
Religion and prosocial behaviour: a field test

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Religious people are thought to be more prosocial than nonreligious people. Laboratory studies of this using ultimatum, dictator, public goods and trust games have produced mixed results, which could be due to lack of context. This article examines the relationship between religion and prosocial behaviour using data from a context-rich, naturally occurring field experiment that closely resembles the dictator game – tipping in restaurants. Customers were surveyed as they left a set of restaurants in Richmond, Virginia, in the summers of 2002 and 2003. Our findings reveal no evidence of religious prosociality.

After examining the paltry tips left by a church group, our waitress was not pleased. Looking toward my table, she grumbled, “These people come in with the Ten Commandments and a ten-dollar bill, and they don’t break any of them!”

—Elzena Arguello, as told to *Reader’s Digest*

I. Introduction

Whether it is the admonishment to tithe or to follow some version of the Golden Rule, a common principle of religions is that one should treat others with respect and compassion. Because of these religious teachings it is often argued that the prevalence of religion and religious beliefs promotes prosocial behaviour (see Anderson *et al.*, 2008 for a brief literature review). In recent years a number of laboratory experiments have tested, with varying results, the association between religion and different

manifestations of prosocial behaviour (i.e. altruism, trust and cooperation). Dictator and ultimatum games have tested for altruism (Eckel and Grossman, 2003, 2004; Ben-Ner *et al.*, 2004; Tan, 2006). Public goods games have tested cooperation (Sosis and Ruffle, 2003; Anderson *et al.*, 2008). Trust games have tested for trusting behaviour and trustworthiness (Fehr *et al.*, 2003; Anderson *et al.*, 2008; Tan and Vogel, 2008).¹

The ambiguous findings may be because these studies were conducted in a sterile, context-free environment, but, as shown by Eckel and Grossman (1996), context does matter. The context-free environment may not trigger the prosocial behaviour religion is assumed to instil in its adherents. This study adds to the literature by considering the relationship between religion and prosocial behaviour in a context-rich environment. We report results for a natural field experiment that closely mimics the dictator game – tipping at a restaurant.²

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¹ See Norenzayan and Shariff (2008) for a review of experimental and survey studies of religious prosociality in the psychology and sociology literature.

² Tipping qualifies as a natural field experiment according to Harrison and List’s (2004) taxonomy of field experiments. Subjects engage in a task they would naturally undertake and are unaware that they are participating in an experiment.

The nature of the restaurant tip has many features of a dictator game. There are two parties – the diner and the server. One party dictates the outcome of the game (i.e. how much will be passed from the dictator to the recipient). Furthermore, a tip is not mandatory and a patron (especially a one-time patron) can easily forgo it. Where tipping differs from the standard dictator game is the absence of a predetermined pie to be divided. However, social norms have established certain focal points, though these may be regional and/or establishment type specific.³ For example, 57% of survey respondents in Parrett (2006) cited 15% as the per cent tip norm with another 30% citing 20% as the norm. These findings are consistent with *The Amy Vanderbilt Complete Book of Etiquette*, which writes that ‘today, fifteen percent is standard in most restaurants, although in a first class establishment, if the food is outstanding and the service impeccable, you might give twenty percent’ (Tuckerman and Dunnan, 1995).

II. Data

The data were collected from five restaurants in Richmond, Virginia, in the summers of 2002 and 2003. The 2002 survey was administered on Friday and Saturday evenings at each restaurant; the 2003 survey added Thursday evening. Customers were approached as they exited the restaurant and the person paying the bill was asked to complete the survey. Respondents answered the survey privately. The survey collected information on the size of the bill and tip, characteristics of the dining experience and diner and server demographics. Religiosity was measured as regular attendance at religious services. Combined 986 surveys were collected out of 1205 attempts.⁴

Observations were dropped if an automatic service charge was applied to the bill, if the respondent received help paying the bill or leaving the tip or an incomplete/ambiguous response was provided to a survey question used in the analysis.

³ Ruffle (1998) and Parrett (2006) used laboratory studies to examine tipping using dictator games with pie sizes determined endogenously by the recipient’s effort with mixed results. Both find a positive tip–service relationship, but Parrett (2006), which is framed to more closely resemble a restaurant tipping setting, finds that this relationship is weak. Meta-analyses of field studies examining the effect of service quality on tip size find the same positive, but tenuous relationship (Lynn and McCall, 2000). That diners tip based primarily on some percentage of the bill is supported by Azar (2007) who, in a recent literature review, reported that bill size is the most important variable in determining dollar tip.

⁴ Survey available on request.

⁵ Our measure of religiosity (i.e. regular attendance at religious services) is similar to that used in many previous laboratory studies. Only Tan (2006) and Tan and Vogel (2008) use more extensive measures.

⁶ We only report results for the significant variables and the religion variable. Regressions included all of the independent variables listed in Table 1 plus bill size squared, table size squared and customer age squared. Complete results available on request.

⁷ Interacting religion and each of service quality, dining frequency, table size and bill size did not alter our conclusion.

We also dropped one zero-tip observation and six observations in which the respondent’s tip exceeded 100%; these seven outliers represent significant discrete jumps in the data. Our final data-set consisted of 495 observations. A description of the variables used in the analysis and summary statistics are provided in Table 1.

III. Empirical Specification

The empirical specification used here is

$$T_i = \alpha_o + \alpha_r R_i + \alpha_n X_{in} + \varepsilon_i$$

where i indexes a particular server–customer tip transaction and, for robustness purposes, T is the natural log of the dollar tip amount or the tip per cent. If the respondent regularly attends religious services $R = 1$ and X is a vector of customer, server, dining and survey characteristics that might influence tips.⁵ The model is estimated using Ordinary Least Squares (OLS).

IV. Results

We find no evidence of religious prosociality in the field. Looking first at differences in the uncontrolled mean tip earnings of religious and nonreligious diners, relative to the latter, religious diners tipped \$0.58 less on a dollar tip basis ($p = 0.077$, two-tailed t -test) and 1.14 percentage points less on a per cent tip basis ($p = 0.030$, two-tailed t -test).

Controlled differences in the mean tip earnings of religious and nonreligious diners are presented in Table 2.⁶ We find that relative to nonreligious diners, religious diners tipped approximately 1.9% less on a dollar tip basis ($p = 0.390$, two-tailed t -test) and roughly 3% less on a per cent tip basis ($p = 0.159$, two-tailed t -test), but these results are not statistically significant.⁷

Table 1. Description of variables and summary statistics ($N = 495$)

Variable	Description	Mean	SD
% tip	Percentage tip	19.11	5.83
\$ tip	Dollar tip	6.33	3.67
Bill size	Size of bill	34.85	20.25
Table size	Size of table	2.72	1.21
# checks	Number of checks at table	1.13	0.53
Credit card	= 1 if respondent paid with credit/ATM card; 0 otherwise	0.67	0.47
Service quality	Respondent's rating of service quality on scale from 1 ('poor') to 7 ('excellent')	5.76	1.12
Male server	= 1 if server male; 0 otherwise	0.29	0.45
Male customer	= 1 if respondent male; 0 otherwise	0.68	0.47
Customer age	Respondent age	45.12	12.11
Married customer	= 1 if respondent married; 0 otherwise	0.75	0.43
Religious customer	= 1 if respondent regularly attends religious services; 0 otherwise	0.49	0.50
Rich customer	= 1 if respondent reports income as \$52 000 + ; 0 otherwise	0.83	0.38
Educated customer	= 1 if respondent has bachelor's or graduate/professional degree; 0 otherwise	0.73	0.44
Dining frequency	Respondent's rating of frequency with which he/she dines at restaurant, on scale from 1 ('least frequent') to 7 ('most frequent')	3.35	1.80
Former server	= 1 if respondent ever employed as server; 0 otherwise	0.28	0.45
Customer % tipnorm	Respondent's belief regarding percentage tip norm	16.72	2.85
Customer \$ tipnorm	(Customer % tipnorm) \times (Bill size)	5.82	3.67
R1	= 1 if Restaurant 1; 0 otherwise	0.20	0.40
R2	= 1 if Restaurant 2; 0 otherwise	0.26	0.44
R3	= 1 if Restaurant 3; 0 otherwise	0.20	0.40
R4	= 1 if Restaurant 4; 0 otherwise	0.18	0.39
Thursday	= 1 if Thursday; 0 otherwise	0.15	0.36
Summer 2002	= 1 if Summer 2002; 0 otherwise	0.39	0.49

Table 2. Effect of self-reported religiosity on tips ($N = 495$)

Variable	ln(\$ tip)	ln(% tip)
Constant	0.900*** (0.167)	2.976*** (0.168)
Religious customer	-0.019 (0.022)	-0.030 (0.022)
Bill size	0.024*** (0.002)	-0.008*** (0.001)
Bill size squared	-0.00009*** (0.00001)	0.00003*** (0.00001)
Table size	-0.056 (0.047)	-0.063* (0.038)
Service quality	0.042*** (0.011)	0.042*** (0.011)
Male customer	0.080*** (0.027)	0.071*** (0.026)
Customer age	-0.010* (0.005)	-0.010* (0.005)
Rich customer	0.076* (0.041)	0.099** (0.041)
Former server	0.047* (0.025)	0.047* (0.025)
Customer % tipnorm	-	0.009* (0.005)
Customer \$ tipnorm	0.034*** (0.012)	-
R2	0.064* (0.038)	0.077** (0.036)
R-squared	0.778	0.291
F-statistic	59.83***	5.46***

Notes: White-corrected SEs in parentheses.

***, ** and * denote 1, 5 and 10% significance levels (two-tailed).

V. Discussion

It is a widespread belief that religious people are more prosocial than nonreligious people (Orbell *et al.*, 1992

as cited by Tan, 2006). Laboratory tests of this hypothesis have returned mixed results. One reason for the indeterminate results is that laboratory experiments are, typically, conducted in a context-free

environment. Lacking context, the laboratory exercise may fail to activate the prosocial tendencies of religious persons.

This article reports results from a context-rich, naturally occurring field experiment – tipping in restaurants. The restaurant tip has characteristics of the dictator game. Furthermore, tipping is a behaviour that a people engage in frequently and there are well-established norms of behaviour. If religious people are more prosocial, they would be more likely to adhere to those norms. Our results fail to support this hypothesis. We find no significant difference in the tipping behaviour of religious and nonreligious diners.

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