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Religion and Fairness in the Ultimatum Game: Examining Mennonite Beliefs and Actions

Chris D. Gingrich

Eastern Mennonite University, chris.gingrich@emu.edu

Ryan Swartzentruber

Eastern Mennonite University, ryan.swartzentruber@emu.edu

Jessica H. Kraybill

Eastern Mennonite University, kraybilljess@gmail.com

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Cover Page Footnote

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For the healing of the nations, Lord, we pray with one accord,
for a just and equal sharing of the things that earth affords.

Number 367 from *Hymnal: A Worship Book*, text by Fred Kaan (1965)¹

The surprise emergence of Thomas Piketty's *Capital* to national best seller reflects increased awareness and interest surrounding income inequality in the US.² While evidence shows the gap between rich and poor widening during the last 50 years, newspapers and magazines have greatly increased their coverage of the issue since 2006.³ For instance, a search of newspaper and magazine articles from 2002 to 2006 containing the phrase “income inequality” yielded an annual average of 57 articles but from 2010 to 2014 yielded an annual average of 464 articles, peaking at 1,002 articles in 2014.⁴ The issue has also become increasingly partisan, with commentators on the left generally advocating for government intervention to slow down the widening gap, claiming that restricted opportunities prevent many people from achieving financial success. Those on the right often claim that the growing income gap stems either from differences in work ethic or underlying market forces and thus does not require greater government intervention, provided that sufficient opportunity exists to advance economically.⁵

Within this debate, religion can influence opinions on political and economic issues.⁶ Looking specifically at attitudes toward inequality, personal

¹ *Hymnal: A Worship Book* is commonly used each Sunday across North American Mennonite churches. Rebecca Slough, ed., *Hymnal: A Worship Book* (Scottsdale, Pennsylvania: Mennonite Publishing House, 1992).

² Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge, Massachusetts: Belknap Press, 2014); Chris Isidore, “700-Page Book by French Economist Is Amazon’s Top Seller,” CNN Money, <http://money.cnn.com/2014/04/21/news/companies/piketty-best-seller> (accessed March 2, 2015).

³ For an overview of growing inequality, see “Forget the 1%: It is the 0.01% who are Really Getting Ahead in America,” *The Economist*, <http://www.economist.com/news/finance-and-economics/21631129-it-001-who-are-really-getting-ahead-america-forget-1> (accessed March 2, 2015).

⁴ Search conducted using Newspaper Source Plus at Eastern Mennonite University.

⁵ James Nuechterlein, “Living with Inequality,” *First Things: A Monthly Journal of Religion and Public Life* 212 (2011): 3.

⁶ Ben Gaskins, Matt Golder, and David Siegel, “Religious Participation and Economic Conservatism,” *American Journal of Political Science* 57 (2013): 823.

surveys help identify religion's impact.⁷ These studies provide useful insights but only reflect survey respondents' stated preference for particular economic conditions or outcomes. In reality, individuals' stated preferences can differ greatly from their revealed preferences, as observed when their decisions affect a direct monetary payoff. Consequently, surveys or "contingent valuation" techniques often contain substantial bias compared to actual or revealed preferences.⁸ Regarding religion's role, Hoffman explains how researchers often find inconsistencies between participants' statements and actions.⁹

Fortunately, economic experiments can explore individuals' revealed preferences toward income equality. A common tool for this task is the ultimatum game (UG), where two individuals decide how to divide a monetary sum between themselves.¹⁰ One individual, the Proposer, decides the share of the sum to keep and the remainder goes to the partner, the Responder. While several variations are possible (e.g., repeated versus single play, anonymity versus disclosure, etc.), the common element is that the Responder can accept or refuse the Proposer's offer, and in the latter case neither player receives anything. Hence, each player's revealed preference for equality is evident from the size of the Proposer's offer and whether or not the Responder accepts the offer. *Ceteris paribus*, Proposers who favor greater economic equality should offer a larger share of the initial sum. Responders inclined toward equality will more likely reject small offers. Critics rightly ask whether small-scale experiments such as the UG accurately measure true social preferences toward fairness and inequality due to the artificial laboratory environment.¹¹ However, because factors such as treatment effects and anonymity can be tightly controlled, experimental findings often provide meaningful and scalable insights into social preferences rooted in microeconomic behavior otherwise unattainable from surveys alone.¹²

This study explores how religion affects revealed preferences toward inequality during the UG and specifically examines the behaviors of Mennonites, a Protestant denomination whose roots extend to the 16th century Anabaptist

⁷ For example, see "What You Need to Know: Public Opinion on Economic Inequality," Public Religion Research Institute, <http://publicreligion.org/research/2013/07/public-opinion-on-economic-inequality> (accessed March 2, 2015).

⁸ Richard O'Doherty, "The Theory of the Contingent Valuation Method," *Hume Papers on Public Policy* 6 (1998): 67.

⁹ Robert Hoffmann, "The Experimental Economics of Religion," *Journal of Economic Surveys* 27 (2013): 813.

¹⁰ Werner Güth, Rolf Schmittberger, and Bernd Schwarze, "An Experimental Analysis of Ultimatum Bargaining," *Journal of Economic Behavior and Organization* 3 (1982): 367.

¹¹ Steven Levitt and John List, "What Do Laboratory Experiments Measuring Social Preferences Reveal About the Real World?" *Journal of Economic Perspectives* 21 (2007): 153.

¹² Hoffmann, 2013.

reformation in Western Europe.¹³ Mennonites deserve attention regarding this contentious social issue because their doctrine emphasizes the importance of community, mutual aid, and care for the poor. The particular sample examined here includes students, faculty, and staff on the campus of Eastern Mennonite University (EMU), located in Virginia, USA. The EMU campus community features a broad range of Christian denominations, including Mennonite, and thus allows a comparison of Mennonites with other faith traditions.

The paper is organized as follows: Section II briefly explores the relevant literature on UG experiments and also describes Mennonites and their religious beliefs. Section III details the particular UG experiment used in the study. Section IV describes the results and Section V interprets the findings. Section VI provides summary comments.

BACKGROUND

During the last 30 years researchers have used UG experiments to investigate behaviors regarding fairness, bargaining, altruism, and related topics. Camerer and van Damme et al. thoroughly review this literature and summarize key findings.¹⁴ Typical (i.e., median and mode) Proposer offers range from 40 to 50 percent of the initial sum. Mean offers are generally 30 to 40 percent of the initial sum, with very few Proposers offering less than 10 percent or more than 50 percent. Responders nearly always accept offers of at least 40 percent but reject offers below 20 percent about half the time. These behaviors for both Proposers and Responders discredit the usual assumptions of Neo-Classical economics, where each individual presumably maximizes their self-interest. Stated differently, some Responders willingly reject “free money” and some Proposers offer more than the minimum required to entice Responders' acceptance. The Proposer offers defy easy explanation, however, since relatively large offers may reflect either preferences for greater equality or strategic self-interest since larger offers raise the Responders' likelihood of acceptance.¹⁵

The question whether religion influences UG actions thus lies within the general literature regarding religion's impact on prosocial and “helping”

¹³ Palmer Becker, “What is an Anabaptist Christian?” <http://www.mennonitemission.net/SiteCollectionDocuments/Tools%20for%20Mission/Missio%20Dei/DL.MissioDei18.E.pdf> (accessed March 5, 2015).

¹⁴ Colin Camerer, *Behavioral Game Theory: Experiments in Strategic Interaction* (Princeton, New Jersey: Princeton University Press, 2003); Eric van Damme et al., “How Werner Güth's Ultimatum Game Shaped Our Understanding of Social Behavior,” *Journal of Economic Behavior and Organization* 108 (2014): 292.

¹⁵ Camerer, 2003; Richard Thaler, “Anomalies: The Ultimatum Game,” *Journal of Economic Perspectives* 2 (1988): 195.

behaviors. Norenzayan and Shariff identify four possible reasons why religion promotes prosocial behavior, based on: 1) Social reputation, 2) “Supernatural monitoring,” 3) Increased trust among group members, 4) Group size, where larger groups tend to display greater religiosity.¹⁶ The first argument extends even to Adam Smith who said that human capital investment includes an individual's reputation, of which religious participation helps to reinforce.¹⁷ Reason number two states that so-called supernatural monitoring can replace formal monitoring mechanisms whose social function is to support commerce and trade. For example, experimental evidence suggests a positive impact of religious language and imagery on altruistic behavior.¹⁸ Argument three occurs where a common religion between strangers provides reasons to extend trust more than would prevail without religion. Proponents claim that such trust evolves from costly prosocial and cooperative behaviors.¹⁹ Lastly, religion provides a deterrent against freeloading (i.e., antisocial behavior) in large groups.²⁰

From a psychological perspective, religion's impact on individual altruism stems from whether their religiosity shows an intrinsic or extrinsic orientation.²¹ Extrinsic religiosity reflects self-interest and views religion as a “means to an end,” and with the exception of reputation promotion, shows little connection to helping behaviors. Intrinsic religion reflects not the means but the end itself and should positively influence helping behaviors. Overall, however, psychologists find scant evidence for any religious impact on altruistic behavior. The limited positive connections are generally based on stated attitudes and preferences only.

More specifically, a recent literature within economics explores whether religion and culture influence UG outcomes.²² Tan measured UG participants' self-reported general religiosity and found no significant impacts on the behavior of either Proposers or Responders among a Judeo-Christian population in

¹⁶ Ara Norenzayan and Azim Shariff, “The Origin and Evolution of Religious Prosociality,” *Science* 322 (2008): 58.

¹⁷ Gary Anderson, “Mr. Smith and the Preachers: The Economics of Religion in the Wealth of Nations,” *Journal of Political Economy* 96 (1988): 1066.

¹⁸ Azim Shariff and Ara Norenzayan, “God is Watching You: Priming God Concepts Increases Prosocial Behavior in an Anonymous Economic Game,” *Psychological Science* 18 (2007): 803.

¹⁹ Richard Sosis and Candace Alcorta, “Signaling, Solidarity, and the Sacred: The Evolution of Religious Behavior,” *Evolutionary Anthropology: Issues, News, and Reviews* 12 (2003): 264.

²⁰ John Snarey, “The Natural Environment's Impact upon Religious Ethics: A Cross-Cultural Study,” *Journal for the Scientific Study of Religion* 35 (1996): 85.

²¹ Bernard Spilka et al., *The Psychology of Religion: An Empirical Approach* (New York: The Guilford Press, 2003); Gordon Allport, “Religion and Prejudice,” *The Crane Review* 2 (1959): 1.

²² Hoffmann, 2013; Hessel Oosterbeek, Randolph Sloof, and Gijs van de Kuilen, “Cultural Differences in Ultimatum Game Experiments: Evidence from a Meta-Analysis,” *Experimental Economics* 7 (2004): 171.

Germany.²³ He did, however, find impacts on Responder behavior due to specific religious factors such as degree of ritual practice and spiritual encounter. Chuah et al. found that greater religiosity for British and Chinese-Malayan Proposers produced lower offers.²⁴ Buchan et al. claimed that Japanese Proposers provide higher offers than their American counterparts.²⁵ On the other hand, Roth et al. found that offers from Americans and Yugoslavians generally exceed offers from Japanese and Israeli Proposers.²⁶ They also found lower rejection rates in Japan and Israel than in the US and Yugoslavia. Henrich conducted UG experiments in both a traditional Amazonian-Peruvian society and the US and found that the Peruvian offers are more than 20 percentage points below the American offers.²⁷ The Peruvian Responders accepted nearly all these offers. Finally, Chuah et al. found that Chinese-Malaysian Proposers generally offer more than British nationals but the authors did not find significant behavioral differences among Responders.²⁸ One interpretation for these contradictory results is that differing geography alone does not imply cultural values. Moreover, within-country results can show considerable variation.²⁹ Nonetheless, the above studies suggest that external factors such as religion and culture can affect social preferences as observed in UG outcomes. In addition, UG evidence from disparate communities such as Amazonian, Japanese, and Israeli shows a direct relationship to the offer amount and the rejection rate, thereby suggesting possible Proposer foresight regarding Responder behavior.

This study extends the above literature by asking whether UG behaviors for one particular Christian denomination that emphasizes social justice teachings in its doctrine differ from mainline denominations. On one hand, predicting Mennonite behavior in the UG versus other denominations is challenging since Mennonites and other Anabaptist groups trace their history to Western Europe

²³ Jonathan Tan, "Religion and Social Preferences: An Experimental Study," *Economics Letters* 90 (2006): 60.

²⁴ Swee-Hoon Chuah et al., "An Economic Anatomy of Culture: Attitudes and Behaviour in Inter- and Intra-National Ultimatum Game Experiments," *Journal of Economic Psychology* 30 (2009): 732.

²⁵ Nancy Buchan, Rachel Croson, and Eric Johnson, "When Do Fair Beliefs Influence Bargaining Behavior? Experimental Bargaining in Japan and the United States," *Journal of Consumer Research* 31 (2004): 181.

²⁶ Alvin Roth et al., "Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study," *The American Economic Review* 81 (1991): 1068.

²⁷ Joseph Henrich, "Does Culture Matter in Economic Behavior? Ultimatum Game Bargaining Among the Machiguenga of the Peruvian Amazon," *American Economic Review* 90 (2000): 973.

²⁸ Swee-Hoon Chuah et al., "Do Cultures Clash? Evidence from Cross-National Ultimatum Game Experiments," *Journal of Economic Behavior and Organization* 64 (2007): 35.

²⁹ Oosterbeek, Sloof, and van de Kuilen, 2004.

around 1520 and share a common history with mainline Protestants.³⁰ Consequently, modern Mennonites have certainly been exposed to Calvinist influences, where individual financial success signifies God's blessing.³¹ Another contributing factor could be that most modern Mennonites no longer distinguish themselves from secular society in terms of dress, language, or other rituals as common 50 to 100 years ago.³² Hence, there is a potential growing influence on Mennonites of the larger American society, which shows a moderate tolerance for widening inequality.³³

On the other hand, Mennonite doctrinal emphasis on social justice issues remains strong. The *1995 Mennonite Confession of Faith* claims the authority of Jesus' teachings such as the Sermon on the Mount (Matthew chapters 5 to 7) and the Parable of the Good Samaritan (Luke 10:29-37) that mandate care for the physical needs of others.³⁴ Moreover, two highly influential Mennonite writers, Ronald Sider and Donald Kraybill, argue that Christian discipleship includes a social - and even political - component regarding poverty alleviation and concern for human material well-being.³⁵ Thus, if Anabaptist-Mennonite values produce greater social preference toward justice and fairness, Mennonite Proposers should *ceteris paribus* show higher offer values and Mennonite Responders show higher rejection rates for low offers than non-Mennonites.

DATA AND METHODS

The specific UG employed in this study was a single play, non-negotiable game with full anonymity for both participants and an initial \$10 sum provided to the Proposer. Potential participants age 18 and older were recruited from the EMU campus community, including undergraduate and graduate students, faculty and staff, and family and friends of these groups. However, no EMU connection was required to participate. Recruitment took place using classroom visits,

³⁰ Becker, "What is an Anabaptist Christian?"; "Who are the Mennonites?" Third Way Media, <http://www.thirdway.com/menno/?Topic=23|Basic+Beliefs> (accessed March 5, 2015).

³¹ James Smith and Jon Wisman, "Legitimizing Inequality: Fooling Most of the People All of the Time," *The American Journal of Economics and Sociology* 70 (2011): 974.

³² "Who are the Mennonites?" Third Way Media.

³³ "What You Need to Know: Public Opinion on Economic Inequality," Public Religion Research Institute.

³⁴ "Confession of Faith in a Mennonite Perspective," Mennonite Church USA, <http://resources.mennoniteusa.org/about/confession-of-faith-in-a-mennonite-perspective-1995> (accessed March 5, 2015).

³⁵ Ronald Sider, *Rich Christians in an Age of Hunger: Moving from Affluence to Generosity* (Dallas: Word Publishing, 1997); Donald Kraybill, *The Upside-Down Kingdom* (Harrisonburg, VA: Herald Press, 2011).

campus electronic classifieds, Facebook, posters, and personal invitation. Participants received no compensation, other than the promise of “winning” up to \$10. In September 2013 EMU's Institutional Review Board approved the study's use of human subjects.

Before participating in the experiment, candidates received full disclosure regarding the game and their rights. After agreeing to these conditions, participants completed a brief survey regarding their religious preference and commitment, age, sex, and status in the EMU community (faculty, student, etc.). The Appendix contains the full consent agreement and survey. The consent agreement, survey, and UG sessions all occurred in a computer laboratory, with each session consisting of 10 to 24 participants (mean = 15.2). Total available funding provided for 116 UG pairs.

The ultimatum game sessions were managed using a cloud-based game service provided by MobLab, Inc.³⁶ Lab assistants fully explained the game procedures to the participants after they completed the consent form and initial survey. Once the game began, MobLab randomly divided the group into Proposers and Responders and also randomly paired a Proposer and Responder. In scenarios with an odd number of participants MobLab left one Proposer without a Responder, unknown to this individual. In such cases ($N = 5$), MobLab automatically rejected their offers. The Proposer and Responder had two minutes to complete their agreement. On only 3 occasions was the allotted time inadequate, in which case only the Proposer offers appear in the subsequent analysis. Participants who “earned” a positive payout received their cash immediately after the game concluded.

RESULTS

Table 1 summarizes the characteristics of all participants and also describes Proposer and Responder behavior for each demographic subset. Out of 116 Proposers the largest single religious group was Mennonite ($N = 42$), followed by other Christian ($N = 22$), Protestant Christian ($N = 18$), Catholic ($N = 18$), Anabaptist non-Mennonite ($N = 7$),³⁷ Atheist/Agnostic ($N = 7$), and one each for Buddhist, Hindu, Quaker, and other. The Proposers' average age was 30.1

³⁶ “Moblab: A playground for decisions,” Moblab, Inc., <https://www.moblab.com> (accessed December 7, 2015).

³⁷ Includes non-Mennonite denominations with a shared history and doctrinal beliefs (e.g., Brethren). For more information see Becker, “What is an Anabaptist Christian?” and “How Brethren Understand God's Word,” The Brethren Church, Inc., http://www.brethrenchurch.org/upload/documents/Brethren_Documents_and_Resources/How_Brethren_Understand_Gods_Word.pdf (accessed March 5, 2015).

years and 61.2 percent were female. For all religions combined, Proposers' average level of religious commitment was 3.12 (Likert scale from 1 to 4, with a score of 1 reflecting weaker religious commitment and 4 reflecting stronger commitment), with Mennonites and Anabaptist non-Mennonites showing the strongest commitment at 3.36 and 3.71, respectively. The vast majority of Proposers were students (undergraduate = 78.4 percent and graduate = 3.4 percent), followed by faculty (8.6 percent), staff (7.8 percent), and all others combined (1.8 percent). Responders (N = 108) show a similar pattern at 56.8 percent female with an average age of 29.4 years. Mennonites were also the largest group (N = 33) with Protestants (N = 22), other Christians (N = 17), Catholics (N = 18), Anabaptist non-Mennonite (N = 7), Atheist/Agnostic (N = 6), and Buddhist (N = 1) finishing out the groups. Religious commitment varied less for Responders, ranging from a 3.11 average for Catholics to a 3.39 average for Mennonites, and an overall mean of 3.24. Over 83 percent of Responders were EMU students, with faculty comprising 9.3 percent, staff 6.6 percent and the remainder (0.9 percent) representing other categories.

Table 1. Summary of Ultimatum Game results, by religious subgroup.

| | All | Mennonite | Protestant | Christian/ Other | Catholic | Anabaptist non- Mennonite | Atheist or Agnostic | Other* |
|-------------------------------------|------|-----------|------------|---------------------|----------|---------------------------------|------------------------|--------|
| Proposers | | | | | | | | |
| N (number) | 116 | 42 | 18 | 22 | 16 | 7 | 7 | 4 |
| Religious commitment (1 to 4) | 3.12 | 3.36 | 3.22 | 2.82 | 2.69 | 3.71 | 2.71 | 3.25 |
| Age (years) ⁺ | 30.7 | 27.9 | 36.4 | 31.8 | 28.2 | 34.3 | 31.7 | 26.8 |
| percent Female | 61.2 | 54.8 | 72.2 | 72.7 | 68.8 | 42.9 | 28.6 | 75.0 |
| percent Undergraduate | 78.5 | 71.4 | 83.3 | 86.4 | 81.3 | 71.4 | 71.4 | 100.0 |
| percent Faculty | 8.6 | 11.9 | 11.1 | 4.6 | 12.5 | 0.0 | 0.0 | 0.0 |
| percent Graduate Student | 3.5 | 0.00 | 0.0 | 9.1 | 6.3 | 0.0 | 14.3 | 0.0 |
| percent No relationship | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 14.3 | 0.0 | 0.30 |
| percent Staff Member | 7.8 | 14.3 | 5.6 | 0.0 | 0.0 | 14.3 | 14.3 | 0.0 |
| percent None of the above | 0.9 | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Average Decision (\$) | 4.61 | 4.76 | 4.44 | 4.59 | 4.50 | 4.43 | 4.57 | 4.75 |
| Median Decision (\$) | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Mode decision (\$) | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard Deviation (\$) | 1.75 | 1.62 | 1.42 | 2.32 | 1.15 | 1.62 | 3.10 | 0.50 |

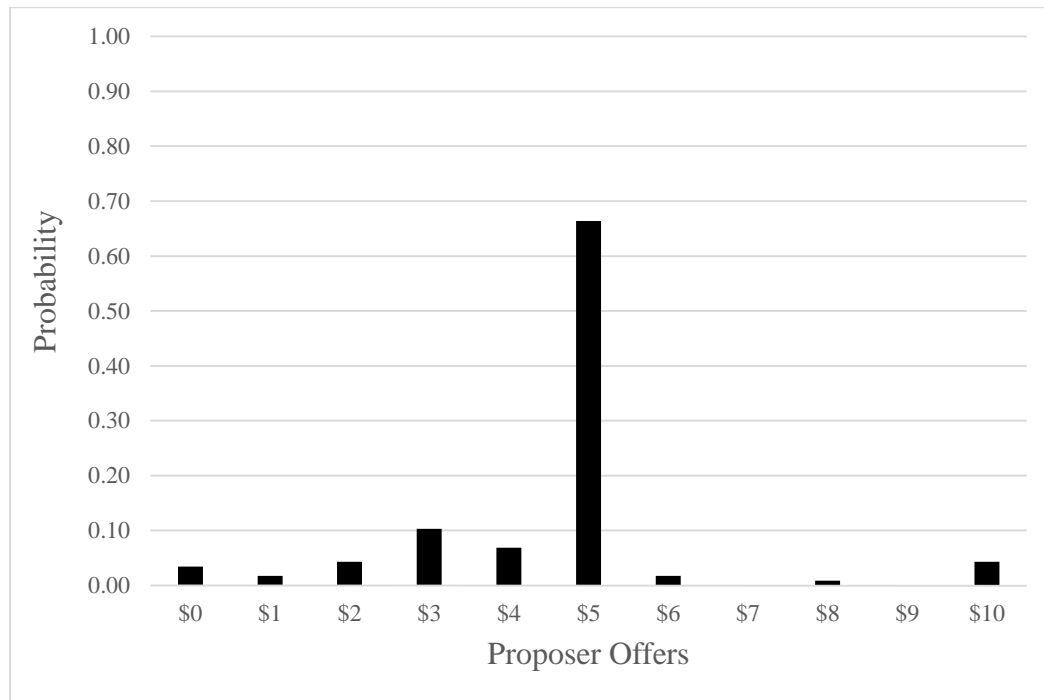
Table 1 (continued)

| | All | Mennonite | Protestant | Christian/ Other | Catholic | Anabaptist non- Mennonite | Atheist or Agnostic | Other* |
|-------------------------------------|------|-----------|------------|---------------------|----------|---------------------------------|------------------------|--------|
| Responder | | | | | | | | |
| N (number) | 108 | 33 | 22 | 17 | 18 | 7 | 6 | 1 |
| Religious commitment (1 to 4) | 3.24 | 3.39 | 3.14 | 3.24 | 3.11 | 3.14 | 3.17 | 3.00 |
| Age (years) ⁺ | 29.3 | 30.6 | 26.4 | 30.9 | 29.2 | 35.4 | 25.3 | 21.0 |
| percent Female | 57.4 | 51.5 | 59.1 | 82.4 | 33.3 | 57.1 | 16.7 | 100.0 |
| percent Undergraduate | 82.4 | 66.7 | 90.9 | 94.1 | 94.4 | 57.1 | 83.3 | 100.0 |
| percent Faculty | 9.3 | 18.2 | 4.6 | 0.0 | 5.6 | 28.6 | 0.0 | 0.0 |
| percent Graduate student | 0.9 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| percent No relationship | 0.9 | 0.0 | 0.0 | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| percent Staff member | 6.6 | 12.1 | 4.6 | 0.0 | 0.0 | 14.3 | 16.7 | 0.0 |
| percent None of the above | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rejection Rate (percent) | 8.3 | 6.1 | 14.3 | 11.8 | 5.6 | 14.3 | 0.0 | 0.0 |

*Includes Buddhist, Hindu, Quaker and self-described “other.”

+Given the high percent of undergraduate students, the average age is greater than expected due to several UG sessions conducted during evening adult degree completion classes.

Figure 1. Probability distribution of Proposer offers (N = 116).



Proposer offers averaged \$4.61 with both a median and mode of \$5. Figure 1 shows the probability distribution for all offers. While Mennonites demonstrate the highest mean offer (\$4.76), Table 2 shows that it does not differ statistically from any other religious subgroup. One related question is whether the degree of religious commitment might affect the mean offers. Hence, Table 3 compares offers for strongly committed Mennonites, as measured by a self-reported commitment of 3 or above, to the mean offers of other religious groups with an identical commitment and also to less committed individuals (commitment of 2 or less). Even after adding this distinction, none of the mean offers for other subgroups differ from the mean Mennonite offers.

Table 2. P-values from test of equal means for Proposer offer values, by subgroup (sample size). Null hypothesis is that mean values are equal.

| | Atheists and Agnostics (7) | Anabaptists non-Mennonite (7) | Catholic (16) | Christian Protestant (18) | Christian other (22) | All non-Mennonites (74) |
|-----------------|----------------------------|-------------------------------|---------------|---------------------------|----------------------|-------------------------|
| Mennonites (42) | 0.879 | 0.627 | 0.497 | 0.453 | 0.760 | 0.475 |

Note: Not all subcategories are tested because of small sample sizes.

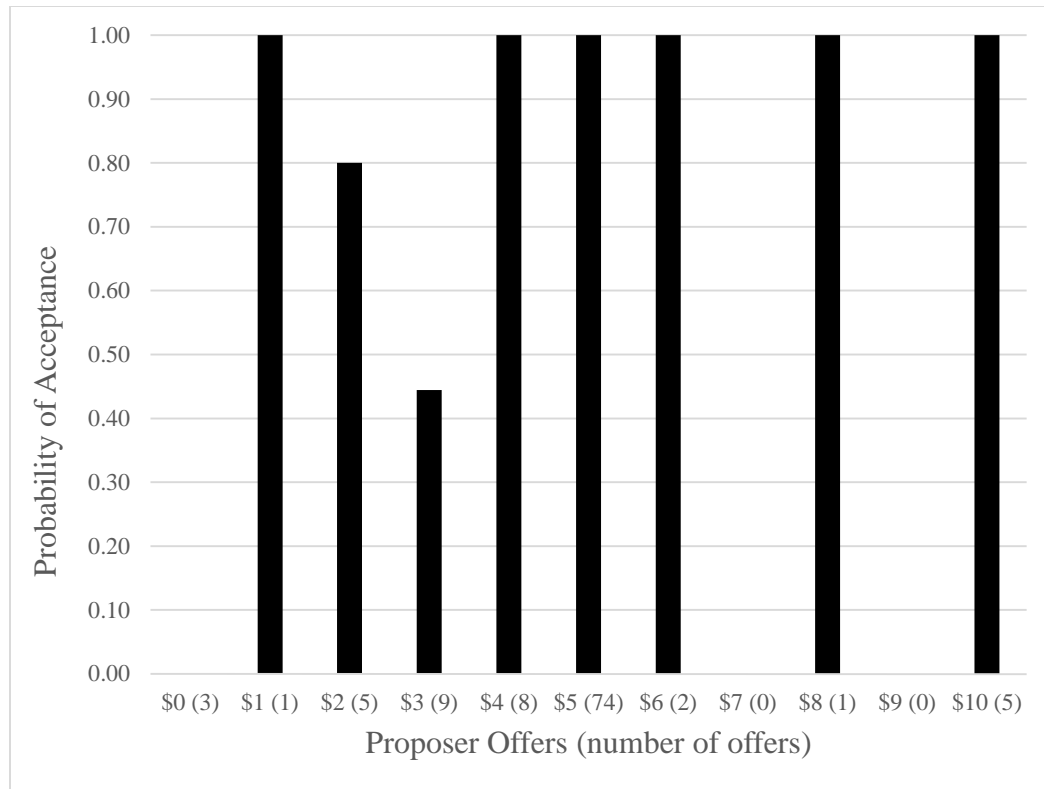
Table 3. P-values from test of equal means for Proposer offer values, by subgroup according to either strong or weak religious commitment (sample size). Strong commitment denotes a self-report religious commitment of 3 or 4 (Likert scale = 1 to 4) and weak commitment denotes 1 or 2. Null hypothesis is that mean values are equal.

| | Anabaptists non-Mennonite, strong commitment (6) | Catholic, strong commitment (11) | Christian Protestant, strong commitment (14) | Christian other, strong commitment (14) | All groups combined, weak commitment (27) |
|------------------------------------|--|----------------------------------|--|---|---|
| Mennonites, strong commitment (37) | 0.511 | 0.396 | 0.387 | 0.933 | 0.460 |

Note: Not all subcategories are tested because of small sample sizes.

Figure 2 shows the distribution of Responders' acceptance probabilities, conditional on their offers received. Overall, the Responders accepted Proposers' offers at a very high rate (91.7 percent). They accepted all offers \$4 and above and accepted offers between \$1 and \$3 at a 60 percent rate. Responders rejected all 3 zero offers. For the entire sample, Responders rejected only 6 offers which did not provide sufficient observations to meaningfully analyze religion's impact on their behavior.

Figure 2. Probability distribution of Responder acceptance rate, conditional on offer received.



Note: MobLab restricted offers to discrete dollar amounts (e.g., \$2.00, \$3.00, etc.).

A shortcoming in comparing Proposer offers in Tables 2 and 3 is that the tests only account for potential differences arising from religious factors. Alternatively, a regression model can jointly explore all factors affecting Proposer offers, including religion, sex, age, and status (e.g., student vs. faculty). Following Chuah et al., Proposer offers are regressed on all available demographic variables including possible interaction effects.³⁸ Full descriptions and summary statistics for all variables appear in Table 4. Given the small sample size ($N = 7$), their shared historical roots and doctrine, plus the lack of significant differences in

³⁸ Chuah et al., 2009.

Tables 2 and 3, Anabaptist non-Mennonites were pooled with Mennonites. Likewise, faculty and staff were also combined due to small sample sizes (N = 10 and N = 9, respectively).

Table 4. Summary of variables used in regression model to predict Proposers' offer values (N=116).

| Variable | Mean | Standard deviation | Description |
|------------------|-------|--------------------|--|
| OFFER | 4.61 | 1.75 | Proposer offer values (\$), ranging from 0 to 10 |
| ANABAPTIST-MENNO | 0.42 | .. | Binary variable = 1 if Proposer is either Mennonite or Anabaptist non-Mennonite, otherwise = 0 |
| FEMALE | 0.61 | .. | Binary variable = 1 if Proposer is female, otherwise =0 |
| AGE | 30.67 | 13.52 | Proposer's age (years) |
| FACSTAFF | 0.16 | .. | Binary variable =1 if Proposer is either EMU faculty or staff, otherwise = 0 |
| A-MENNO*AGE | 12.17 | .. | ANABAPTIST-MENNO * AGE |
| A-MENNO*FEMALE | 0.22 | .. | ANABAPTIST-MENNO * FEMALE |
| A-MENNO*FACSTAFF | 0.04 | .. | ANABAPTIST-MENNO * FACSTAFF |
| FEMALE*AGE | 20.55 | .. | FEMALE * AGE |
| FACSTAFF*AGE | 4.02 | .. | FACSTAFF * AGE |
| FEMALE*FACSTAFF | 0.03 | .. | FEMALE * FACSTAFF |

Table 5 contains the regression results for the Proposer offers. The most glaring finding is the lack of significance for Anabaptist-Mennonite (AM) identity. To explore all possible AM influences, two alternative specifications were also investigated. First, Mennonite Proposers were decoupled from Anabaptist non-Mennonite Proposers. Second, different levels for religious commitment (1 to 4) were used to identify Mennonite Proposers. In summary, these alternate configurations did not change the statistical significance of Mennonite identity and generally produced lower R² values.³⁹

³⁹ Results available on request

Table 5. Regression results for Proposers' offer values (N = 116). Dependent variable = OFFER

| Variable | Full Estimate | | | Reduced Estimate | | |
|----------------------------------|---------------|------------|---------|------------------|------------|---------|
| | Coefficient | Std. Error | p-value | Coefficient | Std. Error | p-value |
| Intercept | 2.10 | 0.98 | 0.034 | 2.54 | 0.75 | 0.000 |
| ANABAPTIST-MENNO | -0.85 | 0.92 | 0.355 | | | |
| FEMALE | 3.09 | 1.23 | 0.013 | 2.45 | 0.94 | 0.011 |
| AGE | 0.12 | 0.04 | 0.002 | 0.10 | 0.03 | 0.002 |
| FACSTAFF | 0.18 | 2.03 | 0.930 | -2.19 | 0.95 | 0.024 |
| A-MENNO*AGE | 0.05 | 0.04 | 0.199 | | | |
| A-MENNO*FEMALE | -0.02 | 0.75 | 0.974 | | | |
| A-MENNO*FACSTAFF | -1.63 | 1.24 | 0.190 | | | |
| FEMALE*AGE | -0.15 | 0.04 | 0.001 | -0.12 | 0.04 | 0.002 |
| FACSTAFF*AGE | -0.06 | 0.05 | 0.244 | | | |
| FEMALE*FACSTAFF | 3.76 | 1.44 | 0.010 | 2.94 | 1.17 | 0.013 |
| F statistic (degrees of freedom) | 1.47 (10,105) | | 0.161 | 2.35 (5,110) | | 0.045 |
| R ² | 0.123 | | | 0.097 | | |

Other variables that significantly affect Proposer offers include sex, age, and the Proposer's relationship to EMU (i.e., faculty-staff status). Age shows a mixed impact on offers depending on the Proposer's sex. For men, each year generally adds \$0.10 to their offers, while women reduce their offers by \$0.02 for each additional year. Similarly, female proposers generally show smaller offers than males (a \$0.68 reduction at the data means), and this effect becomes more pronounced with age but is less pronounced for EMU faculty-staff. The marginal impact of a Proposer's faculty-staff status yields a mixed impact by sex, with male faculty-staff offering substantially less (\$2.19) than males from other groups, while female faculty-staff offer slightly more (\$0.75) than other females.

DISCUSSION

The above result - that Mennonite Proposers, including all Anabaptists, do not show any significant differences for their offers compared to other Christian groups – at first appears inconsistent with Mennonite doctrinal positions that emphasize community and concern for human need. While this finding does not negate these positions, it implies that Mennonite social preferences toward inequality are no different than other mainline American Christians. As described earlier, this result could occur from factors such as the historical influences of Calvinism or Mennonite assimilation with the dominant Christian culture. Yet another factor could be the lack of specific religious questioning which would match Tan's findings.⁴⁰

An alternative interpretation for the above finding is that individuals from other denominations have recently become equally concerned about inequality as Mennonites so that no unique denominational behaviors appear in the results. Increased coverage regarding inequality in the national media could partly explain this phenomenon. This “convergence” of Mennonite and non-Mennonite beliefs and practices is especially likely for the EMU sample given that the university's mission and vision statements emphasize Mennonite ideals regarding community. EMU's vision statement quotes Micah 6:8:

we commit ourselves to “do justice, love mercy, and walk humbly with God.”
[quotes added]⁴¹

In addition, EMU's Shared Values state that:

EMU embodies the enduring values of the Anabaptist tradition: Christian discipleship, *community*, service, and peacebuilding. [italics added]⁴²

These claims are potentially evident on campus through a Center for Justice and Peacebuilding that includes a graduate degree program and several offshoots that aim to address global injustice issues and other sources of conflict and violence.⁴³ In addition, for over 30 years EMU undergraduates have been required to participate in a cross-cultural seminar experience for their general education coursework. For the vast majority of students, this seminar occurs in

⁴⁰ Tan, 2006.

⁴¹ “EMU Mission Statement,” Eastern Mennonite University, <http://emu.edu/president/mission> (accessed December 7, 2015).

⁴² Ibid.

⁴³ “The Center for Justice and Peacebuilding,” Eastern Mennonite University, <http://emu.edu/cjp> (accessed December 7, 2015).

either a low income country or relatively poor location within the US. While direct student outcomes from this experience are difficult to generalize, a stated purpose of the program since its inception has been to internationalize and provide credibility for EMU's goal of "working toward world peace, just social structures, and equality of access to the basic necessities for life and dignity."⁴⁴

The above information begs the question of how EMU Proposers' mean offer compares to other settings. Recall from Table 1 that the mean offer for all EMU participants was \$4.61 or 46 percent of the initial sum. By contrast, Camerer claims that broad evidence from the literature shows mean offers ranging from 30 to 40 percent of the initial sum.⁴⁵ While it is tempting to attribute this difference to the EMU-specific influences described above, the lack of empirical test regarding this claim makes it tenuous at best. Moreover, Camerer's sources reveal substantial variation in sample sizes, ranging from only 10 UG pairs to 330 pairs.⁴⁶ Taking a weighted average of all studies listed with the weights based on sample sizes reveals an overall mean of 39.3 percent. The two most comparable studies that also conducted the UG on an American college campus show mean offers ranging from 39 to 41 percent and 44 to 47 percent, which closely resemble the EMU mean.⁴⁷ Moreover, Oosterbeek et al.'s broad finding that cultural factors do not significantly affect UG offers places a high burden of proof to attribute the higher EMU offers to Mennonite-related factors.⁴⁸ The EMU offers also showed an overall standard deviation of \$1.75 (\$1.62 for Mennonites), which lies slightly above the standard deviation from the two studies cited above (ranging from \$1.03 to \$1.33).⁴⁹ If anything, the EMU offers should show less variability if the university's mission and vision statement influenced UG behaviors across campus.

Yet another potentially important information piece would be the length of time that participants had spent at EMU. These data would allow a test whether time exposed to Mennonite beliefs and values raised Proposer offers among non-Mennonites. Unfortunately, these data were not gathered in the initial survey.

⁴⁴ Bruce Martin, "The Impact of the Cross-Cultural on the Changing Religious Identity of Early Adults: A Thematic Approach" (D.Min. diss., Princeton Theological Seminary, 2001); Orval Gingerich, "Internationalizing General Education: A Case Study of Eastern Mennonite College and the Global Village Curriculum," (Ed.D. diss., University of Virginia, 1995), 137.

⁴⁵ Camerer, 2003.

⁴⁶ Roth et al., 1991; Robert Slonim and Alvin Roth, "Learning in High Stakes Ultimatum Games: An Experiment in the Slovak Republic," *Econometrica* 66 (1998): 569.

⁴⁷ Catherine Eckel and Philip Grossman, "Chivalry and Solidarity in Ultimatum Games," *Economic Inquiry* 39 (2001): 171; Robert Forsythe, "Fairness in Simple Bargaining Experiments," *Games and Economic Behavior* 6 (1994): 347.

⁴⁸ Oosterbeek, Sloof, and van de Kuilen, 2004.

⁴⁹ Rescaled to match the \$10 initial sum listed here. Details available upon request.

Even if the EMU offers exceeded those from other settings, it is impossible to know whether higher offers reflect Proposer perceptions that Responders may not accept “unfair” splits. If this belief exists, the higher offers would not reflect Mennonite ideals of community and altruism but would reflect Proposer self-interest. However, the tendency for the EMU Responders to accept nearly all nonzero offers (Fig. 2) suggests that the Proposers offered more than the minimum amount to convince Responders to accept. If Proposers acted selfishly and foresaw that most Responders would likely accept a \$2 or \$3 offer, the results would show more “low” offers. That is, the \$4 and \$5 offers could be considered altruistic if Proposers foresaw Responder preferences. While this possibility cannot be confirmed, other studies suggest that Proposers use foresight to increase or decrease their offers to match Responder behavior.⁵⁰ Another way to identify altruistic motives for the Proposers would be to ask their perceptions about the minimum offer that Responders would accept. This answer could then be compared to their actual offer.

A related area for future study would be to conduct the Dictator Game (DG) on the EMU campus and examine any distinct Mennonite behaviors. In the DG experiment, two players also divide a sum among themselves, except that there is no Responder decision. Rather, the “Dictator” decides how to divide the sum and any positive amounts given to their partner reflects pure altruism.⁵¹

Future researchers should also compare the EMU UG results to similar data obtained from non-Mennonite institutions, such as a Mainline Protestant campus. This would help identify aspects of the results that stem from a convergence between Mennonites and Mainline Protestants and aspects that arise from EMU's campus ethos.

CONCLUSION

This study examined religion's impact on social preferences by examining behaviors in the ultimatum game (UG) for one group of American Christians, Anabaptist Mennonites. Mennonites deserve special attention in this area due to their doctrinal emphasis on social justice issues. The results showed that Mennonite Proposers' mean offer did not significantly differ from other Christians. Proposers' mean offer for the entire sample on the campus of Eastern Mennonite University was 46 percent of the initial sum, which is near to but slightly higher than most existing studies. By contrast, Responders were slightly

⁵⁰ Henrich, 2000; Roth et al., 1991.

⁵¹ Camerer. 2003.

more accepting of Proposer offers than documented elsewhere, though insufficient data prevented a separate analysis of this result for Mennonites. To the extent that Proposers foresaw Responders' low rejection rates, the higher offers suggest overall greater altruism for EMU Proposers than for other settings. One contributing factor to this result may be EMU's vision and mission statements that emphasize community and social justice perspectives.

APPENDIX – CONSENT AND SURVEY FORMS

*required

Please read the following consent form and type your full name, today's date, and your email address if you agree to participate.

If you participate in this research, you will be asked to reveal your own religious affiliation or preference and then participate in a short exercise where you will correspond anonymously via computer with another person regarding a potential cash payoff. During the exercise you can earn up to \$10 or you may earn nothing. The earnings from the exercise will be paid immediately upon completion. You may only participate in the exercise one time. There are no foreseeable risks or discomforts to you as the subject.

Except for the above potential earnings (minimum = \$0, maximum = \$10), there will be no personal benefits to you from participating in this research. Your participation in the experiment will take approximately 5 to 10 minutes.

Your participation in this research is strictly voluntary. You may refuse to participate at all, or choose to stop your participation at any point in the research without fear of penalty or negative consequence.

This personal information/data you provide for this research will be treated confidentially, and all raw data will be kept in a secured file by the researcher. Results of the research will be reported as aggregate summary data only, and no individually identifiable information will be presented unless explicit permission is given to do so.

You also have the right to review the results of the research, if you wish to do so. A copy of the results may be obtained by contacting the researcher.

Dr. Chris Gingrich
Eastern Mennonite University
Harrisonburg, VA 22802
540-432-4154
chris.gingrich@emu.edu

Participant consent

I, (type full name below) _____ have read and understood the foregoing information explaining the purpose of this research and my rights and responsibilities as a subject. Typing my name, today's date, and my email address below designates my consent to participate in this research, according to the terms and conditions listed above.

Please type your full name*

Please enter today's date*

Please enter your email address*

Your email will not be shared with anyone

Please answer the following questions. All information will be treated confidentially.

With what religion/denomination do you most closely align your own beliefs? (check only one)*

- Atheist or Agnostic
- Buddhist
- Christian/catholic
- Christian/Anabaptist non-Mennonite (e.g. Brethren)
- Christian/Mennonite
- Christian/Protestant (e.g. Baptist, Lutheran)
- Christian/Other
- Hinduism
- Islam
- Judaism
- Mormon
- Other _____

Regarding the above religious affiliation, how would you describe your commitment to these beliefs?

1 2 3 4

weakly committed strongly committed

Please enter your age (years)*

Please provide your sex*

- Female
- Male

Please mark your relationship to EMU (choose only one)*

- Undergraduate student
- Graduate or seminary student
- Faculty member
- Staff member
- No relationship to EMU
- None of the above