Religion and Trust in Strangers: Evidence from a Trust Game with Third Party Punishment[*]

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Abstract

Previous research indicates higher trust and trustworthiness with religious individuals. Drawing on this finding, this study investigates how religious individuals appraise trust and trustworthiness from strangers as a third party punisher. Furthermore it is tested, whether the notification of the punisher's religiosity reinforces trust and trustworthiness, as it may serve as an indicator for fair punishment of norm violations. Results indicate that information on the punisher does not change the play, and that religiosity does not influence costly third party punishment in sustaining a group cooperation norm. However, trust decreases and punishment of trust increases with increasing religious service attendance. Furthermore, religiosity does not show any influence on trustworthiness.

1 Introduction

Empirical evidence, although mixed, suggests that religiosity is related to higher levels of a variety of pro-group behaviors like generosity (Eckel and Grossman 2003; Saslow et al. 2012), cooperation (Ruffle and Sosis 2003; Anderson, Mellor, and Milyo 2010), and trust (Tan and Vogel 2008; Daniels and von der Ruhr 2010).[3] This effect can be explained by belief-, devotion- or fear-driven concerns of the individual, knowing that God is watching one's every deed (Norenzayan and Shariff 2008: 58).

Although much research has been conducted in scrutinizing the effect of religiosity on social outcomes, no study, to the best of the author's knowledge, has investigated how religiosity affects (costly) third party punishment. In addition to that, this study explores changes in investors' and trustees' play based on notification of the punisher's religiosity. Due to the population's demographic structure this study focuses on the Christian religion.

The remainder of this article is organized as follows. Section 2 presents the underlying economic theory and develops the hypotheses. Section 3 describes the experimental design and procedure. Section 4 presents the results. Section 5 discusses and section 6 concludes.

2 Economic theory and hypotheses

The trust game with third party punishment is a variant of Berg, Dickhaut, and McCabe's (1995: 124, 125) investment game: after two players receive an initial endowment, the investor transfers some, all or none of his endowment to the trustee, who receives the tripled amount, and decides how much he returns to the investor. The transfer of the investor serves as a measure for trust, whereas the return of the trustee serves as a measure for trustworthiness. In the third party punishment variant, the punisher is informed about the decisions made and decides to punish the trustee by using his own endowment. Given this design, economic theory predicts by using backward induction no punishment, as it reduces the punisher's payoff, and thus, nothing returned by the trustee and nothing sent by the investor, correspondingly. Hence, the subgame perfect Nash equilibrium is no transfers made and no punishment executed. In this study both investor and trustee can be punished. However, economic theory prediction remains unaffected.

Contrary to economic theory prediction, previous studies report investments of 50% and returns of 95% of the investment on average (Camerer 2003: 86). In the third party punishment variant, these amounts even increase as punishment is a function of the degree of

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[3] Appendix A provides an overview over the previously conducted studies and their findings, respectively.

distribution norm violation, that is, punishment increases the more the norm is violated (Charness, Cobo-Reyes, and Jiménez 2008: 23-25; Ohtsubo et al. 2010: 261; Fehr, Fischbacher, and Gächter 2002: 14). One explanation for the latter finding is altruistic punishment, in which the punisher sacrifices his endowment in order to sustain a group-benefiting cooperation norm. However, contrary to the construct of altruism, in which the sacrifice made results in the improvement of an individual's position, altruistic punishment implies the deterioration of an individual's position in order to improve the group's outcome (Fehr and Fischbacher 2003: 786; Fehr and Fischbacher 2004: 85).

As all major religions, Christianity advises its followers to be other-regarding, that is, to be altruistic. Anderson, Mellor, and Milyo (2010), for example, present evidence of higher altruism with Christians. Following the altruistic punishment explanation, one would expect Christians to punish norm violations of trustees more as they tend to show higher degrees of altruism to achieve group benefits. As this study allows punishment of the investor, following the same line of reasoning, it is expected that Christians will punish low trust higher in order to promote cooperation for higher group outcomes.

H_1: Christians will punish low trust higher compared to nonreligious punishers.

H_2: Christians will punish norm violations of trustees higher compared to nonreligious punishers.

Furthermore, previous studies indicate behavioral differences across denominations (Fehr et al. 2003: 21; Welch, Sikkink, and Loveland 2007: 37). Drawing on Fehr et al.'s (2003) finding that Catholics trust more than Protestants and thus emphasize trust more, it is hypothesized that Catholics will punish low trust and low trustworthiness higher than Protestants and other denomination members.

H_3: Punishment of Catholics will be more severe compared to Protestants and other denomination members.

Finally, Tan and Vogel (2008: 838, 840) present evidence of increasing trust invested by investors when facing a religious trustee. Apparently, there is something with religious individuals that makes them more trustworthy as shown by Tan and Vogel (2008). Applying this finding to the third party punishment trust game, it stands to reason that notifying the punisher's religiosity leads to increasing trust and trustworthiness, as other players might perceive the religious punisher to be more trustworthy in executing an appropriate punishment for norm violations. Thus:

H[4]: Notifying the punisher's religiosity will lead to an increase in trust and trustworthiness.

3 Design and procedure

3.1 Experimental design

A trust game with third party punishment as described in the previous section was modified in that both players can be punished and that the role of the punisher was assigned twice to increase the number of observations. Strategy method as an alternative means was not applicable, as Brandts and Charmann (2011: 394) report a lower likelihood of punishment compared to direct response. All players specified their decisions and expectations of the other players' decisions in case of investor and trustee using direct response method.

The punisher role was assigned based on subjects' responses in a questionnaire at the session start, which queried agreement with two items on religion, one on political attitude and one on female sexuality (see Appendix C2). Subjects agreeing with both statements on religion were assigned a Christian punisher role, subjects disagreeing a nonreligious punisher role. All other roles were assigned randomly once the required number of punishers was set. Although both punishers specified their punishment only one punishment was executed depending on the particular treatment. Subjects were kept unaware of this setting by a careful wording of the instructions. The instructions read: "In this game there are three player types A, B and C. Every participant will be assigned to one of the player types, so that a number of participants will play player types A, B, and C.". Figure 1 summarizes the game design.

Figure 1: Game design
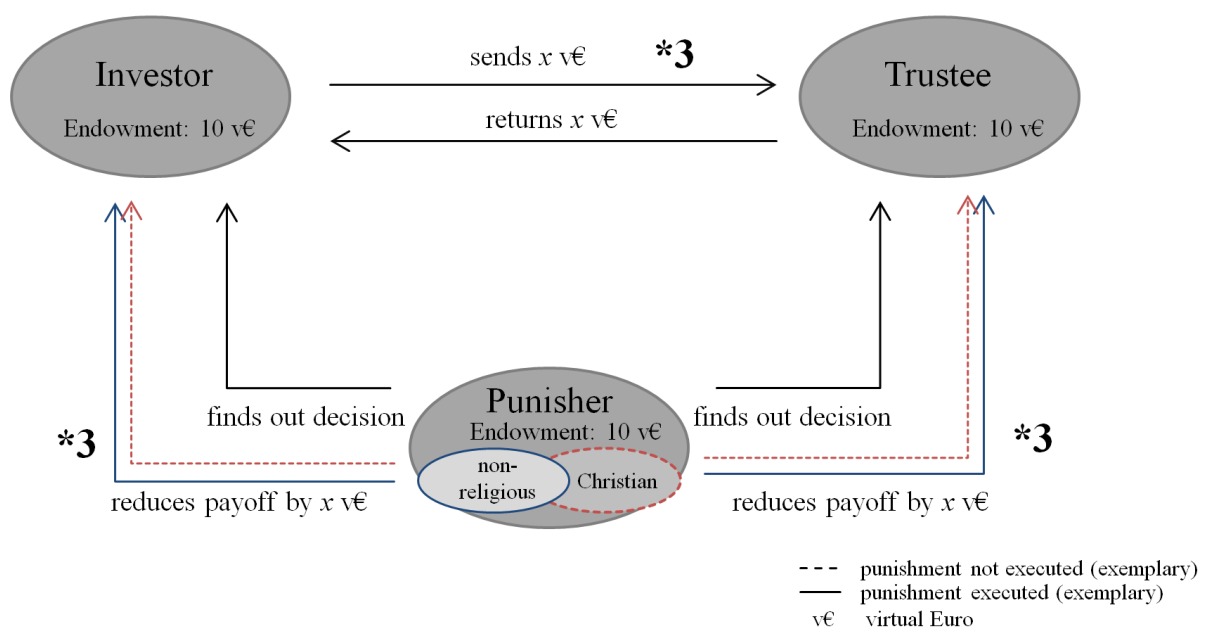
Two treatments were defined in which the investor and the trustee were given a piece of information on the punisher previous to their decisions. In the first treatment (T1) they were informed about the punisher's religiosity by referring to his agreement with the statement "one should not avenge oneself, but give place unto the wrath of God". A second treatment (T2) was defined, displaying the punisher's (dis)agreement with the political item, to test whether a change in play was due to the any information being displayed or content dependent. In the control group no information was displayed. Punishers did not know the treatment condition they were playing in.

A within-subject design was chosen for reasons of better comparability of the decisions of the investor and trustee across conditions. Thus, three periods were played with fixed role allocation. To avoid the end round effect subjects were not informed about the number of rounds to be played. To reduce the carry-over effect, a type of absolute stranger matching was performed, of which the subjects were made aware of in each period. This matching protocol ensured that any investor played only once with any trustee and any constellation of two punishers, which were kept together for reasons of comparability of punishments (see Appendix B for an example of the matching protocol). Additionally, subjects were not informed about each round's payoff after punishment. To control for order effects treatments were counterbalanced in different sessions.

3.2 Experimental procedure

Following two pretests, the experiment was conducted on December 10 and 12, 2012 in a computer lab with partitioned terminals on the campus of the University of Passau (WIWI R030) together with Lorenz's (2013) experiment using the software z-Tree (Fischbacher 2007). Mutual interference of behavior is not expected as experiments investigated coordination and social preferences. Six sessions were conducted each day between 9 AM and 5 PM, lasting on average 32 minutes. In the sessions, one experimenter controlled the server for the PCs, whereas the other experimenter instructed the subjects.

Subjects were recruited by advertisement on social media platforms, in lectures, and on campus. Every subject participated only once in the experiment. Because no monetary incentive could be offered, subjects were compensated with pastries and candies. Altogether 148 subjects participated in the experiment. However, due to occurrence of technical problems, observations of four subjects were excluded from analysis.

Subjects were seated randomly upon arrival. General instructions were read aloud before subjects completed the short questionnaire and continued with the coordination experiment. In

the mean time, the role allocation and grouping was performed based on the questionnaire data. Once subjects completed the first experiment, they participated in the punishment experiment and finished the session by filling out a questionnaire. The instructions used neutral language and illustrated the game play using placeholders instead of numbers to avoid a possible framing effect. As the game play is quite intuitive, practice periods were not used. Appendix C contains screenshots of the respective screens.

Due to a programming error, the punisher's (dis)agreement with the political item in T2 was displayed incorrectly in the first four sessions. However, a chi-squared test shows the independence of all decisions made from whether agreement or disagreement was displayed (all p-values > 0.131). Likewise, counterbalancing did not yield a significant dependency of the order of the treatments from any decision made at the 5% level, except for one measure (the trustee's return in T1). However, an analysis of this measure showed this to be due to subject heterogeneity, as no pattern was found.

Of the 144 subjects 44.4% were males. With the exception of two participants all were students, mostly affiliated with the faculties of philosophy and economics. Subjects' age ranged from 18 to 36, with a mean of 22.9 (sd = 3.08). With respect to religion 51.4% were Catholic, 25.7% Protestant, 2.8% other denomination members, 10.4% not religious, and 9.8% Muslim, Buddhist or other. The latter were excluded from analysis.

4   Results

Religiosity was measured with four items on belief aspects, including belief in God, and belief in the existence of the devil, and three items on ritual aspects, e.g., the church attendance frequency (see Table 1). Previous studies found belief and ritual to be two main dimensions of religiosity (De Jong, Faulkner, and Warland 1976: 866; Tan and Vogel 2008: 835). To test the hypotheses, OLS regressions, logistic regressions, and nonparametric tests were applied. The latter is due to lacking normality of the measures revealed by KS-tests (p-values <0.05).

A Mann-Whitney-U-Test was conducted to test whether Christians punish low trust, that is, investments ranging from zero to two, higher than nonreligious punishers. Using belief in God as a grouping variable, results show no significant difference for the punishment of the investor (Z=-.945, p=0.345) and of the trustee (Z=-.091, p=0.928). Controlling for differences using other aspects of religiosity, such as the frequency of religious service attendance (ordinally-split on the median), yields the same result (p>0.05). Thus, there is no support for H$_1$.

To test H_2 and H_3 different religiosity aspects were regressed on the punishment of the investor (executed in 47.2% of all cases, m=0.83, sd=1.14) and of the trustee (executed in 58.5% of all cases, m=2.10, sd=2.75) using standard errors clustered at subject level to correct for possible serial correlations. To assess the probability of the punishment logistic regressions were conducted; to assess the intensity of the punishment OLS regressions were performed. In order to measure the influence of each aspect on the punishment, the aspects used in this study were not factored. Regression results are shown in Table 1.

Regressions on the trustee's punishment probability and intensity show no significant effect of any religiosity measure at the 5% level, indicating that religiosity has no influence on the punishment behavior. Thus, H_2 is not supported. With respect to denominational differences, none of the dummy coefficients for Catholic, Protestant, and other denominations' members is significant at the 5% level for both the investor's and the trustee's punishment. Hence, there is no support for H_3 either.

However, religiosity shows a significant influence on the investors' punishment: logistic regression reveals that executing punishment is less likely for subjects believing in God, that is, approximately one in eleven believing in God punishes.[4] However, the likelihood to punish increases with an increase in frequency of religious service attendance. For example, the probability to punish for an individual attending religious service on a weekly basis is approximately 82%.[5] Assessing these effects in OLS regression shows the frequency of religious service attendance to have a positive effect on the punishment height, whereas belief in God is insignificant both at the 5% level. Although punishment does not differ with respect to low or no trust, as tested previously, regression results indicate significant differences for higher levels of trust. A Mann-Whitney-U-Test confirms a significant punishment difference of investments greater two using frequency of religious service attendance (median split) as a grouping variable ($p<0.01$).

Finally, Friedman tests were conducted to test for differences in the investors' and trustees' decisions and expectations across treatment conditions. No measure reached statistical significance (all $p>>0.05$), indicating that neither information being displayed nor the kind of information had an impact on the investors' and trustees' decisions and expectations. Controlling for an effect only for religious individuals, Mann-Whitney-U-tests show no

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[4] The odd ratio is the exponentiated regression coefficient. An odd ratio greater one indicates a higher likelihood, whereas an odd ratio smaller one indicates a lower likelihood.
[5] Calculated by double transformation of the point estimate, multiplied by 52, first, into the effect coefficient (log odds or odds ratio) and second, into probabilities.

Table 1: Regression results

	punishment of investor		punishment of trustee		investment	return ratio
	logistic regression	ols regression	logistic regression	ols regression	ols regression	ols regression
aspects of religiosity						
agrees to give room to God's wrath	2.084 (2.237)	-0.671 (0.450)	8.981 (15.640)	0.296 (0.604)	-0.0316 (0.706)	-0.00591 (0.0382)
agrees that God is love	3.212 (3.396)	0.154 (0.383)	0.406 (0.683)	-0.054 (0.671)	1.608** (0.763)	0.0522 (0.0448)
beliefs in God	0.091** (0.095)	0.347 (0.584)	0.351 (0.306)	-0.235 (0.483)	0.0764 (0.880)	-0.0433 (0.0504)
beliefs in the existence of the devil	1.393 (1.352)	0.444 (0.272)	1.420 (1.306)	0.002 (0.613)	-0.223 (1.000)	-0.0488 (0.0614)
frequency of religious service attendance	1.029*** (0.009)	0.0071*** (0.0026)	0.994 (0.007)	-0.002 (0.006)	-0.261** (0.108)	-0.00813 (0.00581)
frequency of praying	1.003 (0.004)	-0.00018 (0.0019)	1.003 (0.005)	-0.0003 (0.003)	-0.0005 (0.0055)	-0.0002 (0.0004)
frequency of bible reading	0.988 (0.008)	-0.0039* (0.0022)	1.000 (0.005)	0.0095 (0.00596)	0.0701** (0.0336)	0.00115 (0.0017)
denomination (dummies)						
Catholic	0.290 (0.219)	-0.536 (0.468)	0.931 (0.876)	-0.433 (0.583)	0.356 (0.948)	0.0092 (0.0432)
Protestant	0.974 (0.955)	-0.361 (0.441)	0.682 (0.461)	-0.082 (0.518)	0.104 (0.971)	0.0409 (0.0489)
Free Church	1.158 (1.988)	-0.416 (0.601)	0.420 (0.633)	-2.108* (1.214)	2.497 (7.002)	0.427 (0.363)
additional covariates						
investment	0.620*** (0.069)	-0.235*** (0.048)	1.516*** (0.152)	0.614*** (0.107)	-	-
return	1.138*** (0.043)	0.0856*** (0.025)	0.815*** (0.042)	-0.273*** (0.0541)	-	-
punishment of investor	-	-	36.259*** (19.146)	0.441*** (0.115)	-	-
punishment of trustee	47.228*** (31.787)	0.172*** (0.042)	-	-	-	-
female	1.188 (0.988)	0.196 (0.421)	0.619 (0.417)	-0.126 (0.449)	-0.376 (0.772)	0.00173 (0.0393)
age	0.925* (0.043)	-0.0079 (0.018)	0.980 (0.041)	-0.094** (0.0356)	-0.0144 (0.0777)	0.00697** (0.00275)
game theory know-ledge (dummy)	0.259* (0.189)	-0.180 (0.231)	0.921 (0.520)	-0.143 (0.395)	-0.564 (0.669)	-0.00316 (0.0302)
intercept	3.914 (5.272)	1.688*** (0.591)	0.248 (0.317)	2.978*** (1.004)	5.742*** (1.828)	0.133* (0.0701)
N	177	177	177	177	195	177
F (Wald in logistic)	91.83***	5.05***	93.76***	10.01***	2.51***	5.72***
(pseudo) R-squared	0.510	0.243	0.476	0.516	0.116	0.136

Odds ratios displayed in columns 1 and 3; independent variable *punishment of investor / trustee* dichotomized in logit regression; frequencies in days per year; clustered standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

significant difference for any investigated measure at the 5% level either. Hence, H_4 is not supported.

Besides these analyses, the author examined trust and trustworthiness with respect to the influence of religiosity. As Table 1 shows, the frequency of religious service attendance has a negative influence on the height of investment, whereas Bible reading and agreeing that God is love show a positive influence ($p<0.05$). However, with respect to the trustees' return ratio no measure reached statistical significance, indicating that trustworthiness is not affected by religiosity. The mean investment was 4.74 (sd=3.694), the mean return ratio 0.2445 (sd=0.21044). As a final note, none of the results presented in this section are confounded by gender, as found in a previous trust game study (Croson and Buchan 1999).

5 Discussion

Results indicate that the aspects of religiosity used in this study have no influence on the punishment as hypothesized, thus, providing no support for the altruistic punishment explanation. To interpret this finding, it is necessary to distinguish between altruism as a means to improve an individual's situation and altruism as a means to improve the group's outcome at cost of deteriorating an individual's position. Notable, higher altruism with religious individuals was consistently reported in terms of the first-mentioned means (e.g., Eckel and Grossmann 2003; Saslow et al. 2012). Thus, this study adds to the literature as it reveals that religious individuals' willingness to improve another's situation is limited to situations in which the improvement does not necessitate deterioration of other involved individuals.

However, the increase of the investor's punishment with an increase of religious service attendance cannot be explained by this line of reasoning. Considering that trust was recently shown to be unlike trustworthiness not a social norm (Bicchieri, Xiao, and Muldoon 2011), this finding raises the question why trust was punished in almost 50% of the cases, but in particular why religiosity reinforces punishment. Taking into account that this effect occurs for all investments but the very low ones, it appears as religious service promotes distrust, so that trust is punished increasingly with higher attendance rates. This is supported by the significant decrease of trust with increasing religious service attendance of the investor.[6] This finding could be due to lower trust in strangers by religious individuals, as reported in Welch, Sikkink, and Loveland (2007: 37). However, the authors report counterworking effects of

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[6] Tan and Vogel (2008: 838) report a negative effect of ritual, including religious service attendance, on trust. However this finding is insignificant.

denominational affiliation, which decreases trust, and frequency of religious service attendance, which increases trust. Likewise, Daniels and von der Ruhr (2010: 183) report increasing trust with increasing religious service attendance. Although both studies are survey based, this experimental study does confirm neither effects of denomination affiliation nor a positive effect of higher service attendance. Thus, future research should investigate the determinants of the relationship between low trust and religious service attendance and other aspects of religiosity.

With respect to displaying information on the punisher's religiosity, results indicate no change in investors' and trustees' play. As investors and trustees did not know their counterpart (i.e., the respective investor and trustee), results suggest that even the outlook of a fair punishment does not overpower the effect of a stranger as a counterpart. Thus, although transfer rates increase with the presence of a third party punisher as shown in previous studies, this effect cannot be reinforced by notifying attitudinal information on the punisher. Future research should investigate whether the outlook of a fair punishment reinforces trust and trustworthiness when investors and trustees know about their respective counterpart.

Finally, considering the results with respect to trust and trustworthiness, findings yield no support for Tan and Vogel's (2008) finding of higher trustworthiness with religious individuals. Interestingly, the effects of religiosity on trust are counterworking. However, high Bible reading frequency compensates the negative effect of religious service attendance and even slightly increases trust when done on a daily basis. Thus, this finding, although mixed, can be seen as partial support for Tan and Vogel's (2008) finding of higher trust with increasing religiosity.

6 Conclusion

This study investigated behavioral differences between religious and nonreligious individuals with respect to costly third party punishment, and the effect of notifying the punisher's religiosity on investors' and trustees' play. Results indicate that information on the punisher does not change the play, and that religiosity does not influence costly third party punishment in sustaining a group cooperation norm. However, trust decreases and punishment of trust increases with increasing religious service attendance. Furthermore, religiosity does not show any influence on trustworthiness.

In conclusion, some limitations of this study must be addressed. First and most important, the experiment was conducted without financial incentives, which results in a distortion of the subjects' behavior. Second, due to subject pool characteristics the results are only valid for a

student survey population, and furthermore only within the context of the third party punishment trust game and for the Christian religion, as other religions were excluded from analysis. Finally, the notified information on the punisher's religiosity might have evoked doubts about a fair punishment, as it raises questions concerning the punishment intentions. This might explain the absence of the effect as hypothesized. Thus, future research might reinvestigate this finding using a clearer indicator of the punisher's religiosity.

Appendix A: Literature review

author (year)	area of research	game type	religion	key finding (with respect to religiosity)
Eckel and Grossman (2003)	prosocial behavior	dictator game	not specified	positive correlation of active membership in religious group and donation height to secular charities (p. 694)
Eckel and Grossman (2004)	prosocial behavior	dictator game	Christianity, Islam, Judaism	no effect of religiosity on amount of donation to secular charities (pp. 280, 281)
Tan (2006)	prosocial behavior	dictator game, ultimatum game	Christianity, Judaism	no overall effect of religiosity, due to counterworking effects of religious belief (positive effect) and participation (negative effect) (p. 65)
Saslow et al. (2012)	prosocial behavior	dictator game, public goods game, trust game	not specified	study 2: significant effect of religiosity on generosity (p. 4) study 3: no main effect of religiosity on generosity (p. 6)
Ruffle and Sosis (2003)	cooperation	public goods game	Judaism	male Jews are significantly more cooperative than female Jews and nonreligious people dependent on the frequency of engagement in religious ritual (pp. 17, 19, 22)
Anderson and Mellor (2009)	cooperation	public goods game	Christianity	no evidence supporting a moderating effect of religious affiliation or participation on cooperative behavior (p. 59)
Anderson, Mellor, and Milyo (2010)	cooperation	public goods game	Christianity	positive correlation of religious service attendance and the height of contributions (pp. 172, 173)
Fehr et al. (2003)	trust	trust game	Christianity	Catholics trust more than Protestants and nonreligious people (pp. 15, 21)
Tan and Vogel (2008)	trust	trust game	Christianity, Judaism	increase of trust and trustworthiness with an increase of religiosity of the trustee (pp. 838, 840)
Daniels and von der Ruhr (2010)	trust	–	Christianity	trust increases with the frequency of religious service attendance, although denominations orientation moderates (p. 183)
Anderson, Mellor, and Milyo (2010)	trust	trust game	Christianity	no significant behavioral difference between religious and nonreligious people (pp. 172, 173)

Appendix B: Matching protocol

Pre-questionnaire data from session 1:

subject	female sexuality	political attitude	religion: revenge	religion: Love	assigned role
1	1	0	**1**	**1**	P_C
2	0	0	0	1	investor
3	0	0	0	1	trustee
4	0	0	**0**	**0**	P_N
5	0	0	1	0	investor
6	0	0	**1**	**1**	P_C
7	0	0	**1**	**1**	P_C
8	0	1	1	1	investor
9	0	0	**0**	**0**	P_N
10	0	1	1	1	trustee
11	0	0	**0**	**0**	P_N
12	1	1	0	0	trustee

1= agree
0= disagree

Christian punisher (P_C)

nonreligious punisher (P_N)

Role allocation:

	investor#1	investor#2	investor#3	investor#1	investor#2
trustee#1	P_{C1}/P_{N1}	P_{C2}/P_{N2}	P_{C3}/P_{N3}	P_{C1}/P_{N1}	P_{C2}/P_{N2}
trustee#2	P_{C2}/P_{N2}	P_{C3}/P_{N3}	P_{C1}/P_{N1}	P_{C2}/P_{N2}	P_{C3}/P_{N3}
trustee#3	P_{C3}/P_{N3}	P_{C1}/P_{N1}	P_{C2}/P_{N2}	P_{C3}/P_{N3}	P_{C1}/P_{N1}
				period 1 period 2 period 3	

Grouping period 1 (group 1, group 2, group 3):

	2	5	8	2	5
3	1/4	7/11	6/9	1/4	7/11
10	7/11	6/9	1/4	7/11	6/9
12	6/9	1/4	7/11	6/9	1/4

Grouping period 2:

	2	5	8	2	5
3	1/4	7/11	6/9	1/4	7/11
10	7/11	6/9	1/4	7/11	6/9
12	6/9	1/4	7/11	6/9	1/4

Grouping period 3:

	2	5	8	2	5
3	1/4	7/11	6/9	1/4	7/11
10	7/11	6/9	1/4	7/11	6/9
12	6/9	1/4	7/11	6/9	1/4

Appendix C: Screenshots

C1: Welcome screen

Herzlich willkommen zum Experiment und vielen Dank für Ihre Teilnahme.

Ich werde Ihnen kurz einige allgemeine Erläuterungen zum Experiment vorlesen. Erst nachdem Sie diese gehört haben, klicken Sie bitte auf "Experiment starten".

Die Teilnehmer an dem Experiment befinden sich alle hier im Raum. Alle nehmen am selben Experiment teil. Mit dem Experiment wollen wir Erkenntnisse über menschliches Verhalten gewinnen.

Das Experiment dauert ca. 30 Minuten. Eine Auszahlung der erspielten Gewinne ist leider nicht möglich. Bitte verhalten Sie sich dennoch so, als würden die Gewinne ausbezahlt werden.

Sie spielen anonym und können sich nicht untereinander absprechen. Die von Ihnen getroffenen Entscheidungen sowie die von Ihnen angegebenen Daten können Ihnen nicht zuordnet werden.

Während des Experimentes müssen Sie teilweise auf die anderen Teilnehmer warten. Dies kann auch mal einige Minuten in Anspruch nehmen. Bitte bleiben Sie während dieser Zeit geduldig sitzen. Nutzen Sie die Zeit, um sich Ihr Verhalten während des Experimentes zu überlegen.

Alle Anweisungen und Erklärungen finden Sie auf den folgenden Bildschirmseiten. Bitte lesen Sie alle Informationen gründlich durch, bevor Sie einen Bildschirm per Mausklick verlassen.

Sie können einmal verlassene Bildschirme nicht erneut aufrufen.

Bleiben Sie bitte während des Experiments ruhig an Ihrem Arbeitsplatz sitzen. Bitte sprechen Sie von jetzt an nicht mehr miteinander.

Sollten Sie Fragen haben, heben Sie bitte Ihre Hand. Wir kommen dann zu Ihnen.

Klicken Sie jetzt auf "Experiment starten".

| Experiment starten |

C2: pre-questionnaire

Bitte lesen Sie die folgenden Sätze konzentriert durch und geben Sie anschließend an, ob Sie der jeweiligen Aussage zustimmen oder nicht zustimmen. Klicken Sie bitte anschließend auf "weiter"!

Nichts ist trauriger als eine Frau, die sich aus anderen Gründen auszieht als für die Liebe.
○ stimme zu
○ stimme nicht zu

Man soll selber keine Rache nehmen, sondern Gott das Gericht überlassen.
○ stimme zu
○ stimme nicht zu

Autoverkäufer verkaufen Autos, Versicherungsvertreter Versicherungen. Und Volksvertreter?
○ stimme zu
○ stimme nicht zu

Gott ist die Liebe
○ stimme zu
○ stimme nicht zu

| weiter |

C3: game instructions (5 screens)

Spielanleitung

In dem folgenden Spiel gibt es drei Spielertypen: A, B und C. Alle Teilnehmer werden einem der Spielertypen zugewiesen, so dass mehrere Teilnehmer die Spielertypen A, B und C spielen. Die Zuweisung zu den Spielertypen wird mit dem Spielstart (Runde 1) bekanntgegeben und bleibt für alle Spieler über das gesamte Spiel gleich. Der Spielertyp wird oben links im Bildschirm angezeigt.

Das Spiel geht über mehrere Runden. Die aktuelle Runde wird oben in der Mitte angezeigt.

Auf den nächsten Seiten wird der Spielablauf erklärt. Bitte lesen Sie die Instruktionen auf den folgenden Seiten.

[weiter]
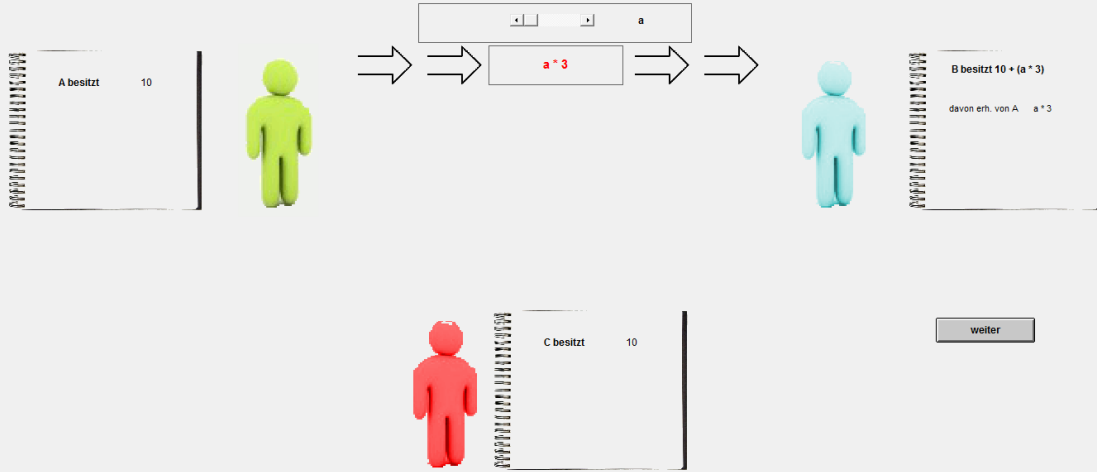
Spielertyp A entscheidet

Runde: Spielanleitung

Alle Spieler erhalten zu Beginn jeder Runde 10 VEuro (virtuelle Euro).

Spielertyp A sendet von seinen 10 VEuro den Betrag **a** im Intervall zwischen 0 und 10 an Spielertyp B. Der gesendete Betrag wird Spielertyp B verdreifacht gutgeschrieben (**a * 3**).

Spielertyp A gibt seine Entscheidung über die Scrollbar ein.

a

a * 3

A besitzt   10

B besitzt 10 + (a * 3)

davon erh. von A   a * 3

C besitzt   10

[weiter]

Spielertyp B besitzt 10 VEuro und den von A gesendeten, verdreifachten Betrag **a * 3**. Er enscheidet, welchen Betrag **b** er davon an Spielertyp A zurücksendet, indem er Betrag **b** in der Scrollbar einstellt.

A besitzt   10 + b

davon erh. von B   b

a * 3

b

B besitzt   10 + (a * 3)

davon erh. von A   a * 3

Eingabe Betrag b

C besitzt   10

weiter

Spielertyp C kann die Auszahlung der beiden anderen Spieler reduzieren, indem er seine VEuro einsetzt. Jeder von C eingesetzte VEuro wird den Spielern verdreifacht abgezogen. Der Abzug für Spielertyp A **ca** und Spielertyp B **cb** wird von C über die jeweilige Scrollbar eingegeben und den jeweiligen Spielern verdreifacht abgezogen.

Die Auszahlung in der jeweiligen Runde ergibt sich entsprechend für die Spielertypen A und B aus ihrem jeweiligen Besitz abzüglich der von C eingesetzen und verdreifachten VEuro. Die Auszahlung von C ergibt sich aus dem Besitz abzüglich der eingesetzen VEuro.

A besitzt   10 + b

davon erh. von B   b

Abzug durch C -ca * 3

====================

Ausz. für A   ??

a * 3

b

B besitzt   10 + (a * 3)

davon erh. von A   a * 3

Abzug durch C -cb * 3

====================

Ausz. für B   ??

Eingabe von **ca**

ca

C besitzt   10

Abzug bei A   ca

Abzug bei B   cb

====================

Ausz. C   ??

Eingabe von **cb**

cb

weiter

17

Bitte beachten Sie folgende abschließende Hinweise:

Der Auszahlungsbetrag nach Reduktion durch Spielertyp C wird nicht in der jeweiligen Runde angezeigt. Diese Information wird am Spielende bekanntgegeben.

In jeder Runde werden Sie Spielpartnern zugewiesen, mit denen Sie zuvor nicht gespielt haben und auch im weiteren Spielverlauf nicht wieder spielen werden.

In einigen Runden werden den Spielertypen A und B identische Informationen über Spielertyp C gegeben, bevor diese ihre jeweilige Entscheidung treffen.

Haben Sie die Instruktionen verstanden und möchten das Spiel starten, so klicken Sie bitte auf "Spiel starten". Falls Sie Fragen haben, heben Sie bitte Ihre Hand, der Experimentleiter kommt dann zu Ihnen.

[Spiel starten]

C4: Decision investor (Treatment 1)

Sie sind Spielertyp A.

Runde 2
Sie wurden neuen Spielpartnern zugelost.

Ihnen stehen 10 VEuro zur Verfügung.
Bitte entscheiden Sie, wie viele VEuro Sie an Spielertyp B senden möchten!

| ◄ | ► | 0 |

0

[Senden]

0

Sie besitzen	10
davon erh. von B	??
Abzug durch C	-??
===================	
Ihre Ausz.	??

B besitzt	10
davon erh. von A	0
Abzug durch C	-??
===================	
Ausz. für B	??

C besitzt	10
Abzug bei A	-??
Abzug bei B	-??
===================	
Ausz. C	??

Spielertyp C stimmt dem Satz "Man soll selber keine Rache nehmen, sondern Gott das Gericht überlassen." zu!

C5: Expectations trustee (Treatment 2)

Sie sind Spielertyp B.

Runde 3
Sie wurden neuen Spielpartnern zugelost.

Spielertyp A trifft gerade die Entscheidung, ob bzw. wie viele VEuro er Ihnen sendet.

Wie viele von seinen 10 VEuro sollte er Ihnen senden?
Diese Information wird nicht an Ihre Mitspieler übermittelt.

Ok

A besitzt 10
davon erh. von B ??
Abzug durch C -??
==================
Ausz. für A ??

0

0

Sie besitzen 10
davon erh. von A 0
Abzug durch C -??
==================
Ihre Ausz. ??

C besitzt 10
Abzug bei A -??
Abzug bei B -??
==================
Ausz. C ??

Spielertyp C stimmt dem Satz "Autoverkäufer verkaufen Autos, Versicherungsvertreter Versicherungen. Und Volksvertreter?" nicht zu!

C6: Decision trustee (control)

Sie sind Spielertyp B.

Runde 1
Die Spieler wurden am Anfang der Runde neu zugelost.

Spielertyp A hat Ihnen 5 VEuro gesendet. Sie habe den verdreifachten Betrag von 15 VEuro erhalten.

A besitzt 5
davon erh. von B 0
Abzug durch C -??
==================
Ausz. für A ??

15

0

Sie besitzen 25
davon erh. von A 15
Abzug durch C -??
==================
Ihre Ausz. ??

Senden

Bitte entscheiden Sie, wie viele VEuro Sie an Spielertyp A zurücksenden möchten!

C besitzt 10
Abzug bei A -??
Abzug bei B -??
==================
Ausz. C ??

C7: expectations investor (control)

C8: punishment expectations investor(/trustee) (control)

C9: decision punisher

Runde 1

Die Spieler wurden am Anfang der Runde neu zugelost.

Sie verfügen über 10 VEuro, die Sie einsetzen können, um die Auszahlung von Spielertyp A und/ oder Spielertyp B zu reduzieren. Jeder von Ihnen eingesetzte VEuro wird verdreifacht und anschließend den betroffenen Spielertypen abgezogen. Sie können den Spielertypen A und B jedoch nicht mehr abziehen, als diese besitzen.

A besitzt	9
davon erh. von B	4
Abzug bei A	0
=================	
Ausz. für A	9

15

4

B besitzt	21
davon erh. von A	15
Abzug bei B	0
=================	
Ausz. für B	21

Wieviele VEuro möchten Sie einsetzen, um die Auszahlung von Spielertyp A zu reduzieren?

0

Wieviele VEuro möchten Sie einsetzen, um die Auszahlung von Spielertyp B zu reduzieren?

0

Sie besitzen	10
Abzug bei A	0
Abzug bei B	0
=================	
Ihre Ausz.	10

OK

C10: payoff screen

Die folgende Tabelle stellt die Zusammensetzung Ihrer Auszahlung dar.

In diesem Spiel wurde der Spielertyp C in jeder Gruppe **zweifach** besetzt. In der jeweiligen Gruppe haben beide Spielertypen C die auszuführende Reduktion angegeben, jedoch wurde **nur eine der beiden ausgeführt**. In der Tabelle sind nur die Reduktionen angeführt, die ausgeführt wurden. In allen anderen Runden beträgt Ihre Auszahlung 10 VEuro.

Runde	Reduktion ausgeführt	Auszahlung reduziert bei A	Auszahlung reduziert bei B	Auszahlungbetrag
1	Reduktion nicht ausgeführt	0	0	10
2	Reduktion nicht ausgeführt	0	0	10
3	Reduktion ausgeführt	0	0	10

Ihre Gesamtauszahlung in VEuro beträgt: 30

weiter

C11: questionnaire (2 screens)

Bitte beantworten Sie zum Abschluss des Experiments folgende Fragen auf den nächsten zwei Seiten und drücken Sie anschließend auf "absenden".

Die von Ihnen gemachten Angaben werden vollständig anonym erfasst und ausgewertet!

Glauben Sie an Gott?
- ○ ja
- ○ nein

Gehören Sie einer Religion oder Konfession an? Wenn ja, welcher?
- ○ gehöre keiner Religion an
- ○ katholisches Christentum
- ○ evangelisches Christentum
- ○ freikirchliches Christentum
- ○ Islam
- ○ Hinduismus
- ○ Buddhismus
- ○ Judentum
- ○ andere

Abgesehen von Hochzeiten, Beerdigungen und Taufen, wie häufig besuchen Sie Gottesdienste?
- ○ mehr als einmal die Woche
- ○ einmal die Woche
- ○ einmal im Monat
- ○ zu den großen Feiertagen
- ○ einmal im Jahr
- ○ weniger als einmal im Jahr
- ○ überhaupt nicht

Abgesehen von Hochzeiten, Beerdigungen und Taufen, wie häufig beten Sie?
- ○ mehr als einmal die Woche
- ○ einmal die Woche
- ○ einmal im Monat
- ○ zu den großen Feiertagen
- ○ einmal im Jahr
- ○ weniger als einmal im Jahr
- ○ überhaupt nicht

Abgesehen von Hochzeiten, Beerdigungen und Taufen, wie häufig lesen Sie in der Bibel (im Koran, in der Thora, etc.)?
- ○ mehr als einmal die Woche
- ○ einmal die Woche
- ○ einmal im Monat
- ○ zu den großen Feiertagen
- ○ einmal im Jahr
- ○ weniger als einmal im Jahr
- ○ überhaupt nicht

[weiter zum zweiten Teil]

Glauben Sie, dass der Teufel existiert?
- ○ ja
- ○ nein

Haben Sie Kenntnisse in Spieltheorie? Wenn ja, um welche Art von Spiel hat es sich bei dem zuvor gespielten Spiel gehandelt?
- ○ ja, es handelt sich um ein Ultimatumspiel
- ○ ja, es handelt sich um ein Vertrauensspiel
- ○ ja, es handelt sich um ein Diktatorspiel
- ○ nein, ich habe keine Kenntnisse in Spieltheorie

In welcher Fakultät studieren bzw. arbeiten Sie?
- ○ Juristische Fakultät
- ○ Wirtschaftswissenschaftliche Fakultät
- ○ Philosophische Fakultät
- ○ Fakultät für Informatik und Mathematik
- ○ keine

Sind Sie männlich oder weiblich?
- ○ männlich
- ○ weiblich

Wie jung sind Sie?
[   ]

[absenden]

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