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## The Truth About Lying: Does a Lie Cause Ego Depletion?

Shannon A. Summerlin Jr

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The Truth About Lying: Does a Lie  
Cause Ego Depletion?

by

SHANNON A. SUMMERLIN, JR.

(Under the direction of Janie Wilson)

ABSTRACT

Ego depletion is defined as the loss of self-control resulting from prior acts of self-control. Several tasks cause ego depletion, including effortful cognitive tasks. I proposed that lying would create ego depletion due to the cognitive control associated with telling a lie. I further anticipated that the potential embarrassment associated with getting "caught" in a lie would cause additional ego depletion among participants. In the proposed study, we asked participants to lie to a confederate and either gave them the impression they would be caught in the lie or gave them a clear indication that they would not be caught in the lie. A control group was not asked to lie. I anticipated that ego depletion would be demonstrated among those asked to lie by failing to persist on a computer task relative to participants who were not asked to lie. In addition, of those asked to lie, I expected more ego depletion to result from the expectation of being caught telling a lie relative to the condition in which participants were led to believe they would not be caught. Finally, I assessed trait honesty as a potential covariate in this study. Results showed that those people who lied completed significantly fewer computer trials than those who did not lie, indicating ego depletion relative to the control condition. The act of creating a lie requires an individual to engage in cognitive effort, such as memory, improvisation, and creative thinking, and cognitive energy has been tied to deficits in self-control (i.e., ego depletion). Lack of a difference between the two lie conditions may indicate that the lie itself was highly distressing,

and the added burden of being caught lying was not sufficient to overcome the ceiling effect that already existed. As an alternative explanation, all participants may have assumed they would be caught in the lie when they encountered the other student on campus after the study.

The Truth About Lying: Does a Lie

Cause Ego Depletion?

by

SHANNON A. SUMMERLIN, JR.

B.A., Belmont Abbey College, 2012

A Thesis Submitted to the Graduate Faculty of Georgia Southern University in

Partial Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

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SHANNON A. SUMMERLIN, JR.

Major Professor: Janie Wilson

Committee: Shauna Joye

Lawrence Locker

Electronic Version Approval:

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## CHAPTER 1

## INTRODUCTION

## Purpose of the Study

The purpose of the present study was to experimentally examine participants who were asked to be dishonest with the rationale that the process of lying would lead to ego depletion. By randomly assigning participants to either lie or not and then subsequently using a persistence task to measure ego depletion, the current study tested the hypothesis that participants who are being dishonest would be significantly more ego depleted than those participants who told the truth.

As an additional component, those who lie were either lead to believe they would be caught in the lie or not caught, allowing an examination of embarrassment or guilt as potentially ego depleting. It was expected that those who lied and believed they would get caught in the lie would exhibit more ego depletion than those who lied and knew they would not get caught.

*How This Study Is Original*

The present study deals with the particular relationship between the process of lying and the theory of ego depletion. No past research has examined the possibility of a direct relationship between these two variables making this study novel and important to the advancement of the ego depletion theory because it allows for future research into other processes similar to telling a lie.

## CHAPTER 2

**The Truth About Lying: Does a Lie Cause Ego Depletion?**

A large portion of human behavior is influenced by automatic or unconscious cognitive processes. However, many crucial cognitive functions require deliberate executive control of the self. Self-control requires planning, decision making, responsibility, and execution of action, all of which are taxing for the individual over a given period of time and reduce subsequent self-control (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998). The loss of self-control after a task requiring self-control is called ego depletion (e.g., Baumeister et al., 1998).

**Ego Depletion**

Ego depletion is caused by the persistent use of self-control necessary throughout a typical day (e.g., Baumeister, 2002; Baumeister et al., 1998). For example, studying intensely for an exam requires cognitive self-control and may result in less control on a subsequent task, such as refraining from consuming too much alcohol at a social function. By the same token, someone may strictly diet during the day only to "cheat" at night when self-control resources are depleted. Even athletes feel the effects of ego depletion during a long workout; as they mentally and physically focus on proper exercise techniques, they may become less disciplined in their body movements (self-control) over time.

Because the "ego" is a single source of energy, any type of self-control should deplete the ego. In fact, depletion based on one modality (e.g., suppression of emotions) can reduce self-control on an unrelated task (e.g., physical endurance). Ego depletion can be induced in a laboratory setting using self-control of emotions, cognition, and behaviors.

Muraven, Baumeister, and Tice (1998) asked participants to suppress their emotions when watching an upsetting video describing environmental disaster effects on wildlife. Controls

were informed they could freely express their emotions. Participants were then required to hold a spring-loaded handgrip for as long as they were physically able. Compared with the control group, participants who suppressed their emotions held the handgrip for significantly less time (Muraven et al., 1998). This study supported the notion that emotion suppression creates ego depletion as measured by a physical outcome.

In a series of studies using emotion suppression, Fischer, Kastenmuller, and Asal (2012) also showed evidence of ego depletion. In experiment 2 of their study, the depletion-condition participants were told to try not to experience, feel, or show any emotions while watching a funny cartoon. Those in the no-depletion condition were told to "let their emotions freely flow" while watching the funny cartoon. Ego-depleted participants showed higher levels of risk-tolerance in critical road traffic situations than non-depleted participants, indicating a higher potential for an accident. In the third experiment, Fischer and colleagues asked participants to suppress emotions to pictures of a horrifying traffic incident and again found evidence of ego depletion in the form of significantly higher acceptance of risk. Finally, the fourth experiment showed that ego depletion from emotion suppression was associated with mental exhaustion, leading participants to be more willing to take risks. Taken together, the studies discussed above indicate increases in potential risk following ego depletion caused by emotion suppression.

A second class of ego-inducing tasks involves cognitive self-control. In experiment 1 of Fisher and colleagues' (2012) studies discussed above, participants were asked to imagine a visit to the zoo and write down every animal that came to mind during this imaginary journey. Participants in the ego-depletion condition were instructed not to think about a white bear. Whenever they thought of a white bear, they were to suppress the thought, mark an "X" on the questionnaire, and continue thinking about other animals and situations in the zoo. In a

subsequent task that involved ego depletion, participants reported higher levels of sensation seeking, a prominent predictor of actual risk-taking, than non-depleted participants. Similarly, Tice, Baumeister, Shmueli, and Muraven (2007) used the same white-bear thought suppression task as mentioned in the study above to ego deplete. They then offered participants in both conditions cups of a bad-tasting drink mix consisting of Kool Aid, vinegar, and water to drink until participants insisted they did not want anymore. Results of the study showed that those in the thought-suppression or ego-depletion group persisted in drinking significantly less of the bad-tasting drink than did the control condition.

Using a slightly different cognitive self-control task, Christiansen, Cole, and Field (2012) showed participants an emotion-provoking video clip, then administered a writing task in which participants wrote down any thoughts that came to mind in a five-minute period. Those in the ego-depletion condition were asked to avoid thinking about any emotions the video may have provoked for the entirety of the five-minute writing task. In the control condition, participants were asked to write down their thoughts in a five-minute period of time with no restriction of content. Those in the thought-suppression group increased alcohol consumption, displaying a reduction of self-control relative to the control manipulation. The studies summarized here suggest that suppression of thought, like suppression of emotion, requires self-control and in turn can elicit ego depletion.

Studies of cognitive effort can include an obvious physical component, with ego depletion the consistent outcome. Englert and Bertrams (2012) asked participants to transcribe a neutral text onto a separate sheet of paper for six minutes. Participants in the depletion condition were asked to omit the letters e and n while transcribing the text. Those in the control condition did not receive any specific instructions on how to transcribe the text. Next, all participants were

asked to throw a basketball into a hoop. Those in the depletion group made a significantly lower percentage of baskets than did those in the control condition. Thus, simple cognitive control, with or without an obvious behavioral component, induces ego depletion. Further, the use of a physical task emphasizes that the ego is a single well of self-control energy that crosses modalities.

As the previous examples have shown, measures of cognitive self-control rely on simple tasks. Schmeichel, Vohs, and Baumeister (2003) sought to explore the effects of ego depletion on higher-level thinking to explore a potentially more complex relationship. All participants watched a video of a woman being interviewed. At the bottom of the screen flashed a series of words that were irrelevant to the interview. In the ego-depletion condition, participants were instructed to direct their attention away from the words and to focus exclusively on the woman. This task involved self-control insofar as people were required to manage their attention and redirect it back to the interview whenever they began to notice the irrelevant words. In the control condition, participants were given no such instructions. Next, items from the Graduate Record Examination (GRE) reasoning test were given to participants. Results revealed that those in the depletion group scored significantly lower on the number of items answered correctly, the number of items attempted (i.e., number of items for which participants recorded an answer), and the proportion of items answered correctly than did those in the control condition. This study extended our knowledge of ego depletion to encompass complex mental tasks as assessment measures. Again, any task of self-control appears to jeopardize subsequent self-control, regardless of the chosen task or assessment, at least with emotion suppression and cognitive control.

A third class of ego-depletion tasks involves behavioral self-control. For example, Baumeister and colleagues (1998) required participants to resist temptation in an effort to reduce self-control. Participants in the ego-depletion group were told they were free to eat radishes but must resist the temptation to eat cookies. The control group was free to eat the chocolate. The experimental group showed a lower persistence on a subsequent unsolvable puzzle task measured by how long participants attempted the task.

In the studies discussed above, there emerges a clear relationship between ego depletion and emotion suppression, cognitive effort, and behavioral control. Outcomes generally include measures of subsequent self-control. Although the bulk of ego-depletion research has focused on the tasks explained above, emerging literature has extended ego depletion to additional outcomes such as loss of self-monitoring tied to guilt and lying. Xu, Bogue, and Bushman (2012) examined the potential relationship between ego depletion and guilt. Participants were ego depleted using a Stroop task in which they had to identify color words that were a different color from the color they conveyed (e.g., the word "red" was shown in blue print). Using both an explicit and implicit guilt measurement, the authors illustrated that participants who were ego depleted felt less guilty (Xu et al., 2012). This finding suggests that ego depletion affects self-control in subtle ways, including self-assessment of guilt.

Although ego depletion has been shown to reduce feelings of guilt, Debey, Verschuere and Crombez (2012) demonstrated that ego depletion actually attenuates lying, indicating that loss of self-control does not necessarily lead to loss of morality. Specifically, participants were ego depleted by an "e" hunting task in which they read an article on cosmic radiation and had to cross out every letter "e" that was not adjacent to or two letters away from another vowel. Results showed ego-depleted participants had a longer measured response time when lying on an

autobiographical identification test than did those not ego depleted (Debey et al., 2012). The act of lying requires self-monitoring, and like ego depletion, is shown to be a cognitively taxing process. Therefore if lying takes effort, exhaustion associated with ego depletion should, in fact, make lying less likely.

### **Lying**

Cognitive theories of deception posit that deliberate and successful lying requires more cognitive resources than telling the truth (Vrij et al., 2008). Successful lying requires the activation and integration of many cognitive mechanisms (Gombos, 2006). Vrij, Fisher, Mann, and Leal (2008) outlined several aspects of lying that contribute to an increased mental load. First, making up the lie may be cognitively taxing because it requires thought and imagination. Second, a person may work harder to monitor personal body language while lying. Third, the person telling a lie may monitor the listener carefully for clues to acceptance of the lie. Fourth, the liar will need to remain vigilant to continue the fictitious role. Fifth, a person telling a lie must suppress truthful responses. By the same token, DePaulo and colleagues (2003) suggest that due to a liar's need to seem natural, it is imperative for a person to monitor impressions of his or her credibility, which would be a task of self-regulation that consumes cognitive resources. Simply put: Often the truth is easier to provide, offering the path of least resistance.

Perhaps due to the increased cognitive load associated with the process of lying, many consistent behavioral cues are generated. Zuckerman, DePaulo, and Rosenthal (1981) found that these behavioral cues were largely associated with two main channels, the auditory channel and visual channel. For the visual channel, pupil dilation and shoulder shrugging were shown to be significantly linked with lying. As for the auditory channels, hesitation of speech, making errors



in speech, adding irrelevant information, abnormal pitch, and making negative statements were all significantly linked to lying as well.

Using the behavioral efforts established by Zuckerman, DePaulo, and Rosenthal (1981), DePaulo and colleagues (2003) conducted a meta-analysis of deception literature and analyzed the content of lies as compared to truth telling. They found liars to make significantly fewer spontaneous corrections to a story and admit to not remembering details far less than those who were actually telling the truth. Liars also used a great deal more illustrators and external associations to create a more plausible story. Taken together, Zuckerman and colleagues (1981) and DePaulo and colleagues (2003) add evidence to the argument that lying is an effortful process and should be ego depleting.

However, research on lying and ego depletion is limited. Vendemia, Buzan, and Green (2005) showed participants a series of questions about themselves that was either colored red or blue. If the question was written in red, they were to answer truthfully, and if it was in blue, they were to fabricate an answer that was not the truth. Using this method, the participant would lie half of the time and tell the truth the other half. Analysis of the data showed reaction times for the deception group to be longer than the truth group, suggesting a possible link between lying and ego depletion (as well as indicating the effort associated with lying).

If lying requires cognitive effort, those who are ego depleted should avoid lying in order to conserve energy. Conversely, the act of lying, as cognitively effortful, should deplete. The case was made above for avoiding lies due to increased cognitive load. However, additional features of lying may reduce self-control. The liar may fear embarrassment. That is, perhaps people exert cognitive, emotional, and behavioral energy when lying but also when worrying about being

caught in a lie. Thus embarrassment may be an additional feature of lying's reduction of self-control.

Embarrassment's most basic function is to act as a deterrent for behaviors society deems deviant. Embarrassment is an emotion people feel when they have violated a social convention or disrupted social interactions (Feinberg, Willer, & Keltner, 2012). Modigliani (1971) argued that embarrassment is a brief loss of situational self-esteem in an ongoing social interaction. As a result, poor behavior in public results in more embarrassment than private failure. Interestingly, Feinberg and colleagues (2012) found that embarrassment can be endearing, causing others to view the embarrassed person as prosocial. Perhaps embarrassment is seen as an admission of poor performance, which implies personal guilt and perhaps remorse. Regardless, feeling embarrassed requires energy resources and may explain ego depletion associated with lying. Those who lie may worry about getting caught.

### **The Present Study**

Past studies have suggested a possible link between lying and ego depletion due to the cognitive energy associated with telling a lie. However, currently no research has shown that the process of lying leads to ego depletion. The purpose of the present study was to experimentally examine participants who were asked to be dishonest with the rationale that the process of lying would lead to ego depletion. By randomly assigning participants to either lie or not and then subsequently using a persistence task to measure ego depletion, the current study tested the hypothesis that participants who are being dishonest would be significantly more ego depleted than those participants who told the truth.

As an additional component, those who lie were either lead to believe they would be caught in the lie or not caught, allowing an examination of embarrassment or guilt as potentially

ego depleting. It was expected that those who lied and believed they would get caught in the lie would exhibit more ego depletion than those who lied and knew they would not get caught.

## CHAPTER 3

### Method

#### Participants

A sample of 62 Georgia Southern University students participated in the study. Of those 62 participants, 21 were men, and 41 were women. The average age of the participants was 19 years old with a standard deviation of 2.08 years. Sixty-one percent of participants were Caucasian, 25 percent were African American, and 14 percent categorized themselves as Other (Latino, Asian American, etc.). Of the 62 participants, 15 were first-year students, 28 were sophomores, 12 were juniors, and 6 were seniors.

#### Measures

Three assessments of the “health drink” measured perceptions of the drink.. Ratings of perceptions consisted of 3 Likert-type items. Two items required a scale from 1 (very bad) to 5 (very good). These questions included: "How did the drink taste?" and "How did the drink smell?" A final item required participants to rate "How likely would you be to purchase this drink?" on a scale from 1 (very unlikely) to 5 (very likely). Our primary item of interest was the rating of taste.

The Attentional Network Task (ANT) assessed ego depletion by quantifying participants' persistence on a computer task. (See Figure 1 for a screenshot of the ANT.) The ANT measured participants' attentiveness and persistence on a 312 item-recognition task. Participants clicked the left or right Shift key, depending on the direction of an arrow presented above a plus sign (+) in the middle of the screen. The program collected data on persistence by showing how many individual items were completed out of the possible 312 before the participant chose to quit the program. Higher values indicated more persistence (self-control), whereas lower values indicated

less persistence. As a second measure, participant's attentiveness was recorded as the individual response times (RT; i.e., pressing a key in response to a stimulus) for each item. Individual RTs were averaged together for analysis. Longer values of RT indicated less focus or self-control due to diminished mental resources.

The Honesty-Humility section of the Hexaco-PI-R personality inventory was comprised of 16 items (Lee & Ashton, 2004). Some examples of the Hexaco Honesty-Humility section questions are: "I would be tempted to buy stolen property if I were financially tight," "If I want something from someone, I will laugh at that person's worst jokes," and "I would never accept a bribe, even if it were very large." The Hexaco has been shown to have good reliability and validity, including all subscales (Lee & Ashton, 2004.) All items were rated from 1 (strongly disagree) to 5 (strongly agree). Ten of these items were reverse scored such that higher values indicated higher levels of honesty and humility. All item ratings were averaged together to obtain a single value.

### **Procedure**

When participants first entered the lab (tested individually), they completed an informed-consent form. Participants were then asked to drink a bad-tasting drink under the cover story that it would improve energy and attention. The drink contained a packet of Kool Aid mixed with vinegar rather than water (no sugar). Participants drank one ounce. After the sample had been consumed, the three ratings of the drink were completed.

Participants were randomly assigned to enter the (1) no-lie condition (control group), (2) lie, no-confrontation condition, or (3) lie, confrontation condition. In both lie conditions, the researcher indicated, "Fair enough. Some people think it tastes okay, believe it or not. It's important to our study that participants come in without negative expectations about the taste, so

please don't tell anyone that you think the drink tastes bad." In the no-lie condition, the researcher said the first 2 sentences from the quote above.

In all conditions, a confederate entered the room after the participant consumed the beverage and rated it. The confederate posed as a participant arriving early for the experiment. The researcher left the room to check the experiments' schedule for the new participant saying he must have double-booked a time slot, and the confederate asked the participant how the drink tasted.

When the researcher returned to the room, the confederate asked if he could return at another time since he had an upcoming test. In the lie-confrontation condition, the researcher answered, "Let me go get you the drink, this will only take a moment," and left the room to give the participant the impression that he/she would be caught in the lie. The researcher then reentered the room a short time later and told the confederate that he instead just changed the scheduled lab trial to a later time. The confederate was told he was free to go. The confederate then left the room. In both the lie, no-confrontation and control conditions, the researcher answered, "Let me go change your appointment time, this will only take a moment," and left the room. The researcher then reentered the room a short time later and told the confederate that he changed the appointment, and he was free to go. The confederate left.

The participant was instructed how to use the ANT computer program. After confirming that the instructions were understood, the researcher allowed the participant to work on the ANT, telling each participant to complete as much as possible but stop at any time throughout the program. The participant then completed the Humility-Honesty section of the Hexaco personality inventory and a demographics survey which included the question, "In the last 6 months, how would you rate your overall attentiveness compared to other college students?"

## CHAPTER 4

### Results

Power analysis revealed that for 20-25 participants per condition, there was a 60% chance of detecting a medium effect size for the study based on delta effect sizes of .25 for small, .75 for medium, and 1.25 and higher for a large effect. Those participants in the lie conditions who did not lie to the confederate were not used in the final analysis, resulting in three participants' data being excluded.

Because the hypothesis specified expectations, a priori orthogonal group comparisons showed that a combination of both lie conditions ("caught" or "not caught") significantly differed from the no-lie (control) condition,  $t(59) = 2.39, p = .02$ . Participants persisted for a fewer number of ANT computer trials when they believed they would be caught in a lie ( $M = 111.10, SD = 85.32, n = 20$ ) than if they believed they would not be caught in a lie ( $M = 133.18, SD = 97.92, n = 2$ ) or if they were not asked to lie at all ( $M = 187.50, SD = 115.85, n = 20$ ). (See Figure 2.) However, the two lie conditions did not differ from each other,  $t(59) = -.71, p = .048$ .

#### Secondary Analysis

A secondary analysis was conducted using a MANOVA, with the following dependent variables in a single analysis:

- Number of computer (ANT) trials
- Average reaction time for trials
- Total number of errors divided by number of completed trials
- Average reaction time over the first 25 trials
- Number of errors in the first 25 trials

Among these DVs, only the total number of computer trials (ANT) completed revealed significant group differences. These differences were discussed in the primary analysis. No other

outcomes reached significance ( $p > .05$ ). (See Table 1 for all descriptive statistics.) Further, covarying out the Humility-Honesty section of the Hexaco personality inventory using a MANCOVA analysis did not alter results.

### **Manipulation Check**

To ensure that our manipulations were effective and participants in the lie condition were, indeed, lying about the taste of the drink, taste ratings were analyzed. Participants failed to differ in their ratings of the drink's taste,  $F(2, 58) = .22, p > .05$ , indicating that all participants found the drink to be distasteful.



## Chapter 5 Discussion

This study's primary hypothesis was that those participants who engaged in the process of telling a lie would be more ego depleted as measured by less persistence on the Attentional Networking Task (ANT) than those who did not lie. Results showed those participants asked to lie persisted significantly less than those not asked to lie on the ANT, confirming the primary hypothesis. The act of creating a lie requires an individual to engage in many cognitive faculties, such as memory, improvisation, and creative thinking, and in turn should be ego depleting. In addition, a strong emotional component is tied to the act of lying because it is generally deemed to be an immoral and harmful action. This could elicit feelings of discomfort or guilt, which has been correlated with ego depletion, as shown by Xu and colleagues (2012). Our result offers the first known examination of lying as ego depletion and confirms that self-control is compromised.

An alternative explanation for these results could be that it was the participant's compliance and not the lying that was ego depleting. In its simplest definition, compliance refers to a certain type of response or acquiescence to a request. (Cialdini & Goldstein, 2004) Kelman (1958) asserted that compliance is when an individual chooses to be influenced by a person of authority to gain favor. In a well-known study on obedience and compliance, Milgram (1963) showed how powerful compliance to authority can be. In the experiment, participants acted as teachers who asked questions of confederates in a separate room. If the confederate answered incorrectly, the participant was asked by the experimenter to administer electric shocks at increasing levels. As the confederate continually answered incorrectly, the experimenter persisted in asking the participant to administer the next level of shocks, despite the confederate's cries of pain. Numerous participants complied to administer dangerously high-level shocks at the experimenter's request. The pressure exerted by Milgram was minimal; he merely said

statements such as, "The experiment requires that you continue." Such minor pressure was sufficient to induce compliance even when participants believed they were physically harming another person. Therefore, even negligible pressure to comply created strong social demands.

Perhaps telling a lie to comply with a person in authority introduces the contextual variable of social pressure. Because the experimenter, an authority figure, asked participants to lie about the drink's taste, they complied in spite of knowing that lying is undesirable. Although it may seem odd that participants would lie so readily when asked to do so, Kassin and Kiechel (1996) showed that compliance with police authority figures led to false confessions and embellished stories, a much more detrimental outcome. The pressure to comply in the current study may have created a situation in which the participant felt guilty not only for lying but the compliance to lie in the first place. Perhaps the synergistic effect of pressure to comply in addition to lying led to ego depletion. To test this potential explanation, a follow-up study could control for compliance by asking participants in the control condition to, as a favor to the researcher, tell others that the drink tasted bad. If compliance is a crucial component for ego depletion, the effect found in the current study should be observed. However, if the lie is the crucial component for ego depletion, compliance in all conditions will reveal the power of lying alone.

A third potential explanation is tied to individual variability across additional variables. Although participants were randomly assigned to conditions and should therefore have been equated on expectation across all variables except the independent variable, further analyses checked this assumption. For example, people in the groups were tested at different times of the day, with those later in the day showing more ego depletion. Muraven and Baumeister (2000) proposed that executive functioning and self-regulation act as a muscle, with each use depleting

resources available for later tasks. However, we examined average time of day across the three conditions and found no differences,  $F(2, 58) = .43, p > .05$ . The average time for all groups was between 3:00pm and 4:00pm. Neither can group differences be attributed to participant variables such as trait attentiveness and trait honesty. The three groups showed similar ratings of attentiveness,  $F(2, 58) = .25, p > .05$ . Finally, participants in the three conditions did not differ on trait honesty as measured by the Hexaco-PI-R personality inventory,  $F(2, 58) = .87, p > .04$ . These measures provide at least three assessments of additional variability. Although Other sources of variability may exist and were not measured in this study.

As a second hypothesis, it was proposed that those who felt that they would be caught in a lie would be more ego depleted than those who felt they would not be caught in a lie based on social distress. However, the two groups did not differ. Given the limited campus geography, participants may have felt they would be caught in the lie at a later time on campus. It would be reasonable to assume the participant (confederate) would be seen again. Of course, it is also possible that participants truly felt no distress about being caught in a lie. Perhaps the lie itself was distressing enough, and the added burden of being caught lying was not sufficient to overcome the ceiling effect that already existed.

The secondary analysis of our study added multiple variables in addition to overall number of ANT trials completed. However, the overall multivariate test did not show additional significant outcomes. Certainly, the addition of multiple uncorrelated dependent variables may have limited statistical power. French and colleagues (2002) warn that a degree of freedom is lost for every new dependent variable, which in turn lowers the power of the test. In light of this knowledge, the MANOVA analysis was made secondary to the original analysis of only the ANT persistence variable.

### **Potential Limitations**

Our study suffered from a lack of diversity within our participant sample. In terms of gender, it would have been preferable to have an equal number of male and female participants instead of having twice as many women as men. A more diverse ethnic sample would have been better as well given that 86 percent of participants were either Caucasian or African American. Finally, our study only contained six seniors. A more diverse sample would expand external validity and allow us to generalize our results beyond the demographic limits of our sample, including moving beyond college-age students as those required to lie.

A more significant lie may have benefitted this study as well. Since participants were only lying about the taste of a drink and did not seem to care if they were caught, as evidenced by the result of no difference between the two lie conditions, it may have been better to ask them to lie about something more personal or tell a more elaborate lie. As another option, participants could be asked to tell multiple lies to assess the potential for a quantifiable relationship. Regardless of the approach, a more elaborate lie should require additional cognitive, emotional, and behavioral self-control.

The present study marks the first known empirical experiment of lying as ego depleting. Telling a lie – even a small lie – reduces self-control on a subsequent, unrelated task. Because self-control on one task attenuates self-control on other tasks, and they need not be from related modalities, lies can reduce performance on many tasks, including emotional, cognitive, or behavioral. Perhaps this detrimental effect of lying can dissuade the use of lies in those who seek to maintain self-control.

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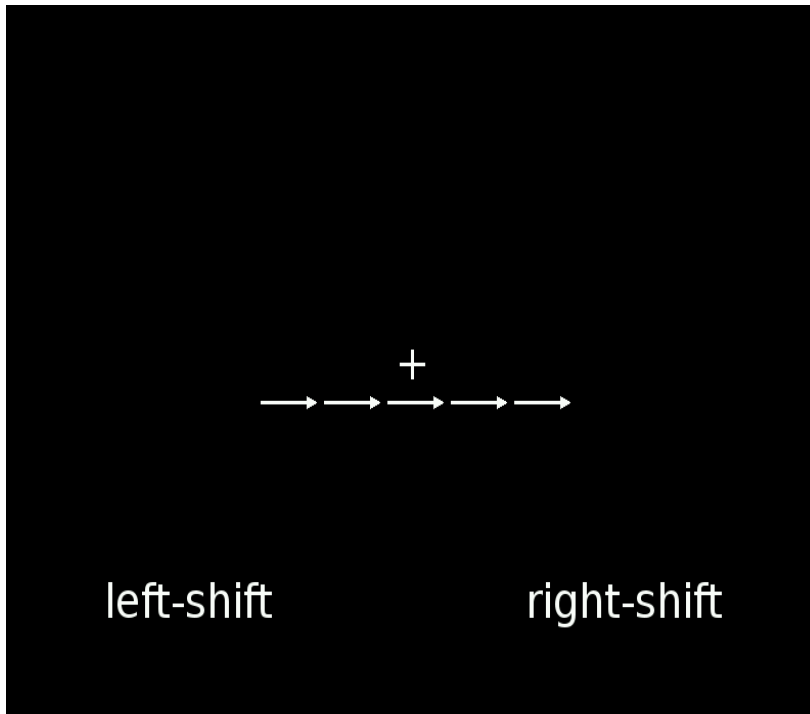
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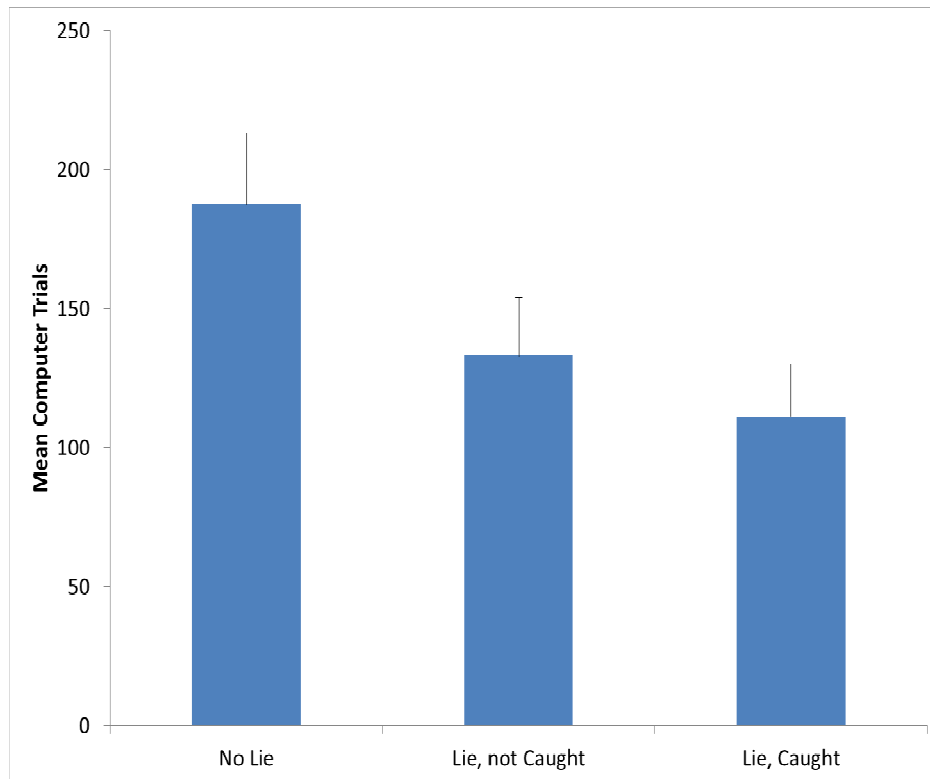
**Table 1.** Descriptive statistics for all variables.

	<b>Control</b>	<b>Lie, Not Caught</b>	<b>Lie, Caught</b>
	<b>M (SD)</b>	<b>M (SD)</b>	<b>M (SD)</b>
ANT Number	195.15 (113.71)	133.181 (97.92)	111.10 (85.32)
Reaction Time Mean	639.06 (61.10)	652.84 (159.54)	638.88 (87.93)
Error Ratio	.08 (.09)	.05 (.06)	.05 (.09)
Reaction Time (First 25)	706.91 (142.15)	658.14 (143.32)	683.15 (113.41)
Errors (First 25)	3.00 (4.14)	1.90 (2.90)	1.25 (1.68)
Attentiveness	3.57 (.62)	3.72 (.82)	3.70 (.57)
HEX Mean	3.28 (.42)	3.46 (.70)	3.23 (.55)
Taste	1.63 (.68)	1.63 (.78)	1.5 (.73)





*Figure 1.* The Attentional Network Task (ANT) is a computer recognition-choice program that measures participants' attentiveness and persistence. Participants click left or right shift, depending on the direction of the arrow near the plus sign.



*Figure 2.* Graph of results. Participants who did not lie persisted longer than those who lied.

Error bars represent *SD*.