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# Moderators of Positive and Negative Spillover

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Running head: MODERATORS OF POSITIVE AND NEGATIVE SPILLOVER

MODERATORS OF POSITIVE AND NEGATIVE SPILLOVER

by

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A thesis submitted to the Department of Psychology  
in partial fulfillment to the requirements for the degree of

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## MODERATORS OF POSITIVE AND NEGATIVE SPILLOVER

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## MODERATORS OF POSITIVE AND NEGATIVE SPILLOVER

### Abstract

Two studies explored individual difference moderators of spillover. Positive spillover occurs when one prosocial behavior leads to an increase in subsequent prosocial behavior, whereas negative spillover or moral licensing occurs when one prosocial behavior leads to a decrease in prosocial behaviors. The moderators of interest were internal motivation, external motivation, and preference for consistency. It was predicted that those who exhibit high external motivation would demonstrate negative spillover, those who exhibit internal motivation would demonstrate positive spillover, and those with high preference for consistency would demonstrate positive spillover. Although these moderation predictions were not supported, Study 1 replicated previous work demonstrating moral licensing, or negative spillover. Participants who completed an initial non-prejudiced act later donated less money to a charity supporting racial equality than participants in the neutral control condition. The results of Study 2 demonstrated positive spillover. Participants who completed an initial pro-environmental act were more likely to help a local environmental organization compared to those who completed a neutral initial task. Future research is needed to understand the cause of the differing results, including measuring potential mediators in future studies.

Keywords: positive spillover, negative spillover, moral licensing, prejudice, pro-environmental behavior

### Moderators of Positive and Negative Spillover

People who perform a good deed, such as recycling a phone book, may believe that they have done enough for the day, and then indulge in behaviors that are harmful to the environment, such as taking a long, hot shower. Others may feel as though their recycling is not enough and may be inspired to do more for the environment. The same patterns of behavior can also be applied to the broader domain of prosocial behavior, which is defined as when someone benefits someone else at their own expense (Bénabou & Tirole, 2006; Stern, 2000). Examples of prosocial behavior include holding the door open for someone or letting someone into traffic. These actions may lead people to feel as though they have done enough for the day for others or to feel inspired to continue performing prosocial behaviors. These divergent responses to engaging in an initial act of pro-environmental or prosocial behavior are representative of two seemingly contradictory theories that have received empirical support: moral licensing and positive spillover (Blanken, Van de Ven, & Zeelenberg, 2015; Thøgersen & Crompton, 2009). The purpose of the current research is to investigate individual differences that may alter when an initial prosocial act leads to decreased or sustained engagement in a subsequent prosocial behavior. The current research will investigate both prototypical prosocial behaviors and pro-environmental behavior, which can be considered a subset of prosocial behavior.

#### **Moral Licensing/Negative Spillover**

Moral licensing theory proposes that people who perform a morally good behavior will later carry out morally deviant behaviors (Merritt, Effron, & Monin, 2010). Carrying out a morally acceptable behavior gives one the license to perform less morally acceptable behaviors because one has already performed their good deed for the day (Blanken, Van de Ven, & Zeelenberg, 2012). Participants who established themselves as non-prejudiced by hiring a Black

person, for example, were more likely to hire a White person the second time (Monin & Miller, 2001).

Similar to moral licensing is negative spillover. Spillover is defined as the effect of interventions on additional behaviors not initially targeted by the intervention (Truelove, Carrico, Weber, Raimi, & Vandenberg, 2014). Negative spillover occurs when the likelihood of adopting additional pro-environmental behaviors (or prosocial behaviors) decreases after performing one pro-environmental behavior (Gneezy, Imas, Brown, Nelson, & Norton, 2012; Thøgersen & Crompton, 2009). In other words, people may justify not completing another pro-environmental behavior because they had already done one previously (Nilsson, Bergquist, & Schultz, 2017). People who recycle, for example, may then leave the lights on in their home. In one study, people who performed a small, costless prosocial behavior (recycling a bottle versus throwing a bottle into a trashcan) were less supportive of a green fund than those in the control condition, in which participants were not asked to “toss” the bottle out for the experimenter (Truelove, Yeung, Carrico, Gillis, & Raimi, 2016). Negative spillover and moral licensing are theoretically similar concepts because they both involve a prosocial behavior followed by a reduction in subsequent prosocial behavior (Margetts & Kashima, 2017).

Negative spillover effects have not been investigated extensively (Truelove et al., 2014). One example is the reduction of environmentally friendly behavior while on vacation (Miller, Rathouse, Scarles, Holmes, & Tribe, 2010; Truelove et al., 2014). People reported that they did not need to carry over their pro-environmental behaviors while on vacation due to the fact that they perform them while at home.

### **Positive Spillover**

In contrast to moral licensing and negative spillover, positive spillover occurs when



performing one behavior, such as a pro-environmental behavior, leads to an increase in similar behaviors (Thøgersen & Crompton, 2009). Working for a company emphasizing pro-environmental behaviors, for example, could promote the development of pro-environmental habits at home, such as turning off home computers when not in use (Littleford, Ryley, & Firth, 2014). In Gneezy et al. (2012), participants were assigned to donate part of their payment for participating to a charity or a donation was made on their behalf. Participants who made the donation themselves, and therefore engaged in a costly prosocial behavior, were less likely to deceive an unspecified person compared to participants for whom a donation was made by the experimenter. This positive spillover was due to the development of a prosocial identity. One takeaway from this research is that costly behaviors, such as those that take up more time, effort, or money, may be necessary to facilitate positive spillover, as costless behaviors are often not salient enough to motivate a subsequent prosocial behavior (Gneezy et al., 2012; Truelove et al., 2014).

The purpose of the current research is to investigate individual differences that may alter when an initial prosocial behavior promotes subsequent reduction or continuation of additional prosocial behaviors. In other words, the current research focuses on factors within a person that may be related to why one person demonstrates moral licensing and another person demonstrates positive spillover after an initial prosocial act.

### **Individual Difference Moderators**

Several moderators of spillover have been explored (Truelove et al., 2014). The cost of a decision may moderate the effects. Participants who made a costly donation compared to those who had made a costless donation were more likely to demonstrate positive spillover (Gneezy et al., 2012). Positive spillover may also be more likely to occur if the initial or subsequent

behavior are in the same domain or a domain perceived as similar (Thøgersen & Crompton, 2009). The effect of domain similarity in promoting positive spillover may be due to the differences in environmental identities or the amount of environmental knowledge one has (Truelove et al., 2014). Some people, for example, do not see similarities in reducing red-meat consumption and reducing car emissions even though both activities reduce a person's carbon footprint. The ways in which people make decisions can also have an effect on spillover behavior. People who made a rule-based ethical decision (over an outcome-based decision) in a moral dilemma subsequently gave more money in a dictator game in which the participant had access to a sum of money and had to choose how much of it to allocate to another person (Cornelissen, Bashshur, Rode, & Menestrel, 2013; Truelove et al, 2014). Additionally, causal attribution may moderate spillover effects. People who are forced or paid to do something may be less likely to perform a subsequent consistent behavior in the absence of coercion or compensation (Truelove et al, 2014; Zanna & Cooper, 1974).

Whereas the moderators explored in previous research focused on the behavior itself and cognitive style, the current research is focused on investigating individual differences related to motivational states that may moderate spillover. The individual differences explored in these experiments focus on the ways in which people want to be portrayed to themselves or to others around them.

**Internal and External Motivation.** The first individual difference moderator I will investigate is internal and external motivation to respond without prejudice (Study 1) or internal and external motivation to be pro-environmental (Study 2). Internal motivation is based on morals and beliefs, and external motivations are based on what is socially acceptable, such as norms (Hausmann & Ryan, 2014). Internal and external motivation are orthogonal constructs,

meaning that scores on one subscale are not related to scores on the other. Internal and external motivation may jointly moderate effects of spillover and moral licensing.

Internal motivation represents a sense of moral responsibility, and those embracing an internal motivation will be intrinsically, or internally, motivated to behave in a manner consistent with their beliefs. Thus, people who are internally motivated to respond without prejudice, for example, should behave in a manner that is associated with low levels of prejudiced attitudes regardless of whether they completed a previous act demonstrating that they are not prejudiced (Klonis, Plant, & Devine, 2005). People high in internal motivation, therefore, are expected to demonstrate a pattern reflecting positive spillover regardless of their level of external motivation.

Those with external motivations should initially be willing to behave in a non-prejudiced or pro-environmental manner because they are concerned with how they are being perceived by others (Klonis et al., 2005). After demonstrating their lack of prejudice or pro-environmental behavior, people who are externally motivated may subsequently engage in the opposite behaviors. That is, those embracing an external motivation may feel as though they now have the license to stop making the effort to appear non-prejudiced or environmentally conscious. This would reflect negative spillover. Those participants who are low in both internal and external motivation should demonstrate relatively low likelihood of helping regardless of whether they completed an initial prosocial behavior because they are not motivated to help.

Past work investigating internal and external motivation has reported that these variables do not have moderating effects on moral licensing, but this may be due to participants fear appearing prejudiced to themselves (Effron, Miller & Monin, 2012). That is, people may view themselves as egalitarian and avoid overtly racist displays so that they do not develop a prejudiced self-image even if they are in fact biased (Dovidio & Gaertner, 2000). While Effron

and colleagues' (2012) study was measuring prejudiced behaviors, such as hiring a Black police officer or White police officer, the behavior measured may have been too overt to allow people to conceal their prejudice. The current research employed a dependent measure of prejudice that was less overt. Participants were asked to donate money to a charity that supports racial equality. Participants who choose not to donate because they do not support racial equality could justify their actions by convincing themselves that their decision was due to a lack of funds rather than prejudice. Thus, the method of the current study may increase the odds of finding a moral licensing effect specific to those high in external motivation to respond without prejudice.

**Preference for Consistency.** Another potential moderator is preference for consistency (Studies 1 and 2). Those who have high preference for consistency exhibit congruent behaviors that match their thoughts, and those who do not behave in more unpredictable patterns (Guadagno, Asher, Demaine, & Cialdini, 2001). The power of consistency is a strong motivator of human action (Cialdini, Trost, & Newsom 1995). People vary in their need for consistency, and a strong preference for consistency may motivate positive spillover of effects. That is, if someone with a high need for consistency performs a non-prejudiced or pro-environmental behavior, they may feel the need to continue these behaviors, assuming they perceive the second behavior as within the same domain. In other words, people must perceive both behaviors as demonstrating their lack of prejudice or support for the environment. People who have a low need for consistency who complete an initial prosocial behavior may not feel compelled to continue similar behaviors because they are not concerned about maintaining a coherent pattern of behavior. Preference for consistency has not previously been investigated as a moderator of spillover effects (Nilsson, Bergquist, & Schultz, 2017).

Past research has shown, however, that preference for consistency moderates responses to the foot-in-the-door technique (Freedman & Fraser, 1966; Guadagno, Asher, Demaine, & Cialdini, 2001; Nilsson, Bergquist, & Schultz, 2017; Thøgersen & Crompton, 2009). People with a high preference for consistency are more likely to comply with a larger request when first presented with a smaller request relative to people with a low preference for consistency. The increase in a solicited behavior observed among those high in preference for consistency suggests that similar effects may be observed when participants are asked to perform a second prosocial or pro-environmental behavior after the performance of an initial behavior. Alternatively, people low in preference for consistency may show moral licensing due to their acceptance of inconsistency across situations.

### **The Current Research**

The current research will consist of two studies in which participants engage in a prosocial behavior or not and subsequently have a choice about whether to complete a second prosocial behavior. In Study 1, participants will complete an initial task in which they either do or do not have the opportunity to demonstrate non-prejudiced behavior, and then they will have the opportunity to donate to the NAACP. In Study 2, participants will write a pro-environmental essay or a neutral essay, and then they will have the opportunity to stuff envelopes for a local environmental organization. In each study, participants will complete measures of internal and external motivation and preference for consistency. The current research is designed to assess whether internal and external motivation or preference for consistency is related to whether an initial prosocial behavior promotes engagement in or disengagement from a second prosocial behavior.

The first set of predictions describe moderation hypotheses for preference for consistency. I predict that participants who display a high preference for consistency will have a pattern consistent with positive spillover. That is, participants given the opportunity to engage in an initial prosocial behavior will donate more money to charity (Study 1) or stuff more envelopes for a local environmental organization (Study 2) compared to participants who did not perform an initial prosocial behavior. Among participants who display a low preference for consistency, I predict that participants who completed an initial prosocial behavior will have a pattern consistent with moral licensing/negative spillover. That is, participants who completed an initial prosocial task will donate less money to charity (Study 1) or stuff fewer envelopes for a local environmental organization (Study 2) compared to participants who did not complete an initial prosocial behavior.

The second set of predictions describe moderation hypotheses for internal and external motivation. I predict a three-way interaction between experimental condition, internal motivation, and external motivation. In other words, the amount donated to charity (Study 1) or number of envelopes stuffed (Study 2) will depend jointly on whether participants completed an initial prosocial task, their level of internal motivation, and their level of external motivation. I will first describe the predictions for participants low in internal motivation. For those participants, I predict that the effect of completing an initial prosocial behavior will depend on their level of external motivation. More specifically, I predict that participants high in external motivation who complete an initial prosocial behavior will donate less money to charity (Study 1) or stuff fewer envelopes (Study 2) compared to participants who did not complete an initial prosocial task. In other words, participants with low internal and high external motivation are expected to demonstrate a pattern consistent with moral licensing/negative spillover. Their

willingness to engage in prosocial behavior is predicted to decrease after they complete an initial prosocial behavior. Additionally, I predict that participants low in internal and low in external motivation will donate relatively little to charity (Study 1) and stuff relatively few envelopes (Study 2) regardless of whether they complete an initial prosocial behavior because these participants are simply not motivated to engage in the forms of prosocial behavior measured in the current research.

I will now describe the predictions for participants high in internal motivation. I predict that participants high in internal motivation will donate a relatively high amount to charity (Study 1) and stuff a relatively high number of envelopes (Study 2) regardless of whether they completed a prosocial task and regardless of external motivation. This pattern of findings would provide evidence for positive spillover because internal motivation is expected to encourage consistent engagement in prosocial behaviors.

### **Study 1**

The goal of this study was to assess whether preference for consistency or internal and external motivation moderate spillover effects. Study 1 focused on the domain of prejudice. Participants read a vignette that manipulated whether participants made a choice that demonstrated their lack of prejudice. Spillover was measured by providing an opportunity to donate to the National Association for the Advancement of Colored People (NAACP) Then participants completed measured to assess the proposed moderators.

### **Method**

**Participants.** The minimum desired sample size of 199 participants was determined using power analysis ( $F^2 = 0.08$   $\beta = 0.80$ ,  $\alpha = 0.05$ ). In order to increase power, we recruited 300 MTurk workers in exchange for \$1.00 compensation.

Whereas 332 participants started the study, only 298 finished it. Thirty-eight participants who completed the experiment twice, exhibited a language barrier, had missing data, or failed the attention check were excluded from analyses. This left a total of 255 participants (132 men, 122 women, 1 did not wish to report). An additional 22 participants who selected the incorrect suspect were excluded because these participants did not complete an initial prosocial, non-prejudiced behavior, rendering it impossible to assess moral licensing. The total number of participants in the primary analyses was 233 (119 men, 113 women, 1 did not wish to report).

**Materials and procedure.** For the independent variable, participants were given a crime vignette (Effron et al., 2012; see Appendix A). Participants read a scenario in which their wallet was stolen. The wallet is described as containing \$202 in cash: four \$50 bills and one \$2 bill. The vignette does not mention the race of the suspect. However, stereotypical descriptions are given, including those describing the suspect as having a hoodie, sagging jeans, and basketball shoes. The vignette also indicated that the crime occurred in a low-income neighborhood that is predominately Black. Participants viewed the faces of two male suspects who were detained for questioning. Suspect 1 claimed to have been sleeping at home during the crime, had a previous record of petty theft, and was found with an iPod, \$152 cash (three \$50 bills, and one \$2 bill). Suspect 2 had a stronger alibi, as he was working at a local restaurant, and was found with a cell phone and \$10 cash. In the experimental condition Suspect 1 is White and Suspect 2 (the obviously innocent suspect) is Black. In the control condition, both Suspect 1 and 2 are White. Participants were asked who they believe committed the crime. The majority of participants in both conditions were expected to choose Suspect 1 as guilty. Participants in the experimental condition who chose Suspect 1 as guilty were expected to have the sense of performing a good deed because they made their decision based on the facts of the case rather than racial bias



(Blanken et al., 2015). Participants in the control condition chose between two White suspects and therefore did not have the opportunity to demonstrate non-prejudiced behavior.

Participants then completed the 16-item Brief Mood Introspection Scale (Mayer, & Gaschke, 1988) to ensure that mood did not differ systematically by condition. For each item, participants indicated how much each word describes how they are currently feeling. Responses were recorded on a 4-point scale (1 = *definitely do not feel*, 4 = *definitely do feel*). The Brief Mood Introspection Scale is composed of a mood valence subscale and a mood arousal subscale. Neither the mood valence subscale,  $t(231) = -1.04, p=0.299, d=0.13$ , nor the mood arousal subscale differed by condition,  $t(231) = 1.41 p=0.160, d=0.19$ .

For the dependent variable, participants were asked whether they would like to donate any amount of their compensation for participation to the NAACP. The message on the screen read: "Our mission at the National Association for the Advancement of Colored People (NAACP) is to ensure equal rights for all persons and to eliminate any and all race-based discrimination. A large part of our success is a result of support from individuals like you and your contribution would aid us in our ongoing efforts. You may donate between \$0.00 to \$1.00 of your compensation from this study to the NAACP. Please indicate the amount you wish to donate below."

Participants then filled in the amount of how much they would like to donate from \$0.00 to \$1.00 (Blanken et al., 2012). All participants received the full amount of compensation stated in their Informed Consent, and the lab made a donation to the NAACP for the total amount that participants in the study chose to donate (\$94.60).

Participants then completed the 18-item Preference for Consistency Scale (Cialdini et al., 1995). Participants indicated on a 7-point scale the extent to which they agreed with each

statement (1 = *strongly disagree*, 7 = *strongly agree*). Examples include: “Even if my attitudes and actions seemed consistent with one another to me, it would bother me if they did not seem consistent in the eyes of others,” and “I’m uncomfortable holding two beliefs that are inconsistent.” Responses were averaged to create a composite variable ( $\alpha = 0.91$ ). Preference for consistency did not differ by condition,  $t(231) = -.07, p = 0.950, d = 0.01$  ( $M = 4.49, SD = 0.88$ ).

Participants then completed the 10-item Internal/External Motivation to Respond without Prejudice Scale (Plant, & Devine, 1998). This scale, composed of an internal and external subscale, measured participants’ motivations for being non-prejudiced. Items were measured on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Examples include: “Because of today’s PC (politically correct) standards I try to appear nonprejudiced toward Black people” (external subscale) and “Because of my personal values, I believe that using stereotypes about Black people is wrong” (internal subscale). Responses to each the internal motivation ( $\alpha = 0.57$ ) subscale and the external motivation subscale ( $\alpha = 0.90$ ) were averaged separately to create composite variables. Neither internal motivation,  $t(231) = 0.43, p = 0.670, d = 0.05$ , ( $M = 4.90, SD = 0.91$ ), nor external motivation,  $t(231) = -0.22, p = 0.830, d = -0.03$  ( $M = 3.70, SD = 1.54$ ), differed by condition.

Participants then completed a manipulation check in which they were asked how others would perceive them if those others knew how the participant responded to the crime vignette. Participants completed a semantic differential scale with the target item “prejudiced/egalitarian” There were also seven filler items (e.g., “cold/warm”). Responses were recorded on a 5-point scale (1 = *prejudiced*, 5 = *egalitarian*). Participants in the control ( $M = 3.33, SD = 0.91$ ) and experimental conditions ( $M = 3.28, SD = 1.01$ ) did not differ in the extent to which they thought

others would view them as prejudiced or egalitarian based on their response to the crime vignette,  $t(230)=0.39, p=0.700, d=0.05$ .

## Results

**Preliminary analyses.** The first analysis examined whether participants excluded for selecting the wrong suspect differed systematically from participants who selected the correct suspect in their internal and external motivation to respond without prejudice and preference for consistency. Results of an independent samples  $t$ -test indicated that external motivation was higher among those who chose the incorrect suspect ( $M=4.54, SD=1.24$ ) than those who chose the correct suspect ( $M=3.70, SD=1.54$ ),  $t(253) = 2.46, p= 0.015, d=0.60$  Internal motivation to respond without prejudice did not differ among those who chose the correct suspect ( $M=4.90, SD=0.91$ ) or incorrect suspect, ( $M=4.87, SD=1.36$ ),  $t(253) = -1.06, p= 0.916, d= 0.03$  Preference for consistency did not differ among participants who chose the incorrect suspect ( $M=5.01, SD=0.76$ ) or the correct suspect ( $M=4.79, SD=0.88$ ),  $t(253) = 1.10, p= 0.273, d= 0.27$

**Main analyses.** An independent samples  $t$ -test was conducted to compare the amount donated to the NAACP in the experimental and control conditions to assess whether previous results replicated (Young, Chakroff, & Tom, 2012). There was a significant difference between the control condition ( $M=0.32, SD=0.35$ ) and experimental condition ( $M=0.22, SD=0.30$ ),  $t(231) = 2.40, p=0.017, d=0.31$ . These results suggest a moral licensing effect took place for those who were in the experimental condition, as they participated in a prosocial behavior, and then donated less money to the NAACP than those participants in the control condition, where no prosocial behavior took place.

A multiple regression analysis was conducted examining condition, preference for consistency, and preference for consistency X condition as simultaneous predictors of donation

amount to the NAACP. There was a main effect for condition on donation amount,  $\beta = -0.16$ ,  $p = 0.017$ , partial  $r = -0.16$ . Those who were in the experimental condition donated less money to the NAACP than those in the control condition. There was no main effect of preference for consistency average on donation amount,  $\beta = 0.04$ ,  $p = 0.540$ , partial  $r = 0.04$ . Contrary to the hypotheses, there was no interaction between condition and preference for consistency,  $\beta = 0.06$ ,  $p = 0.347$ , partial  $r = 0.06$ .

Next, a multiple regression analysis was conducted examining condition, internal motivation to respond without prejudice, external motivation to respond without prejudice, and all two-way and three-way interactions as simultaneous predictors of donation amount to the NAACP. There was a main effect of condition,  $\beta = -0.14$ ,  $p = 0.032$ , partial  $r = -0.14$  but no main effect of internal motivation,  $\beta = 0.09$ ,  $p = 0.202$ , partial  $r = 0.09$  or external motivation,  $\beta = 0.06$ ,  $p = 0.380$ , partial  $r = 0.06$ . There was also no interaction between condition and internal motivation,  $\beta = -0.05$ ,  $p = 0.530$ , partial  $r = -0.04$  or between internal and external motivation,  $\beta = 0.04$ ,  $p = 0.600$ , partial  $r = 0.04$ . There was, however, a marginally significant interaction between condition and external motivation,  $\beta = 0.13$ ,  $p = 0.073$ , partial  $r = 0.12$  (see Figure 1). Contrary to hypotheses, there was no three-way interaction between condition, internal motivation, and

external motivation,  $\beta = -0.07$ ,  $p=0.320$ , partial  $r= -0.0$

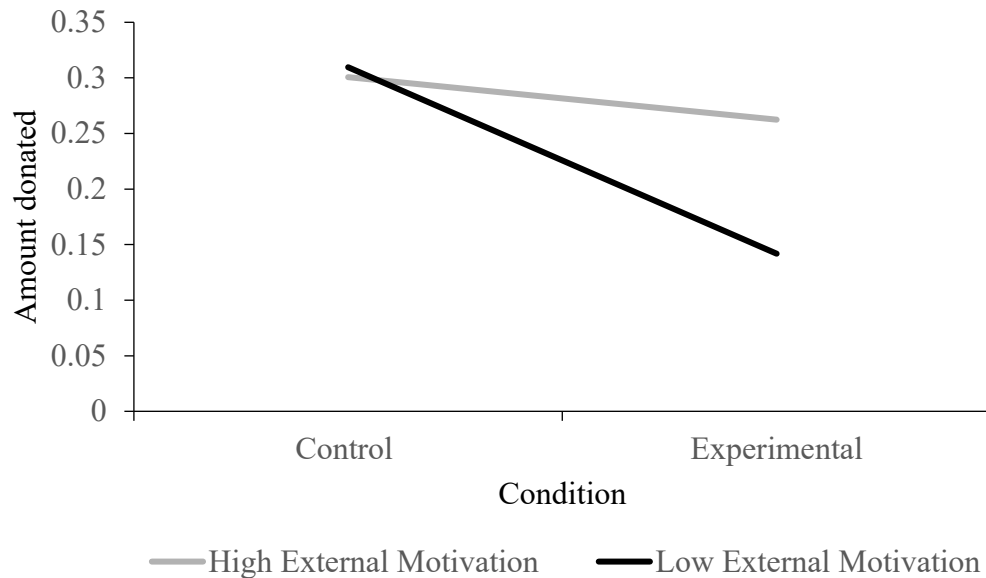


Figure 1: A marginally significant interaction between condition and external motivation

We further explored the two-way interaction between condition and external motivation by examining the effect of condition at high (+1 *SD*) and low (-1 *SD*) levels of external motivation. There was an effect of condition at low levels of external motivation,  $\beta = -.26$ ,  $p=0.005$ , partial  $r= -.19$ . In other words, those participants who were low in external motivation donated less money in the experimental condition than in the control condition. There was no effect of condition at high levels of external motivation,  $\beta = -.06$ ,  $p=0.550$ , partial  $r= -.04$ .

## Discussion

Study 1 provided a replication of the moral licensing effect. Participants who performed a non-prejudiced behavior later donated less money to the NAACP. The results also indicated an interaction between condition and external motivation. The hypothesis was that individuals high in external motivation would be particularly likely to show the licensing effect. In contrast to hypothesis, the data indicated that moral licensing was observed in those *low* in external

motivation. Given the departure from the hypothesis, these results indicate that people who are unmotivated by social norms may be most likely to immediately license after completing an initial egalitarian act perhaps because they simply do not care how others perceive them. These results, however, should be interpreted with caution. Unlike the results of the current experiment, previous research has shown those high in external motivation are more likely to exhibit prejudiced behaviors compared to those low in external motivation (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002). The lack of findings for internal motivation could be due to the low reliability of the internal motivation subscale. Additionally, preference for consistency did not moderate the results.

Study 1 suffered from selective attrition. Participants who selected the innocent suspect were excluded from analyses, including 8 participants in the control condition and 14 participants in the experimental condition. The number of exclusions in the experimental condition was presumably higher due to racial bias. Whereas the innocent suspect was White in the control condition, the innocent suspect in the experimental condition was Black. This means that the most racist participants in the experimental condition were presumably excluded from analyses, while those in the control condition were retained. If true, then it is all the more surprising that a moral licensing effect was observed. Participants retained in the experimental condition were likely less prejudiced than those in the control condition and they nonetheless gave less money to the NAACP. Study 2 was designed to correct this methodological limitation by employing a manipulation in which all participants could be included in the analyses.

## **Study 2**

Study 2 provides a conceptual replication of Study 1 using pro-environmental behaviors. Participants completed measures of internal and external motivations to be pro-environmental

and preference for consistency. Then participants were assigned to write essay about ways to improve the university's environmental impact or ways to improve their daily routine and were told that the information would be shared with a community organization in order to come up with persuasive ways to influence others to improve their own lives or the environment. Participants then had the opportunity to perform a pro-environmental behavior in which they could take part in an ostensible intervention for a community organization.

### **Method**

**Participants.** The minimum desired sample size of 199 participants was determined using power analysis ( $F^2=0.08$ ,  $\beta=0.80$ ,  $\alpha=0.05$ ). Participants were recruited during the Fall 2018 semester through University of North Florida's SONA system and participated for partial course credit.

A total of 226 participants (44 men, 168 women, 4 transgender, non-binary, or other, and 10 do not wish to report) completed the study. Participants who failed the attention check ("Please select '*Disagree*' as your response for this item") were excluded from analyses. This left a total sample of 197 participants (38 men, 151 women 4 transgender, non-binary, or other, and 4 do not wish to report).

**Materials and procedure.** Participants completed the 12-item Internal/External Motivation to be Pro-Environmental Scale (Goplen, 2014). Participants responded to each statement using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Examples include: "I try to make pro-environmental decisions in order to avoid social disapproval," (external subscale;  $\alpha=0.71$ ) and "I try to behave in pro-environmental ways because it is personally important to me" (internal subscale;  $\alpha=0.88$ ). Neither external motivation to be pro-

environmental,  $t(183) = .07, p=0.947, d=0.17$  ( $M=3.16, SD=1.00$ ), nor internal motivation to be pro-environmental,  $t(183) = -.27, p=0.790, d=0.10$  ( $M=5.14, SD=1.08$ ), differed by condition.

Participants completed the 18-item Preference for Consistency Scale (Cialdini et al., 1995). Responses were recorded on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Examples include: “Even if my attitudes and actions seemed consistent with one another to me, it would bother me if they did not seem consistent in the eyes of others,” and “I’m uncomfortable holding two beliefs that are inconsistent. ( $\alpha = 0.83$ ).”<sup>1</sup> Preference for consistency did not differ between by condition,  $t(183) = -0.35, p=0.727, d=0.00$  ( $M=4.70, SD=0.74$ ).

Participants then completed the 44-item Big Five Inventory as a distractor scale (John, Donahue, & Kentle, 1991). Responses were recorded on a 5-point scale (1=*strongly disagree*, 5=*strongly agree*). Examples include “worries a lot” and “tends to be quiet.”

For the independent variable, participants were given an essay topic and were asked to write a persuasive essay on that topic (Chen & Risen, 2010). In the experimental condition, the essay topic presented was “What do you think people at your school can do to help the environment? Describe why you think this is something important for UNF [University of North Florida] to focus on.” In the control group the essay topic was “What do you think you could do to make your everyday routines easier? Describe why you think this is something important to focus on.” Participants were informed that their essays would be used by a local community organization to influence people to improve their own lives or to improve the community. Both conditions wrote for 15 minutes on their essays.

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<sup>1</sup> For the first 10 participants, there was an error in the scale in which two items were on the same row. This was corrected for subsequent participants, and the two items on the same row were excluded when calculating scores for the first 10 participants.



Participants completed the 16-item Brief Mood Introspection Scale (Mayer, & Gaschke, 1988) to ensure that mood did not vary systematically by condition. For each item, participants were asked how much each word describes how they are currently feeling using a 4-point scale (1 = *definitely do not feel*, 4 = *definitely do feel*). The scale is composed of a mood valence subscale and a mood arousal subscale. Neither mood valence,  $t(172) = -0.81, p=0.417, d=0.12$  ( $M=2.80, SD= 6.64$ ), nor mood arousal,  $t(172) = -0.98 p=0.326, d=0.15$  ( $M=16.03, SD=4.11$ ), differed by condition.

Participants were then falsely informed that they finished the experiment early. As the dependent variable, the experimenter informed the participant that the lab is involved in a project to help a local environmental organization send letters to advertise for a campaign to change laws related to clean energy (see Appendix B for a copy of the letter). The experimenter informed the participant that she had to leave for another obligation and that the participant should “feel free to stuff as many or as few envelopes as you like” (Houle, Sagarin, & Kaplan, 2005). The experimenter returned to stop the participant if they had not stopped stuffing envelopes by 15 minutes. The participant was then fully debriefed, and the number of envelopes stuffed was recorded as a measure of helping behavior.

Participants then completed a manipulation check in which they were asked how others would perceive them if those others knew how the participant responded to essay prompt. Participants responded to a semantic differential in which the target item was “pro-environmental/non-environmental.” There were also seven filler items (e.g., “cold/warm”). Responses were recorded on a 5-point scale (1 = *pro-environmental*, 5 = *non-environmental*). Participants in the control and experimental conditions differed as predicted on response to the manipulation check,  $t(180)=2.89, p =0.004, d=0.43$ . That is, participants in the experimental

condition ( $M=2.29$   $SD=1.35$ ) stated that their response to the essay prompt would be seen as more “pro-environmental” than participants in the control condition ( $M=2.91$   $SD=1.52$ ).

## Results

**Main analyses.** An independent samples  $t$ -test was conducted to compare the number of envelopes stuffed in the experimental and control conditions to assess whether previous moral licensing results replicated (Young, Chakroff, & Tom, 2012). There was a significant difference between the control condition ( $M=13.01$ ,  $SD=11.76$ ) and experimental condition ( $M=17.41$ ,  $SD=14.41$ ),  $t(189) = -2.31$ ,  $p=0.022$ ,  $d=0.33$ . These results indicated positive spillover as participants in the experimental condition completed a prosocial behavior and then stuffed more envelopes than those in the control condition, where no prosocial behavior took place.

A multiple regression analysis was conducted examining condition, preference for consistency, and preference for consistency X condition as simultaneous predictors of number of envelopes stuffed. There was a main effect for condition on the number of envelopes stuffed,  $\beta=0.15$ ,  $p=0.031$ , partial  $r=0.15$ . Those who were in the experimental condition stuffed more envelopes than those in the control condition. There was a main effect of preference for consistency average on the number of envelopes stuffed,  $\beta=-0.23$ ,  $p=0.001$ , partial  $r=-0.23$ . Participants with a higher in preference for consistency stuffed fewer envelopes than participants with a lower preference for consistency. Contrary to the hypotheses, there was no interaction between condition and preference for consistency,  $\beta=0.03$ ,  $p=0.700$ , partial  $r=0.03$ .

Next, a multiple regression analysis was conducted examining condition, internal motivation to be pro-environmental, external motivation to be pro-environmental, and all two-way and three-way interactions as simultaneous predictors of number of envelopes stuffed. There was a main effect of condition,  $\beta=0.19$ ,  $p=0.009$ , partial  $r=0.19$ , no main effect for internal

motivation,  $\beta = 0.02$ ,  $p = 0.817$ , partial  $r = 0.02$ , and no main effect for external motivation,  $\beta = -0.11$ ,  $p = 0.131$ , partial  $r = -0.11$ . There was an interaction between internal and external motivation,  $\beta = -0.17$ ,  $p = 0.028$ , partial  $r = -0.16$ , no interaction between condition and internal motivation,  $\beta = -0.13$ ,  $p = 0.081$ , partial  $r = -0.13$ , and no interaction between condition and external motivation,  $\beta = -0.02$ ,  $p = 0.790$ , partial  $r = -0.02$ . Aligning with our hypotheses, there was a three-way interaction between condition, internal motivation, and external motivation,  $\beta = -0.21$ ,  $p = 0.007$ , partial  $r = -0.20$  (see Figure 2).

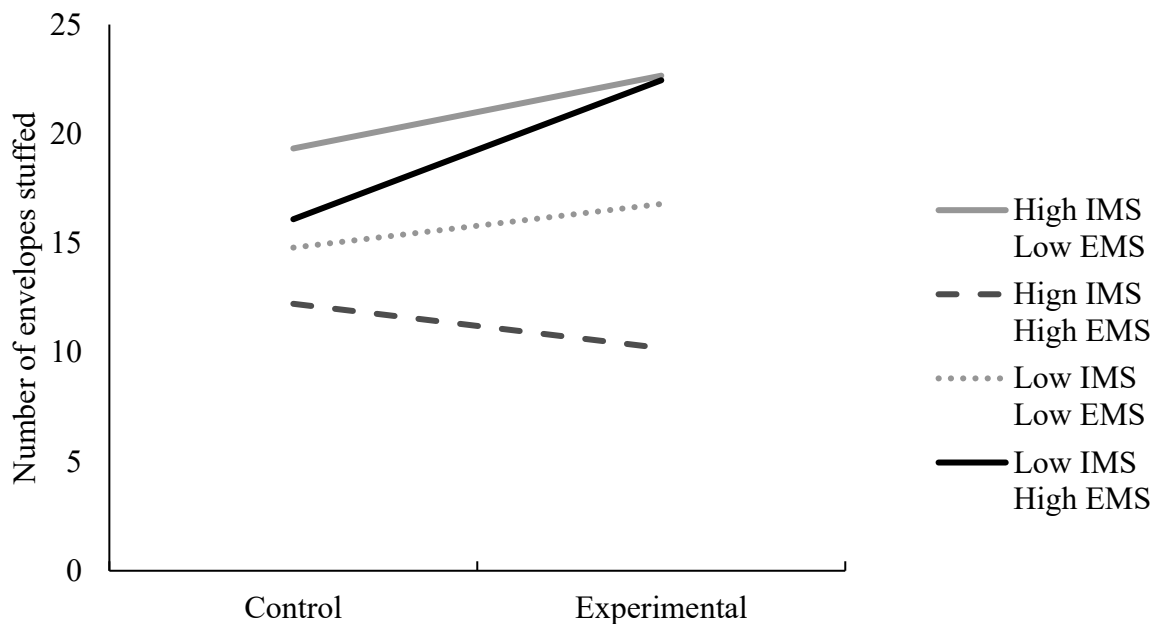


Figure 2. Three-way interaction between condition, internal motivation, and external motivation.

We deconstructed this three-way interaction using simple slopes analysis by assessing the effect of condition at low and high levels of internal and external motivation. Among those high in internal motivation and high in external motivation, the number of envelopes stuffed did not differ by condition,  $\beta = -0.15$ ,  $p = 0.297$ , partial  $r = -0.07$ . Among those high in internal motivation and low in external motivation, participants in the experimental group stuffed an average of 6.8 more envelopes than those in the control condition,  $\beta = 0.26$ ,  $p = 0.050$ , partial  $r = 0.14$ . Among

those low in internal motivation and high in external motivation, participants in the experimental group stuffed an average of 12.9 more envelopes than participants in the control condition,  $\beta = 0.49$ ,  $p=0.003$ , partial  $r= 0.22$ . Among those low in internal motivation and those low in external motivation, the number of envelopes stuffed did not differ by condition,  $\beta = 0.15$ ,  $p=0.166$ , partial  $r= 0.09$ .

## **Discussion**

In contrast to Study 1, the results from Study 2 provided evidence of positive spillover. Additionally, the predicted three-way interaction between experimental condition, internal motivation, and external motivation was observed. In particular, positive spillover was evident among participants who had either high levels of internal motivation and low levels of external motivation or the opposite pattern (i.e., low levels of internal motivation and high levels of external motivation). This pattern of results may not represent a meaningful pattern of data. It is unclear for example, why participants who have high levels of both types of motivation would not show positive spillover when each type of motivation alone was associated with that effect.

## **General Discussion**

The goal of the current research was to investigate several potential individual differences moderators of positive spillover and negative spillover/moral licensing. Study 1 replicated the moral licensing effect (Effron et al., 2012). Participants who convicted an obviously guilty White suspect over an obviously innocent Black suspect later donated less money to the NAACP. In other words, an initial prosocial behavior led to a reduction in subsequent prosocial behavior, possibly because the initial prosocial act provided moral credentials (Crandall & Eshleman, 2003; Dutton & Lennox, 1974; Effron et al., 2012; Monin & Miller, 2001). Participants who

convicted a guilty White suspect over an innocent Black suspect could reduce their donation to the NAACP and still view themselves or have others see them as non-prejudiced.

Whereas Study 1 focused on the domain of prejudice and found a moral licensing effect, Study 2 found a positive spillover effect in the domain of conservation psychology. Participants who wrote an environmental essay stuffed more envelopes for an ostensible pro-environmental community organization compared to those who wrote a neutral essay. In this study, participants' behavior demonstrated consistency (Truelove et al., 2014). Engagement in an initial prosocial behavior led to a continuation of prosocial behavior on a subsequent task. These results are similar to the infamous foot-in-the-door technique in which completing a low-cost behavior leads to performing a second, similar task even if it comes at a higher cost (Freedman & Fraser, 1966). Study 2 also found that those with higher preference for consistency stuffed fewer envelopes than those with a low preference for consistency. It is unclear why this unexpected effect occurred. Because preference for consistency is correlated with rigidity (Cialdini et al., 1995), it is possible that those with a high preference for consistency were less willing to extend the experiment appointment time to provide assistance.

The results of Study 1 and Study 2 did not support the hypothesized interaction effects. In both studies, I predicted that people with a high preference for consistency would be more likely to demonstrate positive spillover by donating more money (Study 1) or stuffing more envelopes (Study 2) compared to those with a low preference for consistency because it is important for them to behave in a consistent, congruent manner. I also predicted that internal and external motivation would affect whether moral licensing or positive spillover would occur. People with high internal motivation were expected to demonstrate positive spillover regardless of their external motivation because they are presumably personally driven to behave in a prosocial

manner. People with low internal motivation were expected to be generally disengaged. The exception is that those high in external motivation were expected to donate money (Study 1) or stuff envelopes (Study 2) to provide the appearance of being prosocial, but only if they had not completed an initial prosocial task. Participants in the experimental condition, who had been given a chance to demonstrate their prosociality through an initial task, were expected to engage in moral licensing.

Although the predicted pattern of effects was not observed, results from Study 1 suggested that the moral licensing effect was specific to participants low in external motivation. This was contrary to my hypothesis, which predicted that moral licensing would be found primarily in individuals *high* in external motivation. This indicates that moral licensing may be more likely to occur if an individual does not care about how others view them. In Study 2 the pattern of results for the interaction between internal motivation, external motivation, and condition suggested that positive spillover occurred among people with high levels of internal motivation alone or high levels of external motivation alone. The combination of the two resulted in an absence of positive spillover. Although this interaction was statistically significant, the pattern of results did not support the hypotheses. It is possible that these findings do not represent meaningful, replicable data patterns, and therefore further data collection is necessary. The fact that internal and external motivation had different moderation patterns across studies lends additional support to the possibility that these results were due to chance variability in the dataset.

Taken together, the results of both studies indicated that preference for consistency may not moderate spillover and internal and external motivations may not moderate the effects in a meaningful way. The findings for internal and external motivation replicate past research (Effron

et al 2012.; Monin, & Miller, 2001), and the use of various methodologies and domains (e.g., prejudice and environmental behavior) lends additional confidence to those conclusions.

The null results for preference for consistency provide the first evidence that this individual difference does not moderate spillover (Nilsson, Bergquist, & Schultz, 2017). There is, however, an important caveat to this conclusion. It is possible that preference for consistency did not moderate the effects because participants in each study did not view the two behaviors that they were asked to engage in as belonging to a similar domain (Truelove & Gillis, 2018). In Study 1, for example, participants may not have viewed the action of selecting the correct suspect as demonstrating egalitarian values. Participants in Study 2 may not have viewed both writing the essay and stuffing envelopes as pro-environmental (e.g., perhaps the envelope stuffing task was construed as helping the researcher rather than helping the environment). If the participants viewed the tasks as representing different domains, then even a person with a high preference for consistency may respond differently to each task. Future research on preference for consistency and spillover should measure whether participants view the initial and subsequent prosocial behavior as belonging to the same domain.

One of the most striking features of the results is that opposite patterns of effects were found in Study 1 and Study 2. Whereas Study 1 found evidence of moral licensing, the results of Study 2 demonstrated positive spillover. Differences in methodological or sample characteristics may explain the discrepant results. Although the manipulations in Study 1 and Study 2 were both designed to provide participants with an opportunity to engage in an initial act of prosocial behavior, these studies did not measure hypothesized mediators. It is possible that the results of Study 1 were due to an alternative explanation. In Study 1, participants in the experimental condition may have been primed with negative stereotypes about Black people because they read

a crime vignette and saw a Black suspect (participants in the control condition viewed two White suspects). Activation of negative stereotypes about Black men may in turn have led participants to reduce their donations to the NAACP.

Participants in Study 2 wrote about ways in which the university could be more pro-environmental. It is unclear exactly which aspect of this manipulation led to positive spillover. The manipulation may have primed affiliative motives or social identity because the prompt instructed them to think about how why their suggestions would be important for their university. Additionally, the manipulation may have led participants to reflect on past pro-environmental behaviors they have performed and to consider ways in which they could improve their own environmental identity. Previous research indicates that thinking about previous instances of past pro-environmental behaviors mediates positive spillover (Truelove et al., 2014; Van der Werff, Steg, & Keizer, 2013). Future research could investigate whether positive spillover in the domain of prejudice would occur if the manipulation had provided participants a chance to reflect on previous examples of egalitarian behavior. Additionally, future research could include measures to assess possible mediators.

There were also other methodological differences between the two studies that could account for the discrepant results. One major difference between studies is that the initial prosocial behavior of responding to an essay prompt about ways to promote pro-environmental behavior in Study 2 was costly due to the time and effort involved, whereas the initial egalitarian behavior of refusing to convict an obviously innocent Black suspect in Study 1 was not. Research on positive spillover suggests that initial prosocial behaviors need to be costly in order to influence a second, prosocial behavior. This is because putting forth effort increases the likelihood that a person will think about why they exerted effort and should therefore activate



thoughts about their motives or beliefs (Gneezy et al., 2012; Truelove et al., 2014). In Study 1, the moral licensing effect could be due to the initial prosocial behavior not being costly enough to evoke a second behavior, in this case, a donation to the NAACP. To directly assess how the costliness of the initial behavior affects spillover, these studies could be conducted as a multifactorial design that also varies the costs of the initial behavior. In Study 1, for example, participants could have been assigned to help a community organization by varying the cost of writing an essay about the importance of being inclusive of outgroup members by having different cost conditions (e.g., write an essay for 5 minutes or write for 15 minutes) in order to measure the effect of cost.

The samples used in Study 1 and Study 2 were also drawn from different populations, and this could account for the differing results. The sample in Study 1 ( $M_{age} = 37.00$ ) was more representative in age, gender, socioeconomic status, and geographic location within the United States than the sample in Study 2 ( $M_{age} = 25.6$ ). These samples were drawn from different cohorts, and young adults now are more likely than previous cohorts to report an environmental identity (McDougle, Greenspan, & Handy, 2011; Thiele, 1999). Although the young, student sample in Study 2 displayed positive spillover it is unclear whether this result would replicate in a more representative sample among people who may identify less strongly with pro-environmental ideals. Additionally, there may have been other unmeasured individual differences between the samples that could account for the differing results.

Promoting egalitarian and pro-environmental behavior is critical given the increasing diversity of the population in the United States and increasing environmental threats across the globe. Although the solutions to the problems of prejudice and environmentally destructive behavior can be addressed through disciplines as diverse as economics, sociology, and

anthropology, psychology offers a unique perspective by focusing on the determinants of individual behavior. Information about when moral licensing or positive spillover occurs is crucial in creating policies or initiatives aimed at increasing egalitarian or pro-environmental behavior. Although the current studies found evidence of both moral licensing and positive spillover, this research was unsuccessful in identifying individual difference moderators. Neither preference for consistency nor internal and external motivations moderated the effects. Future research is needed to gain insight into the moderators of positive and negative spillover.

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## Appendix A

**You've been robbed!**

You stop in at a fast food restaurant in a poor area of your home town. While paying for your food, you notice that the guy in line behind you is listening to rap music very loudly on earphones. You set down your wallet and keys for a moment. The next thing you know, the guy behind you grabs your wallet and keys and runs out the door. You can't see his face, but you notice that he is wearing a black hoodie, baggy blue jeans sagged down below his hips, and basketball shoes.



You estimate that he's between 5'9" and 6" tall, and between 140 and 160 pounds.

Your wallet contained your driver's license, credit cards, and \$202 in cash: four \$50 and one \$2 bill.

After investigating the incident, the police detain the suspects shown on the next page. Please read the information about them carefully.





Experimental Condition

	Suspect #1	Suspect #2
		
Alibi	Sleeping at home alone	Working at local restaurant
Previous record	Petty theft (\$300)	None
Behavior when detained	Cooperated with officer	Cooperated with officer
Found with	iPod and \$152 cash (three \$50 bills, and one \$2 bill)	Cell phone, \$10 cash

After reading the information about these suspects, please select the suspect whom you personally think is **MOST LIKELY TO HAVE COMMITTED THE CRIME.**

Control Condition

	Suspect #1	Suspect #2
		
Alibi	Sleeping at home alone	Working at local restaurant
Previous record	Petty theft (\$300)	None
Behavior when detained	Cooperated with officer	Cooperated with officer
Found with	iPod and \$152 cash (three \$50 bills, and one \$2 bill)	Cell phone, \$10 cash

After reading the information about these suspects, please select the suspect whom you personally think is **MOST LIKELY TO HAVE COMMITTED THE CRIME**.

## Appendix B



Dear Florida Resident,

Fifty one cities across the U.S. have embraced renewable energy as their power source by committing to transition to 100% clean renewable energy through our **Ready for 100 - Clean Energy for All** campaign! To date, 160 mayors across 33 states have signed on to our [Mayors for 100% Clean Energy](#) commitment!

In Florida, Mayor Buddy Dyer of Orlando recently issued a proclamation endorsing a goal of powering Orlando entirely with clean and renewable energy by 2050. Mayor Dyer joins a growing coalition of Mayors for 100% Clean Energy who have announced support for a goal of powering their communities with 100% renewable energy, such as wind and solar. These cities will also transition to zero emission electric transportation and safer pathways for cyclists and pedestrians.

So far, 40 mayors in Florida have stepped forward to take Sierra Club's pledge to commit his/her city to the goal of the complete elimination of all fossil fuel consumption!

Want your mayor to commit your city to 100% clean energy? Contact Phil Compton, Sierra Club Issue Chair (727), with Sierra Club's Ready for 100% Clean Energy for All campaign at 727-824-8813, ext. 303.

**Sierra Club Florida**  
1990 Central Avenue  
St. Petersburg, Florida 33712

