

IFN Working Paper No. 1084, 2015

Subliminal Influence on Generosity

Ola Andersson, Topi Miettinen, Kaisa Hytönen,
Magnus Johannesson and Ute Stephan

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Ola Andersson,[†] Topi Miettinen,[‡] Kaisa Hytönen,[§] Magnus Johannesson,[¶] and Ute Stephan^{||}

September 18, 2015

Abstract

We experimentally prime subjects subliminally prior to charity donation decisions by showing words that have connotations to prosocial values for a very short duration of time (17ms). Our main finding is that, compared to a baseline condition, the prosocial prime increases donations with about 10-17 percent among subjects with strong prosocial preferences. A similar effect is also found in our data when interacting the prime with the personality characteristic of BigFive agreeableness. We also contribute with providing an arguably better method for testing for "sublimity". The method reveals that some subjects are capable of recognizing some of the prime words, and the results are overall weaker when we control for this capacity.

Keywords: Charity; subliminal; priming; universalism; values; personality

JEL-codes: C91; D01; D03

1 Introduction

To render complex economic environments amenable to coherent analysis, traditional economic models typically assume rational economic agents with stable individual preference rankings over outcomes (Becker and Stigler, 1977). Recently a novel and more complicated picture about the economic man has emerged. In this landscape, the economic man is a far less perfect implementer of far more unstable and unclear individual preferences and goals. The individuals in the models may differ in terms of these capacities too. In this case, the societal planner can serve a purpose by softly and non-intrusively influencing the individual perceptions regarding the alignment of individual and societal goods, for instance. This opens the door for new soft policies to reduce free-riding, for instance. These

*We thank seminar participants at the CNEE workshop in Lund, SBEN workshop in Stockholm, at the Finnish Economic Association Annual Conference 2015 in Helsinki, and the ESA European Meeting in Heidelberg for helpful comments and suggestions. We gratefully acknowledge financial support from the Ragnar Söderberg Foundation, the Swedish Council for Working Life and Social Research, and the Jan Wallander and Tom Hedelius foundation, and the hospitality of the PCRClab at the University of Turku where the experiments were conducted.

[†]Research Institute of Industrial Economics and Lund University

[‡]Hanken School of Economics, HECER, & PCRC at the University of Turku

[§]Aalto University

[¶]Stockholm School of Economics

^{||}Aston Business School

policies would influence those most receptive without depriving those not prone to mistakes from their individual freedom. Such soft ways of influencing individual decisions are coined as nudges by Sunstein and Thaler (2008).

In this vein there is a recent strand of experimental literature studying how subtle cues (or nudges) affect prosocial behavior.¹ One prominent cue is the “watchful eyes” treatment which has been studied both in the field (e.g., Ekström, 2013) as well as in the lab (e.g., Rigdon et al., 2009; Haley and Fessler, 2005). Another common way to introduce cues is to use value laden wording in the experimental instructions such as “taking” or “keeping” in the dictator game (Dreber et al., 2013) or “Community Game” and “Wall-street Game” in the context of a public goods game (e.g., Lieberman et al., 2004).² Although it is hazardous to compare results from such disparate cues and situations it is noteworthy that the effect of cues on prosocial behavior seems to be highly contextual. Indeed, some studies find strong effects (Haley and Fessler, 2005) while others no effect (Dreber et al., 2013). Interestingly, Rigdon et al. (2009) find heterogeneous effects with respect to gender: males are more responsive to the cue. Indeed, non-controlled heterogeneous responses over the subject population might very well be one explanation for the differential results. In addition, even though these cues are often subtle, simple experimenter demand effects cannot be ruled out: a subject might observe the cue and simply behave in accordance with what she thinks the experimenter is expecting. We believe that the current study adds to this literature by addressing both these issues. Firstly, we have a detailed measure of personality in dimensions that we deem important for the responsiveness to the cues introduced. Using these we can study if and how the response varies over the subject population. Secondly, by making the cue subliminal (i.e. a subliminal priming procedure) we steer clear of any conscious experimenter demand effect.

In this paper we study the role of subliminal priming³ - a nudge whose role in the economic sphere is highly unexplored.⁴ In particular, in an experimental design with over 300 subjects we investigate whether subliminally priming broad prosocial goals - universalism values (Schwartz, 1992) - leads to subsequent higher prosocial giving to charity. The priming consists of value-laden prime words which are shown to each participant for a very short duration (17ms) just before the donation tasks. The charity donation decisions bear real consequences and the subjects are aware of this. We contrast the prosocial priming treatment with a neutral priming treatment, where the words shown have no value-laden connotation. By using well established measures of personality we also investigate

¹Usually, in these studies data comes from individual decision making situations such as the dictator game or giving to charities where coordinating effects of cues are not present (Fehr and Schmidt, 2006).

²A related identity priming method asks questions that remind the participant about her/his gender (e.g. Boschini et al., 2012), profession (Cohn et al., 2013; Cohn et al., 2014) or religion (Ahmed and Salas, 2011).

³A subliminal stimulus is presented for such a short duration that it does not reach an individual’s threshold for conscious perception.

⁴The only subliminal priming study in economics we are aware of is Posten et al. (2014) who study the influence of priming on beliefs in a trust-game setup. We are interested in the effects of subliminal priming on altruistic donations where priming is expected to predominantly affect the preferences, not the beliefs.

the interaction effect between the priming and aligned personality dimensions (value orientation of universalism).

Priming refers to the non-conscious activation of social knowledge structures (Bargh, 2006). In a typical priming study, a concept such as achievement is primed in a way that the participants are not aware of their exposure to the concept (for instance, through displaying a woman winning a race on a sheet of paper with an unrelated task; or by presenting achievement-related words in scrambled sentence word-puzzles). Subsequently, a measure is taken on human perception, motivation, behavior, or evaluation that relates to the domain of the prime (for instance, funds raised by call center agents, Shanz and Latham, 2009). The effect of priming is commonly explained in reference to network theories of memory. The prime activates concepts related to the prime as well as connected action repertoires, which lead to the observable response (Bargh, 2006; Custers and Aarts, 2010). The stronger the repertoires, the stronger the effect of the prime. Thus priming particularly impacts activities aligned with one's needs, motivation, goals. Karremans et al. (2006), for instance, demonstrated that "subliminal priming of a brand name of a drink positively affected participants' choice for, and their intention to, drink the primed brand, but only for participants who were thirsty" (pp. 792).

Similarly, values theory suggests that priming is particularly influential along dimensions aligned with one's predominant personal values for which such repertoires are in place. In other words, our prosocial priming (universalism value) should particularly impact individuals scoring high on the corresponding value. A second reason for expecting such interaction effects comes from recent empirical findings which emphasize affect as a mechanism of how priming influences behavior. In particular, Custers and Aarts (2007, 2010) propose that primes linked to positive affect are rewarding and hence lead to stronger behavioral responses. There is evidence that, while subliminally presented rewards are not consciously perceived and processed, they are nevertheless effective and influence behavior (e.g., Bijleveld et al., 2014), and that subliminal primes linked to positive rewards achieve greater behavioral effects than subliminal primes devoid of reward potential (Aarts, Custers, and Marien, 2008). This combination of higher subliminal affect and greater rewards gives a second reason to expect a greater impact of our priming condition on those participants who value prosociality to a greater extent. Indeed, in an controlled incentivized contest experiment, Andersson et al. (2015) find a positive effect of supraliminal prosocial priming on team contest contributions of those individuals who score high on personal prosocial values.

To study the hypothesis that the charity contributions of individuals with prosocial personal values are affected by subliminal prosocial priming, we elicit participants' personal values (Schwartz et al., 2001) and personality measures (Realo et al. 2009) one-week prior to the priming and the donations in the laboratory. We carry out the elicitation via well-validated psychological self-report measures and we repeat the personal value and personality elicitation in the laboratory after the donation experiment. They also evaluate how well they know each of the

charity organizations and how much they value their work.

To verify the sublimity of the prime, we employ a novel incentivized objective threshold method where the subject is shown the short-lasting stimuli and then she is asked to reproduce that particular prime word by typing it on the screen. Our prime word reproduction task has two core advantages relative to existing methods: first, there are monetary incentives for the participant to make her best guess (some authors have argued for lacking incentives in the existing subjective threshold methods based on funneled questionnaires; Simons et al. 2006). Second, since the participant must be able to reproduce each prime word, we can control whether the subject saw precisely that word and not just whether the participant performs better than luck in a number of word reproduction tasks like in the typical objective threshold methods.⁵ The downside is that subjects that may be affected by the prime (and thus give more to charity in the donation experiment) may also be more likely to have the capacity to read the prime words in the control task. Indeed, results from the literature on semantic priming indicate that primed subjects are more capable of reading prime words which are semantically similar to the value-associated-words with which the subjects have been primed (Aarts and Custers 2007). We discuss this issue in more detail in Section 5.3.

We first test the hypothesis of an overall effect of the prosocial prime on donations, but here we cannot reject the null hypothesis of no effect. For a test of our second hypothesis, that the prosocial prime affect donations for individuals with strong prosocial preferences, we compare mean donations between the prosocial prime treatment and the neutral prime treatment for individuals scoring above the median level of prosocial inclination (as measured one-week prior to the priming and donation experiment). For this hypothesis we find support in the data: the prosocial prime increases mean donations by 11 percent in this group⁶. This effect is robust to controlling for a range of personality measures, and a similar effect is found when interacting the prosocial prime with the personality characteristic of agreeableness (BigFive). We also control for the sublimity of the task, by means of the the prime-word reproduction control task described above. Our results are robust to adding a variable for the number of recognized words in the regressions, but not towards excluding subjects who recognized at least one word. The issue is complicated by the fact that priming as such seem to affect the ability to recognize the priming words in the subsequent control task; i.e. subjects in the prosocial prime treatment recognize significantly more words in the sublimity control task than subjects in the neutral prime treatment.⁷ We conclude that our results suggest

⁵Simons et al. (2006) have criticized objective threshold methods on these grounds. In objective threshold methods the researcher verifies sublimity by letting the participant, after each subliminal prime word, to choose between the correct shown prime word and a false alternative.

⁶When including all control variables, the marginal effect estimate rises to 17 percent.

⁷The reason for not controlling for sublimity when first showing the subjects the prime words is that we did not want to emphasize the private monetary incentives for writing correct prime words immediately before the donations. Variation in the (expectations about) earnings in the reproduction task would have constituted a potential confound in understanding the effect of sublimity. This poses novel challenges for the control task design in future work.

that subliminal priming increases donations among individuals with high levels of prosociality, but further work is needed to confirm this result and to find still better ways of controlling for sublimity.

The priming research springs from social psychology but there are few studies exploring the effect of the prime on incentivized economic behavior. Kamenica (2012) briefly reviews this small experimental economics literature on priming. Among priming studies, there are even fewer exploring subliminal priming (see Bargh and Chartrand, 2000, for a classification of the priming conditions). The study closest to ours is Posten et al. (2014) who examine the effects of subliminal priming on trust in an investment game setup and find positive effects on trust and on beliefs about trustworthiness when subjects are primed with concepts of trust as opposed to concepts of distrust. They are primarily interested in the effects of priming on beliefs but speculate that similar effects might be found on the preference side. Indeed due to the lack of strategic interaction and beliefs in our study, the found priming effect seems to be channeled through preferences. Hence our studies are highly complementary and show that primes may work through both channels. Another related study comes from the field of emotion research in psychology. Zemack-Rugar et al. (2007) find that subliminal priming of guilt emotion increases intentions to volunteer in charity work but priming sadness has no such impact. Thus they conclude that exogenous variation through priming in emotions of similar valence can lead to very different outcomes. Pichon, Boccato, and Saroglou (2007) find that subliminal priming of religion can lead to greater prosociality, manifested by picking up more pamphlets from charitable organizations after being primed. In terms of interactive effects of primes with personality characteristics, Benjamin et al. (2010) find in an economic experiment on ethnic identity that people from different racial backgrounds were differently sensitive to a prime. Damasio et al. (2011) find that subliminal priming may influence risk aversion in a gambling task.

The paper is organized as follows. In Section 2 we introduce the experimental procedures and present the hypotheses. Thereafter, in Section 3, we give an overview of the pilot-studies that lead to the adopted design and we give estimations for the power of our adopted experimental tests. Section 4 presents our main results and in Section 5 we study their robustness. Section 6 concludes.

2 Experimental design and procedures

We use an experimental design with four core building blocks. The first is an elicitation procedure for measuring personal values and personality traits. To achieve this we utilize two complementary methods: first, a Personal Value Orientation (PVQ) survey tool (Schwartz et al., 2001) and a thirty-item Big5 survey tool (Realo et al., 2009), both used by social psychologists and economists (see Lönnqvist et al., 2009; Becker et al., 2012). The second key

element is an exogenous subliminal manipulation of goal formations, i.e. priming, that subjects are unaware of. This part is operationalized by using connotative words that appear on the screen prior to the actual decision task for a very short duration (17 milliseconds) - a standard procedure in social psychology (Bargh et al., 2000). The third pillar consists of the 10 distinct charity decisions each of which immediately follows a two-stimuli word-manipulation (second pillar). The fourth consists of ex-post controls and questionnaires including a method for controlling whether the priming was subliminal, a questionnaire into how well subjects knew the charities (familiarity) and how much they appreciate each charity (appreciation), and ex-post (test-retest) questionnaires eliciting (a second time) the personal values and personality characteristics.

2.1 The priming procedure

We apply conceptual trait priming using a subliminal design (Bargh and Chartrand, 2000). I.e. immediately before each charity donation decision, there are two consecutive subliminal priming stimuli appearing on the screen. Each stimuli starts with a forward mask ##### which appears on the 60 Hz computer screen for 50 milliseconds followed by an empty screen for 17 milliseconds, followed by the prime word for 17 milliseconds, then another empty screen for 17 milliseconds, and finally a backward mask ##### for 50 milliseconds.

The priming words are used to prime subjects in two alternative conditions: a prosocial -prime treatment where the prime words have connotations with prosocial universalism values (Uni treatment), and a neutral prime treatment without any value-laden connotations (Neu treatment) (see the Appendix). The prime condition is kept constant for each subject throughout the session. Prime-words for the prosocial prime are inspired by the words in universalism items of the Schwartz Value Survey (Schwartz, 1992), which lists, for each value, a series of synonymous or specifying words (see the Appendix). Universalism values emphasize goal formations that relate to understanding, appreciation, tolerance, and protection for the welfare of all people and for nature (Schwartz, 2006). The distributions of the lengths of the prime words are identical in the two treatment conditions (the lengths of the primes words vary from 5 to 17 letters). Out of the 20 prime words in each condition, two are presented prior to each charity decision. The charity decision is then taken according to the instructions on the screen. Thereafter two new priming stimuli appear. No prime word appears twice during the 10 decisions.

2.2 Elicitation of personal values and personality traits

One week before the actual lab experiment, the subjects fill-out a 40 question PVQ questionnaire (Schwartz et al., 2001) and a thirty-item Big5 questionnaire (Realo et. al. 2009) using the internet-based Webropol survey-tool.⁸ In

⁸See Tables 7 and 8 for correlations between the different dimensions of each personality measure.

a subset of the sessions they also answer the PVQ questionnaire *after* the computerized part in the lab and prior to pay-out(test-retest design) but the results reported here use the pre-elicited data. At the end of the post-elicitation phase in the lab we also elicit gender and age. We did the elicitation of values before the experiment since we want to make sure that the elicitation of personal values are not be influenced by the subject's experiences during the experiment phase in the lab. In the Appendix we conduct an analysis on the elicited values. Although we see slightly higher values (see Table 10) in the ex-post questionnaire, compared to the ex-ante evaluation, the correlation is high between the two and there does not seem to be big differences between the two treatments (see Table 9).

2.3 The charity decisions

The decision tasks consisted of donations to 10 different Finnish and international charity organizations which are among the best known in Finland (see the Appendix for a translation of their names). The order of the tasks/organizations was the same for each subject. The subject got on-screen instructions whenever a charity donation decision was due. Each decision consisted of sharing 20 euros between the participant and the charity organization the name of which appeared on top of the decision screen (see the Appendix). The subject could alter the share assigned to her/him and to the organization by pressing buttons as guided on the screen. Also the provisional division appeared on the screen. The subject would confirm the division by pressing an instructed button. As explained in the written instructions handed to the subject prior to the experiment, one of the ten charity decisions was randomly drawn after the computerized part of the experiment. The participant and the thus randomly chosen charity organization was remunerated according to the corresponding decision of the participant once the laboratory procedures were over.

Control for sublimity of the prime

Once the actual charity donation tasks were completed, the instructor arrived at the cubicle and set up another computerized stage of the experiment. This was started by the subject by typing in the personal but anonymous identification code. Each of the 20 prime stimuli were presented one at a time with the same timing as in the actual priming sequence. After each stimuli, the subject was asked to reproduce the sequence of letters she/he saw on the screen. Two out of the 20 words were randomly drawn after the computerized part and the participant was paid one euro for each correctly reproduced word. This task was designed to control whether the priming was truly subliminal or whether a subject could read some of the words.

The control task we used differs from those typically used in priming studies in social psychology where either (1) a funneled questionnaire (subjective threshold method) or (2) a two-alternative choice task has been used (objective

threshold method, see Simons et al., 2006, for a critical review). The funneled questionnaire essentially asks the subject what she/he thinks the purpose of the priming stimuli were. This method has been criticized for not providing sufficient incentives for the subjects to express a concern for an experimenter’s attempt of subliminally influencing decisions. If the subject is hesitant and feels such a story is far-fetched, she/he might not write about his/her concerns despite such suspicions. Our method overcomes this problem by directly asking what the subject saw and providing monetary incentives for attempting to answer correctly even when there is only a faint idea of what the stimuli might have been. In the two-alternative choice task that has also been used in the existing literature, the subliminal priming stimuli item is first shown to the subject. Then she/he is offered two candidate words of which one is correct and the other is incorrect. No monetary incentives are typically provided for giving correct answers. Moreover, only a large sample of trials allows the researcher to convincingly conclude whether the participant is capable of reading the prime words and performing better than luck in matching a correct alternative with the prime stimuli. Our method overcomes these challenges: we can convincingly conclude for each prime word, whether the participant was capable of reading the word. Moreover, we provide monetary incentives for performance so that there are monetary incentives to try even seemingly far-fetched and/or faint impressions of what one might have seen.

Control for charities

In a third computerized part of the experiment, each participant was given on-screen instructions to rate each of the ten charities in turn, first in terms of how well the participant knew the organization (Familiarity), and then in terms of how much the participant valued the work of the charity (Appreciation). Both items were rated on a scale from 1 to 5.

2.4 Laboratory procedures

Subjects were recruited using the ORSEE software (Greiner, 2004) and the computerized tasks in the laboratory were programmed and conducted using the NBS-Presentation software. The experiments were conducted at four occasions (sessions) between May 2013 and April 2014. There was always one and the same staff member communicating with the subjects (in addition to the experimenter).

The invitation to participate in a scientific decision making experiment was sent to 1088 registered subjects in the PCRClab subject pool in Turku of which about 91 percent are students at the University of Turku. Psychology students were excluded due to their potential familiarity with priming methods and potential uncontrolled demand effects. The enrolled participants arrived according to a predetermined schedule in fifteen-minute intervals, two

persons scheduled at a time. The identity of each subject was checked. When there were several subjects in the corridor waiting for their turn, they sat separately without seeing each other. The first in line was given the opportunity to read through the instructions without a possibility to communicate with others. Once the subject had read the instructions and there was a vacant computer, she/he was allocated the computer located in a visually isolated cubicle in the laboratory. The instructions were also posted next to the computer. The subject was guided to proceed according to the instructions.

The same two computers were used in all sessions. The treatment condition was varied at the computer level and from subject to subject in an alternating manner in the order of arrival at the specific computer (to indirectly control for any computer-specific or seat-specific differences and to exclude any hour-of-the-day or other sequence specific effects). There was no consistent pattern regarding the first arrival being allocated a certain computer or a certain treatment.

The subject entered her/his personal anonymous code (see Appendix) that was used to associate the pre-elicited data with the laboratory data, and the experiment automatically started. Once the charity choices were made, a second computerized stage started where the subliminal prime stimuli were again presented to the subject one at a time. On-screen instructions asked the subject to reproduce the letters or symbols that had appeared on the screen (see above) by typing the letters/symbols and pressing enter (many participants typed the mask, #####, or left the space empty, supposedly due to their inability to see the prime word or its letters). At the third computerized stage, each participant rated the ten organizations according to how well the subject knew about the organization and how much she/he appreciated the work of the organization.

Once all decisions were completed, the payoff-relevant decision was drawn and the remuneration was calculated based on the charity choice and on how many of the two randomly drawn prime words the subject could read. Before paying the remuneration to the subject in cash, the second elicitation of the PVQ questionnaire was carried out. It took on average 40 minutes to complete the laboratory stage of the study.

Hypotheses

Our first hypothesis states a simple positive effect of subliminal priming on the charity contributions.

Hypothesis 1: There is a positive effect of the universalism prime on the donations.

As argued in the Introduction we expect the universalism prime to primarily affect donations for individuals with strong universalism values (prosocial individuals). But even if the universalism prime only increase donations for individuals with strong universalism, the overall mean should be higher in the universalism prime group than in

the neutral prime group, as long as the universalism prime does not have a negative effect on the donations in some group of subjects.⁹ This is thus a motivation for testing Hypothesis 1. As a second hypothesis we also test if there is a significant effect of the universalism prime for individuals with strong universalism values; a high universalism value is here defined as a personal universalism value above the median.¹⁰

Hypothesis 2: There is a positive effect of the universalism prime on the donations of those participants whose personal universalism value score is above the median.

3 Pilot studies, sample size and statistical power

We carried out a number of pilot studies, that led to the design in the main study. These pilot studies are briefly described here. Our study is inspired by a recent study by Andersson et al. (2015). They found that in teams contests prosocial individuals provide more effort for the team when primed with self-transcendence-value-laden word-scrambles (universalism and benevolence values). The effect of the self-transcendence prime on proself motivated agents (power and achievement values) was the opposite - their effort for the team was reduced.

In this study we examine a related effect – that of the match between personal value-driven goals and the prime on charitable giving. In our first pilots we used a word-scramble priming technique, i.e. a supraliminal instead of a subliminal priming technique (Bargh et al. 2001) similar to the one used in Andersson et al. (2015). If an effect was found here, we would then proceed to study whether subliminal priming could bring about the same effect. Our first pilot study was run in the end of January 2011 as a class-room experiment in Norrtälje, Sweden (n=51). We found an effect of word-scramble priming but a large fraction of subjects understood the purpose of the study (using a standard ex-post funneled questionnaire procedure, see e.g., Bargh et al., 2001) - a feature typically considered to undermine the reliability of a priming study due to potential experimenter demand effects, for instance (Zizzo, 2010). The reason for the high rate of understanding the purpose of the prime, we thought, was the fact that the personal values were elicited ex-post during the same experimental session and it was easy to recognize that the words in the items of the Schwartz PVQ questionnaire were similar to the prime word items in the scrambles.

Our next pilot was arranged at the experimental laboratory of the Max Planck Institute in Jena, Germany, in April 2011 (n=60). We still used word-scramble priming but in contrast to the design in Norrtälje, we changed the

⁹The study by Andersson et al. (2015), using a supraliminal prosocial priming method, suggests that a negative effect of the universalism prime cannot be ruled out in subjects with low universalism values; this is therefore also a motivation for Hypothesis 2 (to test for a positive effect of the universalism prime in only subjects with strong universalism values).

¹⁰In the Appendix we study the robustness of the above stated interaction effect using the Big5 agreeableness measure which can arguably be said to be correlated with universalism (Roccas et al., 2002).

timing of the personal value elicitation, which was conducted a week before the actual experiment using an internet survey-tool, as in our final research design. We conjectured that the temporal separation of the elicitation of values and the priming would allow us to reduce the number of subjects who would understand the purpose of the study. Once again we found results indicating the effectiveness of the prime on charitable giving. Nevertheless, an important fraction of the subjects still understood the purpose of the study (using the standard funneled questionnaire). We again suspected the words in the items of the ex-ante conducted Schwartz PVQ questionnaire were similar to the prime words in the word scramble.

Since the evidence pointed towards a positive interaction effect between the prime and personal values on charity donations, we decided to proceed with the subliminal priming experiments instead of the word-scramble priming. The advantage of the subliminal priming was that if the subjects in fact were unable to consciously read the words appearing in the subliminal stimuli, they could not possibly consciously associate the prime words with the items of the PVQ questionnaire, and we could rule out any demand effects.

The first sessions with a subliminal design were run in Turku, Finland, on the 24th and 25th of January 2012 (n=57). The design was fairly reminiscent of the main experiment but (1) there was only 8 charity donation decisions, (2) we did not use the forward and backward masks in the stimuli, (3) the actual prime word appeared on the screen for 34 milliseconds instead of 17 milliseconds, (4) we contrasted a self-transcendence prime with a self-enhancement prime in our experimental treatment (In the self-enhancement prime we used 8 prime words with a power-value association and 8 prime words with an achievement-value association, all words taken directly from the PVQ items.) Prior to each of the 8 charity donation decisions there were 4 word stimuli of which two were actual words with connotations and two had letters randomly reshuffled into a non-meaningful combination of letters. Once the charity decisions were taken, we asked the subjects to evaluate each of the stimuli again and decide whether an actual word had appeared on the screen, or just a non-meaningful combination of letters, or whether one could not tell. Being able to tell apart words from non-words would be evidence of failure to subliminally prime the subject (typical two-alternative objective threshold task). However, this technique's main drawback is that it has low power. Indeed, this deficiency has been discussed by Simons et al. (2006), for instance. Yet, we found out that surprisingly many subjects could read the words on the screen.

To further improve the subliminal priming, we therefore pilot-tested various lengths of the stimuli, sizes of the letters, with and without forward and backward masks and with different length between the prime word stimuli and the masks. The purpose was to choose a priming condition where more than 90 percent of the words could not be recalled/read but still the stimuli would be just barely "underwater" in the sense that marginal changes to facilitate the reading of the stimuli would undermine sublimity. These modifications brought us to our last pilot

experiment, conducted in Turku the 24-25 of October, the 4 and 11 of December 2012 (n=44). It differed from the present design only in that the benchmark condition used a proself priming (with connotation to both power and achievement values) instead of a neutral priming condition without any connotations. For the main experiment we changed the proself priming to a neutral prime, to be able to identify a clean effect of universalism priming without confounding it with the effects of the proself prime.

To estimate the statistical power and sample size for the main study we used the observed standard deviation of 4.85 from the last pilot experiment with n=44 (i.e. the standard deviation of the average donation across the different charities). We wanted to have a sufficient sample size to be well powered to detect a medium sized effect (i.e Cohen's $d=0.5$; Cohen, 1992) when testing Hypothesis 2 (the test in the sample with a universalism value above the median).¹¹ We decided to include about 300 subjects in total, which implies a sample size of 150 in testing Hypothesis 2. This gives us 86 percent power to detect a medium sized effect for Hypothesis 2; for Hypothesis 1 where we include the total sample the power is 99 percent of detecting a medium sized effect (but if the universalism prime only affects donations in individuals with high universalism this would decrease the expected effect size and consequently the power for the test of Hypothesis 1).

4 Results

4.1 Data description

All in all, 307 subjects took part in the main experiment (153 in Neu and 154 in Uni). In order not to break the subject's trust in the anonymity we did not want to control whether they had completed the questionnaire before letting them into the lab, and consequently some of the participants in the main experiment had not completed the ex-ante questionnaire. Out of the 307 subjects that took part in the experiment 285 also completed the ex-ante questionnaire. Since the pre-experiment personal value and personality questionnaires were completed at home one week before the experiment, we did not have full control for the pre-experiment data collection. Unfortunately, some participants had not completed the questionnaire when they enrolled at the lab. Each participant, self-generated an anonymous code according to the same set of detailed instructions both at home in the online questionnaire and in the lab. This code was used to match the pre-data with the lab data. Some participants failed to generate a code in the lab that matched a code in the pre-data. Due to these issues the sample size varies a bit as we include more controls. Yet, the pre-elicitation of the value and personality measures was important due to the considerations

¹¹With a standard deviation of 4.85 a Cohen's $d=0.05$ implies an effect size of 9.7.

Table 1: Summary of charitable giving by charity

Charity	Mean	Sd	Min	Max
Foreign Aid of the Finnish Lutheran Church	7.085	5.753	0	20
The Association of the Friends of the University Hospital for Children	10.564	5.392	0	20
Medecins sans Frontieres	9.098	5.721	0	20
The Mannerheim League for Child Welfare	10.329	5.221	0	20
Save the Children	10.58	5.436	0	20
Plan	9.84	5.172	0	20
Red Cross Catastrophe Fund	11.964	5.358	0	20
SOS Children’s Villages	10.345	5.369	0	20
UNHCR and Finnish Refugee Help	10.362	5.188	0	20
WWF	10.404	5.624	0	20
Average	10.057	5.55	0	20

explained in Section 3 and since ex-post elicited values could be influenced by the priming treatment itself.¹² Table 1 gives summary statistics of charitable giving (how much between 0-20 euros was given to the charity) for each charity. Table 2 reports average donations by charity (Finnish translations of the names of the charities in the Appendix) and by the prime and if their universalism score from the PVQ is above or below the sample median.¹³ The division of the sample into these two sub-categories is motivated by Hypothesis 2, i.e. the effect of the prime is expected to be strongest among those subjects with values in line with the prime. From this table we can conclude that the effect of the prime is more pronounced among those with high universalistic values. Indeed, whereas the effect is positive among those with above median values the effect is slightly negative among the others.

In Table 3, we summarize the Big5- (Realo et al. 2009) and PVQ measures (Schwartz, Melech, Lehmann, Burgess, Harris, and Owens, 2001) along with Familiarity and Appreciation measures.

¹²Due to a technical mistake the gender and age variables were not collected for all subjects and we therefore do not include them in the main analysis. We however, report the results from regressions with these variables in the Appendix. Overall we find a positive affect of gender on charitable giving but once we control for personality characteristics the gender effect is halved and becomes insignificant. This is likely due to the fact that many of the gender effects are captured by our multi-faceted personality measures.

¹³To to correct for individual differences in how they use the response scale we follow the literature and center each respondent’s response around his/or her mean response to all 40 questions (see Schwartz, 1992). Our conclusions do not changes if we refrain from such a normalization.

Table 2: Average charitable giving by charity and prime

Charity	Below median		Above median	
	Neu	Uni	Neu	Uni
Foreign Aid of the Finnish Lutheran Church	5.446	6.321	7.455	8.842
The Association of the Friends of the University Hospital for Children	10.631	9.974	10.046	11.711
Medecins sans Frontieres	8.123	7.372	9.420	11.329
The Mannerheim League for Child Welfare	9.662	9.295	10.489	11.776
Save the Children	10.000	9.526	10.921	11.763
Plan	9.031	8.667	10.091	11.447
Red Cross Catastrophe Fund	11.108	10.872	12.489	13.211
SOS Children's Villages	9.477	9.244	10.625	11.895
UNHCR and Finnish Refugee Help	8.585	9.269	11.125	12.118
WWF	8.923	9.103	11.182	12.105
Average	9.098	8.964	10.384	11.620

Table 3: Summary statistics.

Measure	Mean	St.dev.	#N	Min	Max
Benevolence	1.101	0.149	286.000	0.544	1.579
Universalism	1.151	0.197	286.000	0.467	1.630
Achievement	0.998	0.223	286.000	0.327	1.633
Power	0.817	0.201	286.000	0.263	1.353
Conformity	0.888	0.205	286.000	0.242	1.465
Tradition	0.675	0.168	286.000	0.242	1.258
Self-direction	1.116	0.155	286.000	0.658	1.513
Stimulation	0.980	0.247	286.000	0.263	1.548
Hedonism	1.115	0.224	286.000	0.510	1.693
Security	1.030	0.162	286.000	0.522	1.647
Big5 Emotional stability	2.844	0.330	286.000	2.000	3.833
Big5 Extroversion	2.950	0.313	286.000	2.000	3.833
Big5 Openness	2.879	0.375	286.000	1.667	4.000
Big5 Agreeableness	3.223	0.311	286.000	2.333	4.000
Big5 Conscientiousness	2.779	0.291	286.000	1.833	3.667
Familiarity	3.493	0.907	302.000	1.000	5.000
Appreciation	3.232	1.286	302.000	1.000	5.000

4.2 Main analysis

Overall, charitable giving to each of our ten charities is slightly higher under the universalism prime than under the neutral prime (Neu=9.838; Uni=10.275). Yet, the difference is not statistically significant neither for the median nor the mean (Mann-Whitney U-test: $p=0.507$; t-test: $p=0.388$) using the individual average of charitable giving across the treatments. (Since each participant was exposed to a single priming treatment, all tests reported are between subjects tests.) So for Hypothesis 1 we cannot reject the null Hypothesis. For Hypothesis 2, however, we find a significant difference for the average (using t-test; $p=0.076$) but not the median ($p=0.1378$) donation across the two treatments for subjects with universalism measure above the sample median. Although, we do not have a specific hypothesis concerning the priming effect for the subjects with below median universalism, we present these test results as well for completeness. The point estimate of the universalism prime goes in the negative direction in the below median universalism group, but the effect is not significant ($p=0.8188$ for the Mann-Whitney test and $p=0.8526$ for the t-test).

Table 4 reports the results from four regressions using the entire sample with an increasing set of control variables. As can be evidently seen there is no significant treatment effect in general, even though the regressions indicate that charitable giving tends to be higher under the universalism prime.¹⁴

Tables 5 and 6 report the regression results for those above and below the median in universalism respectively, using the same specifications as in Table 4. Figure 4.2 summarizes the findings for the most general specification (model 4) by presenting the predicted marginal effect of the prime on an average subject in each sample.

Returning to Table 5, we see an overall significant and positive effect of the universalism value prime on subjects that score above the median in universalism value in line with Hypothesis 2. The effect grows slightly stronger in magnitude and significance level as we add control variables. For an average subject in the sample scoring above median on universalism there is an 12 -17 percent marginal effect (depending on the model specification) on the charity donations due to prosocial priming.

For subjects below the median in universalism, the average effect of the universalism prime is slightly negative (albeit not significantly so) (Table 6). These effects are analogous to the findings of Andersson et al. (2015) where the prosocially oriented increase their effort and the proself oriented decrease their effort due to supraliminal prosocial priming in team contests. In Andersson et al. (2015), however, both the positive priming effect in the prosocially oriented group and the negative priming effect in the proself group were statistically significant.

¹⁴For reasons explained previously our sample grows smaller as we add controls (Charity and Personality controls), see models (1)-(4) in Table 4. In the Appendix we conduct the same analysis (see Tables 25-27) as below but keeping the sample fixed at the minimal size (i.e. $n=282$).

Table 4: OLS on all subjects

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	0.437	0.495	0.558	0.555
	[0.505]	[0.501]	[0.430]	[0.408]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.838***	5.970***	-3.924***	-24.09
	[0.351]	[0.797]	[0.869]	[24.15]
N	307	307	302	282
R-squared	0.002	0.061	0.321	0.403

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Figure 1: Plots of the predicted marginal effect for an average subject in each subsample.

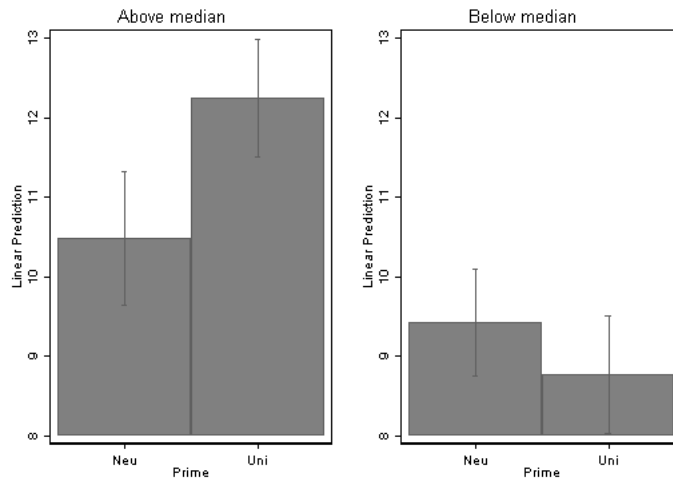


Table 5: OLS on subjects above median Universalism

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	1.257*	1.473**	1.766***	1.767***
	[0.700]	[0.720]	[0.594]	[0.596]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	10.75***	7.863***	-2.790*	-30.87
	[0.456]	[1.258]	[1.457]	[34.52]
N	143	143	142	142
R-squared	0.014	0.076	0.308	0.394

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 6: OLS on subjects below median Universalism

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.134	0.00585	-0.248	-0.648
	[0.716]	[0.725]	[0.614]	[0.512]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.098***	4.474***	-4.126***	-5.035
	[0.513]	[0.986]	[1.185]	[33.29]
N	143	143	140	140
R-squared	0.000	0.077	0.353	0.476

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

5 Robustness

In this section we report a number of robustness checks with regards to the above analysis. We start by using interaction effects instead of splitting the sample and then turn to an analysis where we use a different measure of prosocialness (the BigFive agreeableness measure). Subsequently we analyze if our results are affected when controlling for the individual ability to read the prime words. Overall, our results are robust to such extensions. The only notable difference appears when we simply exclude all subjects that were able to detect any of our prime words in the ex post control task. When we do so Hypothesis 2 fails to hold in many specifications. We discuss the possible reasons for this in that section.

5.1 Interaction effects

The main analysis, using the above and below median samples of universalism, can be criticized for being arbitrary regarding the selection of the cutoff point (the median in our case). We have therefore also conducted a regression analysis where we introduce interaction effects between the Prime and Universalism. For sake of space all tables in this section are reported in the Appendix. Table 11 in the Appendix reveals that the interaction effect has the right sign but is only significant once we control for personality and charity fixed effects.

5.2 Regression analysis using other measures of prosocialness

We also reproduce the main analysis but replace the universalism personal value measure used above with a related prosocial personality trait measure, the Big5 agreeableness measure. (The correlation between universalism and agreeableness is significantly positive at 0.284 with a p-value 0.000.) We run regression analysis on those that score above the median in the studied measure of prosocialness and on those that score below the median. Tables 12 and 13 (in the Appendix) report regression results for subjects above and below the population median of the Big5 agreeableness measure. Although weaker, the findings corroborate those using the universalism measure.

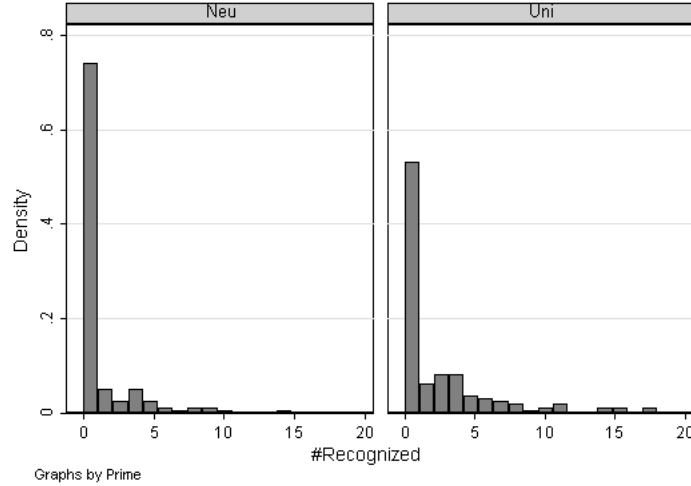
5.3 Controlling for the sublimity of the prime

To ensure that the prime was truly subliminal, we conducted an explicit laboratory procedure to control for this. The subjects were asked to perform the control task right after the charity decisions. The control task is described in detail in Section 2 and it essentially checks for the capacity to read the words that were used as the subliminal stimuli. If the subjects are capable of reading the word, the stimuli is arguably not truly subliminal but rather consciously perceived.

Figure 2 presents a histogram over the number of recognized words. A complicating feature of the control measure for subliminal priming is that more words are being recognized under the Universalism-prime than under the Neutral-prime even though the distribution of the length of the prime words was identical in the two treatments. This difference is confirmed by both a t-test as well as Mann-Whitney U-test (p-value=0.001). This is indicative that the priming may not only affect the charity decisions themselves, but there may be a similar priming effect on the capacity to read and understand words that have connotations with one's predominant values, i.e. the charity-priming task influences the control-priming task in a manner typical for the claimed priming effect.

The difference in recognized words between the two treatments suggests that our way of controlling for sublimity is not unproblematic. It also illustrates some of the problems with existing objective threshold methods where

Figure 2: Number of recognized words by treatment.



subjects might actually be able to read a couple of words, but in a large sample choices still look approximately random and thus such participants are judged as qualifying for sublimity. Results from the literature on semantic priming indicate that primed subjects are more capable of reading prime words which are semantically similar to the value-associated-words with which the subjects have been primed (Aarts and Custers, 2007). Indeed one can view our finding concerning the asymmetries in reading capacity across prime conditions from this perspective: our prosocial prime might have been powerful enough to impact the reading capacity of the words with prosocial connotations in the ensuing control task. In other words, the prosocial prime might have not only impacted the charity donations but also the word-reading capacity in the control task.¹⁵ With this caution in mind we present a set of regressions where we control for the number of recognized words.

We start out by simply including the number of recognized words (`#Recognized`) as a control variable in the regressions reported in the main analysis (see Tables 14, 15 and 16 in the Appendix for corresponding tables). This additional control does not have any major impact on the previously reported results, i.e. we still find a significant impact for those with values in line with the prime. Figure 3 summarizes the results by showing the marginal effect for an average individual in each sample for the most general model in each specification (in Tables 15 and 16).

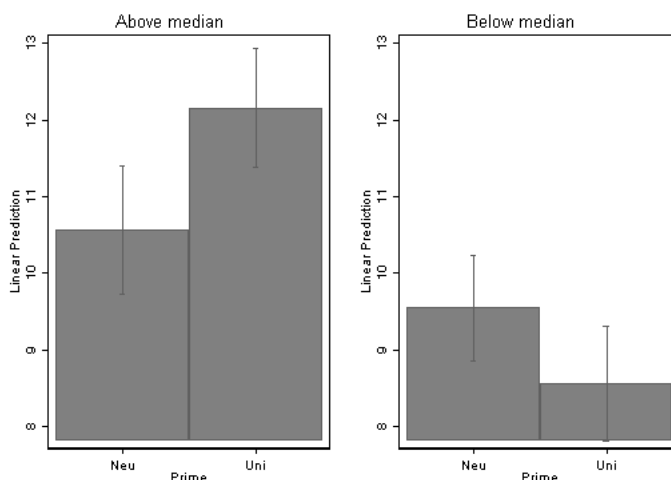
Note, however, that these results need to be interpreted very carefully as the number of recognized words appear to be affected by the prime (and it is thus an endogenous variable).

We can alternatively control for the reading capacity by dropping the data from any subjects who were capable of reading one or more of the words.¹⁶ We present the results of the corresponding regressions in Tables 17, 18, and

¹⁵We ran regressions with `#recognized` as the dependent variable using the data from the universalism prime sessions, see Table 20. The results (in the Appendix) illustrate that the positive interaction effect between personal values and the corresponding prime is of the correct sign but statistically insignificant in our study.

¹⁶Yet, one should notice that since the reading capacity is correlated with the prime, we might throw out variation that associates

Figure 3: Margins plot of the marginal effect for an average subject in each subsample, controlling for reading capacity.



19 in the Appendix.

The analysis of these regressions reveal that excluding subjects with capacity to read at least 1 of the 20 words has a negative impact both on the levels and the statistical significance of the estimated priming effect. Indeed all coefficients are now lower and only significant (at the 10 percent level) in the specifications with many controls (Model 3 and 4). The latter may simply be an effect of a smaller sample ($N=170$ vs $N=105$) but the former may be due to the fact that participants' donations react more to consciously visible prosocial prime words than to subliminal prime words. Due to the endogeneity between the prime and the capacity to read the prime words, these results are also difficult to interpret (it creates a selection problem in comparing the two treatments).

Notice also that our measure of the capacity of reading the prime words may in general overestimate the number of subjects for whom the prime in the donation task was consciously perceived for the reasons explained above (i.e. subjects may recognize more prime words in the control task when they see the words for the second time, than they did during the donation task). Previous priming research indeed suggests that priming may influence not only behavior and motivation but also perception: perception capacity tends to be selective and depend on individual motivational goals. Priming itself may have impacted the accessibility to the previously subconsciously observed words (see Bargh and Chartrand, 2000, pp. 10) and especially so in the universalism treatment (where the words are associated with personal goals for some participants) and not in the neutral priming condition (where the prime words are not associated with no particular values or goals). In the Appendix in Tables 20 and 21,

with variation in the heart of our study. Some experts in the field of priming in social psychology, indeed, strongly discourage scholars from providing multiple choice options asking "which of these words did you see" as a method for controlling and measuring sublimity (see p. 10, section on "Awareness checks for subliminal priming tasks" in Bargh and Chartrand 2010). Funneled questionnaire method is suggested as an alternative. Simson et al. (2005) critically discuss the advantages and shortcomings with both these methods.

we report regressions with the capacity to recognize the prime words as the dependent variable and we find quite large coefficients consistent with such a perception effect of prosocial priming increasing with the importance of the universalism value, though the effects are not statistically significant.

We conducted this robustness check regarding reading capacity in order to control for the hypothesis that our prime is not unconscious and the identified effect on charitable giving is driven by a experimenter demand effect (Zizzo, 2010) to behave in accordance with the hypothesized priming effect when consciously observing a prosocial prime stimuli. In such a case the prime is not subliminal but consciously perceived and one would expect that the emerging demand effect also affects the results of our ex-post PVQ value questionnaire that was conducted at the end of the experiment (about 5 minutes after the subject had completed the reading-capacity control task). That is, if the subject is consciously aware of being prosocially primed and this conscious priming influences donations, then this priming effect might also be exhibited as higher ex-post reported universalism values for such a subject. Contrary to this hypothesis, the ex-post measured universalism values are actually lower under the universalism prime (Neu: mean=1.167; Uni: mean=1.134) and there is no significant difference between treatments in the pre-measured universalism (see Table 9 in the Appendix) The lack of difference in the pre-measured universalism supports the view that randomization to treatments has been properly conducted.¹⁷

6 Conclusion

In a controlled, randomized experiment, we vary a subliminal prime prior to charity donation decisions. There are two alternative primes: one with connotations with prosocial universalism values and another one without any particular value-laden connotations (neutral). For the total sample we do not find a significant priming effect. But we find a positive effect of the universalism prime on charitable giving among those with strong universalism values. That the priming effect increases with the degree of prosociality is in line with theoretical predictions, and suggests that in order to be effective the prime has to be in line with underlying values.

When controlling for the capacity to recognize the prime words, the results are less clear cut. Using number of recognized prime words as a control leaves the main priming result unchanged, but excluding those with capacity to read at least one of the words expels the result. How should these mixed results be interpreted? Our sublimity control task reveals substantial heterogeneity in human capacity to read words fast. There are few participants who can read all and even the longest of the prime words but a substantial minority can read at least one of them. If

¹⁷See also Table 10 in the Appendix illustrating a tendency for higher reports for all value and personality measures under laboratory circumstances after the experiment than in less controlled circumstances when answering though the Webropol-survey-tool over the internet.

we exclude this minority, we lose statistical significance and the positive coefficients are smaller. The heterogeneous capacity to read even word-stimuli of 17 ms of duration casts doubts of one-size-fits-all prime durations in subliminal priming studies and suggests that prime duration should be adjusted individually (Bargh and Chartrand, 2000) or proper individual sublimity tests should be carried out in this case, as we did. This latter strategy faces yet further challenges admitted in Bargh and Chartrand (2000).

We namely find that the fraction of participants capable of reading the prosocial prime words is higher than the fraction of participants who are capable of reading the neutral prime words (although the word-length distributions are identical in these treatment and control conditions). This suggests that the universalism vs neutral priming that took place before the donation decisions differentially influenced the perception capacities in the control task. Previous priming research indeed suggests that priming may influence not only behavior and motivation but also perception: perception capacity tends to be selective and depend on individual motivational goals. Priming itself may have impacted the accessibility to the previously subconsciously observed words see Bargh and (Chartrand, 2000, pp. 10). This should especially be the case in the universalism treatment (where the words are associated with personal goals for some participants) and not so much in the neutral priming condition (where the prime words are not associated with no particular values or goals). When we run regressions with the capacity to recognize the prime words as the dependent variable, we find quite large coefficients consistent with such a perception effect of prosocial priming increasing with the importance of the universalism value, but the effects are not statistically significant. Such effects imply that our measure of capacity of reading the neutral prime words overestimates the number of subjects for whom the prime in the donation task was supraliminal, especially in the prosocial (universalism) priming condition. That the two alternative primes also appear to differentially affect the ability to recognize the prime words in the control task makes it difficult to control for sublimity of the prime in the donation task.

We conclude that we fail to find support for a substantial priming effect in the overall sample, but that our results suggest that subliminal priming increase donations among individuals with high levels of prosociality. But this result need to be interpreted cautiously and further work is needed to establish if this is a robust finding.

Appendix

A Additional tables and regressions

A.1 Correlations

In Tables 7 and 8 we report correlations between our ex-ante and ex-post measures of personal values and personality traits.

A.2 Randomization and difference between ex ante and ex post questionnaire responses

In Table 9 we report on average reported values in the ex post and ex ante personality questionnaires. Please note that the sample in the ex post column is a subset of the entire sample.

Table 10 reports a comparison between values ex ante and ex post along with p-values from a non-parametric Wilcoxon matched pairs test.

A.3 Interaction effects

The main analysis, using the above and below median samples of universalism, can be criticized for being arbitrary regarding the selection of the cutoff point (the median in our case). We have therefore also conducted a regression analysis where we introduce interaction effects between the Prime and Universalism. Table 11 reveals that the interaction effect has the right sign but is only significant once we control for personality and charity fixed effects.

A.4 Regression analysis using other measures of prosocialness

In what follows we reproduce the main analysis but replace the universalism personal value measure used above with a related prosocial personality trait measure, the Big5 agreeableness. We run regression analysis on those that score above the median in the studied measure of prosocialness and those that score below the median. Tables 12 and 13 report regression results for subjects above and below the population median of the Big5 agreeableness measure. Although weaker, the findings here corroborate those using the universalism measure.

A.5 Controlling for number of recognized words

In Tables 14-16 we report robustness checks by introducing the number of recognized words as a linear control in the regressions reported in the main analysis. In Tables 17-19 we instead exclude any subject that were able to read one or more of the prime words in the control task.

Table 7: Correlations: PVQ

	Benevolence	Universalism	Achievement	Power	Conformity	Tradition	Self-direction	Stimulation	Hedonism	Security
Benevolence	1									
Universalism	0.33	1								
Achievement	-0.42	-0.52	1							
Power	-0.41	-0.54	0.5	1						
Conformity	-0.07	-0.18	-0.17	-0.12	1					
Tradition	0.02	-0.12	-0.31	-0.14	0.39	1				
Self-direction	-0.09	0.41	-0.17	-0.21	-0.38	-0.26	1			
Stimulation	-0.09	-0.17	0.05	0.03	-0.41	-0.27	0.15	1		
Hedonism	0.02	-0.15	0	0.06	-0.33	-0.25	-0.18	0.28	1	
Security	-0.2	-0.23	-0.02	-0.04	0.26	0.12	-0.29	-0.43	-0.27	1

Table 8: Correlations: Big5

	Big5 Emotional stability	Big5 Extroversion	Big5 Openness	Big5 Agreeableness	Big5 Conscientiousness
Big5 Emotional stability	1				
Big5 Extroversion	-0.12	1			
Big5 Openness	-0.02	0	1		
Big5 Agreeableness	-0.03	0.03	0.16	1	
Big5 Conscientiousness	0.15	0.03	-0.11	0.12	1

Table 9: Questionnaire responses before and after experiment by Prime

	Ex ante			Ex post		
	Neu	Uni	p-value	Neu	Uni	p-value
Benevolence	1.103	1.099	0.875	1.107	1.100	0.721
Universalism	1.167	1.134	0.080	1.161	1.114	0.074
Achievement	0.975	1.021	0.105	0.961	1.007	0.218
Power	0.808	0.826	0.385	0.820	0.836	0.475
Conformity	0.902	0.874	0.322	0.885	0.848	0.079
Tradition	0.680	0.670	0.794	0.708	0.694	0.601
Self-direction	1.119	1.113	0.760	1.143	1.126	0.658
Stimulation	0.943	1.017	0.044	0.967	1.051	0.020
Hedonism	1.102	1.127	0.589	1.068	1.092	0.526
Security	1.040	1.020	0.232	1.034	1.034	0.912
Big5 Emotional stability	2.843	2.845	0.911	2.822	2.944	0.010
Big5 Extroversion	2.959	2.941	0.799	2.993	2.977	0.643
Big5 Openness	2.883	2.874	0.834	2.908	2.916	0.680
Big5 Agreeableness	3.248	3.199	0.277	3.220	3.214	0.716
Big5 Conscientiousness	2.769	2.789	0.662	2.788	2.767	0.576

Notes: Mean responses by prime and p-values from non-parametric MWU-tests for comparisons between priming conditions

Table 10: Comparing ex ante and ex post responses
Correlations Mean values

		Ex Ante	Ex Post	p-value
Benevolence	0.754	1.095	1.096	0.650
Universalism	0.904	1.136	1.134	1.000
Achievement	0.841	1.003	0.988	0.880
Power	0.804	0.835	0.844	0.404
Conformity	0.809	0.895	0.863	0.003
Tradition	0.758	0.680	0.698	0.081
Self-direction	0.770	1.104	1.134	0.013
Stimulation	0.823	0.986	1.011	0.324
Hedonism	0.811	1.113	1.089	0.001
Security	0.835	1.035	1.029	0.821
Big5 Emotional stability	0.521	2.812	2.881	0.034
Big5 Extroversion	0.624	2.964	2.980	0.319
Big5 Openness	0.747	2.860	2.924	0.000
Big5 Agreeableness	0.599	3.226	3.210	0.382
Big5 Conscientiousness	0.468	2.778	2.780	0.793

Notes: First column gives pairwise correlations between ex-ante and ex-post values.

Last three columns presents overall averages ex-ante and ex-post responses along with p-values from a non-parametric Wilcoxon matched pairs test.

Table 11: OLS on all subjects with interaction effects

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-2.032	-2.180	-4.174*	-5.557**
	[2.897]	[2.894]	[2.490]	[2.354]
Universalism	7.086***	6.946***	2.728**	3.037
	[1.477]	[1.466]	[1.246]	[3.171]
Prime#Universalism	2.307	2.477	4.236**	5.333***
	[2.509]	[2.506]	[2.120]	[2.021]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	2.602	-1.005	-5.279***	-4.420
	[1.752]	[1.844]	[1.733]	[5.720]
N	286	286	282	282
R-squared	0.074	0.129	0.349	0.410

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 12: OLS on subjects above median agreeableness

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	0.608	0.673	0.935*	1.014**
	[0.589]	[0.590]	[0.517]	[0.509]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	10.02***	5.726***	-3.571***	-24.54
	[0.398]	[0.910]	[1.085]	[30.46]
N	199	199	196	196
R-squared	0.003	0.072	0.316	0.384

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 13: OLS on subjects below median agreeableness

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.135	-0.196	-0.606	-0.876
	[1.035]	[1.087]	[0.873]	[0.844]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.945***	6.602***	-5.026***	7.145
	[0.714]	[1.834]	[1.568]	[38.12]
N	87	87	86	86
R-squared	0.000	0.040	0.383	0.516

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 14: OLS on all subjects

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	0.309	0.306	0.400	0.365
	[0.528]	[0.522]	[0.447]	[0.418]
#Recognized	0.108	0.150*	0.126*	0.140**
	[0.0788]	[0.0776]	[0.0651]	[0.0637]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.676***	5.670***	-4.110***	-27.68
	[0.359]	[0.822]	[0.877]	[24.06]
N	303	303	301	281
R-squared	0.006	0.066	0.325	0.408

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 15: OLS on subjects above median Universalism

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	1.224*	1.416*	1.658***	1.587**
	[0.702]	[0.726]	[0.602]	[0.620]
#Recognized	0.0217	0.0398	0.0743	0.0983
	[0.117]	[0.112]	[0.0900]	[0.0873]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	10.73***	7.735***	-3.077**	-35.48
	[0.473]	[1.238]	[1.510]	[33.98]
Observations	143	143	142	142
R-squared	0.014	0.076	0.310	0.397

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 16: OLS on subjects below median Universalism

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.447	-0.397	-0.476	-0.978*
	[0.757]	[0.772]	[0.649]	[0.530]
#Recognized	0.274***	0.303***	0.198*	0.228**
	[0.102]	[0.110]	[0.102]	[0.0937]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	8.657***	4.008***	-4.136***	-2.991
	[0.525]	[0.978]	[1.143]	[33.18]
Observations	140	140	139	139
R-squared	0.022	0.097	0.360	0.486

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 17: OLS on all subjects, restricted sample

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.0570	-0.0575	0.222	0.478
	[0.674]	[0.674]	[0.557]	[0.539]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.926***	6.965***	-3.070**	-61.19*
	[0.408]	[1.072]	[1.202]	[33.81]
N	178	178	177	165
R-squared	0.000	0.056	0.331	0.400

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

A.6 Regressions with #Recognized words as dependent variable

Table 22 shows that when regressing the number of recognized prime words on personal values and the priming condition, participants are able to read more prime words in the universalism priming condition. Coefficients in the regressions in Table 23 indicate an interaction effect between the priming condition and the corresponding personal values. But the effects are not statistically significant.

A.7 Gender and age

We sent out an ex post questionnaire asking about gender and age but we did not get full participation. Hence, there may be sample selection issues that may impact the validity of the conducted analysis. Nevertheless, gender and age are correlated with values and personality measures and thus those capture at least some gender- and age-related variation in charitable giving. The following tables repeat our previous regression analysis studying priming effects now with gender and age controls. Tables 22-24 report the results for the whole sample, for the subjects with above median universalism, and for the subjects with below median universalism, respectively. In Table 22 with the whole sample, women tend to donate more but indeed this seems to be driven by an omitted-variable bias since if personality measures and personal values are not controlled for, the significance disappears and the estimated coefficients fall drastically.

Table 18: OLS on subjects above median Universalism with restricted sample

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	0.572	0.764	1.221*	1.267*
	[0.868]	[0.883]	[0.711]	[0.755]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	10.74***	9.514***	-0.993	-59.77
	[0.512]	[1.225]	[1.669]	[47.33]
N	94	94	93	93
R-squared	0.003	0.063	0.280	0.389

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 19: OLS on subjects below median Universalism, restricted sample

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.474	-0.541	-0.386	-0.747
	[1.038]	[1.073]	[0.900]	[0.751]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	8.926***	4.752***	-3.695**	-54.79
	[0.635]	[1.445]	[1.794]	[43.57]
N	72	72	72	72
R-squared	0.002	0.110	0.400	0.548

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 20: OLS on #Recognized words

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: #Recognized words			
Prime	1.471***	1.423***	1.428***	1.434***
	[0.363]	[0.350]	[0.353]	[0.348]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	1.118***	2.161***	1.875**	5.687
	[0.189]	[0.609]	[0.760]	[5.363]
N	303	303	301	281
R-squared	0.052	0.087	0.089	0.151

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects.

Charity controls include controls for familiarity and appreciation of the charity.

Personality controls for the PVQ and Big5 items.

Table 21: OLS on #Recognized words with interactions

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: #Recognized words			
Prime	-0.688	-0.460	-0.747	-0.516
	[1.854]	[1.785]	[1.808]	[1.835]
Universalism	-0.0451	0.0158	-0.0203	0.0692
	[0.192]	[0.196]	[0.203]	[0.291]
Prime#Universalism	0.464	0.403	0.467	0.420
	[0.416]	[0.393]	[0.398]	[0.405]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	1.346	2.229**	2.228**	6.611
	[0.875]	[1.010]	[1.066]	[5.299]
N	283	283	281	281
R-squared	0.056	0.093	0.096	0.153

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects.

Charity controls include controls for familiarity and appreciation of the charity.

Personality controls for the PVQ and Big5 items.

Table 22: OLS on all subjects

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	0.158 [0.622]	0.264 [0.631]	0.679 [0.523]	0.583 [0.514]
Female	1.583** [0.788]	1.479* [0.790]	0.824 [0.667]	0.373 [0.634]
Age	-0.0180 [0.0514]	-0.0354 [0.0537]	-0.0541 [0.0480]	-0.0589 [0.0465]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.424*** [1.533]	6.944*** [1.927]	-2.445 [1.811]	-38.56 [27.42]
N	203	203	200	193
R-squared	0.016	0.076	0.335	0.438

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 23: OLS on subjects above median Universalism

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	1.156 [0.788]	1.465* [0.833]	1.781** [0.688]	1.949*** [0.729]
Female	1.387 [1.046]	1.647 [1.068]	0.880 [0.917]	0.529 [0.899]
Age	0.0440 [0.0778]	0.0219 [0.0791]	-0.0116 [0.0676]	-0.00293 [0.0712]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	8.420*** [2.246]	5.980** [2.934]	-2.874 [2.769]	-31.04 [38.72]
Observations	109	109	108	108
R-squared	0.028	0.100	0.309	0.410

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 24: OLS on subjects below median Universalism

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.994	-0.933	-0.868	-1.127*
	[0.921]	[0.911]	[0.764]	[0.642]
Female	1.258	1.293	0.691	0.148
	[1.160]	[1.160]	[0.932]	[0.787]
Age	-0.104	-0.129*	-0.102	-0.0721
	[0.0637]	[0.0725]	[0.0753]	[0.0552]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	11.49***	6.941***	-2.021	9.695
	[2.047]	[2.495]	[2.407]	[40.30]
Observations	87	87	85	85
R-squared	0.036	0.122	0.422	0.547

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

A.8 OLS regressions using the smallest sample

Table 25 reports results from four regressions using the the smallest sample (n=282) reported in the main paper. The purpose is to show that our main results are not due to the fact that our sample grows smaller as we add controls. It is fair to conclude that our results are robust to such restrictions.

B Translated instructions

This is an experiment in economic science, welcome. The scientific value of the experiment predicates that you and the organizer of the experiment act in line with the instructions given. You will be paid a monetary remuneration exactly as explained in the instructions. Hence, we urge you to read through the following instructions carefully.

Please, shut down your mobile phone. Do not speak or cause unnecessary noise.

If you have any questions, please, raise your hand - an instructor will come to you. You can present your question by whispering it to the instructor.

During the coming 10 minutes you will make 10 decisions. Your choices are anonymous - from the collected data it is impossible to infer the identity of the decision maker.

Table 25: OLS (restricted sample)

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	0.416	0.464	0.547	0.555
	[0.519]	[0.519]	[0.437]	[0.408]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.977***	5.971***	-4.015***	-24.09
	[0.345]	[0.854]	[0.902]	[24.15]
Observations	282	282	282	282
R-squared	0.001	0.056	0.331	0.403

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 26: OLS on subjects above median Universalism (restricted sample)

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	1.279*	1.488**	1.766***	1.767***
	[0.704]	[0.727]	[0.594]	[0.596]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	10.70***	7.858***	-2.790*	-30.87
	[0.452]	[1.254]	[1.457]	[34.52]
Observations	142	142	142	142
R-squared	0.015	0.074	0.308	0.394

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

Table 27: OLS on subjects below median Universalism (restricted sample)

VARIABLES	(1)	(2)	(3)	(4)
	Dependent variable: Charity contribution			
Prime	-0.0679 [0.719]	0.0596 [0.732]	-0.248 [0.614]	-0.648 [0.512]
Charity/session fixed effects	NO	YES	YES	YES
Charity controls	NO	NO	YES	YES
Personality controls	NO	NO	NO	YES
Constant	9.107*** [0.513]	4.341*** [1.015]	-4.126*** [1.185]	-5.035 [33.29]
Observations	140	140	140	140
R-squared	0.000	0.077	0.353	0.476

Notes: Robust standard errors clustering at the subject level, *** p<0.01, ** p<0.05, * p<0.1.

Prime takes value 1 for Uni. Charity/Session includes charity and session fixed effects. Personality controls for the PVQ and Big5 items. Charity controls include controls for familiarity and appreciation of the charity.

The compensation paid to you in the end of the experiment will depend on the choices you will make. One of the 10 choices you will make will be randomly drawn (each decision has an equal chance of being chosen) and you will be paid according to this choice.

Follow carefully the instructions on the screen.

In each of the ten decisions, you will share 20 euros between yourself and another party. You can increase the share assigned to the other by pressing “k”. You can increase the share assigned to you by pressing “j”. You will see the provisional sharing both in euro terms and in histogram presentation on the screen. When the sharing is to your liking, you can confirm the sharing by pressing “d”.

To start the experiment, write on the “subject-id” field on the screen the first letter of your mother’s maiden name (if you do not know the maiden name of your mother, write the first letter of your own surname), the first initial of your father’s second name (if you do not know your father’s second name, write the initial of the own second name), the last letter of your mother’s first name (if you do not know the last name of your mother’s first name, write the last initial of your own first name), last letter of your place of birth (if you do not know the last letter of your place of birth, write the last letter of your current home town), and the last number of your year of birth. Then click “run” → “run non-stop”

At each time, act according to the instructions on the screen.

B.1 Instructions in the original language (Finnish)

Tömö on taloustieteellinen koe, tervetuloa.

Kokeen tieteellinen luotettavuus edellyttää, että sekä sinä että kokeen järjestäjät toimivat annettujen ohjeiden mukaisesti. Kokeesta maksetaan rahallinen korvaus koeosapuolille tösmölleen siten, kuin ohjeissa todetaan. Lue siis seuraavat ohjeet huolellisesti läpi.

Sulje matkapuhelimesi. Älä puhu tai aiheuta turhaa ääntä.

Jos sinulla on kysyttävää, nosta kättesi – kokeen valvoja tulee luoksesi. Voit esittää mahdolliset kysymyksesi kokeen valvojalle kuiskaten.

Seuraavan 10 minuutin aikana teet 10 valintaa. Valintasi ovat anonyymeja – kerätystä datasta ei voida päätellä päätöksentekijän henkilöllisyyttä.

Kokeen lopuksi sinulle mahdollisesti maksettava kompensatio riippuu tekemistösi valinnoista. Yksi kymmenestä tekemöstösi valinnasta valitaan satunnaisesti (kullakin päätöksellä on yhtälöinen mahdollisuus tulla valituksi) ja korvaus sinulle ja toiselle osapuolelle maksetaan tämän valitun päätöksesi mukaisesti.

Seuraa tarkoin ruudun keskellä näkyviä ohjeita.

Kussakin kymmenestä päätöksestä jaat 20 euroa itsesi ja toisen osapuolen välillä. Voit lisätä toisen osapuolen osuutta painamalla “k”. Voit lisätä omaa osuuttasi painamalla “j”. Näet ruudulla vallitsevan jaon sekä euromääräisesti että histogrammiesityksenä. Kun jako on sellainen kuin haluat, vahvistat päätöksesi painamalla “d”.

Aloittaaksesi kokeen, kirjoita näytöllä näkyvöön kohtaan “subject id” öitisi tyttönimen ensimmäinen kirjain (jos et tiedä öitisi tyttönimeä, kirjoita oman sukunimesi ensimmäinen kirjain), isäsi toisen nimen ensimmäinen kirjain (jos et tiedä isäsi toista nimeä, kirjoita oman toisen nimesi ensimmäinen kirjain), öitisi etunimen viimeinen kirjain (jos et tiedä öitisi etunimeä, kirjoita oman etunimesi viimeinen kirjain), syntymäpaikkasi viimeinen kirjain (jos et tiedä syntymäpaikkaasi, kirjoita nykyisen asuinpaikkasi viimeinen kirjain) ja syntymävuotesi viimeinen numero. Klikkaa sen jälkeen “run” → “run non-stop”

Toimi kulloinkin näytöllä näkyvien ohjeiden mukaan.

C Values orientation questionnaire (How much am I like this person?)

The personal prosocial and proself value orientations were captured with the Portrait Values Questionnaire (PVQ, Schwartz, 2003; Schwartz, Lehmann, and Roccas, 1999; Schwartz, Melech, Lehmann, Burgess, Harris, and Owens, 2001). The PVQ has been widely used in different contexts and shows good psychometric qualities¹⁸. Cronbach Alpha reliabilities were X for pro-social, self-transcendence values (consisting of the lower-order universalism and

¹⁸Psychometric quality refers to the measurement reliability of a self-report measure in, e.g. psychological research. It is typically estimated with Cronbach alpha coefficient. Typically test for psychometric quality include test of dimensionality, or in other words test the clearness with which the questions that are indicators of underlying constructs map onto the corresponding constructs in factor analytic or multidimensional scaling techniques (e.g., DeVellis, 1991).

benevolence value scales) and X for proself, self-enhancement values (consisting of the lower-order achievement and power value scales, see Schwartz et al. 2001). More specifically, the PVQ presents subjects with short portrayals of different people, each describing a person’s goals, aspirations, or wishes that point implicitly to the importance of a single value type (Schwartz et al., 2001). For example, “It is important to Z to be rich. Z wants to have a lot of money and expensive things.” (power) or “E thinks it is important that every person in the world be treated equally. E wants justice for everybody, even for people E doesn’t know.” (universalism). Statements were presented in random order. Subject rated the portrayals in response to the question “How much like you is this person?” on the following scale “very much like me”, “like me”, “somewhat like me”, “a little like me”, “not like me”, and “not like me at all”. Answers were coded 6 (very much like me) to 1 (not like me at all) and mean sum scores for the corresponding items per value calculated.

C.1 PVQ questionnaire

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you.

HOW MUCH LIKE YOU IS THIS PERSON?

- (5) Very much like me
- (4) Somewhat like me
- (3) A little like me
- (2) Not like me
- (1) Not like me at all

1. Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.
2. It is important to him to be rich. He wants to have a lot of money and expensive things.
3. He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.
4. It’s very important to him to show his abilities. He wants people to admire what he does.
5. It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.
6. He thinks it is important to do lots of different things in life. He always looks for new things to try.
7. He believes that people should do what they’re told. He thinks people should follow rules at all times, even when no-one is watching.

8. It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them.
9. He thinks it's important not to ask for more than what you have. He believes that people should be satisfied with what they have.
10. He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.
11. It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself.
12. It's very important to him to help the people around him. He wants to care for their well-being.
13. Being very successful is important to him. He likes to impress other people.
14. It is very important to him that his country be safe. He thinks the state must be on watch against threats from within and without.
15. He likes to take risks. He is always looking for adventures.
16. It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.
17. It is important to him to be in charge and tell others what to do. He wants people to do what he says.
18. It is important to him to be loyal to his friends. He wants to devote himself to people close to him.
19. He strongly believes that people should care for nature. Looking after the environment is important to him.
20. Religious belief is important to him. He tries hard to do what his religion requires.
21. It is important to him that things be organized and clean. He really does not like things to be a mess.
22. He thinks it's important to be interested in things. He likes to be curious and to try to understand all sorts of things.
23. He believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to him.
24. He thinks it is important to be ambitious. He wants to show how capable he is.
25. He thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned.
26. Enjoying life's pleasures is important to him. He likes to 'spoil' himself.
27. It is important to him to respond to the needs of others. He tries to support those he knows.
28. He believes he should always show respect to his parents and to older people. It is important to him to be obedient.

29. He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.

30. He likes surprises. It is important to him to have an exciting life.

31. He tries hard to avoid getting sick. Staying healthy is very important to him.

32. Getting ahead in life is important to him. He strives to do better than others.

33. Forgiving people who have hurt him is important to him. He tries to see what is good in them and not to hold a grudge.

34. It is important to him to be independent. He likes to rely on himself.

35. Having a stable government is important to him. He is concerned that the social order be protected.

36. It is important to him to be polite to other people all the time. he tries never to disturb or irritate others.

37. He really wants to enjoy life. Having a good time is very important to him.

38. It is important to him to be humble and modest. He tries not to draw attention to himself.

39. He always wants to be the one who makes the decisions. He likes to be the leader.

40. It is important to him to adapt to nature and to fit into it. He believes that people should not change nature.

Thank you for your cooperation!

C.2 PVQ - Coding key

- Individual Level Conformity - 7,16,28,36
- Tradition - 9,20,25,38
- Benevolence - 12,18,27,33
- Universalism - 3,8,19,23,29,40
- Self-Direction - 1,11,22,34
- Stimulation - 6,15,30
- Hedonism - 10,26,37
- Achievement - 4,13,24,32
- Power - 2,17,39
- Security - 5,14,21,31,35

D Prime words

D.1 Neutral prime words

pöytä - table; taivas - sky; teksti - text; sisältö - content; käytävä - corridor; todellisuus - reality; tilastokeskus - center of statistics; neutraalisuus - neutrality; kivennäisvesi - mineral water; lumivalkoisuus - snow-whiteness; tulitikkurasia - match box; haja-asutusalue - sparsely populated area; sivustakatsoja - by-stander; sarjakuvahahmo - cartoon character; kansallismuseo - national museum; monikäyttöisyys - versatility; virastorakennus - public office building; virvoitusjuoma - soft drink; perustuskustannus - basis cost / elementary cost; pituussuuntaisuus - longitudinality

D.2 Universalism prime words

ekologisuus - ecological (the noun of being ecological); vapaus - freedom; pyyteettömyys - altruism; reiluus - fairness; tasa-arvoisuus - equality; yhteinen etu - common good; yhdenvertaisuus - parity; avaramielisyys - openmindedness; suvaitsevaisuus - tolerance; ympäristönsuojelu - environmental protection; oikeudenmukaisuus - justice; viisaus - wisdom; oikeamielisyys - righteousness; ymmärtömyys - comprehension; yhteisymmärrys - mutual understanding; laajakatseisuus - broadmindedness; ihmisoikeudet - human rights; rauha - peace; luonto - nature; yhteisöllisyys - communality;

E Charity organizations

WWF - World Wildlife Fund, Punaisen ristin katastrofirahasto - Red Cross Catastrophe Fund, Pelastakaa lapset - Save the Children, UNHCR - Finnish Refugee Help UNHCR, Löökörit ilman rajoja - Médecins sans Frontières, SOS Lapsikylö - SOS Children's Villages, Kirkon Ulkomaanapu - Foreign Aid of the Finnish Lutheran Church, Lastenklinikan kummit - The Association of Friends of the University Hospital for Children, Mannerheimin lastensuojeluliitto - The Mannerheim League for Child Welfare, Plan - Plan Finland.

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