

THE CONSEQUENCES OF DISBELIEF IN FREE WILL: DIMINISHED MORALITY  
OR ENHANCED CONFORMITY?

by

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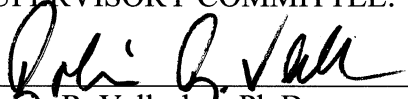
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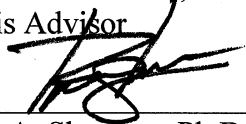
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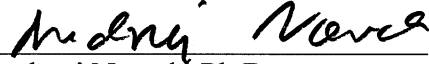
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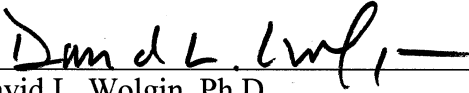
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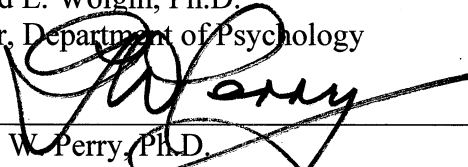
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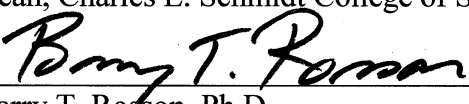
  
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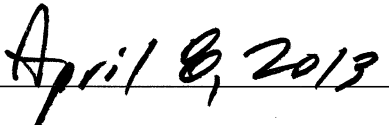
  
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## ABSTRACT

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Diminished belief in free will has been shown to influence morally relevant behavior (e.g., cheating, helping) and conformity. What happens when opportunities for immoral action and conformity are both available? To investigate the relative salience of these action tendencies, we manipulated participants' belief in free will, provided them an opportunity to cheat on a perceptual-reasoning task to obtain a reward, and exposed them to a confederate who did or did not cheat on this task. Participants primed with deterministic (vs. free will) beliefs demonstrated diminished belief in free will, and an increased tendency to cheat regardless of whether the confederate modeled cheating or not cheating. Cheating tendencies were enhanced, however, when the confederate cheated on the task. Discussion centers on the psychological effects of belief versus disbelief in free will and on the methodological challenges associated with research on free will.

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## INTRODUCTION

*Psychological determinism, before being a theoretical conception, is first an attitude of excuse, or if you prefer, the basis of all attitudes of excuse.* (Satre, 1943/1956, pp. 40)

The belief in free will is thought to engender levels of cooperation that allows for the emergence of social order (Baumeister, 2008). Support for this hypothesis can be found in a series of studies that examine the effects of diminished belief in free will. Findings from these studies show that reducing a person's belief in free will can increase antisocial (i.e., lying, cheating, and stealing; Vohs & Schooler, 2008) and aggressive behavior, and decrease prosocial behavior (Baumeister, Masicampo, & DeWall, 2009). Other effects associated with diminished belief in free will include conformity (Alquist, Ainsworth, & Baumeister, 2013) and a reduced tendency to engage in counterfactual thinking (Alquist, Daly, Stillman, & Baumeister, 2009). (For a complete review of studies that have examined the effects of diminished belief in free will, see Baumeister, 2010; Baumeister & Brewer, 2012.)

In this study, the effects of diminished belief in free will on cheating behavior (see Vohs & Schooler, 2008) and conformity (see Alquist, Ainsworth, & Baumeister, 2013) were reexamined under a new set of conditions. This reexamination of effects allowed for a methodological problem (i.e., estimated the cheating scores for each

H participant) in Vohs and Schooler (2008) to be addressed. In addition, the current study also expands our knowledge of how diminished belief in free will influences conformity by demonstrating the boundaries of this effect.

### **Free Will and Deterministic Beliefs**

Philosophers have spent hundreds of years debating the limits as well as the effects of human volition (or lack thereof). From this debate, two perspectives emerged: 1) *incompatibilism* and 2) *compatibilism*. Incompatibilism is the belief that free will and determinism are mutually exclusive of each other. Two examples of incompatibilism are *libertarianism* and *hard determinism*. According to the libertarian perspective, thought and action are believed to be the result of conscious control and not deterministic factors. In contrast, hard determinism is the belief that,

Man is never free to act on his own initiative. Every act is determined by an antecedent act dating back to the very origin of man's being in the intrauterine environment. Man is not free to act and he cannot choose his behavior (Bonner, 1965, p. 44).

In other words, all behaviors are predetermined and have a causal lineage. Some of the factors believed to influence determinism include genetics, environment, and past and present experiences.

In search for a middle ground, philosophers have questioned the incompatibility of free-will and determinism (e.g., Kane, 2002). A solution to the problem of

incompatibility is compatibilism (or *soft determinism*). Under this perspective, free will and determinism are said to coexist. With all the laws of hard determinism being held true in the soft deterministic perspective, what makes free-will possible in this view is how it is defined. The definition in this case is that the individual is able to act in a deliberate fashion, but the deliberation of the act or behavior is still the result of deterministic factors.

In an alternative version of soft determinism, individuals are said to be under their own free will, if and only if there are no *coercive external agents* present at the time in which the individual decides to act (Stace, 1952). This idea of a coercive agent is based on what Stace (1952) found to be the average individual's description of free will. Important in his view is that internal psychological processes are not considered to be a coercive force. This type of soft determinism is similar to "mitigating circumstances" in the American legal system (Goodenough, 2004; Green & Cohen, 2004).

### **Lay Beliefs in Free Will and Determinism**

The definitions mentioned thus far are not based on laypeople's perceptions of free will and determinism. In a study by Monroe and Malle (2010), participants were asked to define their belief in free will. Results from their study show that free will was described by the majority of the participants as a "capacity to choose based on one's desire's... free from constraint" (p. 219). The majority of the participants in this study did not view free will as being caused by deterministic processes. But determinants (e.g., neural processes) were still considered by the majority of the participants as factors

involved in (vs. causing) the process of choice. Monroe and Malle (2010) also found that two-thirds of their sample, based on how participants responded to claims against free will (e.g., free will is an illusion), could be classified as compatibilists.

At the global level, there appears to be a widely held belief in free will. In three separate studies conducted by the International Social Survey Programme (1991, 1998, 2008), laypeople were asked to rate (strongly agree to strongly disagree) a series of statements on religious beliefs, two of which pertained to their perceptions of personal control. The samples were drawn from many countries (i.e., 16 in 1991, 36 in 1998, and 41 in 2008). The two statements that pertained to perceived levels of control were, *There is little that people can do to change the course of their lives* (1991, 1998, 2008), and *We each make our own fate* (1991, 1998). Across these studies, participants' level of disagreement with the first statement was approximately 60%, and the level of agreement with the second statement was close to the same.

### **The Effects of Free Will and Deterministic Beliefs on Behavior**

**Effects of deterministic beliefs on behavior.** There are a number of studies that have demonstrated the effects of deterministic beliefs on behavior. For example, participants in one study were told that their ability to complete a task was based on innate levels of intelligence (vs. effort). Participants who believed that they were incapable of completing the task because of a lack in innate intelligence showed reduced performance on the task (Mueller & Dweck, 1998). This showed that when deterministic beliefs are applied to the self, concerted effort is reduced.

**Effects of diminished belief in free will on behavior.** Diminished belief in free will has been used in a number of studies to demonstrate the importance of free will beliefs as they relate to sociocultural stability (Baumeister, 2008; for review, see Baumeister, 2010; Baumeister & Brewer, 2012). Of interest to the current study are those studies that examined the relationship between belief in free will and morality (Vohs & Schooler, 2008) and conformity (Alquist Ainsworth, & Baumeister, 2013). This study addresses limitations of Vohs and Schooler's (2008) paradigm and advances our understanding of the belief in free will and conformity.

***Diminished belief in free will and morality.*** In a seminal study by Vohs and Schooler (2008), the effects of diminished belief in free will on cheating behavior were examined. In two experiments, Vohs and Schooler (2008) demonstrated this effect; however, the effects measured are flawed. For example, in their first experiment, the measure of cheating was considered inadequate by reviewers because it was *inactive* (vs. *active*), meaning that participants did not actively initiate the behavior. In this experiment, participants were asked to hide solutions to math problems that were being revealed to them. Participants who did not conceal the answers were considered cheaters. This could be viewed as a measure of honesty (i.e., hiding the answers) rather than dishonesty (i.e., passively letting answers be displayed).

To rectify the issue of inactive cheating, Vohs and Schooler (2008) conducted a second experiment in which participants were required to actively initiate cheating behavior. This was done by giving participants the opportunity to steal money. In order to produce active cheating in the laboratory, anonymity is required. To generate feelings of

anonymity, participants arrived in groups of 2 to 5. Upon arrival, participants were immediately separated and brought to their own individual workstation where they were primed with free will, determinism, or neutral beliefs. After being primed, participants completed a measure of free will and deterministic beliefs (FAD: Paulhus & Margesson, 1994). Upon completing the FAD, participants were asked to complete a practice test from the Graduate Record Exam. During this phase of the experiment, the researcher left the participants alone to complete the task. Before the researcher left the room, participants were told that when they finished, they should correct their own test and take \$1 for each correct response. After the participants paid themselves, they were then asked to shred their exams, which eliminated evidence of individual work. In addition, the money that participants were told to take was accessible by all of the participants in the same group. This was done with the intent to further enhance participants' feelings of anonymity.

Since Vohs and Schooler (2008) were unable to determine the amount of money each participant took, each participant was assigned an average value from the total amount of money taken during the session. This method used to calculate the amount of money each participant took is flawed in that “it is possible that only 1 or 2 participants in each group cheated, and that the remainder took their fair share of money (or less)” (Vohs & Schooler, 2008, p 53). In addition, assigning the group mean to each participant in the sessions does not allow for the estimation of a proper error term for data analysis where the unit of analysis is the individual. Since no further studies have been conducted on this topic, the current study examined the effects of diminished belief in free will on

cheating behavior under conditions that allowed for individual cheating behavior to be measured.

*Diminished belief in free will and conformity.* Another effect examined in the current study was the effects of diminished belief in free will on conformity. A recent set of studies by Alquist Ainsworth, and Baumeister (2013) showed that participants with diminished belief in free will demonstrated conformity. In one study, participants were primed with free will or deterministic beliefs and then asked to rate a series of paintings after seeing an already completed set of ratings (Study 2). Participants' ratings were then compared to the completed set of ratings. In a separate study, conformity was measured by having participants come up with names for products after being shown example names of similar products (Study 3). Participants' product names were then compared to the example products to see if the structural patterns found in the example questions were being used in the participants' product names. Results from these studies showed that participants with diminished belief in free will (i.e., determinism priming conditions) conformed more to the materials presented (i.e., completed ratings, examples of product names).

Of interest to the current study are the limits to which diminished belief in free will enhances conformity. As discussed in Alquist Ainsworth, and Baumeister (2013), if the effort required for conformity exceeds that which is required for nonconformity, conformity is less likely to occur. Another limitation is that conformity is less likely to occur if the act of conforming goes against longstanding beliefs or values. In the current study, both of these boundary conditions were tested by first creating conditions where



conformity and nonconformity required comparable levels of effort. In addition, the current study examined participants' willingness to conform to behaviors related to deeply rooted attitudes and beliefs (i.e., honesty and morality).

### **Hypotheses**

Two hypotheses were examined in this study. The first was that participants primed with deterministic (vs. free will) beliefs will cheat more (Vohs & Schooler, 2008). The second hypothesis was that participants in the deterministic priming condition will conform (Alquist Ainsworth, & Baumeister, 2013) to the confederate's behavior (honest or dishonest) – participants in the determinism dishonest condition will cheat more than participants in the determinism honest condition. A null effect was predicted in the free will conformity conditions – participants in the free will dishonest and free will honest condition will exhibit comparable levels of cheating.

## METHOD

### **Overview and Design**

This study used a 2 (priming) x 2 (conformity) between-subjects design. In the priming condition, participants were primed with either free will or deterministic beliefs. In the conformity condition, participants were exposed to either an honest or dishonest confederate.

### **Participants**

One hundred one undergraduate students from FAU participated in this study as part of a course requirement. Data from 12 participants were deemed unusable: 2 participants did not complete experiment, 8 did not understand/follow experimental procedure(s), and in 2 cases the confederate did not follow procedure. With the above cases removed, the final sample consisted of 89 (62 female; mean age 18.8 years) participants. Based on self-reports of ethnicity, the majority of participants were White (49.4%), followed by Hispanic or Latino (20.7%), Black or African American (18.4%), Multiracial (8%), Native Hawaiian and Other Pacific Islander (2.3%), and Asian (1.1%). Ethnicity was left blank by 2 participants.

### **Materials**

**Free will and determinism scale.** The FAD-Plus (Paulhus & Carey, 2011; see Appendix A) was used to measure participants' beliefs in free will and scientific determinism. This measure was used as a manipulation check for the priming.

**Priming.** The priming used in this study is similar to that which was used by

Vohs and Schooler (2008) in their second experiment, which was adapted from the Velten (1968) style of priming. This technique involves reading and contemplating statements. Two different priming booklets were used in this study: (a) free will and (a) scientific determinism. Each booklet contained 15 statements, one statement per page. The free will booklet consists of statements that are pro free-will (e.g., “People are responsible for their behaviors because they have free will to control their actions,” see Appendix B). In contrast, the deterministic booklet contains statements that are anti-free-will (e.g., “People often claim that they have free will, but all they really have is the experience of making choices,” see Appendix C).

**Perceptual reasoning task.** Perceptual reasoning tasks have been used in a number of studies to examine cheating behavior (e.g., Feather, 1963; Srull & Karabenick, 1975; Vallacher & Solodky, 1979). In this study, the perceptual reasoning task consisted of five tracing puzzles (see Appendix D). Of the five puzzles, three are impossible to complete. The task also included a puzzle completion checklist (see Appendix E), five sheets of tracing paper and three pencils.

**Laboratory setup.** The lab consisted of two non-facing workstations separated by a divider. Both workstations had a computer equipped with a mouse, keyboard, headphones and an internet connection. The setup remained consistent between the two sessions of the experiment (T1 and T2) with one exception. During T2 a raffle box was placed in the center of the room. The raffle box was in plain view of both workstations so that the participants could view the dishonest confederate entering the raffle (see Figure 1).

## **Procedure**

Participants completed two sessions. During session one (T1), participants completed a questionnaire. Participants were also assigned a three-digit identification number (ID). This ID was used to reinforce participants' perceptions of personal anonymity. Participants returned the following week to complete session two (T2). During T2, participants read the statements intended to prime a belief in either free will or determinism, after which they completed the perceptual reasoning task and a questionnaire. The data from T2 were analyzed to test the hypotheses.

Before arriving for T2, participants were matched with a confederate of the same gender. The purpose for this was to reduce gender effects. The participant and the confederate arrived at the lab at the same time. Participants were always seated by the researcher at the workstation on the right-hand side of the room. The participant and the confederate completed three tasks: (a) priming task, (b) perceptual reasoning task, and (c) questionnaire.

**Priming task.** Participants read a series of 15 statements. Participants were asked to contemplate each statement for exactly 1-minute. An audio recording was used to indicate to the participants when to move onto the next statement. During the task, the confederate listened to the participants' behaviors to determine if participants were following the audio prompts instructions. The researcher remained outside of the lab room during this task.

**Perceptual reasoning task.** Participants completed a series of tracing puzzles provided by the researcher. Participants were instructed to attempt each of the tracings. Participants were given 10-min to work on this task. The researcher also provided the

participants with rules they should abide by in order to complete tracing: (a) do not lift the pencil off the paper, and (b) do not trace over a line more than once. Participants were given 10-min to work on this task. There was no limit to how many times participants were allowed to attempt a tracing during the 10-min.

Before the experimenter started the timer, participants were shown a copy of the perceptual reasoning checklist. Participants were asked to use the checklist to indicate which of the puzzles they completed. The research told the participants that if they completed three of the five puzzles within the time limit, they could enter a raffle to win a \$35 gift card. Participants entered the raffle by exiting the workstation and submitting their checklist into a box located at the center of the room. After completing the perceptual reasoning task—the task was considered completed when the participant entered the raffle or when time expired—participants completed the questionnaire.

*Confederate Procedures.* Procedures for the honest and dishonest confederates differed slightly. During the perceptual reasoning task, an honest confederate spent the entire 10-min working on the tracings. Honest confederates did not enter into the raffle or make any comments while working on the puzzles. After 10-min, the honest confederate proceeded to work on the questionnaire. Upon completing the questionnaire they exited the lab. In the dishonest confederate condition, confederates worked on the tracings for 2-min. After 2-min, the confederate said out loud, “These puzzles are way too hard.” After making the comment, the dishonest confederate exited the workstation to enter the raffle. The dishonest confederate then returned to their workstation to work on the questionnaire. Upon completing the questionnaire, he or she exited the lab.

## RESULTS

### **Effects of Priming on Free Will and Deterministic Beliefs**

To determine if the priming conditions diminished belief in free will and increased belief in determinism, two factorial ANOVAs were performed. In the first analysis, a 2 (priming) x 2 (conformity) ANOVA was conducted on the scores from the free will subscale of the FAD-plus. A statistically significant main effect for priming was found,  $F(1, 85) = 8.35, p < .001, r = .30$ , such that the average free will score was significantly higher for the free will condition ( $M = 27.82, SD = 4.17$ ) than for the determinism condition ( $M = 25.21, SD = 4.50$ ). The main effect of conformity was not statistically significant,  $F(1, 85) = .30, p = .585, r = .06$ , and neither was the interaction,  $F(1, 85) = .94, p = .335, r = .11$ . Based on these results, determinism priming diminished participants' free will beliefs.

In the second analysis, a 2 (priming) x 2 (conformity) ANOVA was conducted on the scores from the scientific determinism subscale of the FAD-plus. A main effect for priming was found,  $F(1, 85) = 4.05, p = .047, r = .22$ , such that the average free will score was significantly higher for the free will condition ( $M = 18.51, SD = 3.52$ ) than for the determinism condition ( $M = 20.30, SD = 4.51$ ). The main effect of conformity was not statistically significant,  $F(1, 85) = .05, p = .829, r = .03$ , and neither was the interaction,  $F(1, 85) = 1.15, p = .286, r = .11$ . These results show that the deterministic priming increased deterministic beliefs.

## **Cheating Scores**

A cheating score was calculated for each participant by summing the number of impossible tracings a participant claimed to have completed, and noting if he or she entered the raffle. Thus, participants could have received a minimum of 0- (no cheating) to 4-points on the cheating scale: 1-point for each impossible puzzle marked as complete (maximum 3-points), and 1-point for entering the raffle. These items were then combined to create a cheating score ( $\alpha = .73$ ). Correlations between the puzzles can be found in Table 1. The mean cheating score across all conditions was .66 ( $SD = 1.1$ ; see Table 2).

## **Effects of Priming and Conformity on Cheating Behavior**

Because cheating scores were not normally distributed and the sample size was not large, the normality assumption of the traditional ANOVA was not met. Therefore, a robust ANOVA technique was used (Wilcox, 2012). Specifically, a 2 (Priming) x 2 (Conformity) ANOVA with 20% trimmed means was conducted to test the hypotheses of unequal cheating behavior across the conditions (see Wilcox, 2012 p. 505-509 for a further discussion). A main effect for the priming condition was found,  $Q = 4.75$ ,  $p = .019$ ,  $\delta = .48$  such that the average cheating score was higher for the determinism priming condition ( $M = .50$ ,  $SD = .68$ ) than for the free will priming condition ( $M = .07$ ,  $SD = .04$ ; see Figure 2). A main effect was also found for the conformity condition,  $Q = 4.02$ ,  $p = .0275$ ,  $\delta = .20$ , such that the average cheating score was higher in the dishonest confederate condition ( $M = .45$   $SD = .63$ ) than for the honest confederate condition ( $M =$

.08,  $SD = .04$ ; see Figure 2). The interaction effect was not statistically significant,  $Q = 1.44, p = .121$  (see Table 3).<sup>1</sup>

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<sup>1</sup> A 2 (Priming) X 2 (Conformity) ANOVA was run on the cheating scores. Results of the analysis show no main effect for priming ( $F(1,85) = 1.76, p = .188$ ), or conformity ( $F(1,85) = 1.32, p = .253$ ). In addition, the interaction was not significant ( $F(1,85) = .77, p = .383$ ; see Table 1). These results differ from those found using the robust ANOVA.



## DISCUSSION

As predicted, participants in the determinism priming condition cheated more than participants in the free will priming condition. This is similar to Vohs and Schooler's (2008) finding, with some exceptions (see Effects of Priming on Cheating). In addition to the effect of deterministic priming on cheating, it was also shown that exposure to a dishonest confederate increased such behavior. This effect was independent of the priming and belief in free will. Although this result was not predicted, the measured effect stands as a testament to some of the classic experiments on social influence (e.g., Bandura, Ross, & Ross, 1961; Cialdini, Reno, & Kallgren, 1990). The second hypothesis (i.e., conformity to the confederate's behavior would be increased in the determinism conditions) was not unconfirmed.

### **Effects of Deterministic Priming on Cheating**

The main goal of this study was to reproduce the effect of diminished belief in free will on cheating behavior (see Vohs and Schooler, 2008). When compared to Vohs and Schooler (2008), one can see that the source of the effect (condition vs. belief) differs between studies. In this study, differences in cheating behavior were found between the priming conditions, whereas in Vohs and Schooler (2008), belief in free will predicted cheating.<sup>2</sup>

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<sup>2</sup> It should be noted that due to the design of this study, belief in free will could not be used to predict cheating. This is because belief in free will was measured after cheating was measured.

In addition to trying to replicate Vohs and Schooler's (2008) effect, this study also examined the magnitude of cheating behavior resulting from diminished belief in free will. As Vohs and Schooler noted, the design of their second experiment prevented them from measuring the frequency of cheating that occurred for each individual participant. The rationale for the design of their second experiment was that it would increase participants' feelings of anonymity. A problem with this design is that it did not allow them to determine the amount of cheating that occurred on the individual level; it only allowed them to observe the average amount of cheating that occurred. As a result, "It is possible that only 1 or 2 participants in each group cheated, and that the remainder took their fair share of money (or less)" (Vohs & Schooler, 2008, p 53).

In this study, the illusion of anonymity was generated using methods that allowed for cheating behavior to be measured with more precision. First, participants were paired with a confederate, who was believed to be a participant. Second, participants were told that an ID number assigned to them would conceal their true identity. Third, participants were only required to submit the perceptual reasoning checklist if they entered the raffle. Finally, participants were left unsupervised (the researcher left the room) during the perceptual reasoning task. By using these methods, this study was able to determine actual amounts of cheating for each participant of the participants.

Using these methods, this study showed that not all of the participants cheated as a result of the deterministic priming. Therefore, it is fair to assume that the method used to assign scores in Vohs and Schooler's (2008) second experiment masked an important component of this effect: deterministic priming does not appear to influence everyone in

the same way. In other words, having a diminished belief in free will does not necessarily create an amoral individual. Future studies should address these differences.

**Alternative hypothesis.** Several theories have been advanced to explain cheating behavior. One such theory is the theory of self-awareness (Duval & Wicklund, 1972), whereby objective (vs. subjective) self-awareness has been found to reduce cheating behavior (e.g., Diener & Wallbom, 1976).<sup>3</sup> In relation to the current study, the free will priming statements appear to contain an artifact that could have the effect of increasing objective self-awareness. To be more specific, the free will (determinism) priming contains personal pronouns more commonly used by individuals who are objectively self-aware (Davis & Brock, 1975). According to Davis and Brock (1973), personal pronouns are said to sustain attention on the ‘self’ as an object. Given this, the possibility exists that the personal pronouns present in the free will priming statements could have had the effect of maintaining participants’ level of objective self-awareness, which would explain why cheating was lower in the free will priming condition. Another possibility is that the lack of personal pronouns in the deterministic statements could have had the opposite effect (i.e., reduced objective self-awareness and increased cheating). Further research is required to examine these effects.

### **Determinism Priming and Conformity**

In this section, discussion is centered on results related to this study’s second hypothesis: participants in the determinism priming condition were expected to conform to the (honest / dishonest) behavior of the confederate. Results of the experiment did not

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<sup>3</sup> The effect of objective self-awareness reducing cheating behavior does have some limitations. For example, Vallacher and Solodky (1979) found that increased self-awareness can lead to cheating if completion of the task is said to be dependent on one’s own ability (vs. luck).

provide support for this hypothesis. Even though there was no statistically significant difference between the experimental conditions (i.e., free will honest, free will dishonest, determinism honest, determinism dishonest), the mean cheating scores in the determinism (honest / dishonest) conditions did trend in the predicted direction; participants in the determinism honest condition cheated less than participants in the determinism dishonest conditions. Furthermore, when comparing the means of the remaining conditions, there appears to be a pattern whereby the mean cheating score for the determinism honest condition is almost identical to that of the free will dishonest condition, and the mean score for the free honest condition was lower than all other conditions.

One possible explanation for why this effect went undetected is that conformity as a function of diminished belief in free will depends on the level of effort required to conform (Alquist, Ainsworth, & Baumeister, 2013). To be more specific, if the amount of effort required to conform exceeds the amount of effort needed to not conform, the effect is unlikely to be observed. The rationale for this is that diminished belief in free will increases laziness; therefore, conformity that requires little effort provides a means to satisfy the goal of completing a task with as little effort as possible. In this study, cheating behavior could be considered low in effort, in that participants could enter into the raffle by simply dropping a questionnaire into a box. An additional explanation provided by Alquist, Ainsworth, and Baumeister (2013) for why this effect went undetected is that participants might not conform to attitudes or behaviors that are incongruent with important beliefs, such as being honest or maintaining academic integrity. This explanation corresponds with that which is given in the previous section

about individual differences (e.g., person cheats regularly in their academics) acting as a mediating factor that explains why some people with diminished belief in free will cheat and others do not.

### **Limitations**

There are several limitations in the current study. The first limitation is that the incentive used to get participants to volunteer and complete the study (i.e., class credit) was separate and different from the incentive used to entice cheating behavior (i.e., winning \$35 gift card). Since cheating was not the participant's primary level of motivation, the secondary incentive could be interpreted as a bonus incentive.<sup>4</sup> As a result, participants may not have been as concerned with the raffle, given that it had no bearing on the primary goal, which was to complete the experiment and receive class credits. In addition, the raffle used in this study did not provide any kind of tangible reward, which meant cheating had no direct or immediate payoff. Whether this had a significant effect on participants' willingness to cheat seems unlikely given that cheating does not always result in direct or immediate payoffs (e.g., a baseball player injecting steroids). However, given that the effect of diminished belief in free will does not appear to affect everyone in the same way (i.e., not everyone cheats), further examination of how an individual's perception of immediate and short-term goals differ in response to the diminished state merits further examination.

A second limitation of this study is that it was completed by students as a class requirement. Given this, it is possible that participants may have been concerned with

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<sup>4</sup> Participants were only made aware of the raffle after they had volunteered to participate in the study, which means the idea of entering or winning the raffle could not have influenced their decision to participate in the study.

(their own imagined) consequences if they were to be caught cheating during the experiment (e.g., losing credits, failing class). The prospect of winning a raffle, in other words, may have had less impact on participants' motivation than did the prospect of getting caught. However, recent research suggests that people do not weigh risks and benefits when contemplating cheating (Gino, Ayal, & Ariely, 2009).

### **Future research**

Based on the results and limitations of this study, there are two suggestions for future research. First, future research should examine personality differences to see if differences in personality interact with the effects of the deterministic priming. For example, do people with a low baseline belief in free will react the same way to the priming as people with a higher baseline scores? A second suggestion for future research is to analyze the temporal stability of deterministic priming on free will beliefs. This would allow us to know if these effects are long standing, or limited in nature. Of course, susceptibility to priming, as a function of personality type, could also provide us with further information on how long or short-lasting these effects are. Such findings importantly demonstrate not only the basic processes and factors underlying attitude change and stability, but have a range of implications both for understanding how interpersonal conflict is maintained, as well as for the development of conflict resolution strategies.

### **Conclusion**

In conclusion, this study provides important insight into the extent to which diminished belief in free will affects cheating behavior. In addition, results of this study

also show that the effects of deterministic priming on conformity are mired under the conditions of this experiment. Regardless, exposure to dishonest behavior still had an effect on the amount that participants' cheated. Regarding the question of whether diminished belief in free will results in diminished morality or enhanced conformity, the current study supports the notion that diminished belief in free will does increase immoral behavior. However, the results of this study also support the idea that cheating behavior does not solely depend on belief in free will, and that there are multiple sources of influence when considering cheating behavior.

## APPENDICES

### Appendix A

**Instructions:** For each statement below, choose a number from **1 to 5** to indicate how much you agree or disagree

-----1-----	-----2-----	-----3-----	-----4-----	-----5-----
	-	-	-	
<b>Strongly Disagree</b>				<b>Strongly Agree</b>

- 1) \_\_\_\_\_ I believe that the future has already been determined by fate.
- 2) \_\_\_\_\_ People's biological makeup determines their talents and personality.
- 3) \_\_\_\_\_ Chance events seem to be the major cause of human history.
- 4) \_\_\_\_\_ People have complete control over the decisions they make.
- 5) \_\_\_\_\_ No matter how hard you try, you can't change your destiny.
- 6) \_\_\_\_\_ Psychologists and psychiatrists will eventually figure out all human behavior.
- 7) \_\_\_\_\_ No one can predict what will happen in this world.
- 8) \_\_\_\_\_ People must take full responsibility for any bad choices they make.
- 9) \_\_\_\_\_ Fate already has a plan for everyone.
- 10) \_\_\_\_\_ Your genes determine your future.
- 11) \_\_\_\_\_ Life seems unpredictable—just like throwing dice or flipping a coin.
- 12) \_\_\_\_\_ People can overcome any obstacles if they truly want to.
- 13) \_\_\_\_\_ Whatever will be, will be—there's not much you can do about it.
- 14) \_\_\_\_\_ Science has shown how your past environment created your current intelligence and personality.
- 15) \_\_\_\_\_ People are unpredictable.
- 16) \_\_\_\_\_ Criminals are totally responsible for the bad things they do.
- 17) \_\_\_\_\_ Whether people like it or not, mysterious forces seem to move their lives.
- 18) \_\_\_\_\_ As with other animals, human behavior always follows the laws of nature.
- 19) \_\_\_\_\_ Life is hard to predict because it is almost totally random.
- 20) \_\_\_\_\_ Luck plays a big role in people's lives.
- 21) \_\_\_\_\_ People have complete free will.
- 22) \_\_\_\_\_ Parents' character will determine the character of their children.
- 23) \_\_\_\_\_ People are always at fault for their bad behavior.
- 24) \_\_\_\_\_ Childhood environment will determine your success as an adult.
- 25) \_\_\_\_\_ What happens to people is a matter of chance.
- 26) \_\_\_\_\_ Strength of mind can always overcome the body's desires.
- 27) \_\_\_\_\_ People's futures cannot be predicted



Appendix B

**READING TASK**

**PLEASE DO NOT OPEN THIS BOOKLET UNTIL YOU ARE  
INSTRUCTED TO DO SO.**

**Please follow all of the instructions.**

THANK YOU

**STATEMENT 1**

I demonstrate my free will everyday when I make decisions.

**STATEMENT 2**

I am able to override the genetic and environmental factors that sometimes influence my behavior.

**STATEMENT 3**

I have feelings of regret when I make bad decisions because I know that ultimately I am responsible for my actions.

**STATEMENT 4**

I take personal pride in good decisions I have made in the past because I know that, at the time, I had the freedom to and could have made a bad decision.

**STATEMENT 5**

Avoiding temptation requires that I exert my free will.

**STATEMENT 6**

Ultimately people cannot blame their own actions on anything other than themselves.

**STATEMENT 7**

I have free will to control my actions and, ultimately, to control my destiny in life.

**STATEMENT 8**

I am more than a robot that has been programmed by genetics and the environment, no matter what a few scientists claim.

**STATEMENT 9**

People are responsible for their behaviors because they have free will to control their actions.

**STATEMENT 10**

Our actions and thoughts are not simply the result of prior experiences.

**STATEMENT 11**

By exerting their free will, people can and do overcome the negative effects of a dysfunctional environment.

**STATEMENT 12**

It has been shown that mental experience cannot be completely reduced to physical causes.

**STATEMENT 13**

There are many things that science still cannot explain, so it does not trouble me that science cannot offer an explanation for free will.

**STATEMENT 14**

Given that I have had personal experiences that science cannot explain, I also know that I have free will even if science cannot explain it.

**STATEMENT 15**

By exerting my will, I overcome the physical factors that influence my behavior and experience true freedom.

**YOU HAVE REACHED THE END OF THE**  
**READING TASK. PLEASE WAIT FOR THE**  
**RESEARCHER TO RETURN.**

Appendix C

**READING TASK**

**PLEASE DO NOT OPEN THIS BOOKLET UNTIL YOU ARE  
INSTRUCTED TO DO SO.**

**Please follow all of the instructions.**

THANK YOU

**STATEMENT 1**

Ultimately, we are biological computers – designed by evolution, built through genetics, and programmed by the environment.

**STATEMENT 2**

The brain is a complex machine capable of carrying out extremely sophisticated behaviors.

**STATEMENT 3**

Science has demonstrated that free will is an illusion.

**STATEMENT 4**

It is likely that scientists will eventually understand how the feeling of personal experience results from neurons firing in the brain.

**STATEMENT 5**

Everything a person does is a direct consequence of their environment and genetic makeup.

**STATEMENT 6**

Once scientists understand enough about the physical principles underlying behavior, they should be able to precisely predict a person's future actions based solely on that person's genetics and prior experiences.

**STATEMENT 6**

Once scientists understand enough about the physical principles underlying behavior, they should be able to precisely predict a person's future actions based solely on that person's genetics and prior experiences.

**STATEMENT 7**

Our actions are determined by what we have experienced in the past combined with the specific genetic predispositions that we have.

**STATEMENT 8**

Like everything else in the universe, all human actions follow from prior events and ultimately can be understood in terms of the movement of molecules.

**STATEMENT 9**

A belief in free will contradicts the known fact that the universe is governed by lawful principles of science.

**STATEMENT 10**

Our mental activities are exclusively the product of physical processes.

**STATEMENT 11**

Every action that a person takes is caused by a specific pattern of neural firings in the brain.

**STATEMENT 12**

All behavior is determined by brain activity, which in turn is determined by a combination of environmental and genetic factors.

**STATEMENT 13**

People often claim that they have free will, but all they really have is the experience of making choices.

**STATEMENT 14**

Just as science has shown that physical movement is merely forces of gravity combined with muscular force, scientists are now realizing that personal thoughts, feelings, and beliefs are similarly controlled by basic physical processes.

**STATEMENT 15**

Even if some behaviors are not actually pre-determined, this does not mean there is free will, as random actions are no more under our control than are those caused by prior events.

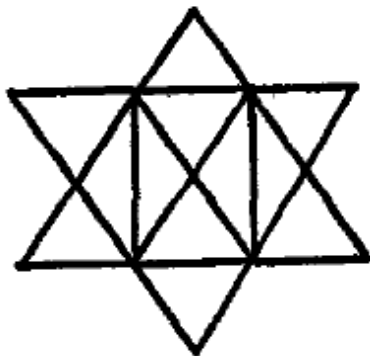
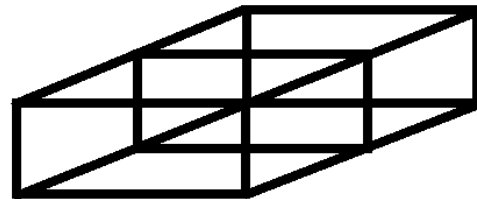
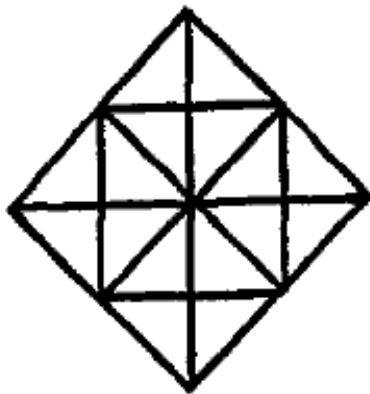
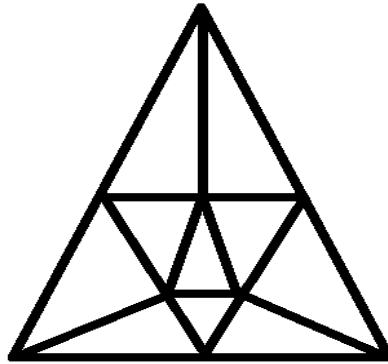
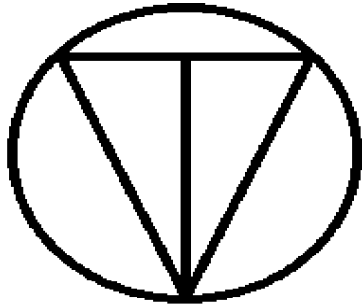
**YOU HAVE REACHED THE END OF THE**

**READING TASK. PLEASE WAIT FOR THE**

**RESEARCHER TO RETURN.**

## Appendix D

**Instructions:** Please trace each shape without lifting your pencil off of the paper and without tracing over any line more than once.

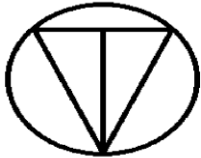


Appendix E

ID # \_\_\_\_\_

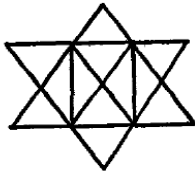
**Please mark off which tracings you finished. If you have finished at least 3 tracings you may enter yourself into the raffle.**

1.



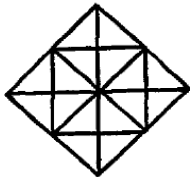
Finished \_\_\_

2.



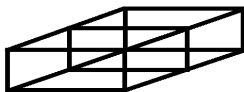
Finished \_\_\_

3.



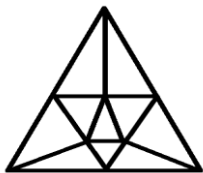
Finished \_\_\_

4.



Finished \_\_\_

5.



Finished \_\_\_



Table 1

*Summary of Inter-correlations, Means, and Standard Deviations for Completion of Perceptual Reasoning Puzzles and Entering into the Raffle.*

	Puzzle 1	Puzzle 2	Puzzle 3	Puzzle 4	Puzzle 5	Entered Raffle
Puzzle 1 (Possible)	—	.63	.27	.34	.19	.13
Puzzle 2 (Possible)	—	—	.49	.16	.26*	.29*
Puzzle 3 (Impossible)	—	—	—	.42**	.31**	.31**
Puzzle 4 (Impossible)	—	—	—	—	.31**	.33**
Puzzle 5 (Impossible)	—	—	—	—	—	.70**
<i>M</i>	.92	.79	.14	.11	.13	.24
<i>SD</i>	.27	.41	.35	.31	.39	.43

*Note.*  $N = 89$

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

Table 2

*Mean Cheating Scores of Participants in all Four Experimental Conditions (with Standard Deviations in Parentheses).*

Priming	Confederate	
	Honest	Dishonest
Free Will	.48 (1.03)	.54 (1.02)
Determinism	.57 (1.03)	1.04 (1.26)

*Note.*  $N = 89$

Table 3

*Trimmed Means for Cheating Scores of Participants in all Four Experimental Conditions (with Winsorized Standard Deviations in Parentheses).*

Priming	Confederate	
	Honest	Dishonest
Free Will	0 (0)	.19 (.46)
Determinism	.15 (.46)	.80 (.97)

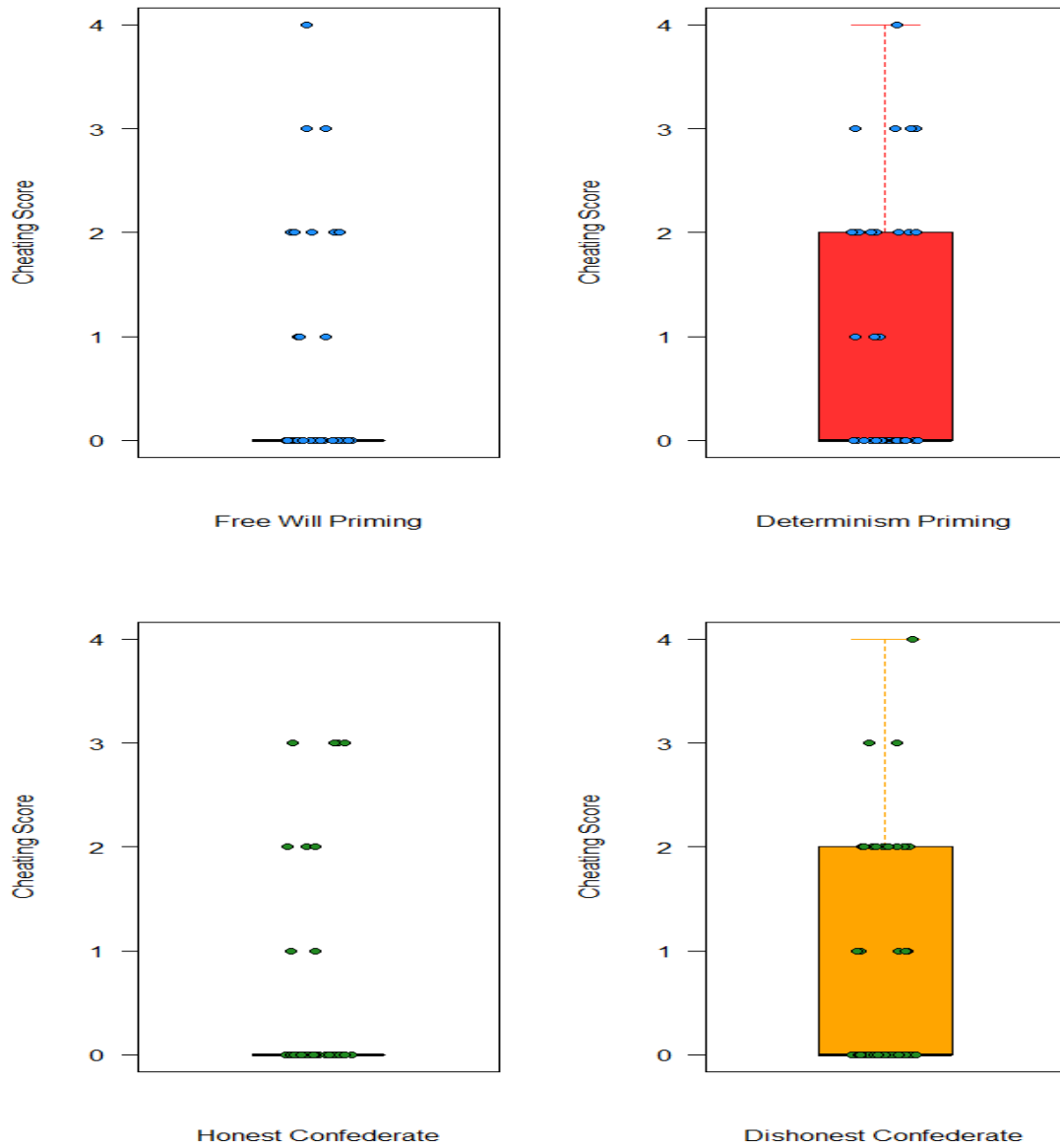
*Note.*  $N = 89$ . Twenty percent trimmed means.

*Figure 1.* Schematic drawing of a bird's eye view of laboratory. Depicted in the schematic is the dishonest confederate approaching the raffle box.



Figure 2.

Boxplot with scatterplot of cheating for priming and conformity conditions.



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