

**TOO COLD FOR WARM GLOW?
CHRISTMAS-SEASON EFFECTS IN
CHARITABLE GIVING**

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Too Cold for Warm Glow?

Christmas-Season Effects in Charitable Giving

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Abstract

This paper analyzes seasonal effects and their potential drivers in charitable giving. We analyze whether donations differ between the pre-Christmas shopping season and summer. Our experiment aims to minimize confounding factors and controls for donor heterogeneity. We find that prosocial subjects significantly reduce donations by almost one half in the pre-Christmas shopping season. We identify stress and savings as significant drivers of this result. First, the higher subjects' reported stress level in the Christmas season relative to the rest of the year, the lower donations. Second, the higher relative savings, the lower giving. The findings provide managerial insights for the timing and design of fundraising campaigns.

JEL Classification numbers: C91, D64.

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1 Introduction

In the United States, more than one third of annual giving (33.6%) happens in the “Giving Season” between Thanksgiving and Christmas.¹ The lion share can be attributed to December where 17.5% of the year’s donations are collected (MacLaughlin, 2014). Likewise, most of the campaigns take place in the holiday time. For instance, “Giving Tuesday” which is celebrated right after Thanksgiving kicks off the charitable-giving season. The fundraising event makes use of social media to raise funds. It is called a “global day of giving” worldwide, where 98 countries took part in 2017. Data from this year reveal that on that day 2.4 million social media engagements happened.² Similarly, Cairns and Slonim (2011) argue that donations in churches are higher at Easter and at Christmas which could be due to the fact that more people go to church during holidays. Noteworthy, fundraising campaigns are often expensive or inefficient (Singh et al., forthcoming). There is evidence that fundraising spending may account to 24% of overhead costs (Hager, 2002).³ Hence, for management practices, it is interesting to learn more about the efficiency of fundraising campaigns in the holiday season. The following questions arise: *Is it that more money is collected in the “Giving Season,” because of higher fundraising activity? Or is it that people during this time generally give more?*

To find an answer, this paper compares people’s willingness to donate in the Christmas season with their readiness to give in summer. We are especially interested in the supply side of donations, i.e., the behavior of potential donors. The paper aims to isolate potential interaction effects with the demand side of collecting money, e.g., a solicitor asking for a donation. We tackle this issue by applying a controlled laboratory experiment where subjects have the opportunity to donate money to a charity (e.g., Eckel and Grossman, 1998), i.e., the German Red Cross. To compare seasonal effects we run our sessions in the week right after Black Friday. By contrast, the data of the control treatment was generated in June.

The laboratory approach allows us to counteract possible obstacles which may arise in the field. First, it minimizes interaction effects induced by the demand side of giving, represented by the solicitor. This is of importance, as Gneezy and Rustichini (2000) emphasize that revenue from donations may also depend on a solicitor’s work motivation.⁴ Second, the laboratory setup also guarantees that the parameters of the solicitation are

¹Similarly, the Center on Philanthropy (2012) finds that 43% of high-income households donate more between Thanksgiving and New Year’s Day.

²See <http://www.givingtuesday.org>.

³High overhead costs are an important factor which may hinder high donations (Gneezy et al., 2014).

⁴It is possible that this aspect could also be affected by the season when the fundraising takes place.

kept constant between the different seasons (Christmas and summer). Comparing field settings of donations during the Christmas and summer season may be problematic, as it is hard to control for heterogeneous effects which may arise in these scenarios. For instance, in street solicitations during Christmas, subjects may be affected by special facts such as Christmas music playing, or a solicitor dressed in a Santa suit. Moreover, when comparing field solicitations in winter and summer, it cannot easily be guaranteed that similar people take part in these two points of time. Importantly, the studential subject pool of our lab study guarantees that participants are homogeneous. Finally, the experiment allows us to control for individual preferences such as Social-Value Orientation which may help to explain donation behavior. This is of importance to explain behavioral changes, as prosociality is related to charitable giving (e.g., Khadjavi 2016) and prosocial people generally donate more (Bekkers and Wiepking, 2011).

The results clearly show that individual willingness to give is not higher in the Christmas season. Instead, we find the opposite, i.e., the data of the Christmas season show a significant decline in subjects' willingness to give as compared to summer. During Christmas time, we find that average donations significantly decrease from 26.8% down to 19.7%. The control data of the summer is in line with laboratory findings of a meta study by Engel (2011) who finds that subjects on average contribute 28.4%. It turns out that the decline in giving can be entirely explained by the behavior of prosocial subjects who donate significantly less (18.9%) in the Christmas season than in summer (34.8%). To shed more light on these findings we run a second wave of our main treatment which focuses on donations in the Christmas season. In this attempt we added a post-experimental questionnaire to control for potential explanations for the decline in winter. The data perfectly replicates the findings of the first wave. The questionnaire reveals that emotional stress is an important explanatory variable. We find that prosocial subjects who report a higher perceived degree of stress in the Christmas season compared to the rest of the year, contribute 34% less than prosocials who are not affected. The finding that subjects face more emotional stress in the Christmas season is in line with Klöner (2004). The author reports an increased rate of cardiac deaths between Thanksgiving and Christmas. Cardiac deaths may also be stimulated by increased consumption stress during the Christmas Season. Not least for this reason Black Friday is often referred to "Dead Friday." Our data also hint that subjects adjust their saving patterns because of an anticipated increase in consumption. That is, we find lower donations for prosocial subjects who report that they save more during Christmas season and plan to buy a high number of gifts.

The findings may be of importance for managerial insights aiming at the efficiency of fundraising campaigns. The results emphasize that it may payoff to distribute fundraising activities differently in the course of the year. To profit by the higher degree of subjects' willingness to give in summer, it may help to run campaigns outside gift seasons. The findings also suggest implications for the design of fundraising activities. That is, campaigns should be run at places where it is likely to encounter less stressed people. For instance, campaigns could take place in relaxing environments such as parks or spas and not in places such as train stations.

2 Experimental Design

Our experiment comprised three stages. Subjects received the instructions of each stage before it started. They were not informed on the outcome until the experiment was finished. At the end of the experiment, one stage was randomly selected to be paid out. Subjects earned Talers and the exchange rate was 10 Talers = 1 Euro.

In the first stage, we elicited subjects' risk preferences with the task introduced by Gneezy and Potters (1997). Subjects had an endowment of 100 Talers and decided on the investment in a risky lottery. There was an equal chance that the lottery would win/lose. If it wins, the invested amount is multiplied by 2.5. Otherwise, the investment was lost. In the second stage subjects were informed that they could donate to a charity (Eckel and Grossman, 1998), i.e., the German "Red Cross." Subjects received an endowment of 100 Talers which could be donated in integers to the charity. We explicitly informed them that the donations would be transferred by online transactions after the experiment.⁵ To ensure credibility, subjects could stay after the experiment was finished and watch us processing the online transaction. The third stage was a public good game which will be part of another study. After the three stages we measured Social-Value Orientation (SVO) (Van Lange et al. 1997) in a non-incentivized setting. Mentzakis and Mestelman (2013) show that SVO data elicited in a non-incentivized setting does not differ from SVO data which was generated with rewards. In our SVO task, subjects had to complete nine decision sets with three choices each. They were presented to hypothetical monetary splits between them and another person. They had to select one out of the three choices in nine decision sets. Subjects can be classified in *prosocial*, *individualistic*, or *competitive*.

⁵In 3 of 4 winter sessions we tested whether overhead costs matter. Subjects could click on a info button to query this information. 29 subjects did so. The donations are not different between the sessions where information could be obtained or not (Mann-Whitney test, $p=0.485$). The distribution is also not different (Kolmogorov-Smirnov test, $p=0.541$). We merge this data for the winter sessions.

In a second wave of the Christmas-season data, we conducted a questionnaire at the end of the experiment. The aim of the post-experimental questionnaire was to learn more about possible reasons for a lower giving rate in the Christmas season. This is motivated by the evidence of Klöner (2004) who reports an increased rate of cardiac deaths between Christmas. Taken this together with empirical findings that higher stress levels are negatively correlated with empathy (Park et al., 2015), we focused on subjects’ perceived levels of stress in the Christmas season. We asked them to compare the perceived stress levels to the rest of the year. Additionally, subjects completed the 30-item “Perceived Stress Questionnaire (PSQ)” introduced by Levenstein et al. (1993). Each item focuses on a stress-related question where subjects can answer based on a 4-points likert scale. The questionnaire allows us to derive a PSQ stress index.⁶ If subjects report an increased level of stress during winter time, this would suggest that they may also show lower levels of empathy which could explain lower giving rates. It is also possible, that stress is increased by higher consumption activity in the pre-Christmas season. Increased consumption behavior during the Christmas time may lead to increased saving behavior and to lower donations at this time.

Therefore, we also ask questions concerning consumption and saving patterns in the Christmas season. That is, we asked subjects whether they already have bought Christmas gifts and how many gifts they intend to buy. They also had to state whether they participated in Black Friday sales and if so, how many products they purchased on this day. Notably, we also control for subjects’ perception of the demand side of the donation market. More precisely, they had to state whether they were confronted more frequently by solicitations and whether they donated more often, relative to the rest of the year. Finally, we also included additional questions on subjects’ sociodemographics, i.e., we asked for their number of siblings and we included proxies for prenatal testosterone exposure. The latter has proven to be related to social behavior (Buser, 2012).

Our experiments were programmed in z-Tree (Fischbacher 2007) and subjects from various fields were recruited with ORSEE (Greiner 2015). As control sessions we ran three sessions with 24 subjects each in June 2015. Our Christmas-season sessions of the first wave were conducted in the week after Black Friday (last week of November 2016) and in the second week of December 2016. The Christmas-season sessions of the second wave were all ran right after Black Friday in November 2017. In the first wave we conducted 3 Sessions with 24 subjects and one session with 23 subjects. Whereas, we conducted three sessions with 24 subjects in the second wave. In total 238 subjects

⁶See the instructions on the PSQ in the Appendix for details on the calculation of the PSQ index.

(131 women and 107 men) participated. One session lasted approximately 60 minutes. Subjects earned on average €12.10 including a show-up fee of €2.

3 Results

In this section we first concentrate on the randomization of subjects to our Christmas-season and summer-season treatments. Then we present our main findings on seasonal effects in charitable giving. Afterwards, we analyze donations conditioned on subjects’ SVO. Finally, we run in-depth regression analyses to shed more light on the channels of our findings. We always report two-sided *p-values*.

3.1 Seasonal Effects

3.1.1 Randomization across Seasons

Table 1 illustrates the randomization of subjects in our treatments with respect to subjects’ socio demographics (standard deviations in parentheses). We present *p-values* of non-parametric tests to analyze seasonal sample differences. The first test (female) is a χ^2 test, the second test (age) is a Mann-Whitney test, and the third test (field of study) is a Kolmogorov-Smirnov test.

treatment	female (%)	age	field of study
Christmas season	0.55 (0.50)	23.79 (4.77)	–
summer	0.56 (0.50)	23.81 (3.02)	–
<i>p-value</i>	0.916	0.545	0.343

Table 1: Overview of subjects’ socio demographics in the treatments (standard deviations in parentheses).

It can be seen that our randomization of subjects was successful between the Christmas and summer season with respect to gender, age, and the distribution of subjects’ field of study. None of these variables is significantly different between the two seasons.

3.1.2 Seasonal Effects in Charitable Giving

Figure 1 reports our main result on seasonal effects in charitable giving. The diagram displays the average percentage of donations to the German Red Cross in summer (June 2015) and the two Christmas season (November & December 2016/November 2017). In June we find that subjects donate 26.8% which confirms results of a meta study (28.4%)

on experimental dictator games (Engel 2011). A conspicuous finding is that donations in winter significantly decrease down to 19.7% (Mann-Whitney test, $p=0.017$). Subjects decrease giving by more than one fourth (26.2%).

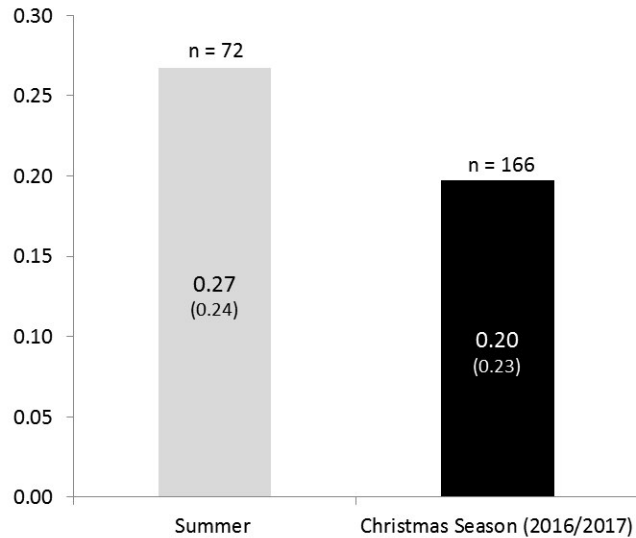


Figure 1: Percentage of donations to the German “Red Cross” across the two seasons. Standard deviations in parentheses.

Result 1: *In the Christmas season subjects significantly decrease their donations by more than one fourth compared to summer.*

In the next section we focus on the role of subjects’ social-value orientation (SVO) for their willingness to donate. Bekkers and Wiepking (2011) emphasize that subjects’ characterized by a prosocial degree of SVO are more likely to give. Therefore, it will be interesting to analyze whether the treatment effect might be induced by a behavioral change of prosocial subjects.

3.1.3 Donations Conditioned on SVO

Figure 2 illustrates the percentage of donations conditioned on subjects’ SVO. It distinguishes between prosocials and individualists. With the SVO task we could classify 223 subjects (147 prosocials, 75 individualists, 1 competitive subject).⁷ The diagram focuses on these subjects. We exclude the only competitive subject.

In summer prosocial subjects give substantially more (34.8%) than individualistic subjects (12.4%) (Mann-Whitney test, $p<0.001$). Interestingly, in the Christmas season,

⁷15 subjects revealed inconsistent choices.

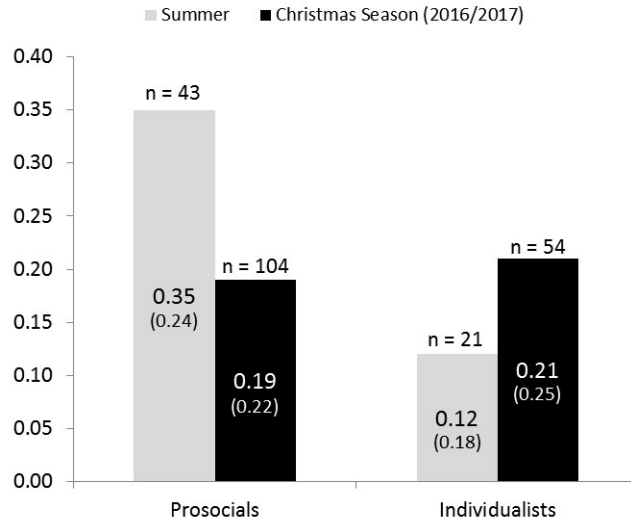


Figure 2: Percentage of donations conditioned on SVO. Standard deviations in parentheses.

prosocials drastically reduce their donations by almost one half (46%) from 34.8% to 18.9%. This reduction is highly significant (Mann-Whitney test, $p < 0.001$). At the same time individualists show similar levels and donate insignificantly more in winter (21%) (Mann-Whitney test, $p = 0.153$). As a consequence, the difference in giving between prosocials and individualists vanishes in the Christmas season, i.e., both types donate the same amount (Mann-Whitney test, $p = 0.824$).

To get a clearer idea on donation behavior of prosocial and individualistic subjects across seasons, we focus on the distribution of donations between summer and winter. Figure 3 depicts histograms for these cases. The figure illustrates histograms of individualists and prosocials for the summer data (left panel) and winter data (right panel).

Focusing on the summer data we find that the distribution of donation levels between individualists and prosocials is significantly different (Kolmogorov-Smirnov test, $p = 0.001$). By contrast, no significant difference can be found when focusing on the winter data (Kolmogorov-Smirnov test, $p = 0.678$). The summer data show that a highly significant difference exist between the fraction of prosocial and individualistic subjects who give nothing. That is, among prosocials we find that significantly less subjects (9%) make a zero contribution, whereas this holds for the majority of individualistic subjects (52%) ($\chi(1) = 14.59$, $p < 0.001$). By contrast, no significant differences can be found between SVO types when focusing on the winter data ($\chi(1) = 0.00$, $p = 0.993$). This confirms the findings of the seasonal treatment effect reported in Figure 2. We thus conclude that prosocials are not only less likely to donate in winter, they generally give less.

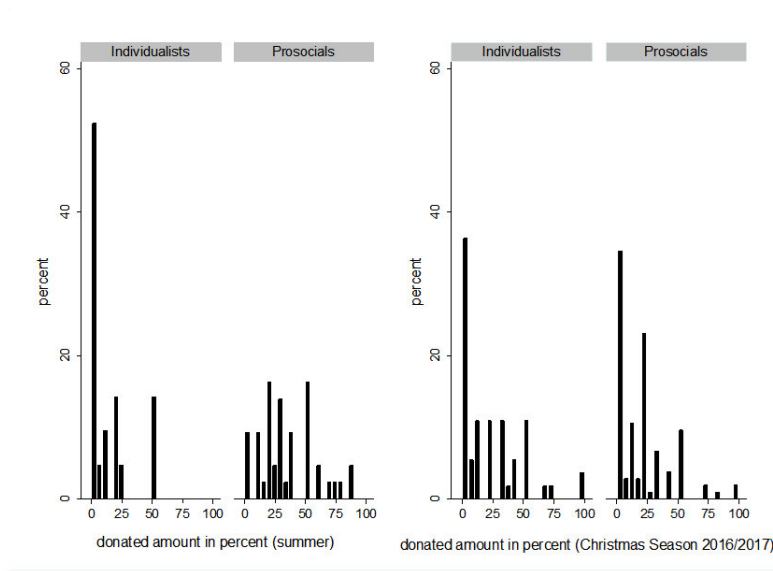


Figure 3: Distributions of donation levels conditioned on SVO types and seasons.

Result 2: *The seasonal effect is entirely driven by prosocials who significantly reduce donations in the Christmas season. On the one hand, prosocials are less likely to donate in Christmas season. On the other hand, those prosocials who donate also give less.*

3.1.4 Regression analyses on seasonal effects

To get deeper insights on the impact of seasonal effects and the role of donor heterogeneity we conduct OLS regressions.⁸

In Models (1)–(3) we focus on the full sample to test for the seasonal effect. This is captured by *christmas season*, a dummy which is positive for the winter data. We include (*prosocial*) which is positive (zero) for prosocial (individualistic) subjects. In Model (2) the interaction term *christmas season* \times *prosocial* analyzes donations conditioned on the season and on subjects' SVO. In Model (3) we test the robustness of the effect and add controls. This first set of controls contains all additional information available for the full sample. The controls are: *female donor*, a dummy testing for gender effects, *age* which focuses on subjects' age in years, their field of study (*econ*: positive for econ students), and *risk tolerance* which is the percentage of the invested amount of Talers.

Model (1) confirms that subjects' donate significantly less in the Christmas season. Model (2) again shows that the seasonal effect is driven by prosocial subjects. That is, prosocial subjects donate significantly more. However, this positive effect is only present

⁸We derive similar results for Tobit regressions.

	Donated amount – Full sample		
	(1)	(2)	(3)
<i>christmas season</i>	-7.635** (3.441)	8.819 (5.819)	8.329 (5.832)
<i>prosocial</i>	4.664 (3.284)	22.386*** (6.039)	21.486*** (6.051)
<i>christmas season</i> × <i>prosocial</i>		-24.673*** (7.126)	-24.320*** (7.124)
First set of controls			
<i>female donor</i>			6.229* (3.325)
<i>age</i>			-0.145 (0.379)
<i>econ</i>			-3.941 (3.335)
<i>risk tolerance</i>			0.064 (0.059)
<i>constant</i>	24.288*** (3.648)	12.381** (4.950)	11.673 (11.289)
observations	223	223	223
R^2	0.031	0.081	0.106
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1			

Table 2: OLS regressions on subjects' donated amount.

in the summer data, which is demonstrated by *christmas season* × *prosocial* being highly significant with a negative sign and similar magnitude as *prosocial*. The coefficient of *christmas season* becomes insignificant once we control for the interaction effect. Model (3) demonstrates that this finding is robust when we add the controls. None of them is significant. The only exception is *female donor*, i.e., women generally donate more. This confirms the results of Eckel and Grossman (1998).

3.2 Potential Drivers of the Treatment Effect

3.2.1 Replication of the Treatment Effect

To get more insights on the seasonal treatment effect, we ran a second wave of the Christmas data. In this respect we aimed in November 2017 to replicate the Christmas-season effect we observed in November/December 2016. We added a post-experimental question-

naire to this second wave with the goal to learn more about the underlying channels of the reduction in donations. Before, we focus on this second-wave data we test whether it is similar to the first wave. Figure 4 overviews the donation levels of the Christmas season in the first (left panel) and second wave (right panel).

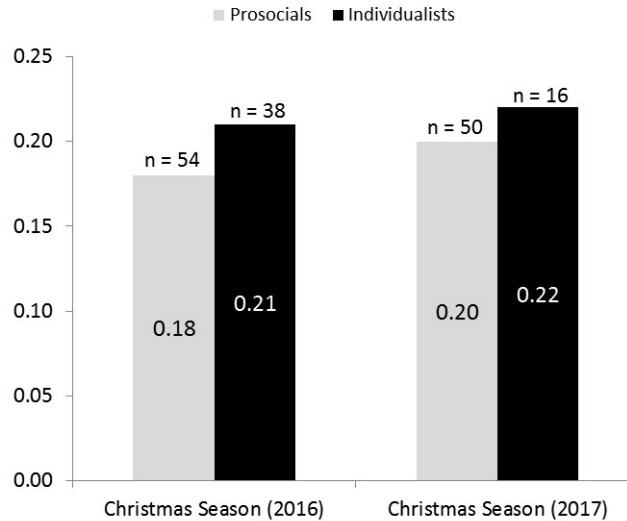


Figure 4: Percentage of donations across winter seasons conditioned on SVO. Standard deviations in parentheses.

Figure 4 shows that average donations and the disaggregated data of prosocials and individualists are very similar across the two winter seasons. Mann-Whitney tests on donations levels between the two waves are insignificant for prosocials ($p=0.538$) and for individualists ($p=0.398$).⁹ This justifies that we can pool the two winter samples. Moreover, this replication of the first wave of the winter data also confirms the robustness of the treatment effect between the seasons.

3.2.2 Analyses of Potential Drivers

In this section we focus on the relation between charitable giving and our two main variables which presumably capture some of the specificity of Christmas season *relative* to the rest of the year: *more stress* and *more savings*. The former measures subjects' current level of overall stress compared to the rest of the year, whereas the latter reflects upon subjects' relative saving behavior.

As a first insight we note that these two measures are negatively correlated with the

⁹This is also confirmed by Kolmogorov-Smirnov tests (prosocials: $p=0.978$; individualists: $p=0.459$).

	Donated amount – Christmas season 2017	
	(4)	(5)
<i>more stress</i>	-5.197** (2.439)	-5.524** (2.703)
<i>more savings</i>	-3.966 (2.399)	-5.038* (2.925)
First set of controls		
<i>female donor</i>		5.277 (7.455)
<i>age</i>		-0.587 (0.634)
<i>econ</i>		-13.748* (7.586)
<i>risk tolerance</i>		0.111 (0.121)
Second set of controls		
<i>prosocial</i>		-1.771 (6.951)
<i>siblings</i>		-2.327 (3.513)
<i>digit ratio left</i>		1.956 (4.303)
<i>digit ratio right</i>		3.948 (4.169)
<i>bought gift</i>		2.395 (6.288)
<i>shopping</i>		-1.153* (0.638)
<i>more donations</i>		-1.252 (4.255)
<i>more donated</i>		-3.695 (4.472)
<i>constant</i>	23.095*** (2.632)	40.877** (19.910)
observations	72	67
R^2	0.106	0.233
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Table 3: OLS regressions on subjects' donated amount.

donation level. This is confirmed by a Pearson’s correlation coefficient test (more stress: $\rho=-0.266$; $p=0.024$, more savings: $\rho=-0.218$; $p=0.066$). That is, the more stress subjects feel relative to the rest of the year the lower their giving. Moreover, the more subjects save relative to the rest of the year, the lower their donated amount. To gain further insights we conduct OLS regressions.¹⁰ Models (4)–(5) test in the Christmas sample for potential drivers of the observed seasonal effect. Model (4) concentrates on the two factors *more stress* and *more savings* in isolation. In Model (5) two sets of controls are included. Additional to the first set of controls we also control for variations in consumption behavior and exogenous factors which might impact individual donations. This second set of controls contains information on subjects’ actual and planned shopping behavior. Additionally, we include information on subjects’ socialization and proxies for prenatal testosterone exposure. In detail, we include the following controls: *prosocial* – a dummy which captures the SVO, *siblings* – the number of siblings, *digit ratio left/right* – the ratio of pointing finger and ring finger of the left/right hand, *bought gift* – a dummy which captures whether subjects’ already have bought a Christmas gift, *shopping* – the sum of the number of planned gifts and actual purchases during Black Friday, *more donations* – the frequencies of donation campaigns relative to the rest of the year, *more donated* – the amount/frequency donated relative to the rest of the year.

Model (4)–(5) confirm the negative correlation between donations and *more stress/more savings*, where the former seems more robust to model specification. With two exceptions none of the control variables are significant. First, the variable *shopping* is associated with lower donations which is plausible from a standard micro economic budget perspective. Second, econ students on average donate less than students from other fields which confirms findings in the literature (e.g., Bauman and Rose 2011).

Result 3: *The higher individuals’ stress level relative to the rest of the year, or the higher their relative private savings, the lower their donations.*

4 Robustness checks

In this section we check the consistency of the main explanatory variables: *more stress* and *more savings*. The variables reflect self-reported measures on a 5-point Likert scale. The fact that *more stress* is indeed related to subjects’ stress level, is supported by the positive correlation with the answers subjects gave in the Perceived Stress Questionnaire (PSQ)

¹⁰We run Likelihood ratio, BIC and AIC tests which confirm that we can treat the ordinal variables *more stress* and *more savings* as continuous. Again, we derive similar results for Tobit regressions.

(Levenstein et al., 1993). It turns out that subjects' PSQ score is positively correlated with *more stress* (Pearson's correlation coefficient, $\rho=0.279$, $p=0.018$). With respect to *more savings* we analyze to what extent this self-reported measure is consistent with other consumption-related measures in our questionnaire. Higher scores in *more savings* ought to be negatively correlated with measures on actual or planned consumption. Information on actual or planned consumption is captured by the variables *bought gift*, *number of gifts*, *black friday*, and *number black friday*. We find that *more savings* is negatively correlated with all these measures, where the correlation is significant at the 5%-level for *bought gift* and *number of gifts*.¹¹ Given the observed consistency of our main independent variables with other stress- and consumption-related measures, we are confident that these two variables indeed capture the aspects of stress and savings, we anticipated.

As additional robustness check we analyzed whether subjects indeed report to be more stressed in the pre-Christmas period as directly and indirectly suggested by other empirical studies. In line with these findings, we observe for the Christmas season data that subjects are significantly more stressed relative to the rest of the year (t-test, $p=0.006$).

5 Conclusion

We experimentally studied seasonal effects in charitable giving. The data show that donations are significantly lower by more than one fourth after Black Friday than in summer. The effect is entirely driven by prosocials who are not only less likely to donate in winter, but also give significantly less if they donate. Led by the two empirical particularities of the Christmas season, i.e., higher consumption spending and higher stress level, we analyzed how differences in saving patterns and perceived stress levels across seasons can account for the observed seasonal effect. In the data we find that both channels are active. First, the higher the stress level around Christmas relative to the rest of the year, the lower donations. As more stress is associated with a lower level of empathy (Park et al., 2015), more stress may translate into lower donations by eroding subjects' warm glow – the positive emotional feeling people get from helping others (Andreoni, 1989, 1990; Lilley and Slonim, 2014).¹² Second, the higher relative savings, the lower the donated amount. In the light of competing consumption categories, this is consistent with the idea that lower disposable incomes translate into lower donations.

¹¹Pearson's correlation coefficients, $\rho=-0.250$, $p=0.034$, $\rho=-0.272$, $p=0.021$, $\rho=-0.174$, $p=0.143$, and $\rho=-0.089$, $p=0.459$

¹²Field experimental evidence by Andreoni et al. (2017) suggests that helping motives are not even different between poor and rich people.

We contribute to a better understanding of the aggregate seasonal pattern in charitable giving. Our results suggest that the empirical fact of significantly higher donations in the last quarter of a year, may primarily driven by the demand side, i.e., by aspects like tax incentives and intensive campaign activities. Moreover, our finding contributes to the discrimination among alternative motives for charitable giving. The insight that stress is a major driver for the substantial drop in donations around Christmas, suggests that charitable giving can at least be partially explained by impure altruism.

From the perspective of campaign managers or consultants, our results may provide interesting insights for the timing and design of fund raising. Given the competition among many solicitations around Christmas and higher campaign cost caused by higher prices for print and media coverage, or for part-time employees, we suggest a careful cost-benefit analysis for running campaigns at this time. Contrary to conventional wisdom it might be more profitable to follow a counter-cyclic strategy and concentrate fund-raising activities outside gift seasons at times with presumably high disposable incomes. Regarding the campaign design we infer that solicitations should be conducted at places where it is more likely to encounter less stressed people. Moreover, campaigns could be more profitable if embedded in a relaxing environment instead of busy places like train stations where one may encounter more but maybe less generous people.

References

- Andreoni, J., 1989. Giving with impure altruism: Applications to charity and ricardian equivalence. *Journal of political Economy* 97 (6), 1447–1458.
- Andreoni, J., 1990. Impure altruism and donations to public goods: A theory of warm-glow giving. *Economic Journal* 100 (401), 464–477.
- Andreoni, J., Nikiforakis, N., Stoop, J., 2017. Are the rich more selfish than the poor, or do they just have more money? a natural field experiment. Tech. rep., National Bureau of Economic Research.
- Bauman, Y., Rose, E., 2011. Selection or indoctrination: Why do economics students donate less than the rest? *Journal of Economic Behavior & Organization* 79 (3), 318–327.
- Bekkers, R., Wiepking, P., 2011. A literature review of empirical studies of philanthropy: Eight mechanisms that drive charitable giving. *Nonprofit and Voluntary Sector Quarterly* 40 (5), 924–973.

- Buser, T., 2012. Digit ratios, the menstrual cycle and social preferences. *Games and Economic Behavior* 76 (2), 457–470.
- Cairns, J., Slonim, R., 2011. Substitution effects across charitable donations. *Economics Letters* 111 (2), 173–175.
- Center on Philanthropy, 2012. The 2012 bank of america study of high net worth philanthropy - issues driving charitable activities among wealthy households.
- Eckel, C. C., Grossman, P. J., 1998. Are women less selfish than men?: Evidence from dictator experiments. *Economic Journal* 108 (448), 726–735.
- Engel, C., 2011. Dictator games: A meta study. *Experimental Economics* 14 (4), 583–610.
- Fischbacher, U., 2007. z-tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics* 10 (2), 171–178.
- Gneezy, U., Keenan, E. A., Gneezy, A., 2014. Avoiding overhead aversion in charity. *Science* 346 (6209), 632–635.
- Gneezy, U., Potters, J., 1997. An experiment on risk taking and evaluation periods. *Quarterly Journal of Economics* 112, 631–645.
- Gneezy, U., Rustichini, A., 2000. Pay enough or don't pay at all. *The Quarterly Journal of Economics* 115 (3), 791–810.
- Greiner, B., 2015. Subject pool recruitment procedures: organizing experiments with orsee. *Journal of the Economic Science Association* 1 (1), 114–125.
- Hager, M., 2002. An introduction to the overhead costs study: Methods and data. In: *Annual Conference of the Association for Research on Nonprofit Organizations and Voluntary Action*, Montreal Canada.
- Khadjavi, M., 2016. Indirect reciprocity and charitable giving: evidence from a field experiment. *Management Science* 63 (11), 3708–3717.
- Kloner, R. A., 2004. The merry christmas coronary and happy new year heart attack phenomenon. *Circulation* 110 (25), 3744–3745.
- Levenstein, S., Prantera, C., Varvo, V., Scribano, M. L., Berto, E., Luzi, C., Andreoli, A., 1993. Development of the perceived stress questionnaire: a new tool for psychosomatic research. *Journal of Psychosomatic Research* 37 (1), 19–32.

- Lilley, A., Slonim, R., 2014. The price of warm glow. *Journal of Public Economics* 114, 58–74.
- MacLaughlin, S., 2014. Charitable giving report: How nonprofit fundraising performed in 2014. Blackbaud, Charleston, 1–20.
- Mentzakis, E., Mestelman, S., 2013. Hypothetical bias in value orientations ring games. *Economics Letters* 120 (3), 562–565.
- Park, K. H., Kim, D.-h., Kim, S. K., Yi, Y. H., Jeong, J. H., Chae, J., Hwang, J., Roh, H., 2015. The relationships between empathy, stress and social support among medical students. *International Journal of Medical Education* 6, 103.
- Singh, J., Teng, N., Netessine, S., forthcoming. Philanthropic campaigns and customer behavior: Field experiments on an online taxi booking platform. *Management Science*.
- Van Lange, P. A., Agnew, C. R., Harinck, F., Steemers, G. E., 1997. From game theory to real life: How social value orientation affects willingness to sacrifice in ongoing close relationships. *Journal of Personality and Social Psychology* 73 (6), 1330.

Instructions of the Experiment

Part 1

In part 1 you will find the following situation:

You have an endowment of 100 Taler which can be invested in a lottery.

The lottery wins or loses with a **probability of 50%**.

- If the lottery wins, your investment will be multiplied by 2,5.
- If the lottery loses, your investment will be lost.

Please note:

- You can only invest integers between 0 und 100 Taler.

If part 1 becomes payoff relevant, the computer will do a random draw which determines whether the lottery wins. The lottery will win with a probability of 50%.

In this case your payoff will be:

Not invested amount of the endowment + amount paid out by the lottery

You will receive the instructions for part two after you have made your decision in part one.

Part 2

In part two you have to decide on an allocation decision.

You have an endowment of 100 Taler. You are given the opportunity to donate Taler to the "German Red Cross." Therefore, you decide on the allocation of the endowment of **100 Taler** between **you and the recipient** ("German Red Cross").

Therefore, the following question will be displayed on the computer screen:

„Decide on the allocation of the 100 Taler between you and the German Red Cross.“

I allocate to me:

I allocate to the German Red Cross:

Please note:

- You have to decide on the allocation of the entire *endowment* (100 Taler).
- You can only split integers (0-100 Taler).
- Your decision will remain anonymous after the end of the experiment.
- After the end of the experiment we will do an online transaction of the total sum of the donations to the German Red Cross. You are invited to stay and watch us doing the transaction.

If this part will be payoff relevant, then your payoff will equal the allocation you dictated to you. At the same time the German Red Cross will exactly receive the amount you allocated to them.

You will receive the instructions for part three after you have made your decision in part two.

On-screen instructions of the SVO test (conducted after part three)

Imagine that another person was randomly matched with you. You do not know this person and you also know that you will not meet this person in the future. You and the other person will make decisions by selecting one of the numbers 1, 2 or 3.

Your own decision will lead to points for you and the other person. At the same time the decisions of the other person will also lead to points for you and for herself/himself. Each of these points is of value. The more points you receive, the better it is for you. The more points the other person receives the better it is for her/him.

In what follows you will find an example of how these exercises will work:

	1	2	3
You will get	500	500	550
The other person will get	100	500	300

In this example the following holds: If you choose “1”, you would get 500 points and the other person would get 100 points. If you choose “2”, you would get 500 points and the other person would also get 500. If you would choose “3”, you would get 550 points and the other person would get 300.

Thus, your decision and your own number of points also affects the other person’s number of points.

Before you make your decisions, bare in mind that there are no right and wrong answers. Just choose your most preferred option.

Keep in mind that the points are of value: The more you get the better. This also holds from the perspective of the other person: The more she/he gets the better,

Questions of the: "Perceived Stress Questionnaire" (PSQ) Levenstein et al. (1993)

Please state for each statement, how often this was true during the last month (1 = almost never; 2 = sometimes; 3 = often; 4 = usually).

1. You feel rested.
2. You feel that too many demands are being made on you.
3. You are irritable or grouchy.
4. You have too many things to do.
5. You feel lonely or isolated.
6. You find yourself in situations of conflict.
7. You feel you're doing things you really like.
8. You feel tired.
9. You fear you may not manage to attain your goals.
10. You feel calm.
11. You have too many decisions to make.
12. You feel frustrated.
13. You are full of energy.
14. You feel tense.
15. Your problems seem to be piling up.
16. You feel you're in a hurry.
17. You feel safe and protected.
18. You have many worries.
19. You are under pressure from other people.
20. You feel discouraged.
21. You enjoy yourself.
22. You are afraid for the future.
23. You feel you're doing things because you have to, not because you want to.
24. You feel criticized or judged.
25. You are lighthearted.
26. You feel mentally exhausted.
27. You have trouble relaxing.
28. You feel loaded down with responsibility.
29. You have enough time for yourself.
30. You feel under pressure from deadlines.

Score: 5 – chosen numbers for items: 1, 7, 10, 13, 17, 21, 25, 29.

Score: chosen numbers for all other items.

PSQ Index = (raw score – 30)/90.

Translation of the post-experimental questionnaire (second wave of the winter data: Christmas season 2017)

[Stress]

Since the last month, do you perceive a higher level of stress compared to the rest of the year?

Select one from the 5 possible answers:

I perceive:

1. a much lower level of stress
2. a lower level level of stress
3. a similar level of stress
4. a higher level of stress
5. a much higher level of stress

[Savings]

Since the last month, do you save more compared to the rest of the year?

Select one from the 5 possible answers:

I save:

1. much less
2. less
3. a similar level
4. more
5. much more

[Solicitation frequency]

Since the last month, do you perceive that there is a higher frequency of solicitations compared to the rest of the year?

Select one from the 5 possible answers:

I perceive:

1. a much lower solicitation frequency
2. a lower solicitation frequency
3. a similar frequency
4. a higher frequency
5. a much higher frequency

Since the last month, have you supported a higher number of solicitations compared to the rest of the year?

Select one from the 5 possible answers:

I supported:

1. a much lower number
2. a lower number
3. a similar number
4. a higher number
5. a much higher number

[Consumption]

Have you already started buying Christmas gifts? Yes/No.

How many gifts are you planning to buy for Christmas? State number.

How many products have you purchased on Black Friday? State number.