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# SOCIAL VALUES ORIENTATION SLIDER MEASURE: EVIDENCES OF VALIDITY AND RELIABILITY AMONG ARGENTINE UNDERGRADUATE STUDENTS

## CECILIA REYNA

ANABEL BELAUS

DÉBORA MOLA

UNIVERSIDAD NACIONAL DE CÓRDOBA [NATIONAL UNIVERSITY OF CÓRDOBA] INSTITUTO DE INVESTIGACIONES PSICOLÓGICAS, CONSEJO NACIONAL DE INVESTIGACIONES CIENTÍFICAS Y TÉCNICAS (IIPSI-CONICET) [PSYCHOLOGICAL RESEARCH INSTITUTE, NATIONAL SCIENTIFIC AND TECHNICAL RESEARCH COUNCIL]

## MARÍA VICTORIA ORTIZ

UNIVERSIDAD TORCUATO DI TELLA [TORCUATO DI TELLA UNIVERSITY]

### CRISTIAN ACOSTA

UNIVERSIDAD NACIONAL DE CÓRDOBA [NATIONAL UNIVERSITY OF CÓRDOBA]

In this research we investigate the psychometric properties of the Social Value Orientation Slider Measure (SVO-SM; Murphy, Ackermann, & Handgraaf, 2011) in samples of university students from Córdoba, Argentina. In Study 1 we evaluated reliability (test-retest), convergent (Triple Dominance Orientation Measure), and predictive validity evidence (experimental games), using a paper-pencilversion. In Study 2 we evaluated predictive validity evidence using incentivized computer games. In Study 3 we evaluated predictive validity evidence in relation to the decisions in experimental games implemented through an online platform. The results showed evidence of adequate properties of temporal stability and convergent validity for the SVO-SM. Although the predictive validity evidence in relation to decisions in experimental games proved to be partially consistent, there were variations depending on the game and the form of application. We discussed the results in light of previous research.

Key words: Social Value Orientation Slider Measure (SVO-SM); Validity; Reliability; Experimental games; Social preferences.

Correspondence concerning this article should be addressed to Cecilia Reyna, Department of Psychology, IIPsi-CONICET, National University of Córdoba, Enrique Barros y Enfermera Gordillo, Ciudad Universitaria, 5000 Córdoba, Argentina. Email: ceciliareyna@gmail.com

Cooperation enables the organization of social interactions and works as an element that allows us to live in society not only for the fulfilment of citizens' duties but also for other actions, such as making



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donations or taking care of the environment. One of the psychological constructs that has been studied in relation to cooperation is the Social Values Orientation (SVO), understood as individual differences in the preferences for the distribution of resources between oneself and another person.

One of the measures most used in recent years to measure SVO is the Social Value Orientation Slider Measure (SVO-SM) proposed by Murphy, Ackermann, and Handgraaf (2011). This measure allows to evaluate the SVO in continuous terms and not only as categories (prosocial, individualistic, and competitive), as proposed by other measures such as the Triple-Dominance-Orientation (TDO) Measure (Van Lange, De Bruin, Otten, & Joireman, 1997) and the Ring Measure (Liebrand, 1984), thus making it more sensitive to gather information about people's preferences. In each of the 15 items that make up the SVO-SM the participant must choose among different forms of distribution of units between themselves and another person. Six primary items allow the locating of a person in a continuum that goes from an altruistic orientation to a competitive one, passing through a prosocial and an individualistic orientation. Nine secondary items distinguish prosocials who prefer to maximize joint profits and those who guide their preferences according to inequity aversion.

In the Latin American context, there are few studies on the relationship between SVO and cooperative behavior (see Amaya-Durán, Ballesteros de Valderrama, & López-López, 2014) and, as far as we know, the psychometric properties of instruments to measure it have not been evaluated. On this basis, we evaluated the psychometric properties of the SVO-SM in samples of university students from Córdoba, Argentina. We performed three studies that allowed us to obtain evidence of reliability and different kinds of validity evidence (convergent and predictive). In the following sections we review empirical antecedents and afterwards we present the different studies. Finally, we discuss the results and assess their implications.

#### **TEST-RETEST RELIABILITY**

The SVO has been shown to be a relatively stable construct over time. Murphy et al. (2011) observed that, after one week, 89% (r = .915) of the individuals (students from a European university) were classified in the same category when the SVO-SM was used, while the percentage was 70% (r = .391) when the TDO Measure was used, and 68% (r = .599) when the Ring Measure was used.

#### CONVERGENT VALIDITY EVIDENCE

Murphy et al. (2011) observed that 67% of the participants were placed in the same category with TDO Measure and Ring Measure, while 74% of the participants were equally categorized using TDO Measure and SVO-SM. At the same time, 75% fell into the same category when using SVO-SM and Ring Measure, with a positive correlation between both measures (r = .65), similar to what was observed by Fiedler, Glöckner, Nicklisch, and Dickert (2013; r = .66) in a sample of residents in Germany.

#### PREDICTIVE VALIDITY EVIDENCE

The SVO has shown predictive power over decisions in different experimental games. Below we mention studies that have evaluated the relationship between SVO and decisions in the dictator game (DG), the ultimatum game (UG), the public goods game (PGG), and the common resources game (CRG). Alt-



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hough the matrix of every game is different, these games can be conceived as experimental situations that model social dilemmas (Van Lange, Joireman, Parks, & Van Dijk, 2013).

In research using both classic and modified DG versions, it has been observed that the SVO was related to the decisions in the game. In samples of university students from Israel (Halali, Bereby-Meyer, & Ockenfels, 2013) and Belgium (Haesevoets, Folmer, & Van Hiel, 2015), the prosocial participants made fairer offers than the proself (competitive and individualistic) participants. Smith (2012) also showed that students from USA who completed the TDO Measure before making decisions in the game made more generous monetary divisions than those who completed the measure after the game. This is an effect that was even more pronounced in those with more consistent SVO. Unlike previous studies, Yamagishi et al. (2013) did not find a significant relationship between SVO and decisions in DG in a study with general population from Japan.

The evidence regarding decisions in the UG is even more controversial. On the one hand, in some studies it was observed that the SVO was related to the offers made by Israeli students in the UG (using the TDO Measure, Halali et al., 2013) and was also related to the acceptance or rejection of offers made by American students (using the Ring Measure, Karangolar & Kuhlman, 2013). Specifically, prosocial participants made fairer offers and rejected fewer unfair offers than proselfs. On the other hand, in other studies the SVO did not predict the decisions of the participants in the role of proponents or respondents in the UG (American students, Druga, 2013; Belgian students, Haesevoets et al., 2015).

With respect to the relationship between SVO and decisions in games involving shared goods, such as PGG and CRG, Balliet, Parks and Joireman (2009) showed through a meta-analytical review that the relationship is moderate being higher in the PGG than in the CRG. Similar results were found in later studies conducted with German students (Böhm & Theelen, 2016) and students from a European university (Murphy & Ackerman, 2013), and also with general population from Germany (Utz, Muscanell, & Göritz, 2014). In general, those results showed that prosocials contribute more to the common pool than individualists. The evidence regarding the predictive role of SVO on the CRG is notoriously scarce. Raines (2014), in a study carried out with American students, observed that greater prosociality was related to lower drawdown of the common pool; however, he found no difference in the implementation of punishment according to SVO.

#### STUDY 1

The purpose of this study was to obtain evidence of reliability and of convergent and predictive validity of the SVO-SM. The test-retest reliability, the convergent validity evidence in relation to the TDO Measure, and the predictive evidence with respect to decisions in the UG, the DG, the PGG, and the CRG were evaluated. In the latter case, the role of sex was also considered.

#### Method

*Participants and procedure.* The full sample consisted of 907 students enrolled in the Psychology admission course at the National University of Córdoba, Argentina (year 2013), aged between 17 and 30 years (M = 19.48, SD = 2.64; 24.8% males, 74% females, and 1.2% not informed). The application was made in paper format, with hypothetical monetary gains. The administration was collective and took place



in the classrooms (20 minutes). Participants completed the SVO-SM and one of the experimental games, and some participants also completed the TDO Measure.

#### Measures

Social Value Orientation Slider Measure (SVO-SM; Murphy et al., 2011). Two versions were used to refer to the amount to be distributed: a version with the word "points" ("your decisions will produce points for you and the other person") and another version with the word "money" ("your decisions will produce money for you and the other person"). The instructions were translated from English into Spanish by three people with English language proficiency and expertise in psychological measurement. Doubts about differences in translations were resolved within the research team.

*Triple Dominance Orientation Measure* (TDO; Van Lange et al., 1997). The TDO comprises nine items in the form of decomposed games where the participant has to choose among three distributive options corresponding to the prosocial, individualistic, and competitive categories. This scale had previously been used with a sample of the general population of Córdoba (Argentina), so there was already a translation of the instructions into Spanish.

*Experimental games.* We used the UG version proposed by Martinez, Zeelenberg, and Rijsman (2011). One group, in the role of the proponent, decided how to divide \$101, while another group, in the role of the respondent, decided how much the offer should be in order for them to accept it. We also used the DG (adapted from Hilbig, Zettler, Leist, & Heydasch, 2013), in which participants decided how much money from the \$101 sum they had, they wanted to give to another participant. Other groups of participants resolved the PGG and the CRG (adapted from Galinsky, Gruenfeld, & Magee, 2003). In both cases, the relationship between the game decision situation and an environmental problem was made explicit. In the PGG, the participants had to decide how much money from the \$5 they had they wanted to contribute to a common pool shared with other nine participants, a pool that would be multiplied by two and would be divided into equal parts later. At the CRG, 10 participants shared a pool of \$100 and each had to indicate how much to draw.

#### Data Analysis

Descriptive and correlation analyses were performed using Pearson's correlation coefficient. In order to evaluate the effect of sex, partial correlation analyses were carried out. The strength of the relationships was also considered following the suggestions of Cohen (1988): .10 small, .30 medium, and .50 large. All studies followed the ethical guidelines of the American Psychological Association (APA, 2002). Participation was voluntary and information was confidential.

#### Results

#### Test-Retest Reliability

Two hundred and thirty-six participants completed the SVO-SM "points" version at Time 1, with angular values in the range of -16.26 to 53.88 (M = 25.03, SD = 16.63). Of those participants, 155 com-



pleted the SVO-SM again at Time 2, one week later, with values between -16.26 and 61.35 (M = 24.69, SD = 16.92). The correlation between the scores of the Time 1 and the Time 2 SVO-SM application was positive and large, r(153) = .745, p < .001. When considering the secondary items, there was a greater trend toward inequality aversion, both at Time 1 (n = 109, M = 0.29, SD = 0.16) and Time 2 (n = 67, M = 0.29, SD = 0.18). The correlation between both scores was positive and large, r(65) = .60, p < .001.

Similar results were obtained with the SVO-SM "money" version. At Time 1, 125 students participated, with values from -5.82 to 61.39 (M = 30.12, SD = 12.28). One week later, 62 participants completed the SVO-SM again, with scores ranging from -7.82 to 54.72 (M = 30.78, SD = 11.83). The correlation was positive and medium, r(60) = .351, p = .005, the strength of the relationship was lower than in the SVO-SM "points" version. In the same way, there was a greater tendency towards aversion to inequality at Time 1 (n = 35, M = 0.22, SD = 0.18) and at Time 2 (n = 25, M = 0.24, SD = 0.19). The correlation between these scores was positive and large, r(32) = .64, p < .001.

#### Convergent Validity Evidence: SVO-SM and TDO Measure

At the previously described Time 1, the participants completed the SVO-SM and the TDO Measure in the "points" or "money" versions. In the "points" version, the following percentages were deduced from the SVO-SM: 66% prosocial, 29% individualistic, 4% competitive. At the same time, the following percentages were observed from the TDO Measure: 38% prosocial, 18% individualistic, 9% competitive, and 35% not classifiable. The association between both classifications was positive (Cramer's V = .511, n = 232, p < .001).

Similar results were obtained when using the "money" version. From the SVO-SM, the following percentages were observed: 1% altruistic, 77% prosocial, 22% individualistic. The following percentages were observed with the TDO Measure: 62% prosocial, 15% individualistic, and 24% non-classifiable. The association between both measures was positive (Cramer's V = .358, n = 123, p < .001).

#### Predictive Validity Evidence

Ultimatum game (UG). One hundred and five participants responded to the SVO-SM and also made a decision in the UG in the role of proponents. Participants offered an average of \$48.67 (SD = 13.87, min = 3, max = 100). In turn, the mean SVO was 26.81 (SD = 13.40). The relationship between the SVO and the offers was small and not statistically significant, r(103) = .172, p = .079. Among prosocials, the tendency to inequality aversion or maximization of the joint gain was not related to the offers, r(65) = -.127, p = .304, either. None of these relationships showed significant variations when controlled by the sex of the participants, general: r(102) = .174, p = .077; prosocials: r(64) = -.073, p = .304.

On the other hand, 109 participants answered the SVO-SM and played the UG in the role of respondents. On average, participants indicated that they would accept offers of \$48.60 (SD = 11), and presented SVO values of 31.13 on average (SD = 12.21). The relationship between SVO and decisions as respondents was not statistically significant, r(107) = -129, p = .182. The partial correlation analyses revealed that the relationship did not change when controlling for the sex of the participants, r(105) = -.115, p = .238. Among prosocials, the tendency to inequality aversion or maximization of the joint gain was not related to the responses of the participants in the role of respondents in the UG, r(85) = .191, p = .076. When controlling the effect of sex, we can see that the relationship increases, but does not reach statistical significance, r(84) = .207, p = .056.



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*Dictator game (DG).* Another group of participants (n = 106) completed the SVO-SM and also made a decision in DG. On average, participants offered \$43.71 (SD = 12.73), and presented SVO scores of 29.55 on average (SD = 13.14). The relationship between the variables was positive and small, r(104) = .287, p = .003. This means that when prosociality was higher the participants gave more money. The relationship changed subtly when controlling the effect of sex, r(100) = .194, p = .051. On the other hand, there were no variations in DG decisions among prosocials, r(82) = -.008, p = .942. That relationship did not change when controlling the effect of sex, r(79) = .004, p = .972.

*Public good game (PGG).* Eighty-five participants responded to the SVO-SM and made a decision in the PGG. Only 51 participants (60%) answered correctly the control questions and were considered for the subsequent analyses. These participants showed an SVO average value of 30.87 (SD = 10.69), and contributed with \$4.13 to the common pool on average (SD = .99). The relationship between SVO and decision in the PGG was not statistically significant, r(49) = -.224, p = .114, nor was there a relationship between the decision in the PGG and the preference for inequity aversion between the prosocials, r(40) = -.158, p = .316. In any case the relationship varied according to the sex of the participants, general: r(48) = -.253, p = .076; prosocials: r(39) = -.161, p = .313.

*Common resources game (CRG).* One hundred and five participants responded to the SVO-SM and made a decision in the CRG. Eighty-two participants (78.10%) answered correctly the control questions and were included in the subsequent analyses. Participants presented SVO values of 32.12 on average (SD = 9.61) and withdrew \$12 from the common pool on average (SD = 12.62). The relationship between SVO and decision in the CRG was not significant, r(80) = -.026, p = .817. In contrast, among prosocials, a significant, positive, and small relationship was observed between the spectrum ranging from aversion to inequality to maximization of joint gains and decision in this game, r(70) = .246, p = .037. The prosocials with greater tendency to the maximization of joint profits decided to extract a higher amount of money for themselves from the common pool. The mentioned relations maintained the same tendency and strength when controlling the sex of the participants, general: r(79) = -.028, p = .806; prosocials: r(69) = .25, p = .036.

#### STUDY 2

As part of a larger study (Acosta, Belaus, & Reyna, 2017), the SVO-SM was applied and the predictive validity evidence was evaluated in relation to the decisions in the UG, the PGG and, the CRG implemented through a computer with interaction among the participants and with real economic consequences.

#### Method

*Participants and procedure.* One hundred and eighty Psychology students from the National University of Córdoba, Argentina, from 18 to 30 years of age (M = 21.50, SD = 2.28; 24.44% males, 74.44% females, and 1.12% not informed), of whom 179 provided complete information and were included in this study. The experiment was run between October 2013 and May 2014. Participants were invited through virtual media or in classrooms. In the experimental room they received oral information about the experiment and before each game they read instructions and answered control questions. Then, they completed the SVO-SM. Decisions in the games had a pecuniary incentive (100 points = 1 Argentinean Peso), but the preferences indicated in the SVO-SM did not.



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*Experimental games, scales, and data analysis.* The experimental games were implemented through the z-Tree program (Fischbacher, 2007). Although several rounds were implemented, for these analyses only the decision made in the first round of each game was considered. The classic version of the UG was implemented, where a participant in the role of proponent had to make an offer on how to distribute 100 points to a participant in the role of respondent. In addition, the PGG (Fehr & Gächter, 2000) and the CRG (Werthmann, Weingart, & Kirk, 2010) were implemented. In the PGG each participant had 20 points and had to decide how much to contribute to a common pool; while in the CRG the participants had to indicate how much to withdraw from a common pool of 80 points. In both games, what was left in the pool after the decisions to add or withdraw were made, was multiplied by 1.6 and divided equally among the members of the group (n = 4). Then, the SVO-SM proposed by Murphy et al. (2011) was applied. Descriptive and correlation analyses were carried out using Pearson's correlation coefficient.

#### Results

#### Predictive Validity Evidence with UG, PGG, and CRG

Fifty-four participants played the role of proponents in the UG and offered on average 43.81 points (SD = 9.77). They presented SVO values of 31.26 on average (SD = 12.74). The relationship between the SVO and the decisions of the proponents was positive and small, r(51) = .275, p = .047, that is, those who showed a greater prosocial tendency offered higher amounts in the UG. When considering prosocials, we observed that aversion to inequality was not related to the offers made, r(40) = -.264, p = .091.

One hundred and seventy-nine participants played the PGG and the CRG. The mean SVO of all participants was 31.37 (SD = 11.42), resulting in 79.4% prosocial and 20% individualistic. In the first round of the PGG, participants contributed 11.01 points on average to the common pool (SD = 5.30), and in the first round of the CRG extracted an average of 15.15 points (SD = 10.27). SVO was significantly and positively related to the PGG decision, r(177) = .217, p = .004, implying that people who were more prosocial contributed more to the common pool, although the effect sizes were small. At the same time, it was observed that the SVO was negatively related to the decision in the CRG, r(177) = -.152, p = .042. However, the graphical inspection of this relationship showed that there were three extreme cases. When these cases were excluded, the relationship was no longer significant, r(175) = -.056, p = .46. When considering only the prosocials, the index of inequity aversion was not related to the decisions in any of these games, PGG: r(140) = -.092, p = .277; CRG: r(139) = .119, p = .159.

#### STUDY 3

Taking into account that the previous studies comprised Psychology students exclusively, we decided to carry out a new study with students from different majors, to evaluate the predictive validity evidence of the SVO-SM in relation to the decisions in the UG, PGG, and CRG, and to examine possible differences in the SVO according to the area of study.



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#### Method

*Participants and procedure.* One hundred and seventy students from the National University of Córdoba and from the National Technological University – Córdoba Regional, who attended majors in different areas: 25 (14.7%) natural, basic and applied sciences; 51 (30%) social sciences (19 from economic sciences); 54 (31.8%) health sciences (51 from psychology); and 25 (14.7%) human sciences; 15 (8.8%) participants did not report this information. Participants were between 18 and 30 years of age (M = 23.60, SD = 3.05); 121 (71.2%) were women and 34 (20%) were men, 15 (8.8%) participants did not report this information. Students were invited to participate through different virtual media. Data collection was done online through LimeSurvey version 2.05 between August and November 2015. Each participant responded to the SVO-SM and one of the games assigned randomly.

*Measures and data analysis.* The following instruments were applied: SVO-SM, UG, DG, PGG, and CRG (see description in Section "Study 1"). The same analyses described in Section "Study 2" werecarried out. In addition, the SVO levels were compared according to the study area through univariate ANOVA and *t*-test.

#### Results

Ultimatum game. Twenty-nine participants responded to the SVO-SM and made a decision in the UG in the role of proponents, four did not respond correctly to the control questions and were eliminated. Participants offered an average of 47.62 Argentinean Pesos (SD = 10.17, min = 1, max = 51). In turn, the mean SVO was 32.25 (SD = 12.62). The relationship between the SVO and the offers in the UG was statistically significant, positive, and large, r(23) = .807, p < .001. Among prosocials, those who tended more toward inequality aversion offered higher amounts in this game, r(19) = -.597, p = .004.

On the other hand, 40 participants answered the SVO-SM and played a round of the UG in the respondent role, five did not respond correctly to the control questions and were eliminated. On average, participants indicated they would accept offers of \$47.57 (SD = 9.48). They presented SVO values of 32.69 on average (SD = 10.38). The relationship between SVO and decisions in the UG as respondents was not statistically significant, r(33) = -.053, p = .762. Among prosocials, the tendency to inequity aversion or maximization of the joint gain was not related to the responses of participants in the respondent role, r(22) = -.211, p = .322).

Dictator game. Another group of participants (n = 40) completed the SVO-SM and also made a decision in the DG, of whom 37 answered correctly control questions and were considered for the subsequent analyses. On average, the participants offered \$48.78 (SD = 8.78), and presented SVO scores of 31.09 on average (SD = 12.87). The relationship between the variables was positive, significant, and large, r(35) = .638, p < .001, the higher the prosocial trend, the more money the participants gave. However, there were no variations in DG decisions between prosocials, r(26) = .010, p = .960.

*Public good game.* Twenty-eight participants answered the SVO-SM and made a decision in the PGG, of whom 21 answered the control questions correctly and were included in the subsequent analyses. They presented SVO values of 31.67 on average (SD = 6.18), and contributed \$3.67 to the common pool on average (SD = 1.16). The relationship between SVO and decisions in the game was not statistically significant, r(19) = -.276, p = .226, and no relationship between the decision in the PGG and the preference for inequality aversion among prosocials was observed, r(15) = .142, p = .586.

*Common resources game.* Thirty-three participants responded to the SVO-SM and made a decision in the CRG, of whom 28 correctly answered the control questions and were included in the subsequent



analyses. Participants showed SVO values of 34.61 on average (SD = 6.52), and withdrew \$9.79 from the common pool on average (SD = 1.69). The relationship between SVO and decision in CRG was negative, medium, and statistically significant, r(26) = -.407, p = .031. People with greater prosocial tendency had a more cooperative behavior in the CRG (withdrew less from the common pool). However, the relationship between the decision in the CRG was not related to the aversion to inequality between prosocials, r(24) = .025, p = .905.

*Comparison of SVO according to area of study.* First, we compared the SVO of the participants according to the study areas (see Section "Method" of Study 3). Any statistically significant differences were observed, F(3,151) = 1.118, p = .344,  $\eta_p^2 = .022$ ). Then, taking into account that the samples of students frequently used are from Psychology and Economic Sciences, we compared the SVO between participants of those majors. In this case, there were no statistically significant differences either, t(68) = -.177, p = .860, d = 0.05.

#### DISCUSSION

The main objective of this research was to obtain evidence on the psychometric properties of the SVO-SM in university students from Córdoba, Argentina. For this purpose, we conducted three studies in which we analyzed reliability, convergent, and predictive validity evidence. In this Section we discuss the results of the different studies grouped according to the psychometric property considered.

#### Test-Retest Evidence

When considering the correlation between the scores of the first and second SVO-SM administrations, adequate temporal stability properties were evidenced in the "points" version. These results are consonant with the original study of the scale conducted by Murphy et al. (2011) who also used an interval of one week. However, considering the minimum scores of .70 suggested by Nunnaly and Bernstein (1994), the "money" version did not present adequate evidence of test-retest reliability.

Regarding the results observed with the secondary items of the SVO Slider, in our context we found a greater tendency towards aversion to inequality in the two versions of the scale and in both times of administration. In the same sense, Murphy et al. (2011) with a Swiss sample showed that more than half of the prosocials (54%) were categorized as averse to inequity. Moreover, the secondary items did not show adequate temporal stability properties ("points" and "money" versions).

#### Convergent Validity Evidence

The results showed that in our context the SVO-SM and the TDO Measure measure the same construct since we found positive and significant associations in the two versions (points and money). These results are in line with those reported by Murphy et al. (2011) who found that both measures ranked people in the same category 74% of the time. It is worth noting that when using the TDO Measure a large percentage of participants (35% in the point version and 24% in the money version) could not be classified. This highlights the benefit of measuring SVO with SVO-SM as it allows continuous measurement to improve sensitivity in gathering information about people's preferences.



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#### Predictive Validity Evidence

#### Dictator Game

Preferences according to the SVO-SM and decisions in the DG were positively correlated, which shows the predictive ability of the SVO in relation to the amount of money the participants give in this game of one-way decision. Several studies found a similar relationship between SVO and DG (Cornelissen, Dewitte, & Warlop, 2011; Haesevoets et al., 2015; Kuss et al., 2015). In contrast, Yamagishi et al. (2013) found no relationship between SVO and DG, which may be due to the fact that SVO was evaluated with TDO Measure, which is less sensitive in detecting variations in distributive preferences. It should be remembered that the SVO items consist of "decomposed games," with great similarity to the DG, which may have made it possible to find a positive relation.

It is important to note that the correlation in Study 3, r(35) = .638, p < .001, was higher than in Study 1, r(104) = .287, p = .003. It can be observed that the larger size of the correlation corresponds to differences in the amount provided in the DG (Study 1: M = 43.71, SD = 12.73; Study 3: M = 48.78, SD = 8.78; t(91.433) = -2.24, p = .026), since the score obtained in the SVO was similar in both studies. These differences are probably due to differences in sample characteristics and mode of administration. In Study 1 (n = 106), the sample consisted solely of admissions to the Psychology degree and the administration was done in paper format and in the classroom. On the other hand, Study 3 (n = 37) was carried out with students of different majors, with greater variability in age, and through an online application.

#### Ultimatum Game

*Proponent role*. When participants played the role of the proponent in Study 1, the relationship between the SVO and the participants' offers was not statistically significant. This result is consonant with the results found by Haesevoets et al. (2015) who did not observe significant results between SVO — using the same version of the scale — and the behavior of the participants in the first round of the UG. However, in both Study 2 and Study 3, the relationship between the SVO and the decisions of the proponents in the first round of the UG was positive and statistically significant. In this sense, Halali et al. (2013) also find that prosocials tend to be fairer than individualists in the UG. However, the number of participants in each orientation was very small and, unlike our study, the authors used a modified version of the UG, adding other conditions (ego depletion) and using the TDO Measure. On the other hand, it is worth noting that Hilbig and Zettler (2009) observed, in an online study like Study 3, that the SVO had a mediating role in the relationship between honesty-humility and the number of points that participants gave in the game.

*Respondent role*. In Study 1 as well as in Study 3, the relationship between SVO and decisions in the UG as respondents was not statistically significant. Consistent with our study, Liebrand (1984) and Druga (2013) also did not find differences between cooperators and selfish ones in the rate of acceptance/rejection of offers in the UG, although they used the Ring Measure. Contrary to our results, Karagonlar and Kuhlman (2013) showed that prosocials (according to the Ring Measure) rejected less unfair offers than selfish ones. One possible explanation for these disparate results is that, unlike our studies, the decisions in the UG in Karagonlar and Kuhlman's study were monetarily incentivized. Moreover, particularly in Study 1, most of the participants presented scores corresponding to prosociality, that is, the variation of the SVO scores was reduced.



Reyna, C., Belaus, A., Mola, D., Ortiz, M. V., & Acosta, C. SVO Slider Measure

#### Public Goods Game and Common Resources Game

The relationship between SVO and cooperative behavior in the PGG and the CRG was unique in every study. In Study 1, with paper application and a single round of each set with environmental frames, no statistically significant relationship was observed. Whereas in Study 2, implemented using the computer and with classic versions of games and incentivized decisions, greater prosociality was associated to greater cooperation in the first decision in the PGG, but not in the CRG. On the contrary, in Study 3, implemented online and with games with the same frame as Study 1, greater prosociality was associated with more cooperation in the CRG but not in the PGG. Although previous evidence is inconclusive as to the relationship between the SVO and the PGG, results of positive relationships predominate (see e.g., Bernold, Gsottbauer, Ackermann, & Murphy, 2015; Murphy & Ackermann, 2014), even in the case of hypothetical decisions in the experimental games (as in Studies 1 and 3; see e.g., Böhm & Theelen, 2016).

With respect to the CRG, the evidence is less clear. Some researchers report a positive relationship between the SVO and cooperation in this game (e.g., Raines, 2014), while others suggest that the effect of the SVO on cooperative decisions is reduced in common resource dilemmas since in this situation people could decide based on equality norms (Balliet et al., 2009; de Kwaadsteniet, Van Dijk, Wit, & de Cremer, 2006). In summary, the results did not provide conclusive evidence about the relationship between the SVO and cooperative behavior in the PGG and the CRG.

#### Limitations and Future Research

It is important to note that in these studies non-probabilistic samples of university students were used, which limits the generalization of the conclusions. This acquires particular relevance taking into account that prosocials are more likely to volunteer in psychological experiments than proselfs (Van Lange, Schippers, & Balliet, 2011). Thus, future studies could use sampling methods that allow for a better representation of the SVO spectrum.

On the other hand, it is worth remembering that the application context of the SVO-SM was different throughout all studies. In addition, although the participants did not receive payment for their decisions in the SVO-SM in any study, they received payment in Study 2 according to the decisions they made in the experimental games, but not in Studies 1 and 3. This certainly limits the comparison between the studies reported here and with results of other investigations. Therefore, future studies could investigate in greater depth the effect of the context of application and, particularly, the effect of hypothetical and real payments on social preferences (see e.g., Gillis & Hettler, 2007; Greiff, Ackermann, & Murphy, 2016; Locey, Jones, & Rachlin, 2012).

In all of these studies, the relationships between the decisions in the SVO-SM and the first or only round of an experimental game were analyzed. Future studies could investigate the relationship between SVO and repeated interactions in cooperative games, and also in games with a different number of players or involving individual versus group decisions (see e.g., Krockow, Colman, & Pulford, 2016).

In these studies, we only considered the behavioral responses in the SVO-SM and in experimental games. However, it is possible to consider other levels of analysis, for example, neuro-physiological, yielding results that allow a better understanding of the predictive role of the SVO in relation to cooperative decisions (see e.g., Wang et al., 2017). At the same time, it would be positive to consider variables such as response time (see e.g., Chen & Fischbacher, 2016; Yamagishi et al., 2017) or emotional skills (see e.g., Kaltwasser, Hildebrandt, Wilhelm, & Sommer, 2016), which have been shown to be related to social preferences.



#### CONCLUSION

The results of these studies show evidence of adequate properties of temporal stability and convergent validity of the SVO Slider Measure. Nevertheless, predictive validity evidence in relation to decisions in experimental games was shown to be partially consistent, with variations depending on the game and the form of application.

We highlight the value of this research as it provides new evidence on the psychometric properties of SVO-SM with samples from a country that has little evidence regarding people's social preferences. Future studies could provide additional information about the psychometric properties of the SVO-SM and also consider the role of other variables related to SVO and cooperative decisions in experimental games, such as the type of information processing, incentives, and social norms.

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