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## The Effects of Video Games and Religious Reminders on Prosociality

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THE EFFECTS OF VIDEO GAMES AND RELIGIOUS REMINDERS ON  
PROSOCIALITY

by

Heather K. Cross

A Thesis Submitted in Partial Fulfillment  
of the Requirements for a Degree with Honors  
(Psychology and Sociology)

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## ABSTRACT

Religious primes have been shown to increase prosocial intentions (Shariff, 2016), whereas prosocial video games tend to increase both prosocial intentions and behaviors (Greitemeyer & Osswald, 2010). The aim of this study was to see whether or not these two predictors could work better in tandem to increase prosociality. It was hypothesized that both types of predictors would increase prosocial intentions on their own, that both types of predictors would work together to further increase prosocial intentions, and that this interaction would be moderated by personal religiosity. Participants were randomly assigned to read religious or nonreligious passages, and then randomly assigned to play either a prosocial or neutral video game. Afterwards, they were given the opportunity sign up to volunteer at bottle/coin drives to support their community, and participation was recorded. Results showed that empathy, humility, and overall gamer identity were associated with greater prosocial intentions, but neither prosocial reminder increased prosocial intentions or behaviors.

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## **Introduction**

Prosociality is defined as voluntary intentions or behaviors that help another person or group of people (Eisenberg & Miller, 1987). Societies are generally prosocial, which fosters cooperation among participants (House et al, 2013). A body of research explained that humans are ultimately more altruistic than other primates, in that social preferences in humans increase the spread of altruistic behavior for the benefit of another human beyond close kin or reciprocating individuals (Silk & House, 2011). Understanding why humans are prosocial can help us determine how we should go about increasing prosociality and fostering community engagement.

The scientific study of prosociality looks at both prosocial intentions and prosocial behaviors. Prosocial intentions involve no participation in good deeds but do suggest that the person means or wishes to be prosocial. In research on prosociality, a lot of the measures used refer to intentions to behave prosocially as opposed to actually engaging in the prosocial behavior (see Greitemeyer & Osswald, 2010; Lin, Tong, Lee, Low, & Gomes, 2016; Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005 for examples). Stating willingness to assist in further studies, although no real further action may be taken, is a common laboratory measure of prosocial intention (Greitemeyer & Osswald, 2010).

Prosocial behaviors are these good deeds directed outward. Some examples include donations, volunteering, even picking up or sharpening pencils for someone (Greitemeyer & Osswald, 2010; Macrae & Johnston, 1998; Whitaker & Bushman, 2012). Several lines of research have attempted to understand what situations or characteristics

promote prosocial behavior. Much of the literature has focused on personality predictors like empathy (Batson et al., 1993; Eisenberg & Miller, 1987), but several theoretical and empirical lines suggest that social cues can promote or inhibit prosociality. Darley and Latane's (1968) popular study highlighted the various social contexts that contribute to greater bystander intervention, a form of prosocial behavior. This study will investigate the role of two different contexts that might promote prosocial behaviors: religion and video games.

### **Religion and Prosociality**

Religion has long been regarded as a source of morality with clear notions of right and wrong (Preston, Ritter, & Hernandez, 2010). Durkheim considered religion the foundation of a working society, claiming that society would always create a new religion to fit its functional needs (1968). Saroglou defined religion as “what humans do in reference to what they consider as external transcendence” (2011, p.1321), which includes practices such as religious attendance, prayer, and belief in an afterlife. Saroglou separated religiosity into four dimensions that are universal and often overlapping: believing, bonding, behaving, and belonging (2011). That is, believing in a truth, bonding with realities that transcend our own, prizing virtuous behavior, and belonging to a group. These four factors are intrinsic to religion, although some of the categories are represented more heavily in some cultures than others (Saraglou, 2011).

Regardless of how cultures approach their religions, practically all religions promote prosociality in their teachings (Batson et al, 1993). *The New Testament*, *Qur'an*, and *Torah*, among other religious and sacred texts, all have passages that refer to helping, sharing, or giving to another person or group of people. In the *New Testament* Book of

Hebrews 13:16 (ESV), it says that one should “not neglect to do good and to share what you have, for such sacrifices are pleasing to God.” Christianity has long held the ideals of doing good, including charity, for the glory of God. Similarly, the Qur’an tells readers that they “will not attain righteousness till [they] spend in charity of the things [they] love” (Qur’an 3:92). In the *Torah*, Deuteronomy 15:11 (ESV) commands that “you shall open wide your hand to your brother, to the needy and to the poor, in your land.” Each of these major traditions, among others, embraces prosociality as a central moral teaching.

Research suggests that religiousness and prosociality are related empirically as well, even if religious prosociality is most often directed towards other ingroup members (Shariff, 2016). Simply belonging and actively engaging in religious groups can enhance prosocial behavior regardless of the specific religion of the believer (Galen, Sharp, & McNulty, 2015; Harrell, 2012; Shariff, 2016). Much correlational research has indicated that religiosity is associated with prosociality. Shariff’s recent meta-analysis (2016) revealed that religiosity was associated with higher self-reports of prosocial behavior, although behavioral measures have yielded inconsistent results. Galen and colleagues (2015) found that volunteering was moderately associated with belief in God and religious attendance. This may be because people sense that they are being watched by God, and they help as a way to avoid supernatural punishment (Bering & Johnson, 2005; Shariff, 2016).

### **Religious priming**

Building on these findings, researchers have investigated the causal role of religiousness in increasing prosociality by manipulating the salience of religiousness through priming. Primes are explicit or implicit activations of concepts, as a way to

experimentally make an idea temporarily more salient or accessible (Bargh, Chen, & Burrows, 1996; Rand et al, 2014). Priming methods have been used widely in cognitive and social psychology. For example, Bargh and colleagues (1996) examined the effects of several types of primes on participants' behavior. In their second experiment, they concluded that those who were primed with an elderly stereotype left the experiment by walking more slowly down the hallway than control participants who were not primed with elderly stereotypes (Bargh, Chen, & Burrows, 1996). Subtle contextual cues like these can have effects on our behavior in unexpected ways.

A common method of religious priming is the use of sentence-unscrambling tasks (Ahmed & Salas, 2011; Bargh, Chen, & Burrows, 1996; Preston, Ritter, & Hernandez, 2010; Preston & Ritter, 2013; Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007; Srull & Wyer, 1979). These tasks involve sets of five words that can be unscrambled to form a four-word sentence. Typically, five of the ten sentences will include concept-relevant prime words (e.g., “cake divine the roof was” – “the cake was divine”). Other researchers have primed participants subliminally, through the Lexical Decision Task, which flashes religious or control words to participants for 20-30ms, too fast for conscious awareness (Galen, 2012; Harrell, 2012; LaBouff, Rowatt, Johnson, & Finkle, 2012; Pichon, Boccato, & Saroglou, 2007; Preston et al, 2010; Shariff, Willard, Andersen, & Norenzayan, 2015).

Regardless of method, several varieties of religious primes exist in the literature. For example, positive and negative religious primes (Pichon et al, 2007; Preston & Ritter, 2013), contextual primes (Ahmed, 2013; LaBouff et al, 2012), primes of God concepts (Lin et al, 2016; Preston & Ritter, 2013; Shariff & Norenzayan, 2007), and religious

primes that offer rewards (Harrell, 2012), have all been examined. A positive religious prime, as suggested by Pichon and colleagues (2007), would include a string of letters that could be unscrambled into a positive religious concept such as *heaven*, whereas a negative religious prime may include the word *hell*. God-concept primes are broad primes that do not attempt to activate either positive or negative aspects of religion, but instead activate the target's own ideas about supernatural watchers or god-figures. All of these types of primes have been associated with more generosity (Harrell, 2012; Shariff, 2016; Shariff, Willard, Andersen, & Norenzayan, 2016; Shariff & Norenzayan, 2007).

While these types of religious primes have been effective at increasing prosocial intentions, they do not accurately reflect the way in which people encounter religious reminders in the real world. That is, they are not particularly ecologically valid. Contextual primes (which use everyday social situations to more naturally activate a construct) may tell us more about the role of religion in prosociality. For example, LaBouff et al (2012) found that participants standing outside a religious building (St. Servatius, Basilica in Maastricht, the Netherlands) were more negative towards outgroups than those standing outside a civic building (City Hall in Maastricht). Shariff and colleagues (2015) have suggested that contextual primes may have the strongest effects because they more closely mirror real-world religious experiences.

As described above, a recent meta-analysis by Shariff (2016) indicated that religious primes do, generally, promote prosociality, but found that these effects tend to be short-term, and largely effective only among believers (see also: Lin et al, 2016). He also notes that although personal religiousness is associated with self-reported prosociality, when helpful behaviors are measured directly in the lab there appears to be

no reliable relationship with religiousness (Shariff, 2016). In addition, religiousness may promote prosociality only toward members of the religious ingroup as opposed to an outgroup (Galen, Sharp, & McNulty, 2015; Preston & Ritter, 2013; Shariff, 2016). However, each of these studies that demonstrate the limits of religious prosociality used lab-based measures of economic games or other outcomes that are not particularly ecologically valid. It could be that religious salience influences prosocial behaviors in real-world contexts like volunteering for food and bottle drives more than it might influence lab-based contexts like economic games.

### **Video Games and Behavior**

Video games have been researched since their emergence in the 1970s and have been the topic of intense academic scrutiny over the past ten years. The generation that developed along with video games saw them not as new media like the generation before, who grew up with an entirely different media culture (Fromme, 2003). New media are often met with skepticism and distrust by those who have grown up with different technologies (Fromme, 2003). We are beginning to see a dramatic growth in research on video games as the first generation to grow up with them begins to conduct their own research.

This early research has focused almost exclusively on violent video games (see Anderson et al, 2010 for a meta-analysis and review). Violent video games have been defined as games “in which the range of options available to a player includes killing, maiming, dismembering, or sexually assaulting an image of a human being” by California state law (*Brown vs. EMA*, 2005). Anderson and colleagues (2001) offer a broader description, suggesting that violent media in general can be considered “those

that depict intentional attempts by individuals to inflict harm on others” (p. 354) which can include human and nonhuman characters.

### **General Aggression Model**

Initially, Anderson, Deuser, and DeNeve (1995) introduced the General Affective Aggression Model or GAAM which was revised to the GAM by Anderson and Dill (2000). In a brief, the model states that aggression is based on knowledge that is created by social learning (Anderson & Dill, 2000; Bandura, 1977). Certain input variables, such as one’s personality and their present social context, can influence that person’s internal state, including their affect, cognition, and arousal. The majority of the studies presented here investigate the effects of violent video games on cognition. This model suggests that exposure to violent media, especially games, makes aggressive automatic cognitive responses more likely. Along with other violent media exposure (e.g., television, internet, etc.), violent video games have been shown to affect people in correspondence with this model (Anderson & Dill, 2000; Prot et al, 2014). Essentially, simulated violence within a game influences a player’s cognition, arousal, and/or their affect, which then creates a short-term effect on their non-conscious decisions to behave more aggressively.

Anderson and Dill (2000) began by looking at the correlational relationship between video game violence and real world violence, such as aggressive behavior and delinquency. They measured exposure to violent video games by asking participants to name their five favorite video games and then asking them to rate the violent content and graphics as well as asking them how often they play these games. They found that exposure was strongly correlated with delinquent behavior, although this is partially due to pre-existing differences in aggressive personality (Anderson & Dill, 2000).

In short, research has found that violent video games increase aggressive behaviors (Anderson & Dill, 2000; Anderson & Bushman, 2001; Anderson et al, 2010) and decrease empathy and prosocial behavior (Anderson et al, 2010; Anderson & Bushman, 2001; Prot et al, 2014). For example, Anderson and Dill's (2000) second study tested the effects of violent video games on aggressive behaviors experimentally, and found that these video games increased aggressive behaviors by increasing the accessibility of aggressive thoughts and feelings. These findings support the GAM such that violent video games can induce aggressive cognition and affect, which can then influence how much a game will affect one's immediate behaviors. In fact, a meta-analysis by Anderson and Bushman (2001) found that with short-term exposure to violent video games, temporarily increased aggression via increased aggressive thoughts and feelings.

However, not all games that are aggressive decrease prosociality. For example, violent video games can have aggressive content with prosocial motives, and aggressive video games that are played cooperatively can increase both prosociality and empathic concern (Gentile et al, 2009; Gitter et al, 2013; Greitemeyer, Traut-Mattausch, & Osswald, 2012; Greitemeyer, 2013; Velez & Ewoldsen, 2013). Gitter and colleagues (2013) had participants play a violent video game and were told that they were protecting another player from enemy NPCs (non-playable characters). They found that the explicitly prosocial context of the violent video game lead to significantly *lowered* aggression (Gitter, Ewell, Guadagno, Stillman, & Baumeister, 2013). In a similar study, Greitemeyer and colleagues (2012) had two participants play a violent video game cooperatively and

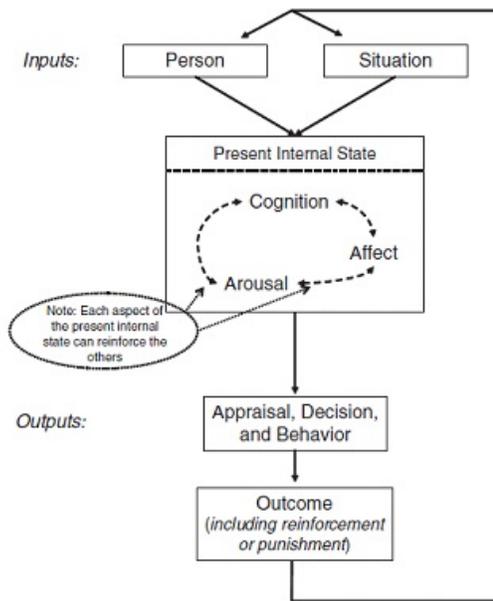
then asked them to share some number of coins they were given to another (unseen) participant. They found that cooperation on a violent video game improved this type of prosocial sharing. Later, Greitemeyer (2013) repeated the same game conditions and found an increase in empathic concern for a description of a struggling family among those who played the violent video game cooperatively rather than competitively.

Regardless of the pro-or-anti-social nature of these effects, they are short-lived. Anderson and colleagues (2010) found that these short-term effects were due to priming processes along the cognitive route of the GAM, similar to the mechanisms of religious primes described above. Players need only access to aggressive behaviors within a game to activate aggressive thoughts and thus increase the probability of aggressive behaviors (Anderson et al, 2010). Like all primes the effects of violent games are not permanent. Barlett and colleagues (2009) tested participants for trait aggression (a baseline measure of how aggressive they are naturally), aggressive feelings and thoughts, as well as heart rate before, immediately, four minutes, and nine minutes after playing a violent video game. They found that the increase in aggressive feelings and thoughts, and physiological arousal from an individualized baseline lasted less than four minutes (Barlett, Branch, Rodeheffer, & Harris, 2009). Their second study dealt with the lasting effects of these games on overt aggressive behavior and found that aggressive behavior could last anywhere between five and ten minutes after violent video game play, although longer time frames were not tested (Barlett et al, 2009). The GAM does suggest pathways for long-term changes to aggressive cognition, but there is no literature yet investigating this area in video games (Anderson & Bushman, 2001).

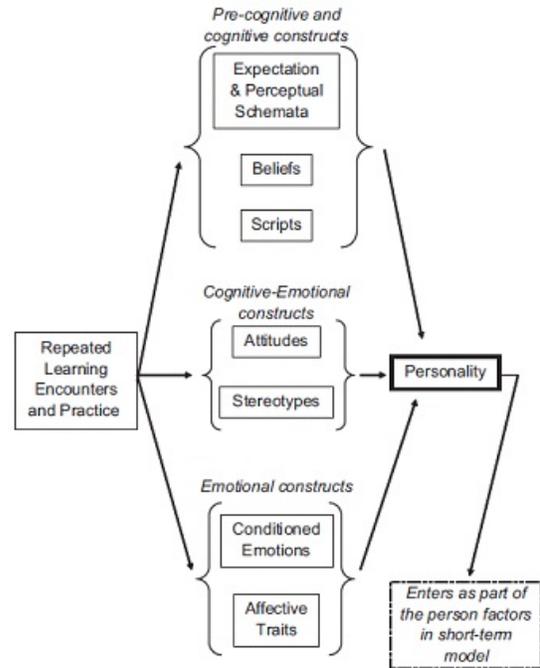
Perhaps there is a parallel case for prosocial video games as well. Prosocial video games, in contrast with violent video games, have no explicit aggression acted upon or perceived by the player, and are games “in which players and game characters help and support each other in nonviolent ways” (Gentile et al, 2009, p. 754). To explain both the probability of long-term effects and the adaptability of the model to include prosocial video games, the GAM was modified into the General Learning Model (GLM).

### **General Learning Model**

The GLM (see Figure 1 and Figure 2 below), introduced by Buckley and Anderson (2006), is a redesign and expansion of the GAM to consider more than just short-term effects and aggression. One's personality and situation (e.g., video games) interact to affect internal states such as cognition, arousal, and affect. Each of these interact with one another to change how people behave both immediately after a situational influence *and in the long-term via reinforcement or punishment* (Anderson & Dill, 2000; Anderson & Bushman, 2001; Buckley & Anderson, 2006; Gentile et al, 2009; Gentile, Groves, & Gentile, 2013; Greitemeyer & Mügge, 2014; Greitemeyer & Osswald, 2009; Greitemeyer & Osswald, 2010; Gitter et al, 2013; Happ, Melzer, & Steffgen, 2015). The GLM suggests that with repeated learning encounters, the resulting behavior is stronger and more of the learned behavior is produced in the long term, which emerges from older social learning theories (Bandura, 1977; Gentile & Groves, 2014).



**Figure 1** Short-term processes in the General Learning Model (simplified view).



**Figure 2** Long-term processes in the General Learning Model.

**Figure 1 and Figure 2.** (Gentile et al, 2009, ppg.754-755)

No longer just about aggression, the GLM models the effects of prosocial media as well. In particular, prosocial video games seem to have multitudes of effects, not just on behavior. Playing prosocial video games reduces aggressive cognition (Greitemeyer & Osswald, 2009), affect, and behavior (Greitemeyer & Mügge, 2014). Greitemeyer and Osswald (2009) used prosocial video games such as *Lemmings* and neutral games such as *Tetris* then measured aggressive thoughts and aggressive affect with a word completion task and the PANAS (Positive and Negative Affect Schedule, see Watson et al, 1988), respectively. They found that playing prosocial games decreased aggressive thoughts at least temporarily (Greitemeyer & Osswald, 2009). Further, a meta-analysis by Greitemeyer and Mügge (2014) revealed that while violent video games increase aggression-related variables and decrease prosocial affect (but not prosocial cognition, although the

data trended in that direction), prosocial video games have the exact opposite effects.

Other studies by Greitemeyer and Osswald (2010; 2011) and a study by Saleem, Anderson, & Gentile (2012) also point to prosocial video games increasing prosocial thoughts, affect, and behavior. Greitemeyer and Osswald (2011) found that playing prosocial games activates the cognitive route of the GLM by priming related prosocial thoughts. They had participants play either *Lemmings* or *Tetris* and then perform a lexical decision task with prosocial, neutral, and non-words, finding that there was an increase in prosocial thoughts after play. Saleem, Anderson, and Gentile (2012) measured state hostility after participants played prosocial, neutral, and violent video games and found that prosocial video games increased positive affect and reduced state hostility. Since both cognitive and affective routes of the GLM are activated by prosocial video games, it stands to reason that prosocial video games should also increase prosocial behavior.

Correlational research has produced fairly consistent findings. One of the studies by Gentile and colleagues (2009) found that middle-school students from Singapore who said they played prosocial games also said that they behaved more prosocially. Prot and colleagues (2014) also found that prosocial media use in general promoted helping across seven countries, including Australia, China, Croatia, Germany, Japan, Romania, and the United States. Further, a longitudinal correlational study in a Singaporean sample (Prot et al., 2014) found that the relationship between prosocial media and prosocial behavior was mediated by an

increase in empathy, consistent with the findings of other researchers (e.g., Greitemeyer, 2013).

An experimental design by Gentile and colleagues (2009) used a U.S. sample to examine the causal effect of prosocial games. Participants were randomly assigned to play either a prosocial, neutral, or violent video game and then were told to pick puzzles of varying difficulty to give to another (actually fictitious) participant. They found that playing prosocial games caused people to be more helpful by picking easier puzzles for the imaginary participant (Gentile et al, 2009).

These findings are further supported by several additional experiments by Greitemeyer and Osswald (2010). In their first experiment, after playing a prosocial or neutral video game, participants witnessed a full pencil holder being knocked over on ‘accident’ and whether or not they helped a confederate retrieve them was recorded. They found that participants who played a prosocial game were more likely to behave prosocially (Greitemeyer & Osswald, 2010). In their second experiment, participants were more likely to agree to participate in further studies without compensation immediately after playing a game (although there were no actual additional studies in which to participate). These results replicated those of the first experiment. In their third experiment, they set up an elaborate scenario in which it appeared that the experimenter was being harassed by an ex-partner—participants who played a prosocial game were more likely to intervene on the experimenter’s behalf.

Essentially, Greitemeyer and Osswald (2010) demonstrated through several experiments that prosocial video games increase both prosocial intentions (study

two) and behaviors (studies one and three). In study four, participants played either a prosocial or neutral game and then wrote down all ideas that they thought while playing the game, after which the pencils from study one were used as a measure of prosocial behavior again (Greitemeyer & Osswald, 2010). The effect of games on behaviors was due to an increase in prosocial thoughts (Greitemeyer & Osswald, 2010). This strengthens the idea that the cognitive route through the GLM is what spurs more prosocial acts when exposed to prosocial stimuli.

It is important to recognize that among all of these studies, the results remained consistent across different kinds of gaming experiences, including difficulty, excitement, and enjoyment (Anderson & Ford, 1986; Anderson et al, 2010; Greitemeyer & Osswald, 2010; Gentile et al, 2009; Whitaker & Bushman, 2012). A meta-analysis by Greitemeyer and Mügge (2014) suggests that these findings among both violent and prosocial video games are evidence that video game effects are dependent upon the content of the game, as the GLM suggests. Further, the GLM considers both the content of a game and the context in which it is played. It could be that playing a prosocial game with a particular frame (e.g., in a religious context), might amplify the effects of the game on prosocial behaviors.

### **The Present Study**

The present study seeks to understand the potential interaction between a religious prosocial context, and a video game's prosocial content. Situational *context* in this case refers to *how* and *why* the situation is occurring. For instance, the activation of religious concepts of charity may prime participants to be more receptive of or influenced by prosocial content.

Situational *content*, when compared with *context*, refers to *what* is uniquely happening within a situation. Take, for example, a prosocial video game. The game's content, as discussed earlier, is an important piece that activates cognitive and affective routes of the GLM (Anderson & Bushman, 2001; Anderson et al, 2010; Greitemeyer & Mügge, 2014; Greitemeyer & Osswald, 2011). The *content* is what makes up the situation and the *context* gives the situation a purpose or framing for the person involved.

When a participant experiences congruent context and content, their behavior may be more strongly influenced. A person exposed to situational *content* (e.g., playing a prosocial game) coupled with situational *context* (e.g., a religious prosocial prime) may have temporarily altered attitudes and behaviors afterward (e.g., greater prosocial intentions and behaviors). A person's arousal, cognition, and affect during this interaction would be altered not only by the content and context of the situation but also the individual differences they bring to the situation. For example, religious prosocial reminders may work differently for religious and nonreligious participants, given the research reviewed above (e.g., Shariff, 2016).

While religious primes are constrained to specific conditions and have a more consistent effect on prosocial intentions than behaviors (Shariff, 2016; Lin et al, 2016), prosocial video games seem to have a broader effect on prosocial intentions and behaviors towards a wider array of targets (Greitemeyer & Osswald, 2010). A religiously prosocial context, coupled with neutrally prosocial content, may be able to further increase prosocial intentions and behavior, even if it is just for believers. Essentially, it is possible that these types of reminders could work

better in combination than they would independently. There is also the possibility that this interaction could be moderated by personal religiosity (Galen, Sharp, & McNulty, 2015; Harrell, 2012; Shariff, 2016). The present research aims to address this question by asking participants to play either a prosocial or a neutral game that will be framed by either a religious or neutral prime. They will then be asked to volunteer their time to a prosocial cause.

We expect that (1a) playing a prosocial game, as opposed to playing a neutral video game, will increase both prosocial intentions and (1b) behaviors, (2) a religious reminder to be prosocial will increase prosocial intentions, (3) the effect of a religious reminder will be weaker on prosocial behavior than prosocial intentions, (4) a religious reminder before playing a prosocial game will increase prosocial intentions, more so than playing either the prosocial or neutral video game without a religious reminder, and (5) this effect may be moderated by religiosity.

## **Methods**

### **Participants**

Undergraduate students were recruited using the University of Maine Department of Psychology's participant pool ( $N=45$ , 25 male, 20 female,  $M_{age}=19.64$ ). Of the 45 participants, 40 were White, 2 were Asian, 1 was Black, and 2 identified as other. They received one research credit for participation.

### **Materials and Procedure**

Qualtrics (2017) was used in the making of the survey for this study. Participants came into the lab individually and began the first part of the survey designed to measure

self-reported predictors of helping, including trait helpfulness, empathy, humility, and gratitude. General helpful behaviors of participants were assessed using a modified version of Rushton's self-report altruism scale (Rushton, Chrisjohn, & Fekken, 1981). Participants were asked to rate how often they had done a behavior, such as "I have given directions to a stranger" or "I have delayed an elevator and held the door open for a stranger" on a scale from 1-7 (1 = "never" and 7 = "very often").

Trait empathy was measured using seven items from the Empathic Concern Subscale of the Interpersonal Reactivity Index (Davis, 1980). Participants were asked to rate how well a statement described them on a scale from 1-7 (1 = "does not describe me well" and 7 = "describes me very well") with statements like "I am often quite touched by things that I see happen."

Trait humility was measured with a seven-item semantic differential scale (Rowatt et al, 2006). Seven bipolar-Likert-type scales from 1-7 were used for participants to rate themselves according to which trait they felt described them the most (e.g., 1 = "arrogant" and 7 = "humble").

Trait gratitude was measured using The Gratitude Questionnaire-6 (McCullough, Emmons, & Tsang, 2002). Participants were asked to rate how strongly they agreed or disagreed with six statements about gratitude, including "I have so much in life to be thankful for" or "As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life" (1 = "strongly disagree" and 7 = "strongly agree").

After completing the initial survey, participants were randomly assigned by Qualtrics to one of two conditions: a religiously prosocial frame or a neutral frame.

Passages were retrieved from an online topic forum (Topical Bible, 2001) where passages could be found by searching for different topics. Passages were selected by searching for *prosociality*, *prosocial behavior*, *helping*, *helping behavior*, and *volunteering*. The three passages were selected by the Qualtrics randomizer from these results. There was one short, one moderate, and one long passage all taken from various books in the New Testament (English Standard Version; please see Appendix B for copies of the passages). Nonreligious passages were retrieved from an online topic forum (Good Reads Inc., 2016) where passages could be found by searching for different topics. Passages were subjectively matched for emotional valence and length, and no passages included prosocial suggestions.

Within each condition, participants were asked to read and answer questions about three passages and then asked to think about what they read as they began the next task.

After receiving the frame, Qualtrics randomly assigned each participant to one of two problem-solving game conditions: a prosocial video game (*So Many Me*) or a neutral video game (*Hook*). Two games were identified that were similar in several respects. Both games were problem-solving and puzzle-based, with similar learning curves and levels of engagement. The two games differed primarily in their narrative framework, either a prosocial story (*So Many Me*), or a neutral frame (*Hook*).

*So Many Me* (Extend Interactive Co., 2014) is a Lemmings-type, puzzle-platformer game in which the player leads a group of characters through different levels with the aim to save them all by leading them safely to the end of each level. Some characters may have to be sacrificed to become a part of the level in order to create a path

for the other characters to move forward. They can be returned to their normal state once their help is no longer needed so that all of the characters can finish the level together. This type of game has been used in previous research with significant results in terms of promoting helping behavior (Greitemeyer & Osswald, 2009, 2010, 2011).

In *Hook* (Targoni & Wasiak, 2015), players must retract lines from their original place to a focal point without “hooking” onto any other pieces of the puzzle that may be in the way. This game is considered a minimalistic puzzle game and was chosen due to its lack of characters, story, and prosocial reminder. There are no characters or voices asking for help, and the only goal of the game is to solve one puzzle and move onto the next. Both games include puzzle-solving mechanisms that get progressively harder as the player moves forward in the game. One game has personified characters that offer help to others while the other has no characters and offers no lessons of helping others.

Participants were told to alert the attending research assistant that they were finished with the first part of the study and that either *So Many Me* or *Hook* should be opened. The research assistant started the game for the participants and told them that they would be timed to play for 15 minutes.

After 15 minutes of gameplay, the attending researcher would knock on the door to tell participants that their time was up. The participants were given the second half of the survey with a manipulation check in which they were asked about their gameplay and reading experiences, and about how their thinking about the passages influenced their gameplay.

At the close of these measures, the survey instructed participants that the next section was loading and then, while they waited, set up the opportunity for prosocial

behavior. A survey page, after the manipulation check and before the evaluation of gaming experiences, described the lab's relationship with Health Equity Alliance (HEAL) and mentioned that our lab recruits volunteers to staff bottle and coin drives to raise money for their ongoing, open-access Bangor-area community food pantry. The survey indicated that we were hosting these drive tables in the Memorial Union on campus every Monday, Tuesday, Thursday, and Friday at specified times and that participants were invited to volunteer their time to staff the tables. Participants were invited to choose from several available dates and times. In addition, participants were invited to sign up for as many hours as they would be willing to work on as many days as they were willing to volunteer. Whether or not participants indicated that they would help, and how much time they signed up to help for, indicated their prosocial intentions.

After being given the opportunity to volunteer and filling out the necessary information, the survey continued. The first measure after the volunteering option was a manipulation check to be sure that the participants were paying attention to the game that they were supposed to be playing. The question asked participants whether they played *Hook*, *So Many Me*, *The Long Dark*, or *Tetris*. All participants correctly named the game they had played.

Participants were asked about their personal experiences with gaming. These questions included preferences for games in general, their interest in games, how often they played video games, and how they perceived the games that they played in terms of difficulty, excitement, enjoyableness, frustration, and prosocial/aggressive tendencies (Anderson & Ford, 1986; Anderson & Dill, 2000; Anderson et al, 2007; Burris & Dow, 2015; Gentile et al, 2009; Greitemeyer & Osswald, 2010; Prot et al, 2014). Once the

survey was completed, participants were told that their study was over, their credit granted, and that they were free to go. Those who did not choose to help were immediately debriefed.

All participants who chose to help were emailed one week before their possible signup times— along with a reminder email one day before their first signup time— with details concerning their part in the bottle and coin drives, including where to show up and what to expect. A research assistant was assigned to these times in order to keep track of the participants who arrived and signed in, which was used as our final measure of prosocial behavior. All participants who chose to help, whether or not they actually attended the event, were sent an additional survey with open-ended questions about why they helped or not, and if they had, what they got out of their experience for exploratory qualitative data. At this point, these participants were emailed the debriefing statement (please see Appendix D for the full debriefing script).

## **Results**

Of the four self-reported predictor variables (general helpfulness, empathy, humility, and gratitude), empathy was correlated with humility ( $r = .40, p = .008$ ) and gratitude ( $r = .36, p = .017$ ). None of the variables were associated with self-reported general helpfulness or religiousness (see Table 1).

One-third of participants said that they would donate their time (see Figure 3). On average, these participants said that they would donate 2.87 hours. Of the four predictor variables measured, empathy and humility were associated with whether or not participants said they would volunteer ( $r = -.39, p = .008$ , and  $r = -.38, p = .012$ , respectively), and empathy was associated with the number of hours participants said

they would donate ( $r=.42, p=.005$ ). Personal religiosity was also not associated with prosocial intentions to help,  $t(21.04)=-.583, p=.554$ , or in the number of hours offered,  $t(2.154)=-1.307, p=.313$ .

Of the 15 participants who said that they would help, only 5 played the prosocial video game. When it came time to volunteer, however, only 4 out of those 15 participants attended. Of those 4 volunteers, 1 played the prosocial video game. Twenty-six percent of those who were assigned the religiously framed passages said they would help, while 1 person who received the religiously framed passages actually volunteered (see Figure 4a and 4b). None of the predictor variables were related to whether or not participants actually volunteered (see Table 2).

Difficulty of the games was related to enjoyment ( $r=.33, p=.027$ ) and frustration ( $r=.58, p=.000$ ). Those who reported less difficulty when playing the games indicated more interest in gaming ( $r= -.30, p=.043$ ) and spending more hours per week gaming ( $r= -.34, p=.022$ ). Identifying more strongly as a gamer was highly correlated with both interest in gaming ( $r=.78, p=.000$ ) and hours per week spent gaming ( $r=.82, p=.000$ ), and all three measures combined were a reliable measure of overall gaming identity ( $\alpha=.90$ ). The excitement of the games was correlated with perceived prosocial content of the games ( $r=.403, p=.006$ ). However, perceived prosocial content and perceived violent content were also related to each other across the two games ( $r=.528, p=.000$ ). None of the three gamer identity measures were related to how participants perceived the content of the games (see Table 3).

The games themselves did not differ from each other in terms of perceptions of difficulty ( $t(43)=.124, p=.902$ ), frustration ( $t(43)=-1.061, p=.295$ ), or excitement

( $t(43)=.16, p=.874$ ). The games did differ by perceived enjoyment ( $t(43)=2.03, p=.049$ ), in that the neutral game was perceived as more enjoyable than the prosocial one. There was no evidence that the enjoyment of the game was related to any prosocial variables (intention:  $r=-.15, p=.31$ ; hours:  $r=.16, p=.578$ ; volunteering:  $r=-.11, p=.489$ ).

Participants overall perceived the prosocial video game as more prosocial ( $t(43)=-5.517, p=.000$ ) and more violent ( $t(43)=-3.798, p=.000$ ) than the other. How they perceived the games had no effect on any prosocial outcomes (see Table 4).

Participants who were more interested in games found these particular games easier than those who were less interested ( $r = -.304, p=.043$ ) and those who self-reported playing more hours of video games also found these games less difficult ( $r = -.341, p=.022$ ). Those who indicated more interest in games were also more likely to say that they would volunteer ( $r=.311, p=.038$ ), although there was no relation to the reported number of hours or whether or not they actually volunteered.

It was expected that playing a prosocial game would increase both prosocial intentions and behaviors. In an independent samples t-test, it was found that game condition did not affect whether or not people said they would volunteer,  $t(43)=-1.704, p=.096, d=.51$ , how many hours they said that they would donate,  $t(43)=1.979, p=.054, d=.67$ , or behaviors,  $t(43)=1.084, p=.284, d=.32$ . While the effect sizes are medium to large, it cannot be said for sure whether this is due to random fluctuation in the sample.

The religious passage condition was expected to increase prosocial intentions. Another independent samples t-test revealed that this was not the case for either saying that they would volunteer,  $t(43)=-1.044, p=.302, d=.31$ , or the number of hours they

claimed they would donate,  $t(43)=1.633$ ,  $p=.110$ ,  $d=.71$ . Similarly, religious condition also did not affect prosocial behavior,  $t(43)=1.084$ ,  $p=.284$ ,  $d=.32$ .

Although the study was underpowered, a MANOVA was run and no significant interaction between game and religious conditions was observed. While it would have been informational to look at the potential moderating effect of religious belief, the pattern of results described did not justify such an analysis.

### **Discussion**

Ultimately, there were no main effects of either prosocial video games or religiously prosocial narrative frames on prosociality. Participants who self-reported having more empathy and humility were more likely to volunteer, as expected from other research (for empathy, see Batson et al., 1993; Eisenberg & Miller, 1987; for humility see LaBouff et al, 2012). To call oneself humble is an oxymoron in the sense that participants may be yea-saying in their responses, indicating what they believe the researchers want to hear. That seems to be supported by the results because those who said they were more humble also expressed a wish to help, but did not actually help more than a participant who self-reported less humility. Self-reporting higher empathy predicted that participants were willing to donate more hours.

Empathy and humility, however, were related to prosocial intentions, meaning that those who said they were more empathic and humble were more likely to agree to volunteer. How empathic they said they were also indicated how many hours they would donate, in that the higher the amount of trait empathy translated to donating a higher number of hours. These effects may be due to participants wanting to answer in a positive

light for the study, because no one wants to be seen as uncaring, conceited, or uncooperative (Silk & House, 2011).

Out of all 45 participants in the study, only 4 people showed up to volunteer at the bottle/coin drives. 15 participants had said that they would, however. This is relatively in line with previous research on prosociality, namely in Shariff's recent meta-analysis (2016) which states that people are more likely to report being prosocial than they are to actually be prosocial. For example, somewhat unexpectedly, belief in God was not associated with positive personal qualities like empathy, humility, gratitude, or general helpfulness.

The games selected were similar across many dimensions, including difficulty, frustration, and excitement. This was also what other studies found using games of a similar type (Anderson & Ford, 1986; Anderson et al, 2010; Greitemeyer & Osswald, 2010; Gentile et al, 2009; Whitaker & Bushman, 2012). Ideally, the only difference between *So Many Me* and *Hook* was supposed to be the perception of the game's content. *So Many Me* was seen by participants as the more prosocial game, however, it was also seen as the more violent game in addition to being slightly less enjoyable. This is important to note because *So Many Me*, while it is a *Lemmings*-type game, is not a distinct copy of *Lemmings* used in earlier studies (Greitemeyer & Osswald, 2009, 2010, 2011). In a recent update of *So Many Me* that occurred just before participants began the study, the game was changed so that the characters a player controlled also had to fight more enemies (by jumping on their heads *Mario*-style) along the way. Although the game was not graphic in these encounters, participants still perceived these acts as violent compared to *Hook*. It is possible that this would have diminished any effect the prosocial

aspect of the game may have had, seeing as violence in games tends to decrease prosocial thoughts and behaviors (Anderson et al, 2010; Anderson & Bushman, 2001; Prot et al, 2014). While some research indicated that sometimes violence for a prosocial cause could actually increase prosociality (Gentile et al, 2009; Gitter et al, 2013; Greitemeyer, Traut-Mattausch, & Osswald, 2012; Greitemeyer, 2013; Velez & Ewoldsen, 2013), the type of violence that occurs in *So Many Me* may not have been seen as violence for a prosocial goal because killing the enemy characters does not save another character directly.

Self-identified gamers reported less difficulty when playing either of the games, which is to be expected when the act of playing a game is practiced long enough to be able to learn any game more quickly than non-gamers. In terms of the GLM, those who are repeatedly exposed to a situation will develop a learned set of reactions in the long run (Gentile et al, 2009), indicating that gamers are more likely to have gone through the process several times already. A participant that identified more strongly as a gamer, however, did not perceive the games as more or less prosocial compared to non-gamers. It was also interesting to note that participants who were more interested in games (part of the measure of gamer identity) were also more likely to indicate that they were willing to volunteer, although they acted just like any other participant when it came to reporting the number of hours they wished to volunteer and actually volunteering. It is possible that, because they were asked about interest in gaming after having gone through over half the study having already played a game, they were answering in a way that was consistent with their behavior at the moment, or answering in the way the researchers expected them to respond.

Neither prosocial video games nor religious passages increased prosocial intentions or behaviors, contrary to the mass of research discussed earlier. While the effect was not significant, however, the size of the effect for intentions was larger than the effect for behavior. It must be stated cautiously that these effects show additional power *may* produce much clearer results, but it is not certain. For example, there was a strong but not quite significant increase in prosocial intentions for those in the neutral game condition. Additional power might reveal that trend as consistent.

There was also no observed interaction between religious contexts and prosocial content. A religious narrative frame (providing *context*) before playing a prosocial video game (the *content*) had no effect on prosocial intentions or behaviors, compared to a religious narrative frame before a neutral game or a neutral narrative frame before playing either type of game. The situation that the person was exposed to, according to the GLM, was meant to influence how they thought and acted afterward. A situation comprised of both *context* and *content*, however, did not produce the desired effects. Apart from the possibility of their actually being no effect of these variables on prosociality, there are several possible alternative explanations. For example giving the participants a way to act out their wish to help (promoted by the religious narrative) by playing a prosocial video game may have exhausted their immediate need to act prosocially and ease their cognitive dissonance that stemmed from not being able to help immediately after receiving the call to act prosocially from the passages (Cialdini & Kenrick, 1973). This is a form of negative state relief, introduced by Baumann, Cialdini, and Kenrick (1981), in which their need to act prosocially (brought about by the religious narrative) results in a negative state that they wish to relieve by eliciting helping

behaviors. The prosocial game, therefore, acted as an outlet for participants to elicit those helping behaviors and return to a positive state, instead of as a reminder to be prosocial as it was intended.

A majority of the work with the GLM has dealt with short-term results (Anderson & Dill, 2000; Anderson & Bushman, 2001; Buckley & Anderson, 2006; Gentile et al, 2009; Gentile & Groves, 2014; Greitemeyer & Mügge, 2014; Greitemeyer & Osswald, 2009; Greitemeyer & Osswald, 2010; Gitter et al, 2013; Happ, Melzer, & Steffgen, 2015), with the long-term results only to come into play after repeated exposure to the same situation (Gentile et al, 2009).

There are several limitations to this study. The first of which has already been mentioned: not enough participants to warrant accurate or significant results that are generalizable. Another limitation is that the games chosen were not piloted but chosen subjectively. If this study were to be replicated, the best suggestion would be to either use *Lemmings* like the rest of the prosocial video game research (Greitemeyer & Osswald, 2009, 2010, 2011), or pilot different games altogether for reliable perceived prosocial and neutral content. A different direction for this study would be to include passages that are prosocial in nature but not religiously charged. Research has shown that prosocial calls to action, whether religious or not, should produce the same effect (Shariff, 2016), so it would be interesting to see if that would still be the case in this study's context.

This study was an attempt to understand how different reminders to be prosocial could work together to increase prosociality. An ecologically valid measure of prosocial behavior was central to the study because it enabled us to say whether or not these reminders could work on people in real world settings. Although the manipulations were

unsuccessful, this study paves the way for a new area of research involving the combination of different types of reminders and their effects on prosociality.

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## **Appendix A - Informed Consent**

You are invited to participate in a research project being conducted by Heather Cross, an undergraduate student in the University of Maine's Department of Psychology. The Faculty Sponsor for this research is Dr. Jordan LaBouff. The purpose of this research is to evaluate the relationship between reading skills and video game play. You must be at least 18 years of age to participate in this study.

### **What Will You Be Asked to Do?**

If you decide to participate, you will be asked to answer informational questions about yourself, read and reflect on several short passages, play a video game for 15 minutes, and then answer a few questions about your experience. This will take approximately 30 to 40 minutes total to complete.

### **Risks**

There is a possibility that you may become uncomfortable when answering a question or reading a passage in this study. You may skip questions or end your participation at any time.

### **Benefits**

This study will have no direct benefit to you, but this research may help us learn more about the relationship between an individual's attitudes and their behavior.

### **Compensation**

You will be granted 1 research credit when you complete this study. You must reach the final page of the survey and click "Exit and Receive Credit" to receive credit for your participation.

### **Confidentiality**

Your identity will be kept confidential. Identifying information will be kept secure in a database with an encrypted key. All identifying information will be kept until data collection is complete (no later than May 31st, 2017). After that, the key will be destroyed. De-identified data will be kept indefinitely on a password protected drive in a locked office or lab. Only the faculty sponsor and the investigator will be able to access the information.

### **Voluntary**

Participation is completely voluntary. If you choose to participate, you may stop at any time. You must reach the final page of the second survey task and click "Exit and Receive Credit" to receive credit.

### **Contact Information**

If you have any questions about this study, please contact me at [heather.cross@maine.edu](mailto:heather.cross@maine.edu). You may also reach the faculty advisor for this study at [jordan.labouff@maine.edu](mailto:jordan.labouff@maine.edu). If you have any questions about your participant rights,

please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board, at (207) 581-1498 or [gayle.jones@umit.maine.edu](mailto:gayle.jones@umit.maine.edu).

University of Maine Institutional Review Board Approved for Use Through 11/09/2017.

Checking yes below indicates that you have read the above information and agree to participate.

## Appendix B

### Survey 1

Thank you for choosing to participate. You will be asked a variety of questions about yourself for the first part of this study. Please answer all questions to the best of your ability. For the next several statements, mark on a scale of 1-5 how often you have done the following acts.

	1 = Never (1)	2 = Once (2)	3 = More than once (3)	4 = Often (4)	5 = Very often (5)
I have given directions to a stranger. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have donated goods or clothes to charity. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have done volunteer work for a charity. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have donated blood. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have helped carry a stranger's belongings (books, parcels, etc.). (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have delayed an elevator and held the door open for a stranger. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have allowed someone to go ahead of me in a lineup (in the supermarket, at the printer/scanner in the library, etc.). (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have helped a classmate who I did not know that well with a homework assignment when my knowledge was greater than his or hers. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have helped an acquaintance to move households. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For the next several statements, indicate using a scale of 1-5 how well each statement describes you (1 = does not describe me well and 5 = describes me very well).

	Does not describe me well. (1)	(2)	Describes me somewhat (3)	(4)	Describes me very well. (5)
I often have tender, concerned feelings for people less fortunate than me. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I don't feel very sorry for other people when they are having problems. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see someone being taken advantage of, I feel kind of protective towards them. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people's misfortunes do not usually disturb me a great deal. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see someone being treated unfairly, I sometimes don't feel very much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

pity for them. (5)					
I am often quite touched by things that I see happen. (6)	<input type="radio"/>				
I would describe myself as a pretty soft-hearted person. (7)	<input type="radio"/>				

Please choose on scale of 1-7 how close you feel about yourself on each trait below.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Arrogant:Humble (1)	<input type="radio"/>						
Immodest:Modest (2)	<input type="radio"/>						
Disrespectful:Respectful (3)	<input type="radio"/>						
Egotistical:Not self-centered (4)	<input type="radio"/>						
Conceited:Not conceited (5)	<input type="radio"/>						
Intolerant:Tolerant (6)	<input type="radio"/>						
Close-minded:Open-minded (7)	<input type="radio"/>						

For the next several statements, indicate using the scale below how much you agree with them.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I have so much in life to be thankful for. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I had to list everything that I felt grateful for, it would be a very long list. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I look at the world, I don't see much to be grateful for. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am grateful to a wide variety of people. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

history. (5) Long amounts of time can go by before I feel grateful to something or someone. (6)	○	○	○	○	○	○	○
--	---	---	---	---	---	---	---

Thank you for completing the first part of the survey. In this next section, you will be asked to read three randomly selected passages and then answer questions about the passages. Please click next to receive your passages.

"Do nothing from selfish ambition or conceit, but in humility count others more significant than yourselves. Let each of you look not only to his own interests, but also to the interests of others." - Philippians 2:3-4 ESV

Please take 1-2 minutes below to write a summary and an explanation about the passage you just read. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. You will be able to submit your answer after 1 minute has passed.

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"Give, and it will be given to you. Good measure, pressed down, shaken together, running over, will be put into your lap. For with the measure you use it will be measured back to you." - Luke 6:38 ESV

Please take 1-2 minutes below to write a summary and an explanation about the passage you just read. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. You will be able to submit your answer after 1 minute has passed.

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"For I was hungry and you gave me food, I was thirsty and you gave me drink, I was a stranger and you welcomed me, I was naked and you clothed me, I was sick and you visited me, I was in prison and you came to me.' Then the righteous will answer him, saying, 'Lord, when did we see you hungry and feed you, or thirsty and give you drink? And when did we see you a stranger and welcome you, or naked and clothe you? And when did we see you sick or in prison and visit you?' And the King will answer them, 'Truly, I say to you, as you did it to one of the least of these my brothers and sisters, you did it to me.'" - Matthew 25:35-40 ESV

Please take 1-2 minutes below to write a summary and explanation about the passage you just read. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. You will be able to submit your answer after 1 minute has passed.

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"You might want to think twice before you try to use a man's conscience against him. It may turn out he doesn't have one." - Brent Weeks, *The Black Prism*

Please take 1-2 minutes below to write a summary and an explanation about the passage you just read. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. You will be able to submit your answer after 1 minute has passed.

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"The only people for me are the mad ones, the ones who are mad to live, mad to talk, mad to be saved, desirous of everything at the same time, the ones who never yawn or say a commonplace thing, but burn, burn, burn like fabulous yellow roman candles exploding like spiders across the stars." - Jack Kerouac, *On The Road*

Please take 1-2 minutes below to write a summary and an explanation about the passage you just read. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. You will be able to submit your answer after 1 minute has passed.

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"The most important things are the hardest to say. They are the things you get ashamed of, because words diminish them-- words shrink things that seemed limitless when they were in your head to no more than living size when they're brought out. But it's more than that, isn't it? The most important things lie too close to wherever your secret heart is buried, like landmarks to a treasure your enemies would love to steal away. And you may make revelations that cost you dearly only to have people look at you in a funny way, not

understanding what you've said at all, or why you thought it was so important that you almost cried while you were saying it. That's the worst, I think. When the secret stays locked within not for want of a teller but for want of an understanding ear." - Stephen King, *Different Seasons*

Please take 1-2 minutes below to write a summary and an explanation about the passage you just read. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. You will be able to submit your answer after 1 minute has passed.

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Thank you for completing the first survey. Please think about these passages as you play a video game. Please notify the attending research assistant that you are finished with the survey and that they need to open the game *So Many Me*. *So Many Me* is a puzzle platformer where you must gather up the character's friends and band together to complete levels with everyone. If one character does not make it, none of them make it, so help them all!

Thank you for completing the first survey. Please think about these passages as you play a video game. Please notify the attending research assistant that you are finished with the survey and that they need to open the game *Hook*. *Hook* is a minimalist puzzle game that involves connecting the shapes with lines that cannot intersect or hook onto each other in order to complete the puzzle.

Thank you for taking time to play the selected video game. For this last section, please answer these questions to the best of your ability.

Earlier, you were asked to remember and think about passages as you played a game.

How do you think your selected reading passages affected your gameplay? If you think that the reading passages did not affect your gameplay, say why. Try to reflect on the passages and the game and how they may interact. Please take 2-3 minutes to answer below. If the button has not appeared yet, please try to elaborate on your thoughts as much as you can. The button to submit will appear after 2 minutes.

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While the program prepares for your next task, we wanted to inform you of an opportunity to volunteer in the community. Food insecurity, or not being able to have reliable access to food, is a problem in the greater Bangor area for many families. Our lab believes that research should be involved in the real world as well, and we are partnered with Health Equity Alliance (HEAL) to help reduce food insecurity of those in need. Health Equity Alliance has an open-access food bank in the greater Bangor area. Our lab has agreed with HEAL to conduct bottle drives that will raise money to go toward HEAL so that local community members can have the food that they need. We are looking for people to staff tables in the Memorial Union on campus to collect donations for the bottle drives. There will be several roles to choose from, and most of the work will be accepting and storing donations from customers. We will supply the transportation from the University of Maine. There will be many helping hands at these

events so it will be a good way to get involved in the community. If the dates for volunteering fit your schedule, would you be interested in helping out?

Yes (1)

No (4)

If No Is Selected, Then Skip To End of Block

For this section, we ask that you please check your weekly schedule. If it is on your phone, you may use it. Please return your phone to the bin when you have finished with your schedule.

Please enter your full name: \_\_\_\_\_

Please enter your email address: \_\_\_\_\_

There are 6 weeks with bottle drives that need staffing. About how many total hours do you think you might be willing to volunteer on any given week?

\_\_\_\_\_ hrs/wk

Please mark as many hours as you would be willing to volunteer from these available times.

- Mondays 2pm-3pm (1)
- Mondays 3pm-4pm (2)
- Tuesdays 11:30am-12:30pm (3)
- Tuesdays 12:30pm-1:30pm (4)
- Thursdays 11:30am-12:30pm (5)
- Thursdays 12:30pm-1:30pm (6)
- Fridays 12pm-1pm (7)
- Fridays 1pm-2pm (8)
- Fridays 2pm-3pm (9)
- Fridays 3pm-4pm (10)

Thank you. Here are your final survey questions.

In terms of your actual experience with video games, would you consider yourself to be a:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Nongamer:Hardcore Gamer (1)	<input type="radio"/>						

On a scale of 1-7, how interested are you in video games? (1 = not at all interested and 7 = extremely interested)

- Not at all interested (1)
- (2)
- (3)
- Moderately interested (4)
- (5)
- (6)
- Extremely interested (7)

Please mark on a scale of 1-5 how often you play video games (1 = low amount of time and 5 = high amount of time):

- Never (1)
- A few times a year (2)
- One to three times a month (3)
- At least once a week (4)
- Almost every day (5)

In recent months, how many hours a week on average would you say that you have played video games?

\_\_\_\_\_ hrs/wk

Please select which game you just played.

- Tetris (1)
- Hook (2)
- The Long Dark (3)
- So Many Me (4)

How difficult was the game you just played?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Easy:Difficult (1)	<input type="radio"/>						

How enjoyable was the game you just played?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Not enjoyable:Very enjoyable (1)	<input type="radio"/>						

How frustrating was the game you just played?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Not frustrating:Very frustrating (1)	<input type="radio"/>						

How exciting was the game you just played?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Not exciting:Very exciting (1)	<input type="radio"/>						

Please rate on a scale of 1-7 how often something happened in the video game you just played.

- \_\_\_\_\_ Did characters try to physically injure each other? (1)
- \_\_\_\_\_ Did you try to physically injure other characters? (2)
- \_\_\_\_\_ Did characters help each other? (3)
- \_\_\_\_\_ Did you try to help other characters? (4)

## Appendix B

### Volunteer Follow-Up Survey

Hello. You are receiving this short survey because you chose to volunteer with the LaBouff lab and HEA (Health Equity Alliance) at a bottle and coin drive on campus.

Whether or not you volunteered, we would like to ask you a couple questions concerning your experience. Clicking to the next page will continue the survey.

Please enter your full name: \_\_\_\_\_

Please answer these questions to the best of your ability.

Did you go to the bottle and coin drive to volunteer?

- Yes (1)
- No (2)

Why or why not?

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Display This Question:

If Did you go to the bottle and coin drive to volunteer? Yes Is Selected

What did you get out of the experience?

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### **Appendix C - Participant Recruitment Text**

You are invited to participate in a research project being conducted by Heather Cross, an undergraduate student in the University of Maine's Department of Psychology. The Faculty Sponsor for this research is Dr. Jordan LaBouff. The purpose of this research is to evaluate the relationship between reading skills and video game play, where you will read passages and play a video game. You will receive 1 research credit for completing this study. You must be at least 18 years of age to participate.

## Appendix D - Debriefing Information

### Debrief Statement 1: Those Who Signed Up and Showed Up

Thank you so much for taking some of your time to participate in this study. There is some information concerning the study and the significance of your participation that we would like to share with you.

The goal of the study was to understand how different kinds of reminders to help might work together to influence whether or not people would donate time to a cause in their community. Based on previous research, each participant was randomly assigned either religious passages or neutral passages, as well as either a prosocial game (*So Many Me*) or a neutral game (*Hook*).

You were asked to describe how you thought your reading skills affected your ability to play the video game. Testing your current skills in either reading or game play was not the main focus of this study. You were then given an opportunity to volunteer some of your time at a bottle drive held by the Health Equity Alliance in the Memorial Union on campus. These bottle returns go toward the food bank to help people in need in that area.

We thank you again for your willingness to participate. We ask that you do not discuss this study with other people, seeing as others will also be participating in this study after your time with us. All participants need to have the same experience. If you have any questions, please feel free to contact the researchers Heather Cross (heather.cross@maine.edu) and Jordan LaBouff (jordan.labouff@maine.edu).

## **Debrief Statement 2: Those Who Signed but Did Not Show Up**

Thank you so much for taking some of your time to participate in this study. There is some information concerning the study and the significance of your participation that we would like to share with you. The goal of the study was to understand how different kinds of reminders to help might work together to influence whether or not people would donate time to a cause in their community. Based on previous research, each participant was randomly assigned either religious passages or neutral passages, as well as either a prosocial game (*So Many Me*) or a neutral game (*Hook*).

You were asked to describe how you thought your reading skills affected your ability to play the video game. Testing your current skills in either reading or game play was not the main focus of this study. You were then given an opportunity to volunteer some of your time at a bottle and coin drive held by Health Equity Alliance (HEA) on campus. You chose to donate your time and you were given an email telling you about your sign up time(s) and specific instructions about how to volunteer. These bottle and coin items are redeemed and donated to HEA, who provide helpful services to stigmatized populations in the area.

We thank you again for your willingness to participate. We ask that you do not discuss this study with other people, seeing as others will also be participating in this study after your time with us. All participants need to have the same experience. If you have any questions, please feel free to contact the researchers Heather Cross ([heather.cross@maine.edu](mailto:heather.cross@maine.edu)) and Jordan LaBouff ([jordan.labouff@maine.edu](mailto:jordan.labouff@maine.edu)).

### **Debriefing Statement 3: Those Who Did Not Sign Up**

Thank you so much for taking some of your time to participate in this study. There is some information concerning the study and the significance of your participation that we would like to share with you. The goal of the study was to understand how different kinds of reminders to help might work together to influence whether or not people would donate time to a cause in their community. Based on previous research, each participant was randomly assigned either religious passages or neutral passages, as well as either a prosocial game (*So Many Me*) or a neutral game (*Hook*).

You were asked to describe how you thought your reading skills affected your ability to play the video game. Testing your current skills in either reading or game play was not the main focus of this study. You were then given an opportunity to volunteer some of your time at a bottle and coin drive held by Health Equity Alliance (HEA) on campus. You chose to donate your time and you were given an email telling you about your sign up time(s) and specific instructions about how to volunteer. We wanted to see if people would actually show up to volunteer as opposed to saying that they would but then be absent during volunteering hours. Thank you for your help in volunteering for HEA. It is greatly appreciated.

We thank you again for your willingness to participate. We ask that you do not discuss this study with other people, seeing as others will also be participating in this study after your time with us. All participants need to have the same experience. If you have any questions, please feel free to contact the researchers Heather Cross ([heather.cross@maine.edu](mailto:heather.cross@maine.edu)) and Jordan LaBouff ([jordan.labouff@maine.edu](mailto:jordan.labouff@maine.edu)).

## Appendix E - Tables and Figures

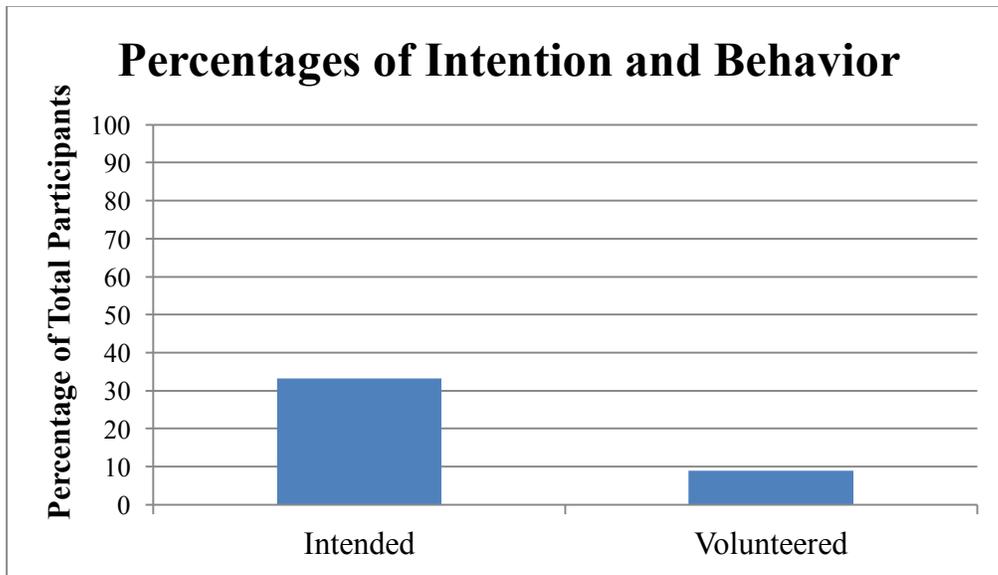
**Table 1.** Descriptive statistics and correlations for predictor variables.

	Mean ( <i>SD</i> )	1	2	3	4	<i>a</i>
1. General Helpfulness	3.11(0.62)	---	---	---	---	.78
2. Empathy	3.90(0.67)	.15	---	---	---	.82
3. Humility	5.49(0.75)	.19	.40**	---	---	.68
4. Gratitude	5.93(0.77)	.22	.36*	.21	---	.79
5. Belief in God	0.27(0.45)	-.10	.22	.23	.04	---

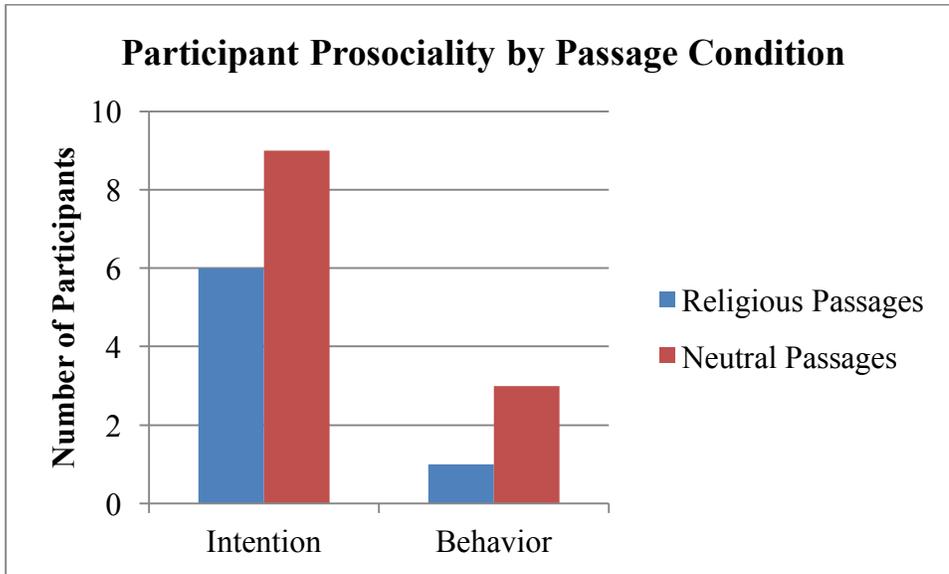
Please note:

\*  $p < .05$ , \*\*  $p < .01$

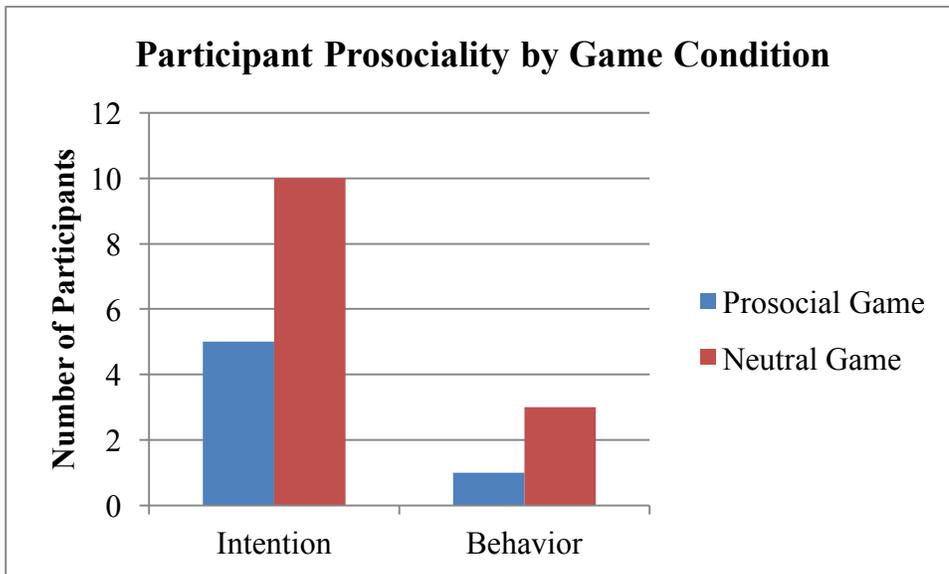
**Figure 3.** Percentage of participants who indicated prosocial intentions and those who participated in volunteering opportunity.



**Figure 4a.** Number of participants by passage condition who indicated prosocial intentions and those who participated in volunteering opportunity.



**Figure 4b.** Number of participants by game condition who indicated prosocial intentions and those who participated in volunteering opportunity.



**Table 2.** Correlations between predictor variables and prosociality measures.

	Mean (SD)	1	2	3	4	5	6	$\alpha$
1. General Helpfulness	3.11 (0.62)	---	---	---	---	---	---	.78
2. Empathy	3.90 (0.67)	.15	---	---	---	---	---	.82
3. Humility	5.49 (0.75)	.19	.40**	---	---	---	---	.68
4. Gratitude	5.93 (0.77)	.22	.36*	.21	---	---	---	.79
5. Intention	3.96 (2.56)	-.27	-.39**	-.38*	-.19	---	---	---
6. Hours Donated	2.22 (1.60)	.05	.42**	.25	.05	.71**	---	---
9. Volunteering	3.27 (1.30)	-.14	.25	.22	.01	-.44**	.34*	---

Please note: \*  $p < .05$ , \*\*  $p < .01$

**Table 3.** Descriptive statistics and correlations for gaming variables.

	Mean (SD)	1	2	3	4	5	6	7	8	$\alpha$
1. Difficulty	3.11 (1.48)	---	---	---	---	---	---	---	---	---
2. Enjoyment	5.27 (1.54)	.33*	---	---	---	---	---	---	---	---
3. Frustration	2.93 (1.56)	.58**	-.08	---	---	---	---	---	---	---
4. Excitement	3.73 (1.60)	.22	.59**	.08	---	---	---	---	---	---
5. Perceived Prosocial Content	3.96 (2.56)	-.05	.13	-.09	.40**	---	---	---	---	.72
6. Perceived Violent Content	2.22 (1.60)	-.17	-.16	-.08	.17	.53**	---	---	---	.85
7. Gamer Identification	3.80 (1.99)	-.24	.20	-.11	.20	.20	.06	---	---	---
8. Gaming Interest	4.49 (1.89)	-.30**	.28	-.17	.13	.10	-.03	.78**	---	---
9. Hours Spent Gaming	3.27 (1.30)	-.34**	.13	-.22	-.01	.16	-.01	.82**	.79**	---

Please note: Gamer Identification, Gaming Interest, and Hours Spent Gaming together are a reliable measure of Gaming Identity ( $\alpha = .90$ ). \*  $p < .05$ , \*\*  $p < .01$

**Table 4.**Correlations between game perceptions and prosocial variables.

	Mean ( <i>SD</i> )	1	2	3	4	<i>a</i>
1. Perceived Prosocial Content	3.11 (1.48)	---	---	---	---	.72
2. Perceived Violent Content	5.27 (1.54)	.53**	---	---	---	.85
3. Intention	2.93 (1.56)	.03	-.12	---	---	---
4. Hours Donated	3.73 (1.60)	.08	-.05	-.71**	---	---
5. Volunteering	3.27 (1.30)	-.23	.01	-.44*	.34*	---

Please note: \*  $p < .05$ , \*\*  $p < .01$

## Appendix F - IRB Approval Letter

Application #: 2016-10-04

Application Title: The Effects of Religious and Video Game Reminders on Prosociality

PI: Heather Cross

Approval Period: 11/10/2016 - 11/09/2017

Dear Heather,

The above referenced project was approved by the University of Maine's Institutional Review Board for the Protection of Human Subjects (IRB) in an expedited review. A continuing review of this project must be conducted by the IRB before the end of the approval period. Although you will receive a request for this information approximately 6-8 weeks before that date, it is your responsibility to submit the information in sufficient time to allow for review before the approval period expires.

Attached is an approved copy of the consent document for this project. The approval for this consent expires on 11/09/2017. **The version you post electronically must contain the approval information shown on the bottom of the attached copy.** The Board waived the requirement for signed consent under Section I.L.3.b. of the Policy. I've also attached a copy of the completed cover page for your records.

Please remember that each subject must be given a copy of the consent document. Any unanticipated problems or harm to the subject must be reported to the IRB immediately. Any proposed changes to the research must be approved by the IRB **prior** to implementation.

Thank you, and good luck with your study.

Gayle

### **Author's Biography**

Heather Cross was born in Barton, Vermont on July 21, 1995. She was raised in Barton, Vermont and graduated from Lake Region Union High School in 2013. Majoring in psychology and sociology, Heather has concentrations in social psychology and crime, law, and justice. She is a member of the volleyball club and the sociology club. She has received a CLAS Undergraduate Fellowship and the Glanville Research Award.

Upon graduation, Heather plans to take a year off to explore her options and travel abroad before returning for an unspecified advanced degree.