croson, R. and Eckel, C. (2008) "Are Preferences Stable Across Domains? An Experimental Investigation of SocialPreferences in the Field," Working paper, University of Texas at Dallas.

Deutsch, M. (1958) "Trust and Suspicion," *Journal of Conflict Resolution* 2(4), 265-279.

Eckel, C. and Grossman, P. (1996) "Altruism in Anonymous Dictator Games," *Games and Economic Behavior* 16(2), 181-191.

Eckel, C. and Grossman, P. (2005) "Managing Diversity by Creating Team Identity," *Journal of Economic Behavior and Organization* 58(3), 371-392.

Forsythe, R., Horowitz, J., Savin, N.E. and Sefton, M. (1994) "Fairness in Simple Bargaining Experiments," *Games and Economic Behavior* 6(3), 347-369.

Frisch, D. (1993) "Reasons for Framing Effects," *Organizational Behavior and Human Decision Processes* 54(3), 399-429.

Gächter, S., Orzen, H., Renner, E. and Starmer, C. (2009) "Are experimental economists prone to framing effects? A natural field experiment," *Journal of Economic Behavior and Organization* 70(3), 443-446.

Griesinger, D. and Livingston, J. (1973) "Toward a Model of Interpersonal Motivation in Experimental Games," *Behavioral Science* 18(3), 173-188.

Güth, W., Levati, M. and Ploner, M. (2008) "Social Identity and Trust: An Experimental Investigation," *Journal of Socio-Economics* 37, 1293-1308.

Hertel, G. and Fiedler, K. (1994) "Affective and Cognitive Influences in a Social Dilemma Game," *European Journal of Social Psychology* 24(1), 131-145.

Hertel, G. and Fiedler, K. (1998) "Fair and Dependent Versus Egoistic and Free: Effects of Semantic and Evaluative Priming on the 'Ring Measure of Social Values,'" *European Journal of Social Psychology* 28(1), 49-70.

Hoffman E., McCabe, K., Shachat K. and Smith V. (1994) "Preferences, Property Rights, and Anonymity in Bargaining Games," *Games and Economic Behavior* 7(3), 346-380.

Iedema, J. and Poppe, M. (1994) "The Effect of Self-presentation on Social Value Orientation," *Journal of Social Psychology* 134(6), 771-782.

Isoni, A., Brooks, P., Loomes, G. and Sugden, R. (2011) "Do markets reveal preferences – or shape them?" Working paper, University of East Anglia.

Joireman, J., Lasane, T., Bennett, J., Richards, D. and Solaimani, S. (2001) "Integrating Social Value Orientation and the Consideration of Future Consequences within the Extended Norm Activation Model of Proenvironmental Behavior," *British Journal of Social Psychology* 40(1), 133-155.

Kanagaretnam, K., Mestelman, S., Nainar, K. and Shehata, M. (2009) "The Impact of Social Value Orientation and Risk Attitudes on Trust and Reciprocity," *Journal of Economic Psychology* 30, 368-380.

Kramer, R., McClintock, C. and Messick, D. (1986) "Social Values and Cooperative Response to a Simulated Resource Conservation Crisis," *Journal of Personality* 54(3), 576-592.

Mallett, Robyn K., Mello, Zena R., Wagner, Dana E., Worrell, Frank, Burrow, Risë Nelson, and Andretta, James R. (2011) "Do I Belong? It Depends on When You Ask," *Cultural Diversity and Ethnic Minority Psychology*, 17(4), 432-436.

McFarland, Sam G. (1981) "Effects of Question Order on Survey Responses," *Public Opinion Quarterly*, 45(2), 208-215.

Messick, D. and McClintock, C. (1968) "Motivational Bases of Choice in Experimental Games," *Journal of Experimental Social Psychology* 4(1), 1-25.

McClintock, C. and Allison, S. (1989) "Social Value Orientation and Helping Behavior," *Journal of Applied Social Psychology* 19(4), 353-362.

Offerman, T., Sonnemans, J. and Schram, A. (1996) "Value Orientations, Expectations and Voluntary Contributions in Public Goods," *Economic Journal* 106, 817-845.

Parks, C. (1994) "The Predictive Ability of Social Values in Resource Dilemmas and Public Goods Games," *Personality and Social Psychology Bulletin* 20, 431-438.

Poulsen, A. and Poulsen, O. (2006) "Endogenous Preferences and Social-dilemma Institutions," *Journal of Institutional and Theoretical Economics* 162, 627-660.

Pruyn, A. and Riezebos, R. (2001) "Effects of the Awareness of Social Dilemmas on Advertising Budget-setting: A Scenario Study," *Journal of Economic Psychology* 22(1), 43-60.

Ruffle, B. (1998) "More is Better, but Fair Is Fair: Tipping on Dictator and Ultimatum Games," *Games and Economic Behavior* 23, 247-265.

Savikhina, A. and Sheremeta, R.M. (2012) "Simultaneous Decision-Making in Competitive and Cooperative Environments," *Economic Inquiry*, forthcoming.

Schotter, A., Weiss, A. and Zapater, I. (1996) "Fairness and Survival in Ultimatum and Dictatorship Games," *Journal of Economic Behavior and Organization* 31(1), 37-56.

Schwarz, Norbert (1999) "Self-Reports: How the Questions Shape the Answers," *American Psychologist*, 54(2), 93-105.

Smeesters, D., Warlop, L., Van Avermaet, E., Corneille, O. and Yzerbyt, V. (2003) "Do Not Prime Hawks with Doves: The Interplay of Construct Activation and Consistency of Social Value Orientation on Cooperative Behavior," *Journal of Personality and Social Psychology* 84(5), 972-987.

Sonnemans, J., Van Dijk, F. and Van Winden, F. (2006) "On the Dynamics of Social Ties Structures in Groups," *Journal of Economic Psychology* 27, 187-204.

Tversky, A. and Kahneman, D. (1981) "The Framing of Decisions and the Psychology of Choice," *Science* 211(4481), 453-458.

Van de Walle, Steven and Van Ryzin, Gregg G. (2011) "The order of questions in a survey on citizen satisfaction with public services: Lessons from a split-ballot experiment," *Public Administration*, 89(4), 1436-1450.

Van Huyck, J., Battalio, R. and Beil, R. (1993) "Asset Markets as an Equilibrium Selection Mechanism: Coordination Failure, Game Form Auctions and Tacit Communication," *Games and Economic Behavior* 5, 485-504.

Van Lange, P., Otten, W., De Bruin, E. and Joireman, J. (1997) "Development of Prosocial, Individualistic, and Competitive Orientations: Theory and Preliminary Evidence," *Journal of Personality and Social Psychology* 73(4), 733-746.

Van Vugt, M., Van Lange, P. and Meertens, R. (1996) "Commuting by Car or Public Transportation? A Social Dilemma Analysis of Travel Mode Judgements," *European Journal of Social Psychology* 26, 373-395.

Welch, Joe L. and Swift, Cathy Owens (1992) "Question Order Effects in Taste Testing of Beverages," *Journal of the Academy of Marketing Science*, 20(3), 265-268.