

Determined to Conform? Addressing the Need to Replicate Free Will Effects

by

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Honors Thesis

Appalachian State University

Submitted to the Department of Psychology  
in partial fulfillment of the requirements for the degree of

Bachelor of Science

May, 2019

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## Abstract

Belief (or disbelief) in free will has been associated with a host of behavioral outcomes. One such association demonstrates a link between free will belief and (lack of) conformity (Alquist, Ainsworth, & Baumeister, 2013). However, despite a considerable array of findings linking belief in free will to changes in human behavior, several recent attempts to replicate high-profile findings have failed (Open Science Collaboration, 2015). The present work is a close replication of Alquist et al.'s (2013) Study 2 which demonstrated that threatening one's belief in free will increased their tendency to conform with others. In this study (N = 129), participants were assigned to one of three conditions: anti-free will, pro-free will, or control. After manipulating belief in free will, participants rated six abstract paintings that had ostensibly been rated by 23 previous participants. The current work failed to replicate Alquist and colleagues work in several ways. First, the manipulation produced inconsistent findings, such that belief in free will as measured by the Free Will and Determinism scale showed no effect of the free will manipulation. Second, we failed to find any effect of the free will manipulation on conformity. We conclude that these results highlight the contention in moral psychological literature that free will effects may not be as reliable as was previously believed.

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### Determined to Conform? Addressing the Need to Replicate Free Will Effects

Debate over the existence of free will has been a source of contention for centuries. While this debate continues to rage in philosophical circles, psychologists have shifted from whether humans have free will to how believing in free will affects behavior. (Dis)believing in free will has been associated with a host of behavioral outcomes, including: creativity and conformity (Alquist, Ainsworth, & Baumeister, 2013), gratitude (Crescioni, Baumeister, Ainsworth, Ent, & Lambert, 2016; MacKenzie, Vohs, & Baumeister, 2014), self-control (Rigoni, Kuhn, Gaudiro, Sartori, & Brass, 2012), aggression and helpfulness (Baumeister, Masicampo, & DeWall, 2009), counterfactual thinking (Alquist, Ainsworth, Baumeister, Daly, & Stillman, 2015), causal attributions (Genschow, Rigoni, & Brass, 2017), and volition (Rigoni, Kuhn, Sartori, & Brass, 2011). Despite this considerable array of findings linking the belief in free will to changes in human behavior, several recent attempts to replicate high-profile effects have failed (Open Science Collaboration, 2015). The present study investigates one such high-profile finding: conformity. Below, I briefly review research on people's conception of free will, past research linking free will belief to behavior, recent replication attempts, and the current study's focus on replicating the effect of disbelieving in free will.

Across cultures, most people believe in "free will" (Sarkissian, Chatterjee, De Brigard, Knobe, Nichols, and Sirker, 2010) but what are people committing to when they assert such a belief? Recent work in social psychology suggests that people's definitions of free will entails three core concepts: free choice, free action, and freedom from internal or external constraints (see Baumeister & Monroe, 2014 for a review). When asked, "what does it mean to have free will?", Monroe and Malle (2010) showed that participants' responses centered on three aspects: decision/choice, following desires/wants, and being free from internal or external pressures.

Even when participants were presented with statements that challenged the existence of free will, the majority of participants rejected that claim, citing the ability to choose as their reason for rejection. Hence, one central feature of the folk concept of free will entails free choice, or the ability to choose based on one's desires, despite internal or external forces (Monroe & Malle, 2010;2014). Similarly, Stillman, Baumeister, and Mele (2011) explored people's definition of free will by randomly assigning participants to describe experiences in which they acted with, or without, free will. Results demonstrated that participants assigned to describe acts that exhibited free will recounted events in which they acted against internal or external pressures, were able to achieve goals, utilized conscious thought before acting, and behaved in alignment with their own moral values. By contrast, when people described actions that were not the result of free will they noted the presence of a powerful figure and a failure to act against external forces or achieve goals (Stillman et al., 2011). In sum, people's concept of free will can be defined as the ability to choose to follow one's own desires and the ability to resist either undue internal or external influences.

Understanding free will as the ability to choose based on one's own desires, state, and goals while rejecting influences to modify thoughts or behaviors suggests that believing in free will may affect people's tendency to act independently versus conforming to others.

If free will entails acting based on one's own volition, then it would follow that threatening one's belief in free will might reduce people's willingness or tendencies to engage in autonomous decision-making. Baumeister and colleagues argued that inducing disbelief may "serve as a nonconscious prime to act in relatively automatic ways, which would thus include enacting impulses rather than exerting control and restraint" (2009, p. 261). Thus, when people are induced to disbelieve in their own free will, they exhibit anti-social tendencies that they

would normally inhibit, such as aggressiveness, or fail to exhibit prosocial tendencies (i.e., helping) when induced to disbelieve in free will (Baumeister, Masicampo, & DeWall, 2009).

Building on this argument, Protzko, Ouimette, and Schooler (2016) manipulated participant's belief in free will to find out if endorsing that belief influence another aspect of prosociality: cooperative behavior. Their findings showed that challenging people's belief in free will caused individuals to act on their own self-interest, becoming "intuitively uncooperative". An additional study undermined participants' belief in free will in order to test its effects on intentional inhibition and perceived self-control (Rigoni et al., 2012). The authors found that participants assigned to the no-free will condition exhibited a weakened ability to intentionally inhibit actions, as well as a lower perception of their own self-control. These findings suggest that manipulating belief in free will can lead to a degradation of self-control and offer insight as to how a disbelief in free will can lead to antisocial tendencies.

Recognizing that reducing people's perceived self-control impacts anti-social tendencies, Vohs and Schooler (2008) proposed that threatening people's belief in free will would increase dishonest behavior. Using cheating behavior as a dependent measure, they manipulated free will beliefs to examine the influence the manipulation would have on moral behavior. In two experiments, participants were exposed to brief messages contained either pro-free will, anti-free will (i.e., deterministic), or neutral sentiments. Then participants were provided with an opportunity to passively (Study 1), or actively (Study 2), engage in cheating behavior to earn more money for themselves. The results of this study showed that weakening free will beliefs reliably increased cheating behavior. These findings sparked concern that if people are (even temporarily) induced to disbelieve in free will, this might undercut people's willingness to inhibit anti-social tendencies and increase immoral behavior.

If morality and prosociality are dependent upon the belief in free will, then denying the existence of such a belief presents serious consequences for society. However, the effects of threatening free will beliefs may be less reliable than we originally thought. In 2015, the Open Science Framework (OSF) collaborated with 270 authors to conduct a large-scale replication of 100 experimental and correlational studies that had been published in three top-tier psychology journals. One of the experiments that OSF attempted to replicate was Vohs and Schooler's (2008) original study demonstrating that disbelief in free will lead to more dishonest and cheating behavior. Koppel, Fondacaro, and Na (2018) predicted that using an experimental manipulation adapted from Vohs and Schooler (2008) would increase free will doubt and subsequently decrease support for retribution and increase support for consequentialism. However, the results showed a negligible difference between the anti-free will condition and the control condition on FAD-Plus (Paulhus & Carey, 2011). Additionally, there were no significant differences between the two groups on support for retribution in regard to various crimes. Since then, other attempts to conceptually or closely replicate have failed to produce the same findings. In one instance, Monroe, Brady, and Malle (2017) used the Velten (1968) free will manipulation that Vohs and Schooler (2008) used to influence people's belief in free will. The authors attempted to conceptually replicate the original finding, but results failed to demonstrate that threatening beliefs in free will increased immoral behavior (Monroe et al., 2016). Another study conducted by Crone and Levy (2018) used the same Velten (1968) manipulation and the results showed that the effect of the manipulation on free will beliefs was insignificant. These failed replication attempts suggest the free will effects may be smaller than originally thought, and that field of free will research is ripe for additional replicative work.

The present study carries forward the recent attempts at replication by examining one experiment that demonstrates a link between free will belief and (lack of) conformity. In three studies, Alquist, Ainsworth, and Baumeister (2013) tested the hypothesis that when people are induced to disbelieve in free will, their likelihood to conform to social cues would increase. They demonstrate that threatening people's belief in free will (relative to control or strengthening free will belief) increased people's tendency to conform with others.

My experiment is a close replication of Alquist et al.'s (2013) Study 2 where they manipulate participants belief in free will and measure conformity via an art task. I predict that when participants are presented with statements threatening free will, the likelihood that their scores on the art task conform to the ostensible previous participant ratings will increase. Conversely, when statements reinforcing the existence of free will are presented, it is predicted that the likelihood participants conform to previous ratings will decrease.

## **Method**

### **Participants**

Participants were 143 undergraduate psychology students at Appalachian State University who completed the study in exchange for course credit. Fourteen participants failed to follow directions from the experimenters and their data could not be included in the analyses, leaving the final sample size of 129 (28 male, 100 female, 1 non-binary). Participants' age averaged 19.3 years ( $SD = 1.54$ ), and the majority of participants identified as White (84.5%), followed by Latin American (6.3%), African American (5.6%), and Asian (1.4%). The sample was politically moderate ( $M = 3.7$ ,  $SD = 1.6$ ) on a 1 (very liberal) – 7 (very conservative) scale, and slightly more religious than average ( $M = 3.1$ ,  $SD = 1.4$ ) on a 1 (not at all religious) – 5 (very religious) scale.



## Procedure

**Free will belief manipulation.** Once participants arrived for the experiment, they were told that they were participating in a two-part experiment that involved a sentence comprehension task and a rating task in which they looked at several modern, abstract paintings. After completing an informed consent, participants were seated in front of a computer screen. The experimenter provided instructions which stated, “the task involves reading several short sentences and then rewriting them in your own words. The program will ask you to think about each sentence for 30 seconds, after that time you can rewrite the sentence, submit your response, and move on to the next sentence”.

The sentences used in all three conditions were the same as those used in Alquist et al. (2013), which were adapted from Vohs and Schooler (2008). In the pro-free will condition, participants were asked to think about and rewrite sentences such as, “I have free will to control my actions and, ultimately, to control my destiny in life.” In the anti-free will condition, participants considered and rewrote sentences such as, “Science has demonstrated that free will is an illusion”. In the control condition, participants were asked to rewrite sentences such as, “Oceans cover 71% of the earth’s surface”.

After completing the sentence task, participants were presented with a slider bar and asked to indicate the extent to which they agreed with that statement, “I have free will”, on a 0 (disagree) to 100 (agree) scale. Participants were also given the FAD-Plus (Paulhus & Carey, 2011), which consisted of 27 items designed to measure free will, scientific determinism, fatalistic determinism, and unpredictability. Each item was rated on a 1 (strongly disagree) to 5 (strongly agree) Likert scale.

**Painting ratings.** After completing the free will sentence manipulation, participants were instructed to view and rate a series of abstract paintings as a measure of their art preferences on a scale of 1 (not at all) to 9 (extremely). Six abstract paintings by Paul Klee and Wassily Kandinsky were presented to participants one at a time on the computer screen.

Experimenters gave participants packets that contained ratings for each of the paintings and explained that each packet had already been completed by 23 previous students. Participants were instructed to mark their ratings on number twenty-four on each page of the packet. The experimenter explained that ratings were being collected in this manner in an effort to conserve paper. This conformity measure was adapted from Arndt, Schimel, Greenberg, and Pyszczynski (2002) and identical to the measure used by Alquist, et al., (2013). The ratings of the supposed 23 previous students averaged around either a seven or a three for each painting. In half of the packets, paintings 1, 2, and 4 averaged around a rating of seven, whereas paintings 3, 5, and 6 averaged around a rating of three. In the other packets, these were reversed such that paintings 1, 2, and 4 averaged around lower ratings. This counterbalancing should negate any effects of coincidence between actual painting quality and supposed ratings.

## Results

### Manipulation Check

We first tested whether the free will manipulation changed participants' self-reported belief in free will and their scores on the Free Will and Determinism subscale of the FAD+ (Paulhaus and Carey, 2011). Examining participants' scores on the free will slider bar showed a significant effect of our manipulation,  $F(2,126) = 9.21, p < .001$ . Tukey post-hoc tests showed that participants in the anti-free will condition ( $M = 68.14, SD = 22.24$ ) reported believing in free will less than participants in the control condition ( $M = 78.67, SD = 20.87$ ) ( $p = .043$ ); whereas

there was no difference between control and the pro-free will condition, ( $M = 86.59$ ,  $SD = 16.48$ ) ( $p = .158$ ).

Examining participants' scores on the Free Will and Determinism subscale revealed a contrasting but significant effect,  $F(2,126) = 3.76$ ,  $p = .026$ . Reported belief in free will was similar between the anti-free will ( $M = 3.51$ ,  $SD = .607$ ) and control ( $M = 3.59$ ,  $SD = .718$ ) conditions ( $p = .79$ ). By contrast, participants in the pro-free will condition expressed higher endorsement of free will beliefs, ( $M = 3.87$ ,  $SD = .571$ ) compared to the anti-free will condition ( $p = .026$ ), though this condition did not significantly differ from control ( $p = .12$ ).

### **Primary Analysis**

We ran a one-way between-subjects ANOVA to test the prediction that inducing participants to disbelieve in free will would increase their tendency to conform to the ostensible other participants' ratings of the six paintings. To test this prediction, we computed an overall "conformity score" for each participant by determining the extent to which participants reported high ratings for paintings that had been rated highly by the other 23 ostensible 'participants' and low ratings for paintings that received low ratings. We then reverse coded the low ratings so that overall higher scores indicated more conformity. We then tested for differences between conditions using a between-subjects ANOVA.

This analysis showed no significant effect of the free will manipulation on conformity,  $F(2,126) = 1.99$ ,  $p = .141$ . Participants in the anti-free will condition ( $M = 33.57$ ,  $SD = 4.51$ ) conformed similarly to participants in the pro-free will condition ( $M = 32.64$ ,  $SD = 6.02$ ), ( $p = .667$ ) and participants in the control condition ( $M = 31.39$ ,  $SD = 4.42$ ), ( $p = .120$ ).

### **Discussion**

To the layperson, belief in free will entails the ability to act on one's desires even in spite of internal or external constraints (Monroe & Malle, 2010; Stillman et al., 2011). In line with that understanding, Alquist, Ainsworth, and Baumeister (2013) hypothesized that manipulating participants to believe in free will increases the likelihood that they act independently, whereas inducing disbelief would result in participants' conformity to others on an art evaluation task. However, widescale replication attempts (OSF, 2015) have shown that free will effects may be less reliable than was originally thought. As previous literature argues that morality and prosociality depend on a belief in free will, the goal of the current study was to attempt to replicate Alquist et al.'s (2013) Study 2.

The current work failed to replicate Alquist and colleagues work in several important ways. First, our manipulation of free will beliefs produced inconsistent findings. The effect of our free will manipulation on self-reported belief in free will demonstrated the predicted effect – people in the anti-free will condition believed less in free will than participants in the control or pro-free will condition. Contrastingly, however, belief in free will as measured by the Free Will and Determinism scale showed no effect of the free will manipulation, though participants in the pro-free will condition increased their belief in free will compared to the anti-free will condition (though not different from control). Thus, one key difference between the present study and the original is that our results suggest the free will manipulation itself may be weaker than previously thought.

Second, the core test in both our and Alquist's experiments was whether manipulating free will beliefs affected people's tendency to conform to others. Using the same procedure and stimuli as Alquist, we failed to find any effect of the free will manipulation of conformity,

suggesting that the link between people's belief in free will and their willingness to conform to the behavior of others may be smaller than previously thought (or potentially non-existent).

Of course, there are several explanations for the failed replication that do not involve hypothesizing that the original effect is false. First, it is possible that the difference in findings could be explained by subtle differences in our procedure. In the original study, Alquist et al. (2013) used different utensils when circling the ostensible previous 23 participant ratings, whereas only a pencil was used in this study. It is plausible that participants noticed that the same utensil had been used and guessed the intent of the study. Second, our study was better powered than the original study, with approximately 40 participants per condition (total  $n = 129$ ) compared to Alquist et al.'s total sample of 56 participants. However, the difference is not so large as to rule out the possibility that the effect exists but is smaller than the original study proposed.

Finally, it has been previously discussed that the Velten (1968) manipulation produced desired results in Vohs and Schooler's (2008) study examining cheating behaviors, but replication attempts using the same manipulation have failed (i.e., Koppel, Fondacaro, & Na, in press). Perhaps this additional failure speaks to the ineffectiveness of Velten's (1968) sentence prime manipulation for free will beliefs. Tentative support for this possibility comes from our uneven effects of the manipulation on the free will belief checks (i.e., the self-report slider bar and the FAD-Plus items).

In sum, these results highlight the contention in moral psychological literature that free will effects may not be as reliable as was previously believed (Crone & Levy, 2018; Koppel, Fondacaro, & Na, in press; Monroe, Brady & Malle, 2017; OSF, 2015). Though the present study failed to support the prediction that (dis)belief in free will affected people's tendency to

conform to others, it is possible that the theoretical link between people's conception of free will and conformity exists. Self-report data demonstrates that people believe that having free will includes the ability to act and think independently (Monroe & Malle, 2010; Stillman, Baumeister & Mele, 2011). This, if laypeople believe that free will entails freedom and independence, then one might expect that threatening such a belief should influence behavior. One possible answer to this question is that people don't have a metaphysical concept of free will, but that 'free will' is a folk shorthand for intentional agency (Monroe et al., 2017) and thus, threatening this folk concept of free will may reveal meaningful effects on behavior.

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