A QUANTITATIVE ANALYSIS OF THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND BEHAVIOR FOLLOWING AN EVALUATIVE PRIMING PROCEDURE

by

Micah F. Hanson

An Abstract
of a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science
In the Department of Psychology
University of Central Missouri

August, 2011
ABSTRACT

by

Micah Hanson

The nature of priming has been discussed in both the cognitive and social psychological literature. In addition, the importance of personality factors as they relate to behavior has been investigated since the days of Sigmund Freud. However, little research has been done to examine how personality factors predict the priming effect one will display. The present study was designed to fill this void by examining the predictive value of one’s personality (as measured by the NEO-FFI-3) as it pertains to the magnitude of behavioral responses (as measured by teacher-evaluation forms) after an evaluative priming procedure. Specifically, the effects of a scrambled sentence test on the participant’s responses to a teacher-evaluation-form were analyzed using Analysis of Covariance (ANCOVA) with the personality scores obtained on the NEO-FFI-3 used as covariates. Lastly, the implications that these results have for the priming literature will be discussed.
A QUANTITATIVE ANALYSIS OF THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND BEHAVIOR FOLLOWING AN EVALUATIVE PRIMING PROCEDURE

by

Micah F. Hanson
A QUANTITATIVE ANALYSIS OF THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND BEHAVIOR FOLLOWING AN EVALUATIVE PRIMING PROCEDURE

by

Micah F. Hanson

August, 2011

APPROVED:

Thesis Chair: Dr. Steven Schuetz

Thesis Committee Member: Dr. David Kreiner

Thesis Committee Member: Dr. Kim Stark-Wroblewski

ACCEPTED:

Chair, Department of Psychology: Dr. Joseph Ryan

UNIVERSITY OF CENTRAL MISSOURI
WARRENSBURG, MISSOURI
TABLE OF CONTENTS

LIST OF TABLES ........................................................................................................... vii

CHAPTER 1: NATURE AND SCOPE OF THE EXPERIMENT .................................................. 1

  Rationale ...................................................................................................................... 1

  Purpose of the Study .................................................................................................. 3

  Hypotheses ................................................................................................................ 3

CHAPTER 2: REVIEW OF LITERATURE ........................................................................ 6

  Defining the Unconscious and Priming ........................................................................ 6

    Debate over the Definition of the Unconscious ....................................................... 6

    Priming in Cognitive Psychology ........................................................................... 8

    Priming in Social Psychology ............................................................................... 9

  The Nature of the Unconscious ............................................................................... 11

    The Unconscious Behavioral Guidance System .................................................... 11

    A Model of the Unconscious Behavioral Guidance System ..................................... 12

    Mirror Neurons ....................................................................................................... 15

    Free Will? ............................................................................................................... 18

    Variability .............................................................................................................. 22

  Personality ................................................................................................................ 24

  Personality ................................................................................................................ 24

    Trait Theory and the Five-Factor Model ................................................................. 26

    Teacher Evaluations .............................................................................................. 31

CHAPTER 3: METHODOLOGY ..................................................................................... 36
List of Tables

Table

1. Time of Priming Procedure and SST Used for Each Condition.........................40
2. Descriptive Statistics for TEF Scores for all Conditions..............................43
3. ANOVA Results..........................................................................................70
4. ANCOVA Results......................................................................................71
Rationale

Researchers in cognitive psychology have recognized the function of the unconscious to be a means to process stimuli that were never consciously perceived. This is appropriate if one accepts the notion that the unconscious plays a minor role in human cognition, and compared to the conscious, is rather “dumb” (Loftus, 1992, p. 764). However, different areas of psychology have been researching the unconscious, and as a result, some researchers have come to believe that it plays a larger role in mental life than previously assumed (Bargh & Morsella, 2008). Social psychology has expanded the role of the unconscious from the processing of subliminal stimuli to include “mental processes of which the individual is unaware” (Bargh & Morsella, 2008, p. 73). This expansion, which will be described as more sensible and evolutionarily useful than the former constricted understanding of the unconscious, increases both the presumed role of the unconscious, and our ability to explore its abilities.

Priming studies serve as a means to explore the nature and limits of the unconscious. Priming has been defined as a “change in the response to a stimulus or in the ability to identify a stimulus as the result of prior exposure to that stimulus” (Gazzaniga, Ivry, & Mangun, 2009, p. 323). However, most of the priming research has assumed cognitive psychology’s constricted definition of the unconscious. When one accepts social psychology’s definition of the unconscious, many new priming methodologies can be utilized to determine the existence and function of mental processes that take place without our conscious awareness.
This study, which accepts social psychology’s understanding of the unconscious, was designed to help illuminate how personality characteristics (as measured by the NEO-Five-Factor Inventory, Costa & McCrae, 1992) may predict the behavior one displays (as measured by an end-of-the-semester teacher-evaluation form) after an evaluative priming procedure. In addition, the timing of priming will be manipulated (occurring either immediately before watching the video with the professor to be evaluated or immediately after watching the video) to determine if the priming effect will vary as a function of this manipulation.

Dijksterhuis and van Knippenberg (1998) reported data suggesting that priming a stereotype could result in participants performing behaviors consistent with the primed stereotype. Other researchers have collected similar data, including Bargh, Chen, and Burrows (1996), who reported that priming a construct or trait exerts a passive influence on subsequent behavior. However, in these experiments, not everyone demonstrates identical behavior after the priming of a specific construct. In the current research, we will examine whether the varying behaviors performed after the priming of a specific trait can be partially explained by variability in personality traits. Stated differently, are varying personalities more “primable” than others? This study was designed to contribute to the psychological literature by attempting to strengthen understanding of how and under what circumstances personality factors can predict behavior and more specifically the evaluative behaviors one performs after a trait or concept is primed.

This research is of scientific significance because priming effects have been demonstrated well in both cognitive and social psychology laboratories, but the real world effect that priming can have has just begun to be studied. This study also has
academic importance because end-of-the-semester evaluations, completed by students, are considered an essential measurement of their professor’s teaching performance, and many decisions that can affect the university, as well as the individual professor, are based on these evaluations (Laws, Apperson, Buchert, & Bregman, 2010). Due to the significance given to these evaluations, it is important that psychologists and educators be aware of all the variables that contribute to the students’ responses.

**Purpose of the Study**

One purpose of this study is to determine if an evaluative priming procedure can influence participants’ response on a teacher-evaluation form (TEF). Also, the study was designed to determine if TEF scores will vary as a function of participants being primed either before or after watching a video of a professor to be evaluated (Pre-Primed and Post-Primed groups respectfully). An additional purpose is to provide insight as to whether or not personality factors (as measured by the NEO-FFI-3) predict the behavior that is automatically triggered after priming the specific constructs of being either accepting or rejecting.

**Hypotheses**

Generally, it is hypothesized that there will be a main effect of priming condition on TEF scores and an interaction between priming condition and particular personality scores.

Specifically, it is hypothesized that the Pre-Primed Accepting group will rate the professor from the video significantly more favorably (as measured by the TEF) than the Pre-Primed Control group. In addition, it is hypothesized that the Post-Primed Accepting group will rate the professor from the video significantly higher (as measured by the TEF)
than the Post-Primed Control group. This is because we expect that individuals unconsciously exposed to the concept of acceptance (Accepting group members) will display more accepting behavior than the control group.

Also, it is hypothesized that the Pre-Primed Rejecting group will rate the professor from the video significantly less favorably (as measured by the TEF) than the Pre-Primed Control group. In addition, it is hypothesized that the Post-Primed Rejecting group will rate the professor from the video significantly lower (as measured by the TEF) than the Post-Primed Control group. This is because we expect that individuals unconsciously exposed to the concept of rejection (Rejecting group members) will display more rejecting behavior than the control group.

In addition, because Openness to Experience (as measured by the NEO-FFI-3) is partially a measure of the degree to which one is aware of personal emotions and is intellectually inquisitive (Costa and McCrae, 1992), it is hypothesized that Openness To Experience will be positively correlated with the magnitude of priming effect (as measured by scores on the TEF) displayed by all groups.

Moreover, it is expected that individuals in the Pre-Primed Rejecting group who score high on Neuroticism will rate the professor more poorly than individuals in the same group who do not score high in this domain. It is also hypothesized that individuals in the Post-Primed Rejecting group who score high on Neuroticism will rate the professor more poorly than individuals in the same group who do not score high in this domain.

Lastly, no hypothesis is offered regarding whether or not those primed before the video (Pre-Primed Accepting group, and Pre-Primed Rejecting group) will demonstrate different priming effects (as measured by the TEF) than those primed after the video.
(Post-Primed Accepting group, and Post-Primed Rejecting group). This lack of prediction is based on two assumptions. First, it is assumed that priming decay will have insufficient time to become a significant factor. Secondly, it is assumed that participants whose recall of an event is primed (participants in a Post-Primed condition) will display similar priming effects compared to participants primed with a more traditional evaluative priming procedure. Since no hypothesis is presented, these results are subject to exploratory analysis.
Defining the Unconscious and Priming

Debate over the Definition of the Unconscious.

Despite being a heavily researched topic in psychology, there is still debate regarding an appropriate definition of the unconscious (Bargh & Morsella, 2008). Since the days of Freud, many researchers have perceived the unconscious to be the epicenter of individual problems, such as psychopathology and maladaptive tendencies (Bargh & Williams, 2006). In addition, most of the early research was conducted with the belief that the conscious is responsible for the vast majority of one’s mental operations. This is the perspective that cognitive psychology has accepted, leaving few operations for the unconscious. Cognitive psychology’s definition of the unconscious equates it with “subliminal information processing” (Bargh & Morsella, 2008, p. 73). That is, the unconscious is a mechanism that processes and recognizes stimuli that were consciously never perceived, such as words flashed on a screen for only fractions of a second. By this definition, the unconscious only impacts a small percentage of our mental life. This is because most of the stimuli experienced last longer than a few milliseconds, and are available to conscious recognition, even if minimal attention is given. This confined definition of the unconscious led to the conclusion that it plays a minimal role in a conscious species, and in comparison to the conscious is rather “dumb” (Loftus & Klinger, 1992, p. 764).

However, social psychology has expanded the role of the unconscious to “mental processes of which the individual is unaware,” compared to the processing of stimuli that
were never consciously perceived (Bargh & Morsella, 2008, p. 73). Expanding the definition of the unconscious directly led to the increased contribution it is presumed to provide in mental functioning, and expanded upon procedures to measure the operations of the unconscious in ways that cognitive psychology had previously not accepted. For example, using social psychology’s definition, scrambled sentence tasks (SST) can be used as a priming instrument to study the unconscious. These are tasks requiring participants to unscramble given words to make a coherent sentence, where every other sentence contains one priming word (Bargh, Chen, & Burrows, 1996). This procedure requires participants to consciously think about the words involved, so they are not subliminal according to cognitive psychology’s definition of the unconscious (Bargh & Morsella, 2010). However, the mental processes that these words produce are not conscious. This allows the unconscious to be primed according to social psychology’s definition of the unconscious.

The current research will presuppose the social psychologist’s definition of the unconscious, for two overlapping reasons. As previously mentioned, the majority of events and stimuli found in nature are not subliminal due to our well-developed senses. Therefore, researchers should attempt to uncover natural explanations, as opposed to procedures that only work in laboratories. The other explanation involves an evolutionary perspective on mental activity. It is believed that Homo Sapiens, as a species, developed consciousness rather late in our evolutionary history (Corballis, 2007; as cited in Bargh & Morsella, 2010). Before this, we presumably relied on the unconscious, which relied on external events and stimuli, to provide us with clues regarding what specific motor movement would be most beneficial. Due to our current
ability and tendency, to easily do the same (Bargh, Chen, & Burrows, 1996: Dijksterhuis, & van Knippenberg, 1998), despite a perfectly functioning consciousness, we conclude that social psychology’s definition of the unconscious is a more natural and evolutionally appropriate explanation of mental activity.

**Priming in Cognitive Psychology.**

For many years, cognitive psychologists have investigated the effects of unconscious stimuli on an individual’s subsequent processing abilities of both the presented stimuli and related stimuli. This research generated a construct called priming, which has been defined by Gazzaniga, Ivry, and Mangun (2009) as a “change in the response to a stimulus or in the ability to identify a stimulus as the result of prior exposure to that stimulus” (p. 323). Many researchers opposed this construct and contributed stark criticism (Holender, 1986), but after reviewing converging studies (Dehaene et al., 1998; Draine & Greenwald, 1998), the scientific community has generally agreed that this phenomenon exists and has thus shifted its focus towards researching what systems produce priming effects, the magnitude of the effects, and the consequences that priming can have on cognition and behavior (Van den Bussche, Van den Noortgate, & Reynvoet, 2009).

Often, priming effects have been measured by cognitive psychologists by means of analyzing participants’ performance on word fragment completion tasks, as was done by MacLeod and Kampe (1996), or word recognition tasks as performed by Grainger et al. (2006). These tasks usually involve participants being exposed to a word for only milliseconds (less than that required for conscious recognition). Subsequently, this procedure encodes the word’s structure and form into participants’ perceptual
representational system, an aspect of their non-declarative memory (Gazzaniga, Ivry, & Mangun, 2009). Improved performance on such tasks after priming is assumed to be the result of having the target word’s makeup and configuration already stored in one’s perceptual representational system, thereby improving the recognition (often scored in reaction times) and completion of the target word in a word fragment completion task.

**Priming in Social Psychology.**

After cognitive psychology’s definition of the unconscious was expanded by social psychologists to include mental operations of which individuals are unaware, new methods of exploring the nature and operations of the unconscious were established. Now, following social psychology’s definition, researchers could prime the unconscious by means that are consciously acknowledged by the participant, as long as the participant remains unaware of the subsequent mental activity that arises. For example, by exposing participants to stimuli that are consistent with a concept, all of the knowledge and perspectives associated with that concept become unconsciously activated (Dijksterhuis & van Knippenberg, 1998)

Bargh, Chen, and Burrows (1996) referred to this kind of priming as “the incidental activation of knowledge structures, such as trait concepts and stereotypes, by the current situational context” (p. 1). For example, Dijksterhuis and van Knippenberg (1998), asked participants to think about being a professor and to write down everything they thought of while doing so. While participants were obviously cognitively aware of what they were doing, they were not aware that doing so activated unconscious mechanisms. These researchers had unconsciously primed the concept, or trait, of intelligence because the participant’s active perception of the average professor activated
many of the knowledge structures containing information about the average professor. As a result, these participants performed significantly better than the control group on a measure of general intelligence. These participants also performed better than those who were primed with the concept of low intelligence by having them think about soccer hooligans. Importantly, the amount of time spent thinking about professors or soccer hooligans was positively correlated with priming effect, leading the way for new priming studies investigating the limits of the unconscious.

In an article by Bargh, Chen, and Burrows (1996), it was demonstrated that by the mere activation of the concept of *rudeness*, participants would behave in a manner consistent with that trait. Equally impressive was that the subtle act of unscrambling a few sentences containing priming words (a scrambled sentence task) was enough to cause this behavioral change. It was found that those who had completed the scrambled sentence task involving words related to the concept of *rudeness* would interrupt their professor sooner than would controls. In addition, those primed with the concept of *politeness* would wait longer than controls to interrupt their professor. In the same article (Bargh, Chen, & Burrows, 1996), a second experiment was reported involving participants being primed with the concept of *elderly*. It was found that these individuals walked down the hallway more slowly than controls, after leaving the laboratory.

When social psychology expanded cognitive psychology’s definition of the unconscious, the phenomenon referred to as “automaticity” could be viewed as a product of the unconscious. Automaticity has been defined as “control of one’s internal psychological processes by external stimuli and events in one’s immediate environment, often without knowledge or awareness of such control” (Bargh & Williams, 2006, p. 1).
With this new perspective, priming can be considered a means to subtly initiate the process of automaticity.

**The Nature of the Unconscious**

*The Unconscious Behavioral Guidance System*

Historically, the role of the unconscious appears to have been underestimated. It seems likely that the mechanisms involved are responsible for many aspects of behavior, despite their elusive nature. As mentioned by Bargh and Williams (2006), the expanded role of the unconscious is consistent with current dual-processing theories of cognition. The authors note that the unconscious seems to serve a default behavioral function. That is, the unconscious scans the environment for information important to one’s immediate behavior. This permits the conscious to focus on events or stimuli outside of the present environment, allowing for adaptive mental functions, like planning, to occur.

This observation, along with copious amounts of data, prompted Bargh and Morsella (2010) to publish an article on the nature of the unconscious called the *Unconscious Behavioral Guidance System* (UBGS). The researchers explained that this guidance system perceives relevant environmental stimuli, and then provides subtle hints and impulses which help to steer our behavior in ways that have proven advantageous in the past, when those particular stimuli have been present. According to the authors, this system is what the ancestors of modern humans relied on for survival before consciousness had evolved and what animals without consciousness use today (to varying degrees). This Unconscious Behavioral Guidance System, due to its evolutionary history, does not provide exact behavioral advice for specific situations. Instead, it provides general impulses based on the environmental information perceived by one’s senses.
This is because passing down information for each situation one’s offspring may encounter is not a pragmatic method of evolutionary aid. However, providing a system that can recognize one’s environmental surroundings, categorize that specific situation into a larger more general one, and provide an unconscious impulse for behavior that is most likely to achieve an advantageous outcome in that general situation is certainly evolutionarily valuable. For example, this Unconscious Behavioral Guidance System described by Bargh and Morsella (2010) would provide the same impulse to avoid dangerous-looking people regardless of whether one is in California or Florida.

_A Model of the Unconscious Behavioral Guidance System_

The present research was developed within the framework of a current model of the Unconscious Behavioral Guidance System. This model described by Bargh and Morsella (2010) contains two stages: step one “refers to automatic activation of distinct internal information processing systems,” while step two “refers to automatic influences of these activated systems on behavior” (2010, p. 92). In addition, there are four separate general systems that can become activated by perceived stimuli: the evaluative system, emotional system, motivational system, and perceptual system. While these systems are separate, they are often running simultaneously and in parallel to one another (due to our complex environment and mental abilities) and can compete with each another. This complexity results in each system contributing to the subsequent behavioral response.

The perceptual system in this model involves the perception of stimuli (events, people, or objects) resulting in the activation of stored information regarding that which was perceived. Much research has been done inquiring into the nature of this system and how it affects us during the imitation of others. For example, infants observe others, and
this observation activates knowledge regarding how they act now and have in the past. By doing so, infants then tend to behave in accordance with those around them, without any conscious intentions (Meltzoff, 2002; as cited in Bargh & Morsella, 2010).

Providing more evolutionary support, Wiltermuth and Heath (2009) reported that acting in harmony with a group can support unity and is often the safest course of action (one can think of a straggler following a herd that gets picked off by predators).

The evaluative system has presumably evolved to promote appropriate approach versus avoidance tendencies, based on preferences that have been advantageous in the past. This system becomes activated instantly following exposure to a prime, resulting in an evaluation of the prime as either good or bad. This activation is then carried over and influences the evaluation of a later stimulus. This is relevant to the present study because academically important evaluations, such as teacher evaluations, could be influenced by prior activation of either positive or negative constructs. According to Ferguson and Bargh (2003), “the observed automatic evaluation of an object represents an integration of multiple sources of affective information” (p. 169). That is, initial evaluations are not based on a sole affective representation that one uses to characterize the evaluated object. Instead, a wide variety of affective representations related to the stimulus or possibly similar stimuli, become active and influence a subsequent evaluation. In line with this theory, Allen, Sherman, and Klauer (2010) demonstrated that outgroup bias could be reduced with an evaluative priming procedure. By initially priming participants with a positive construct, it was found that this activated construct was carried over into the subsequent evaluation and resulted in less implicit bias (that is, the participants performed approach behaviors).
Research performed by Strick, van Baaren, Holland, and van Knippenberg (2009) explored the evaluative system, by requiring participants to view electronic magazines, wherein certain product advertisements were always viewed within the vicinity of a humorous cartoon sketch. In addition, other products were always viewed within the vicinity of non-humorous cartoon sketches. Afterwards, the participants consistently rated the product paired with the humorous advertisements more favorably than the one paired with non-humorous cartoon sketches. The results suggest that humorous sketches increased the approach tendency in the participants, leading to more favorable opinions of the associated product. It is the evaluative system that the current research was designed to explore.

The motivational system becomes activated when a goal representation is primed and results in a behavioral impulse to pursue such a goal (Bargh & Morsella, 2010). One can imagine being primed with the goal of earning a college education via attending a lecture on its importance. This could result in the activation of knowledge structures involving how one should accomplish such a goal. This activation then creates a behavioral suggestion for the individual, leading to behaviors consistent with earning a college degree. As mentioned by Bargh (2006), when the motivational system becomes activated, consistent primes are more influential and inconsistent primes are less effective. This preference is required in order to keep the individual focused on the goal, in a world full of conflicting primes. For example Allen, Sherman, and Klauer (2010) found that priming a positive construct could reduce implicit outgroup bias. However, it was also found that participants’ motivations were positively correlated with the magnitude of the priming effect.
The last system of the model created by Bargh and Morsella (2010) is the emotional system. When an emotion is primed, knowledge associated with that emotion can become activated. This activation feeds into the motivational system to create a goal, such as approach or avoidance behaviors. This contributes to the production of behaviors that will assist in that goal. For example, the sight of a tiger in the wild activates the sense of fear, and also the goal of avoidance. This activation helps persuade an individual to create physical bodily movements intended to help avoid such a predator. In addition, the sight of an overworked or stressed teacher may activate emotions related to being supportive of others and also goals that could help such a teacher. The activation of these emotions and goals could result in behaviors that are related to aiding the teacher, such as giving them positive reviews on a teacher evaluation form.

Mirror Neurons

The term “mirror neuron” is used to describe a system of neurons whose activity increases as a result of both the perception of a specific motor behavior and the actual production of that behavior by an individual (Gazzaniga, Ivry, & Mangun, 2009). Gazzaniga et al. also stated that these neurons are understood to be an essential link between behavior and perception, similar to the Unconscious Behavioral Guidance System proposed by Bargh and Morsella (2010). These neurons allow an egocentric brain to adequately understand the action of another, by understanding that behavior in terms of how the self would perform such an action. Since mirror neurons serve as a link between perception and behavior, the presence of these neurons corroborates the notion that we naturally and unconsciously analyze the behavioral actions of those around us. This would have been an incredible advantage for our ancestors who presumably lived
before the advent of consciousness, by providing them a method of behavioral comprehension. While the discovery of mirror neurons in the monkey brain was made in the 1990s (Gallese, Fadiga, Fogassi, & Rizzolatti, 1996; Rizzolatti, Fadiga, Gallese, & Fogassi, 1996), more recent studies have confirmed their existence in humans (Iacoboni et al., 1999; Molnar-Szakacs, Iacoboni, Koski, & Mazziotta, 2005). The accepted existence of mirror neurons has resulted in a variety of studies attempting to explore their physical properties and purposes (Keysers & Fadiga, 2008).

One such study was performed by Buccino and Riggio (2006); the researchers hypothesized that the mirror neurons’ traditional role of being primarily a system to increase the understanding of another’s actions was too simplistic and that this system had additional motor learning capabilities. Buccino and Riggio (2006), provided data suggesting that mirror neurons play a vital role in learning complex motor behaviors, through the perception of others performing such movements. This was done by having participants measured with an fMRI while both viewing an expert guitar player strum different chords and attempting to strum the chords themselves. The results showed that high levels of activity were recorded in areas containing mirror neurons, from the time of observation until the attempt to play such chords themselves.

Another study was recently performed by Kaplan and Iacoboni (2006), which expanded on our notion of mirror neurons by providing further evidence that the responses generated by mirror neurons are also dependent on the context of an action, compared to simply responding to the action. These researchers exposed participants to images of individuals using either a precision grip or a less precise grabbing gesture in a glass-drinking context. Using an fMRI, the researchers found increased blood
oxygenation level-dependent (BOLD) scores, which is an increased ratio of oxygenated to deoxygenated hemoglobin. These elevated scores were found when the participants saw precision gripping, compared to whole-hand grabbing. This is because the action of using a precision grip matched the expectations created by the drinking context. Therefore, mirror neurons (at least those measured in the right inferior frontal mirror neuron area) respond to both the action observed and the context in which it is involved. The researchers also had participants complete the Empathic Concern subscale of the Interpersonal Reactivity Index (IRI; Davis, 1983) and found that mirror neuron activity was significantly correlated with higher scores on this subscale. These data suggests that one’s ability to perceive the emotions of others is positively correlated with mirror neuron activation in the right inferior frontal mirror neuron area.

As previously mentioned, the initial discovery of mirror neurons characterized their nature as neurons whose activity increases by both the observation of a goal-directed motor movement (e.g. reaching for a specific tool) and the creation of such a similar movement. However, more recent research performed by Montgomery, Isenberg and Haxby (2007) demonstrated that social cues created by motor movements also create equal activation of mirror neurons. The researchers focused their attention on brain regions assumed to be involved in the mirror neuron system, specifically the inferior parietal lobule (IPL) and frontal operculum. By having participants view and perform both goal-oriented hand movements and communicative hand gestures, the researchers measured the extent to which mirror neurons were activated in all conditions. The results suggested that mirror neurons in the analyzed brain regions respond similarly to both goal-oriented movements and communicative hand gestures. With the publication of
such data, the researchers helped link mirror neurons with social competence and understanding, in a similar fashion to Kaplan and Iacoboni (2006).

In summary, mirror neurons function as a link between perception and behavior without conscious awareness. Similarly, the Unconscious Behavioral Guidance System (Bargh & Morsella, 2010) utilizes perception to promote appropriate behavior. Perhaps mirror neurons are involved with the function of the Unconscious Behavioral Guidance System, which can be studied by measuring priming effects. It is therefore possible that researching the nature of mirror neurons may provide insight regarding the nature and limits of both the Unconscious Behavioral Guidance System and priming effects.

_Free Will?_

With such a competent system as the unconscious existing outside of our awareness, the question arises: who is in control? Are we able to consciously act out our desires, or are these behaviors already chosen by our unconscious, resulting in our consciousness simply claiming them as its own after the behaviors are already set in motion? Stated differently, is there such a thing as free will or are we slaves to our unconscious?

Questions regarding free will and determinism might not be falsifiable, and therefore out of the realm of scientific enquiry. However, for insight into this dilemma, we should consider the evidence provided by Libet’s (1986) study regarding the time of intention. Participants could press a button anytime they wanted and were asked to indicate exactly when they had chosen to act, while researchers recorded their brain activity in areas correlated with the initiation of action. It was found that action potentials in these brain regions began to signal that a behavior had been chosen before
the participant’s conscious decision to do so. These results can be interpreted as being consistent with the theory of the Unconscious Behavioral Guidance System providing behavioral advice before conscious awareness. However, the question remains: could the consciousness override these subtle behavioral influences, or would the override merely be the result of stronger conflicting influences from the unconscious?

While conclusions to these and related questions are far from certain, Banks and Isham (2009) provided data indicating that, by delaying the auditory acknowledgment of participants’ actions (by slowing down a beep indicating the start of action), participants could be tricked into believing that they had responded later than they actually had. The results suggested that responses to situations are not conscious, but when one perceives his/her action taking place it is considered as a product of the conscious.

As mentioned in Bargh (2006), certain behavioral patterns can arise which affect the kind of primes to which one is sensitive. Bargh cited Bruner’s (1957) article, where it was described that one’s goals for the present, if continued for an extended period of time, can expand into persisting evolved motives. These evolved motives then exert an influence on the selective attention of the individual, and as Bargh (2006) states, it is suspected that this selective attention would increase the influence of primes that are consistent with one’s selective attention. If this notion holds, the selective attention should also decrease the influence of primes that are inconsistent with one’s selective attention, creating the possibility for a cycle of repeated behaviors.

As previously reported in Bargh (2006), when different primes are in conflict, motivations tend to overrule the effects of primes that are inconsistent with one’s motivated goal. Also, goals reaching further into the future (evolved motives) exert a
powerful influence on our perception and behavior. Therefore, if motivation is under our control, it is reasonable to assume that we can have some control over our behavior and mental process. Studies supporting this notion have been performed by Fiedler, Bluemke and Unkelbach (2009), where it was shown that with explicit instructions or strategic learning, participants could exert self-control on a variety of processes assumed to be automatic. In this case, participants could express varying degrees of self-control after evaluative priming, evaluative conditioning, and the Implicit Association Test (Fiedler & Bluemke, 2005). This corroborates Allen, Sherman, and Klauer’s (2010) findings that individuals who were highly motivated were more apt to reduce their implicit bias towards outgroup members. Thus, it may be the case that we can exert a certain amount of control on our general motivational goals or evolved motives, but the specific behaviors that contribute to the pursuit of such goals are more heavily influenced by the Unconscious Behavioral Guidance System.

Imagine the following example of addiction as a real-life illustration, demonstrating the complexity of free will versus unconscious control of behavior. An individual begins exploring with a non-physically addictive substance, and the initial goals of obtaining, using, and storing the substance continues on to become evolved motivations (similar to those described by Bruner, 1957). This evolved motivation to obtain and use the specific substance should increase the selective attention one has towards ends which could achieve that goal. If this evolved motivation focused one’s selective attention, the individual could become more sensitive to primes related to the substance and less sensitive to primes not related to the substance (as indicated by Bargh, 2006). In turn, the Unconscious Behavioral Guidance System would be providing
behavioral impulses to obtain, use, and store the substance, based on the influence of these extra-sensitive substance-related primes. In the course of obtaining, using, and storing the substance the individual would be exposed to more substance related primes to which the individual is sensitive, causing more subtle behavioral impulses. This results in a vicious cycle of behaviors that mirror psychological addictions (while one should not discount other influencing factors). Also, if the individual acquires and uses the drug with the same individuals repeatedly, unity would be created. That unity is similar to the group harmony reported by Wiltermuth and Heath (2009), who illustrated strengthened unity among those who performed similar ritualistic behaviors.

This real-life example illustrates how the debate regarding free will vs. determinism can be framed within scientifically supported theories. While this example does not provide any definite answers, it does suggest that researchers are systematically breaking down the debate into testable parts. Future research in this area is needed to determine if breaking down this dilemma in this way is appropriate, or if other methods are needed.

However, there are other established relationships between the perception of external stimuli and addictive behavior (which is presumed to be out of one’s control) which could be considered a function of the Unconscious Behavioral Guidance System (Bargh & Morsella, 2010). Research in neuroscience highlights the extent to which subtle environmental stimuli can result in a behavioral impulse, even when one consciously attempts to avoid such behaviors. For example, Di Ciano and Everitt (2003) noted that cocaine use increases the production of dopamine in the ventral tegmental area. These researchers go on to state that subtle contextual cues related to cocaine use provide
a small increase in dopamine production in this area, and that this small increase is
associated with drug-seeking behavior. The possibility exists that this small increase of
dopamine, which occurs with the perception of drug related stimuli, could be the result of
the Unconscious Behavioral Guidance System. However, the question regarding whether
or not this small increase causes drug-seeking behavior, regardless of the decisions
consciously made by the individual, is still unclear.

As researchers discover increasing functions and limits of the unconscious,
previous conceptions regarding the function and limits of the conscious are beginning to
be questioned. Considering the influence of the unconscious on behavior that is
intuitively presumed to be consciously controlled, researchers need to question the extent
to which we can consciously control both overt and subtle behavior. Specifically, can we
consciously overrule the influences of the unconscious, both in general and in specific
circumstances? Also, are “voluntary” or “conscious” behaviors merely perceived as such,
after being chosen by the unconscious? Exploring the limits of priming is an appropriate
method to illuminate the ability and role of the unconscious. As such, priming studies
(specifically ones that research the ability to consciously resist unconscious impulses) can
serve as a viable tool in an attempt to understand the nature and limitations of our “free
will.”

Variability

As previously mentioned, this notion of the Unconscious Behavioral Guidance
System providing subtle behavioral inclinations fits well into an evolutionary framework.
However, it should be noted that evolution requires variability within species (Mayr,
1991). Therefore, certain individuals may benefit more from this system than others.
This could happen in a variety of ways; it might be the case that all or certain unconscious behavioral impulses are stronger for some, due to genetics or the contextual information involved. It also might be the case that throughout a lifespan, one’s Unconscious Behavioral Guidance System could learn to increase or decrease the strength of all or certain impulses for optimal utility, perhaps depending on the context or culture of the individual. The previous examples describe possible individual differences in the strength of one’s unconscious behavioral impulses. However, it also may be the case that some individuals are more sensitive to all or certain behavioral impulses, compared to others.

This alternative view creates a second possible circumstance allowing for varying personalities to potentially be more “primable” than others. The same ideas mentioned above could be applied to the degree to which one’s UBGS is sensitive to environmental stimuli. Genetics could cause individual differences in sensitivity to all stimuli, particular sets of stimuli, or specific contexts. Or perhaps one’s personal history (including culture) helps to regulate one’s sensitivity for maximum evolutionary advantage.

It may also be possible for certain individuals to lack strong impulses and higher degrees of sensitivity compared to the general population, but still make adequate use of their unconscious. Instead of getting stronger impulses or being extra sensitive, some individuals may instead be highly sensitive to the various contexts or stimuli that cause the unconscious to initially activate related knowledge structures. It has been argued that certain cultures can be more highly attuned to different contexts (Nisbett, 2003); therefore culture is likely to play a significant role in determining what contexts initiate the Unconscious Behavioral Guidance System. It might be the case that all the
aforementioned possibilities contribute to the Unconscious Behavioral Guidance System to varying degrees. In fact, an individual’s collection of these possibilities and the degree of their various influences may be a contributing factor that creates one’s personality and individuality.

**Personality**

As previously mentioned, the degree to which the unconscious perceives stimuli not experienced by the consciousness, and the tendency and/or strength of its subsequent behavioral impulses may be a contributing factor towards the development of our individual differences, that is, our personality. This is a novel perspective on personality, which is intriguing considering the number of personality theories in the psychological literature. Early researchers like Sigmund Freud used case studies to create theories that were to be applied to the general population. Here the emphasis was on the unconscious processes that create the framework for personality based on early experiences. While his theories of personality are famous in the psychological literature, modern approaches to the study of personality have yielded more scientific support.

Researchers currently approach personality differently depending on their various perspectives (Derlega, Winstead, & Jones, 2005). The psychodynamic perspective has adopted Freud’s interest in unconscious processes and early childhood experiences. However, psychodynamic psychologists have studied how these factors contribute to personality with more scientific rigor than Freud’s case studies. Cognitive psychologists, such as Bandura (1961) have focused on the manner in which one processes knowledge, perspectives, thoughts about oneself and one’s environment. Equally important from this perspective is how views about the self and the surrounding environment become
integrated. The behavioral perspective has been concerned with how one develops a personality through learning. Biological researchers have focused on the physical nature of the central nervous system, highlighting the importance of genetic predisposition as it relates to personality. Lastly, the humanistic perspectives (e.g., Maslow, 1943) view personality as a series of naturally developing steps toward personal psychological growth.

Today, many psychologists take an eclectic perspective, acknowledging the strengths and weaknesses of all perspectives and realizing that a strong scientific theory of personality will fit well within the best aspects of all perspectives. A sufficient definition of personality can be stated as “the system of enduring, inner characteristics of individuals that contributes to consistency in their thoughts, feelings, and behavior” (Derlega et al., 2005, p. 3). This can be conceptualized as a mental system which is relatively stable after adolescence (McCrae & Costa, 2003), and is individually designed to influence how humans perceive themselves, the world, and provides behavioral cues based on the individual’s experiences and genetics.

Due to personality contributing to behavioral actions via enduring internal characteristics, the possibility exists that those measuring “personality” could be measuring parts of the Unconscious Behavioral Guidance System which could be thought of as part of one’s personality or a contributing factor to it. That is, if a factor of personality is how individuals tend to behave in certain circumstances and the Unconscious Behavioral Guidance System consistently provides subtle behavioral hints, leading to tendencies, then perhaps personality is influenced or a result of the variability of such a system between individuals. Such variability in the system, possibly due to
experience or genetics, could result in individuals receiving stronger behavioral impulses than others, or individuals being more sensitive to such impulses.

The possibility that personality is at least influenced by the Unconscious Behavioral Guidance System holds an eclectic view of personality, combining aspects of many psychological approaches. Similar to the psychodynamic perspective, this hypothesis shares an appreciation for how unconscious processes influence personality, and therefore behavior. This hypothesis is also the product of a behavioral perspective, because it acknowledges the possibility that this unconscious system can learn what behaviors are adaptive from previous experiences. The notion of the Unconscious Behavioral Guidance System influencing personality also shares a common emphasis with the cognitive perspective. Cognitive psychology focuses on “how people process information about themselves and their worlds” and allows for such cognitive processes to be the main “determinant of behavior” (Derlega, et al., 2005, p. 20). The Unconscious Behavioral Guidance System could be the mechanism enabling such cognitive processes to occur. The notion of personality being affected by this unconscious system is supported by the manner in which it stems from previously established perspectives in psychology.

Trait Theory and the Five-Factor Model

Many personality psychologists focus on how individuals differ from one another, by means of their different personality traits. According to Derlega, et al. (2005), this precise definition of personality traits contains within it the following four specific notions of personality traits that should be addressed.
First, these traits should not be considered an all or nothing phenomena. Instead the nature of a specific personality trait should be regarded as existing on a continuum, with high levels on one end and low levels on the other. As with most variables, Derlega, et al. (2005) propose that the majority of the population will be scored as average on different personality traits, forming the traditional bell-shaped curve. These multiple continuums (created by multiple traits) and the varying degrees to which traits are expressed, are contributing factors to the complexity of an individual’s personality, according to trait theory.

The second principle proposed by Derlega, et al., (2005) as being contained in McCrae and Costa’s (2003) definition of personality traits is that traits create mental and behavioral tendencies, as opposed to strict behavioral regulations that the individual is guaranteed to follow. This is because the context of a situation and behavioral cues provided by others exert powerful behavioral suggestions (Bargh & Williams, 2006) that may overrule the tendency to behave in a particular manner. For example, an extrovert under normal circumstances may be inclined to go out and socialize, but immediately after the tragic events of 9/11, this tendency may be overruled by the solemn context.

The third characteristic embedded in this definition is that traits are identified by behavioral and mental patterns. That is, traits have minimal fluctuation, and are therefore relatively consistent into adulthood (McCrae & Costa, 2003). This does not mean that one cannot grow as a person or learn from previous mistakes, but that one will continue to behave, feel, and perceive the world and self in a relatively stable manner.

Lastly, Derlega, et al., (2005) mentioned that McCrae and Costa’s (2003) definition of personality traits entails that traits are “expressed pervasively, in thoughts,
feelings, and actions. In this respect, traits are to be distinguished from habits like chewing gum” (p. 194). The researchers mention that chewing gum, as with many habits, does not require the same cognitive attention as acting out a trait because chewing gum requires minimal cognition to be acquired and performed as a behavioral tendency.

The well known Five-Factor Model of personality (Costa & McCrae, 1989) is a trait theory which postulates that human personality can be assessed by the measurement of five core personality domains or traits. The five domains that this model proposes as comprising personality are Neuroticism, Extroversion, Openness to Experience, Agreeableness, and Conscientiousness. The researchers who are given primary credit for the Five-Factor Model are Paul Costa and Robert McCrae. They found that all the different aspects personality can fit into five larger domains of personality with smaller subdivisions (or facets) comprising each domain (McCrae & Costa, 2008).

According to McCrae and Costa (1999), one’s biology contributes to the five core personality domains, but those five domains are influenced by characteristic adaptations (such as attitudes and culture) in the process of experience or behavior. Thus, this model takes into account both nature and nurture in its conception of personality. While seemingly simplistic, this model has become widely popular in personality research. This is partially because the model is well organized with five major domains and multiple facets contributing to each domain. Although more research is needed, Mendelsohn (1993) concluded that this model provides a significant expansion of our understanding of intrapsychic processes that, when grouped together, are referred to as the concept of personality.
Like all the domains in this model, Neuroticism can be best understood as a collection of traits existing within a continuum. According to Pervin (1989), Neuroticism refers to an aspect of personality involving constancy and low anxiety at one side of the continuum and inconsistency and high anxiety on the other. One can conceptualize this trait as the degree to which an individual tends to become moody or emotionally unstable. The following information on the domains of the Five-Factor Model was obtained from Costa and McCrae (1992).

The next domain is Extroversion, or the propensity to express one’s personality to others. Individuals scoring high on this factor are apt to be sociable and gregarious. They also tend to be lively, active, and assertive. These people receive personal gratification and a renewal of energy when engaging socially with others. This factor is associated with positive emotions and perspectives on life. On the other side of the continuum is introversion, which is a personality characteristic of individuals who do not desire large amounts of social interaction, and whose outlook on life is less optimistic.

Another personality factor described by the Five-Factor Model is Openness to Experience. An individual who scores high on this construct is thought to be capable of exercising a creative and insightful imagination. This factor describes individuals who are attentive to their inner emotions and are intellectually inquisitive. These individuals wish to explore the world, while perceiving themselves as able to understand its nature and appreciate its worth. In doing so, these individuals separate themselves from people who have only a narrow set of practical interests.

People who are honest, well-intentioned, and earnest typically score high on measures of Agreeableness. In this sense, the term “Agreeableness” does not necessarily
refer to the inclination to agree with another individual, because people who score high on this measure are capable of being forthright with an opposing position (although individuals can be passive at the extreme end of the continuum). Instead it means that people who score high on this measure are often trusting of others and sympathetic to their situations.

The last factor of this model is Conscientiousness. This trait describes individuals who, through the use of their higher mental functions, attempt to achieve their goals in the most efficient way possible. They are excellent at carefully planning and meticulously sorting out all the variables that need to be accounted for. Conscientious people are clean and organized, and they value the attainment of new abilities and expertise. One can rely on these individuals because they are self-motivated, trustworthy, and dependable.

The Five-Factor model is a helpful method in determining an individual’s character. However, in many contexts (such as recreational, personal, or occupational) requiring individuals to complete lengthy personality inventories is simply not practical. Therefore, shorter inventories with scientific validity are needed to measure one’s personality traits.
Teacher Evaluations

While the focus of this study was on the influence of personality factors on priming effect, teacher evaluation forms (TEF) were used as the dependent variable in order to both measure priming effect and provide information regarding factors that influence these measures. Thus, real-life applications from the data were potentially greater compared to those of studies using word fragment completion tasks or word recognition tasks.

Teacher evaluations provide universities with information regarding the perceptions students hold of their professors (Youmans & Jee, 2007). At the end of a semester, students often complete a questionnaire that asks specific questions regarding their professor’s teaching performance, as it pertains to achievement of curriculum goals, communication skills, course knowledge, preparation, etc. Significant importance is given to these evaluations, and many decisions that can affect the university and individual professors are based on students’ responses (Laws, Apperson, Buchert, & Bregman, 2010). For example, tenure status, decisions concerning salary, and departmental decisions on how to improve the quality of instructors may be influenced by these measures of student perception. However, research examining responses on teacher evaluation forms suggest that, although teacher evaluation forms’ validity appears to be superior to other methods (Cashin, 1995), responses can be biased by subtle behaviors by the professor (Youmans & Jee, 2007). This observation is relevant to this study because these subtle behaviors could possibly serve as a priming procedure. This would be the case if such actions produce a mental process of which students are unaware. If priming occurs, students’ responses could be influenced, affecting the professor’s tenure, salary,
or the overall quality of the university. It is therefore necessary to understand how and under what conditions student responses can become biased, in order to properly analyze the reliability of these measures.

Youmans and Jee (2007), examined the effects of providing students with chocolate immediately before they completed the teacher evaluation forms. It was found that students who received chocolate scored the professor significantly more favorably than students who received no chocolate. While the professor’s intentions for distributing chocolate may have been obvious to some students, the effects the process had on their mental evaluations of the professor may have been unnoticed. This could be thought of as an evaluative priming procedure, with the positive evaluation of being given chocolate carrying over and positively influencing the students’ subsequent evaluations of the professor.

Other articles have been published regarding how a professor’s use of humor can affect teacher evaluations. Bryant, Comisky, Crane, and Zillmann (1980) reported data which suggested that the use of humor by male professors was positively correlated with more favorable evaluations, especially in the “appeal” category. However, the researchers also found that females’ use of humor was only positively correlated with more favorable evaluations if the humor was hostile in nature. Thus, the use of non-hostile humor for male professors was positively correlated with higher evaluations, while the same humor was negatively correlated with more favorable scores for female teachers.

However, the results of more recent studies (Laws, Apperson, Buchert, & Bregman, 2010) suggest that while professors may be able to influence responses on
teacher evaluation forms by performing specific behaviors on the day of evaluation, students have previously formed a relatively stable evaluation of the professor. These researchers had one group of students complete the teacher evaluation form after the first day of class, another complete the same form after the first week of class, and all students complete the same form (for possibly a second time) at the end of the semester. The results implied that lasting impressions are produced during the first day of class. Considering Laws, Apperson, Buchert, and Bregman’s (2010) research, it is evident that professors’ behaviors on the day of evaluation and on the first day of class can significantly influence students’ responses on teacher evaluation forms.

More research demonstrating the importance of the initial days of a semester, as they pertain to teacher evaluations, was performed by Hermann, Foster, and Hardin (2010). These researchers compared teacher evaluations and course evaluations completed by students in two groups. The first group of students started the semester with a student-teacher discussion regarding class standards, in order to establish both comprehensible expectations and an encouraging environment. The second group of students started the semester in a more traditional manner. At the end of the semester, students who received the student-teacher discussion demonstrated more favorable evaluations of their professor and the class than did the students who did not participate in such a discussion. The importance of the initial days of a semester is highlighted by the research performed by Hermann, Foster and Hardin (2010) and Laws, Apperson, Buchert and Bregman (2010). Together, these studies demonstrate that teacher evaluation forms are often not an adequate measure of a teacher’s performance throughout a
semester. Instead, they illustrate the importance of a certain critical time frame, the
initial days of a semester, for students to form heavily influential impressions.

Recently, Chen and Watkins (2010) demonstrated that another variable was a
significant predictor of how students evaluated their professors. This variable was
teaching style and it was divided into seven different possibilities: judicial, liberal,
executive, legislative, global, conservative, and local. It was found that both conservative
and executive teaching styles were negatively correlated with student evaluation scores,
while no other teaching styles were significantly correlated. In addition, both the age
and gender of the professor moderately affected the relationship between student
evaluation and teaching style. While this experiment was performed in China, the effects
of teaching style on teacher evaluations in our own culture should not be discredited.

McNatt (2010) used a longitudinal experiment to determine the effect of a
teacher’s poor reputation on his/her teacher evaluations. For this experiment, two
sections of the same course were selected for an experimental group and a control. The
experimental group was exposed to misinformation about their professor that was
negative in nature, while the control group received no misinformation. Thus, the
experimental group’s professor acquired a negative reputation, despite the professor’s
high-quality performance. This negative reputation lasted throughout the semester and
resulted in less favorable teacher evaluations for the experimental group compared to the
control.

In general, it appears that the subtle and overt behaviors of a professor can
positively or negatively influence responses on teacher evaluation forms. In addition, the
timing of such behaviors appears to have a significant influence on students’ responses,
as well as the behaviors of others (such as starting a negative rumor about the professor). The behaviors of a professor can also serve as an evaluative priming procedure, if students are unaware of the mental processes these behaviors incite. Therefore, it is vital that university officials are cognizant that these evaluations are dependent upon many factors and do not necessarily represent a factual account of a professor’s quality. In addition, further research is needed to examine what other factors can influence responses on these evaluation forms, in order to enhance the utility of such measures.
CHAPTER 3
METHODS

Participants

The sample consisted of 120 participants, of which 77 (64.20 %) identified as female and 43 (35.80 %) identified as male. The mean age was 21.23 years (SD = 5.14). 97 participants (80.80%) identified as Caucasian, 12 participants (10.00 %) identified as African-American, seven participants (5.80 %) identified as Hispanic, three participants (2.50 %) identified as Asian, and one participant (0.80 %) identified as other. Within the sample, 108 participants were undergraduate students from a mid-sized university in the mid-west, who participated for extra credit or fulfillment of a course requirement. These individuals signed up for the study via Sona Systems (a computer-based scheduling system). The remaining 12 participants were non-students who volunteered for the study during a social event off campus, and a special addendum was granted from the IRB to allow for this accommodation. All participants were randomly assigned to one of the six groups.

Materials

NEO-FFI-3

Participants completed the NEO-FFI-3 (McCrae & Costa, 2010), which is a short form of the NEO-PI-3 (McCrae & Costa, 2010). The NEO-PI-3 is an updated form of the NEO-PI-R (Costa & McCrae, 1992), and the NEO-FFI-3 is an updated form of the NEO-FFI (Costa & McCrae, 1992). Until these new forms were published, the NEO-PI-R was concluded by many researchers to be the most appropriate instrument in order to obtain a
general understanding of one’s personality in terms of trait theory (Paunonen, Jackson, Trzebinski, & Forsterling, 1992). This conclusion is supported by Costa and McCrae’s (1992) report that the NEO-PI-R has sufficient evidence for the internal consistency of its five personality domains; Neuroticism: .92; Extroversion: .89; Openness to Experience: .87; Agreeableness: .89; Conscientiousness: .90; and the facet scales range from .56-.81. It was also reported that while the validity for the larger domains is higher, the validity of the facets (individual components of personality that contribute to domains) should not be discredited (Costa & McCrae, 1995).

The NEO-FFI-3 was chosen for the present study for three reasons: the “NEO-FFI-3 scales explain about 90% as much variance as do the NEO-PI-3 domain scales” (McCrae & Costa, 2007, p. 119), it has been demonstrated that the NEO-FFI is sufficient for most applications (McCrae & Costa, 2004, p. 592), and because the NEO-FFI-3 demonstrates “slightly better psychometric properties” than the NEO-FFI (McCrae & Costa, 2007, p. 124). For example, factor scale correlation values for the NEO-FFI-3 are all equal to or greater than .94 for adults and adolescents (McCrae & Costa, 2010). While participants were administered the whole NEO-FFI-3, only the domains Openness to Experience and Neuroticism were subject to data analysis. This is because the researcher assumed that these two domains were the most likely to generate significant results.

Scrambled Sentence Test

The researcher also utilized three different scrambled sentence tasks (SST’s) designed for this experiment. The first two SST’s were created to prime participants with either the concept of being accepting of others, or of being rejecting. The third SST was designed to serve as a control and lacked any priming words. The three SST’s each
required the participants to create 40 four-word sentences, using the five scrambled words provided for each sentence (see Appendix A, B, & C). Twenty of the 40 sentences involve a prime word that differs according to the group. The Accepting group’s SST included the prime words: “accepting,” “accommodating,” “politely,” “social,” “thankful,” “welcome,” “generous,” “pleased,” “compliments,” “peaceful,” “delighted,” “appropriate,” “courteous,” “pleasant,” “sympathy” “praised,” “civily,” “understanding,” “helpful,” and “admire.” The Rejecting group’s SST involves the prime words: “rejecting,” “uncooperative,” “rudely,” “loner,” “unappreciative,” “denied,” “stingy,” “annoyed,” “insults,” “hostile,” “undignified,” “bothered,” “vulgar,” “discourteous,” “indifference,” “scowled,” “impolitely,” “apathy,” “useless,” and “criticize.”

**Video**

Participants viewed a video lecture found on Youtube, titled “The Virtual University: Marcus Aurelius Part 1”. This is a video of a university professor giving a lecture on Socratic philosophy (Aurelius, 2010). The video lasts nine minutes and fifty-five seconds, however participants were only required to watch the first five minutes. In addition, participants began viewing the video after the initial thirteen seconds. This was because the first thirteen seconds contained video credits that appeared scholarly and pedantic in nature and could possibly have influenced participants’ perception of the professor. The material discussed in this video did not contain any inappropriate language and was considered suitable for all participants involved.

**Teacher Evaluation Form**

In addition, participants completed a teacher evaluation form (TEF) reflecting their perception of the professor portrayed in the video (see Appendix E). All nine
questions from the TEF were taken from Youmans and Jee’s (2007) TEF, in order to keep this study in line with the current scientific literature. While Youmans and Jee’s (2007) TEF required participants to answer each question from 1-5 (indicating their level of agreement with each statement), the present study required participants to answer each question from 1-100. Researchers hoped that increasing the size of the scale would provide more variability, and help to remove the possibility of ceiling effect that was encountered during a pilot study. No questions in this TEF were analyzed individually. Instead, researchers scored each participant’s TEF by summing responses for all questions, for a total TEF score out of 900.

Procedure

This experiment utilized a 2 (Pre-Primed or Post-Primed) x 3 (Control group, Accepting group, or Rejecting group) between subjects factorial design. Total scores on the TEF served as the dependent variable.

Upon entering the laboratory, participants were randomly assigned to one of six groups: the Pre-Primed Control group, the Post-Primed Control group, the Pre-Primed Accepting group, the Post-Primed Accepting group, the Pre-Primed Rejecting group, and the Post-Primed Rejecting group. For this study, “Pre-Primed” refers to a group who was primed before watching the video, and “Post-Primed” refers to a group who was primed after watching the video. In addition, both Control groups completed the same SST (SSTC), both Accepting groups completed the same SST (SSTA), and both Rejecting groups completed the same SST (SSTR).

Like all groups, the Pre-Primed Control group began by completing the NEO-FFI-3 (McCrae & Costa, 2010). Afterwards, participants were told that they would complete
a “standard measurement of creativity, called a scrambled sentence task.” Participants in the Pre-Primed Control group then completed the SSTC. Next, participants were told that researchers “are interested in studying how individuals perceive the quality of a professor after viewing a short video-lecture of that professor.” Participants then viewed the lecture, which ran for five minutes. Afterwards participants completed a TEF and were debriefed about the true nature of the experiment.

The Pre-Primed Accepting group underwent the same procedure as the Pre-Primed Control group. However, participants in the Pre-Primed Accepting group completed the SSTA, designed to prime individuals with the construct of being accepting of others. The Pre-Primed Rejecting group’s procedure was the same as the Pre-Primed Accepting group’s procedure except that these participants completed the SSTR, which is designed to prime participants with the construct of being more rejecting of others. For clarity regarding the procedure, see Table 1.

Table 1

<table>
<thead>
<tr>
<th>Time of Priming Procedure and SST Used for Each Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Participants complete the SSTC before viewing the video</td>
</tr>
<tr>
<td>Accepting</td>
</tr>
<tr>
<td>Rejecting</td>
</tr>
</tbody>
</table>

Note. SSTC = scrambled sentence task for Control groups; SSTA = scrambled sentence task for Accepting groups. SSTR = scrambled sentence task for Rejecting groups.
Afterwards, the researcher examined the data to see if a priming effect occurred, if completing the SST before or after viewing the video made a significant difference on TEF scores, and whether or not certain personality characteristics (as measured by the Neo-FFI-3) were related to the priming effect of each group.

Pilot Study

The validity of the three SST’s were analyzed via a pilot study, and the SST’s yielded significant differences. The responses on the TEF’s were significantly different between the Pre-Primed Control group and the Pre-Primed Accepting group ($p = .015$), as well as the Pre-Primed Control and the Pre-Primed Rejecting group ($p = .001$). In addition, the differences between the Post-Primed Control group and both the Post-Primed Accepting and Post-Primed Rejecting group were near significance. The researcher suspected that a ceiling effect limited the size of the difference between these groups, and two changes were made to accommodate this possibility. The teacher evaluation form used in the pilot study (Appendix D) as the dependent variable, contained four questions worth five points each (for a total of twenty points). The current study utilized a TEF used by Youmans and Jee (2007), which contains nine questions that participants answered on a scale from 1-100 (for a total of 900 points). In addition, the professor from the original video (UCLA Courses, 2010) was deemed too engaging and entertaining for this experiment. Therefore, a video of a less engaging professor was chosen (Aurelius, 2010). Both of these changes were implemented in order to mollify the apparent ceiling effect, in order to produce more informative data. Lastly, the current study required participants to view the video for five minutes, compared to the ten
minutes required for the pilot study. This change was implemented in order to keep participants’ attention level high throughout the experiment.
CHAPTER 4
RESULTS

To test the hypothesis that there would be a main effect of priming condition, a 2 (Pre-Primed vs. Post-Primed) x 3 (Accepting group, Rejecting group, and Control group) between subjects factorial ANOVA was performed; the analysis revealed that there was a significant effect of priming condition on the TEF score provided by the participant, $F(2,114) = 48.61, p < .001$, with a corresponding partial eta squared of .46. The Bonferroni correction for multiple comparisons was applied with an alpha level of .017 per test (.05/3). The Bonferroni post hoc test revealed a significant difference between the Control group and the Accepting group, $p < .001$; significance was also found between the Control group and the Rejecting group, $p < .001$ and between the Accepting group and the Rejecting group, $p < .001$. Thus, the Accepting group had an average TEF score significantly higher than the average Control group, and the Rejecting group had an average TEF score significantly lower than the average Control group (Table 2). In addition, there was no significant difference in TEF scores between the Pre-Primed condition and the Post-Primed condition, $F(1,114) = .40, p > .05$. Also, there was no significant interaction between priming condition and time of prime, $F(2,114) = .09, p > .05$.

Table 2

*Descriptive Statistics for TEF Scores for all Conditions*

<table>
<thead>
<tr>
<th></th>
<th>Pre-Primed $M$ (SD)</th>
<th>Post-Primed $M$ (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>451.55 (100.16)</td>
<td>450.40 (108.58)</td>
</tr>
<tr>
<td>Accepting</td>
<td>595.10 (103.79)</td>
<td>572.40 (120.26)</td>
</tr>
<tr>
<td>Rejecting</td>
<td>329.60 (116.23)</td>
<td>312.25 (157.17)</td>
</tr>
</tbody>
</table>

*Note.* n = 20 per condition.
A two-way ANCOVA measured the extent to which scores on Openness to Experience (as measured by the NEO-FFI-3) was predictive of TEF scores in all groups. The two-way ANCOVA revealed no significant effect for the covariate Openness to Experience, $F(1,113) = 3.03, p > .05$. However, the ANCOVA revealed a significant effect of priming condition on the TEF score provided by the participant, $F(2,113) = 49.79, p < .001$, with a corresponding partial eta squared of .47. The Bonferroni correction for multiple comparisons was applied with an alpha level of .017 per test (.05/3). The Bonferroni post hoc test revealed a significant difference between the Control and the Accepting group, $p < .001$, significance was also found between the Control and the Rejecting group, $p < .001$ and between the Accepting group and the Rejecting group, $p < .001$. In addition, there was no significant difference in TEF scores between the Pre-Primed condition and the Post-Primed condition, $F(1,113) = .74, p > .05$. Also, there was no significant difference for the interaction between priming condition and time of prime, $F(2,113) = .06, p > .05$.

Due to the similarity in average TEF scores between the Pre-Primed Control and the Post-Primed Control group (i.e., $M = 451.55, SD = 100.16 \& M = 450.40, SD = 108.58$ respectively), the average of these two scores was used as the overall control baseline. Also, the extent to which each individual’s TEF score in a priming condition differed from this overall control baseline represented that participant’s priming effect. To examine the relationship between Openness to Experience and priming effect, a Pearson’s $r$ was computed for each of the four experimental groups (Pre-Primed Accepting, Post-Primed Accepting, Pre-Primed Rejecting, and Post-Primed Rejecting). The Pearson’s $r$ between priming effect and Openness to Experience for the Post-Primed
Rejecting group resulted in a significant negative correlation, $r = -.75, p < .001$. The Pearson’s $r$ between priming effect and Openness to Experience for the Pre-Primed Rejecting group resulted in a non-significant correlation, $r = .23, p > .05$. The Pearson’s $r$ between priming effect and Openness to Experience for the Pre-Primed Accepting group resulted in a non-significant correlation, $r = -.36, p > .05$. The Pearson’s $r$ between priming effect and Openness to Experience for the Post-Primed Accepting group resulted in a non-significant correlation, $r = -.08, p > .05$.

It was hypothesized that individuals in the Pre-Primed Rejecting group who scored high on Neuroticism would rate the professor more poorly (as measured by TEF scores) than individuals in the same group who did not score high in this domain. A Pearson’s $r$ indicated a significant positive correlation between TEF scores and Neuroticism within the Pre-Primed Rejecting group, $r = .49, p < .05$, inconsistent with the hypothesis (which anticipated a significant negative correlation between priming effect and neuroticism). It was also hypothesized that individuals in the Post-Primed Rejecting group who scored high on Neuroticism would rate the professor more poorly (as measured by TEF scores) than individuals in the same group who did not score high in this domain. The Pearson’s $r$ revealed a non-significant negative correlation between TEF scores and Neuroticism within the Post-Primed Rejecting group, $r = -.07, p > .05$.

In order to determine if there was a significant difference in personality scores between the current sample and the NEO-FFI-3’s population sample, two one-sample $t$ tests were conducted. The first one-sample $t$ test revealed no significant difference between the average Neuroticism score of the current sample and the average Neuroticism score of the NEO-FFI-3’s normative sample, $t (119) = .16, p > .05$. 
However, the second one-sample *t* test did reveal a significant difference in the average Openness to Experience score between the current sample and the NEO-FFI-3’s normative sample, *t* (119) = 6.56, *p* < .001. Specifically, the current sample had significantly higher scores on Openness to Experience.
CHAPTER 5
DISCUSSION

In order to perform meaningful statistics regarding the relationships of personality variables to the priming effect, the two SST’s used to prime participants had to demonstrate significant priming effects. Fortunately, such priming effects were produced and subsequent analysis was possible. The significant priming effect generated by participants in both the Accepting and Rejecting group was assumed to be a result of the alterations made after the pilot study. These changes allowed for more variance in TEF scores and possibly increased participant attention as well.

It was assumed that individuals who scored high on Openness to Experience would be more heavily influenced by the priming procedure than individuals who scored low on this personality factor. While this prediction was not supported by significant results from either Accepting group or the Pre-Primed Rejecting group, this hypothesis was supported within the Post-Primed Rejecting group. Thus, within the Post-Primed Rejecting group, as participants’ score on Openness to Experience increased so did their priming effect. These results support the possibility that one’s “primability” could be considered a part of his/her personality, as previously suggested by the researcher. However, the fact that the researcher’s hypothesis was not supported for participants primed with a concept of positive valence or participants primed with a concept of negative valance before watching a video of the professor to be evaluated suggests certain possibilities about the limited nature of the connection between personality and the unconscious.

As previously discussed, the possibility exists that the UBGS (Bargh & Morsella, 2010) may be more sensitive to certain stimuli when compared to others. Because the
current findings indicate that there was no significant relationship between Openness to Experience and priming effect within either Accepting group, the current findings support the possibility that this system may provide heightened sensitivity to stimuli of negative valence compared to ones more positive in nature. The current findings also support the possibility that the UBGS may provide stronger behavioral suggestions when exposed to negative stimuli compared to positive stimuli. According to this hypothesis, avoiding immediate harm may be more beneficial than acquiring a positive outcome from an evolutionary point of view. Also, because the only group with a significant positive correlation between Openness to Experience and priming effect was the Post-Primed Rejecting group, perhaps the UBGS’s behavioral suggestions are only strong enough to influence behavior immediately after exposure to the negative construct (as in the Post-Primed Rejecting group). Further research with greater precision than the current study is needed to discern these differences.

After reviewing these results, one should ask what implications can be inferred from the data. If further research supports the conclusions drawn by the researcher, the applied applications of the psychological phenomena under investigation could be of great value to businesses, academia, and society as a whole. This is because the current results inform us about the significant influence of environmental stimuli on subsequent evaluations. Because the results suggest that primes of negative valence can have an adverse influence on subsequent evaluations and this effect is greater for individuals with higher levels of Openness to Experience (such as college students in our sample), one specific application of this research involves the timing of one’s advertisement and population targeted. Specifically businesses seeking to advertise a product to college age
individuals should seek commercial time immediately after a commercial that promotes positive emotional sentiments, compared to negative ones. This would prevent the negative evaluation of the first commercial carrying over into the evaluation of the second commercial. In addition, this effect would be enhanced if the program is targeted to individuals scoring high on Openness to Experience, like college students. This application does not necessarily only involve commercials for products but could include commercials for political campaigns. If one is seeking to obtain support from college age individuals, they would be advised to avoid advertisement time immediately after commercials of negative valence.

Another circumstance where the results from this experiment could be applied involves teacher evaluations. Because the college population probably has higher scores on Openness to Experience than the general population, the influence of any negative prime will likely carry over to negatively influence the teacher evaluation. Therefore, professors should be wary about providing the evaluation form after a negative event (such as a school’s sports team losses to a rival or possibly even a rainy day).

The general conclusion from these results is that evaluations can be negatively influenced by previously unnoticed negative stimuli, and this influence increases as an individual’s Openness to Experience increases. Therefore, if one has an important decision to make, he or she should make a conscious effort to remove any negative stimuli for the environment. In addition, if one is especially intellectually inquisitive he or she might need to make more significant efforts to remove such negative stimuli before any substantial evaluations are made.
The fact that no statistical difference was found between the TEF scores provided by participants who were primed at different times (i.e. between the Pre-Primed Accepting group and the Post-Primed Accepting group, as well as between the Pre-Primed Rejecting group and the Post-Primed Rejecting group) could suggest that a particular prime (in this case a SST) primes one’s memory of an event and one’s subsequent perception of an event to an equal extent. To the author’s knowledge, this is the first study to investigate this distinction, which contributed to the author declining to propose any hypotheses regarding this scenario. While these results suggest the possibility of a similar priming process and effect at work, further studies with varying lengths of time between priming and a subsequent evaluation, in addition to participants being primed with multiple constructs would be needed to confirm this interpretation.

In addition, it was also hypothesized that participants in both Rejecting groups, who scored high on Neuroticism, would rate the professor more poorly than individuals in the same group who did not score high in this domain. No significant effect was found to support this hypothesis. Therefore, the possibility exists that participants’ scores on Neuroticism may be independent from their “primability.” However, the results also showed a significant positive relationship between Neuroticism and TEF scores within the Pre-Primed Rejecting group (exactly the opposite of the hypothesis). This could be the result of insufficient accuracy within the NEO-FFI-3. Had the researchers used the NEO-PI-3, data analysis of the particular facets that contribute to Neuroticism could potentially explain this occurrence. It is also possible that this surprising result could be the consequence of certain limitations within the study.
When performing research on the influence of personality variables, it is useful to obtain data from individuals scoring at both ends of a specific trait’s continuum. This allows for more varied and informative data. Such participants could be found at a mental health clinic or within a larger diverse sample. However, the current experiment was conducted at a mid-sized university located in the mid-western portion of the United States. All participants were either college students enrolled in psychology courses or volunteers without any history of mental disorders. As such, there was no significant difference in scores of Neuroticism between our sample and the Neo-FFI-3’s sample population. However, our sample’s average score on Openness to Experience was significantly higher than the NEO-FFI-3’s sample population. While this deviation from the norm possibly aided the researcher’s analysis, for statistical purposes, having scores on both ends of the continuum would have been more informative. If a more varied sample had been obtained, the likelihood of obtaining more significant results would have been increased.

Another limitation of the current study involves the SSTs used as priming instruments. Although the ability of both priming SST’s were analyzed after the pilot study and afterwards alterations were made that increased the measures’ tendency to prime participants with the intended concepts, the validity of the two instruments would have been greater if the researcher had used priming words that have been previously demonstrated to induce strong emotional reactions. This would have provided greater empirical support for these two priming measures, even with the strong priming effect that was recorded during the current study.
Another limitation of this study was that only two of the five personality domains in the Five-Factor Model (Costa & McCrae, 1989) were subject to data analysis. This represented a suspicion by the researcher that these two factors were the most likely to obtain significant results. Because Openness to Experience is partly a measure of the extent to which one is intellectually inquisitive and wishes to explore the world, it was assumed that participants scoring high on this measure would not take a lackadaisical approach to the SST. In addition, it was assumed that as the extent to which one actively processed the SST increased, so would the obtained priming effect. It was also assumed by the researcher that participants scoring high on Neuroticism would be more critical of the professor portrayed on the video compared to other participants, because of their tendency to become moody or emotionally unstable (Costa & McCrae, 1992). Due to these assumptions, only scores on Neuroticism and Openness to Experience were analyzed.

While one should not disregard these weaknesses, this study also contains certain strengths that deserve mentioning. First, the current experiment began with a pilot study which provided the researcher with the information to improve the study in two specific ways. Specifically, the length of time that participants were to view the video was reduced to five minutes to increase attention, and the total score possible on the TEF was increased to allow for more variability between groups. Secondly, the use of an ANCOVA prevented the researcher from having to group TEF scores into groups. Thus, statistical analysis was more precise and informative than would be possible otherwise. The last strength of this study is its proposal of a novel perspective on personality (i.e. that the extent to which an individual can be primed with a specific construct may be an
aspect of personality). While this proposed notion failed to obtain full support from the data, the significant positive relationship between Openness to Experience and the extent of priming effect found in the Post-Primed Rejecting group certainly warrants further investigation.

Future research could use the same experimental design as the previous investigation, but using the full NEO-PI-3 (McCrae & Costa, 2010) would be advised. While this would increase the amount of time needed for the experiment, it would allow a more detailed analysis. Specifically, this would allow researchers to analyze all five personality domains measured by the instrument, in addition to measuring the influence of the various facets that contribute to each personality domain. It would also be useful to obtain results from a larger and more varied sample than was currently possible. This would allow for a more informative analysis and greater generalizability. Future researchers should also incorporate new priming methods (including new SST’s with priming words previously demonstrated to generate visceral effects or new creative priming methodologies). If thesis changes were implemented and similar results were obtained, the data would provide support for the researcher’s current interpretations and provide further researchers with new avenues for their research.
References


Costa, P. T. Jr., & McCrae, R. R. Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual. Odessa, FL: Psychological Assessment Resources, Inc.


Journal of Experimental Psychology: Human Perception and Performance, 32, 865-884.
doi:10.1037/0096-1523.32.4.865


Mendelsohn, G. A. (1993). It’s time to put theories of personality in their place, or, Allport and Stagner got it right, why can’t we? In K. H. Craik, R. Hogan, & R. N. Wolfe (Eds.), *Fifty years of personality psychology* (pp. 103-115). New York, NY: Plenum.


APPENDIX A
SCRAMBLED SENTENCE TEST: REJECTING VERSION (SSTR)

Scrambled Sentence Task

The following items have a list of five scrambled words. You are to unscramble the words and create a four word sentence out of the five words, using the space provided. Do not worry about proper grammar or sentence structure, simply unscramble the words to make the best four word sentence possible.

is desk greasy rough the____________________________________________________
teammates, parents, rejecting, her, were____________________________________
performed style grace with she______________________________________________
was, atmosphere, uncooperative, seemed, the_________________________________
dance in eat come and____________________________________________________
behaved, politician, children, the, rudely_____________________________________
meet nice you to see_______________________________________________________
tendencies, has, characteristics, loner, Tom__________________________________
think that parents like groups______________________________________________
were, needy, the, refugees, unappreciative____________________________________
believe yes so think I_____________________________________________________
always, newcomers, entirely, denied, are_____________________________________}
i back get when after_____________________________________________________
decision, stingy, family, the, was____________________________________________
on streets people drive cars________________________________________________
words, Jean’s, Tina, style, annoyed________________________________________
brown missing floor the is_________________________________________________
the, common, expected, insults, were_______________________________________
chair memories cracks contains rugged______________________________________
always, narrators, parties, hostile, seem_____________________________________
More On Other Side

get walk buy permit to_____________________________________________________
us, strategy, rules, bothered, the___________________________________________
bus the home ride take_____________________________________________________
undignified, appeared, beliefs, her, actions____________________________________
glue new of stick package_________________________________________________
behaviors, vulgar, their, were, songs_________________________________________
box is yellow wall the_____________________________________________________
company, time, discourteous, was, their_______________________________________
mix hot cook water with___________________________________________________
circumstances, the, indifference, create, history________________________________
simple, want, people, instant, pleasures _____________________________________
work, scowled, actions, Lacy, the____________________________________________
everywhere, are, virtually, usually, computers________________________________
impolitely, acknowledged, we, her, approached________________________________
be, should, swimming, everyone, learning____________________________________
position, apathy, perspective, the, required____________________________________
ajar, leave, doors, unlocked, never___________________________________________
was, opponent, the, useless, clerk____________________________________________
today, bigger, faster, better, means___________________________________________
him, for, believing, acting, criticize __________________________________________
APPENDIX B
SCRAMBLED SENTENCE TEST: ACCEPTING VERSION (SSTA)

Scrambled Sentence Task

The following items have a list of five scrambled words. You are to unscramble the words and create a four word sentence out of the five words, using the space provided. Do not worry about proper grammar or sentence structure, simply unscramble the words to make the best four word sentence possible.

is desk greasy rough the

teammates, parents, accepting, her, were

performed style grace with she

was, atmosphere, accommodating, seemed, the

dance in eat come and

behaved, politician, children, the, politely

meet nice you to see

tendencies, has, characteristics, social, Tom

think that parents like groups

were, needy, the, refugees, thankful

believe yes so think I

always, newcomers, entirely, welcome, are

i back get when after

decision, generous, family, the, was

on streets people drive cars

words, Jean’s, Tina, style, pleased

brown missing floor the is

the, common, expected, complements, were

chair memories cracks contains rugged

always, narrators, parties, peaceful, seem
More On Other Side

gate walk buy permit to_____________________________________________________
us, strategy, rules, delighted, the____________________________________________
bus the home ride take_____________________________________________________
appropriate, appeared, beliefs, her, actions____________________________________
glue new of stick package___________________________________________________
behaviors, courteous, their, were, songs______________________________________
box is yellow wall the_____________________________________________________
company, time, pleasant, was, their___________________________________________
mix hot cook water with____________________________________________________
circumstances, the, sympathy, create, history__________________________________
simple, want, people, instant, pleasures_______________________________________
work, praised, actions, Lacy, the______________________________________________
everywhere, are, virtually, usually, computers_________________________________
civilly, acknowledged, we, her, approached___________________________________
be, should, swimming, everyone, learning_____________________________________
position, understanding, perspective, the, required______________________________
ajar, leave, doors, unlocked, never____________________________________________
was, opponent, the, helpful, clerk____________________________________________
today, bigger, faster, better, means____________________________________________
him, for, believing, acting, admire____________________________________________
APPENDIX C
SCRAMBLED SENTENCE TEST: CONTROL VERSION (SSTC)

Scrambled Sentence Task

The following items have a list of five scrambled words. You are to unscramble the words and create a four word sentence out of the five words, using the space provided. Do not worry about proper grammar or sentence structure, simply unscramble the words to make the best four word sentence possible.

is desk greasy rough the____________________________________________________
your, vegetables, inspect, all, eat_____________________________________________
performed style grace with she________________________________________________
be, math, exciting, can, difficult______________________________________________
dance in eat come and______________________________________________________
was, Einstein, eccentric, smart, very___________________________________________
meet nice you to see________________________________________________________
stomp, cows, grass, the, eat__________________________________________________
think that parents like groups________________________________________________
glasses, people, require, like, some____________________________________________
believe yes so think I_______________________________________________________
coffee, simple, never, please, black___________________________________________
I back get when after_______________________________________________________
blue, infinite, sky, is, the_____________________________________________________
on streets people drive cars__________________________________________________
enjoy, people, movies, often, challenges_______________________________________
brown missing floor the is____________________________________________________
eat, gazelle, will, anything, lions____________________________________________
chair memories cracks contains rugged________________________________________
like, most, children, freedom, chocolate_______________________________________
More On Other Side

g et walk buy permit to_____________________________________________________
red, at, lights, continue, stop_________________________________________________
bus the home ride take_____________________________________________________
play, home, at, work, people_________________________________________________
g lue new of stick package___________________________________________________
s low, often, computers, I, run______________________________________________
box is yellow wall the_____________________________________________________
be, spikes, can, planes, dangerous__________________________________________
mi x hot cook water with____________________________________________________
like, some, quilting, people, racing__________________________________________
s imple, want, people, instant, pleasures ______________________________________
c ommon, soft, pets, are, very_______________________________________________
e verywhere, are, virtually, usually, computers________________________________
ne ed, often, entertainment, haircuts, I________________________________________
be, should, swimming, everyone, learning____________________________________
wo rld, is, country, growing, the____________________________________________
ajar, leave, doors, unlocked, never__________________________________________
in sip r i onal, people, crazy, say, things_______________________________________
t oday, bigger, faster, better, means___________________________________________
a re, jeans, informal, blue, fine______________________________________________
Teacher Evaluation Form

Instructions: Please provide a numbered score from 1-5 for each question. Write your answer at the end of each sentence. You are encouraged to answer all of the questions, responding thoughtfully and honestly. Please read each statement carefully and rate your level of agreement using the following scale:

1 = strongly disagree

2 = disagree

3 = neither disagree nor agree

4 = agree

5 = strongly agree

1. The instructor was well prepared and well-organized.

2. The instructor demonstrated a strong understanding of the course content.

3. The instructor was fair, clean, and consistent with course policies (e.g., grading, attendance, makeups, etc.)

4. The instructor demonstrated interest in the subject matter.
Teacher Evaluation

Instructions: Please provide a numbered score from 1-100 for each question, according to your perspective towards the professor on the video. Write your answer at the end of each sentence. You are encouraged to answer all of the questions, responding thoughtfully and honestly. In some questions you may not have obtained enough information from the video to select and answer, in this case you are to make your best prediction. Please read each statement carefully and rate your level of agreement using the following scale:

1 = strongly disagree
25 = disagree
50 = neither disagree nor agree
75 = agree
100 = strongly agree

Feel free to write in responses that are fall between these given intervals. Ex. 55 or 87

1. You are finding this course intellectually challenging and stimulating.

2. Instructor is enthusiastic about conducting the course.

3. Course materials are well prepared.

4. Students are encouraged to participate in class discussions.

5. Instructor’s explanations are clear.

6. Instructor is friendly toward individual students.

7. Methods of evaluating student work were fair and appropriate.

8. Compared with other courses you have had at this university, this course is:

9. Compared with other instructors you have had at this university, this instructor is:
APPENDIX F
DEMOGRAPHIC SHEET

Demographic Information

Please do not write your name on this demographic sheet. It will be stored separately from all other materials you complete during this study, and will not be linked to your responses in any way. The information provided will allow us to provide an accurate description of the sample. Just place a checkmark or write in your information in the place provided.

• Gender: ___male or ___female

• Age___

• Ethnicity: Caucasian___

                      African-American___

                      Hispanic___

                      Asian___

                      Native American___

                      Other___
Table 3
ANOVA Results

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Partial $\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priming</td>
<td>1381589.12</td>
<td>2</td>
<td>690794.56</td>
<td>48.61</td>
<td>.46</td>
</tr>
<tr>
<td>Time</td>
<td>5658.13</td>
<td>1</td>
<td>5658.13</td>
<td>.40</td>
<td>.00</td>
</tr>
<tr>
<td>Priming × Time</td>
<td>2518.22</td>
<td>2</td>
<td>1259.11</td>
<td>.09</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>1620150.90</td>
<td>114</td>
<td>14211.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27513742.00</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**APPENDIX H**

**TABLE OF ANCOVA RESULTS**

Table 4

*ANCOVA Results*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Partial $\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness to Experience</td>
<td>42288.75</td>
<td>1</td>
<td>42288.75</td>
<td>3.03</td>
<td>.03</td>
</tr>
<tr>
<td>Priming</td>
<td>1390558.70</td>
<td>2</td>
<td>695279.35</td>
<td>49.79</td>
<td>.47</td>
</tr>
<tr>
<td>Time</td>
<td>10291.41</td>
<td>1</td>
<td>10291.41</td>
<td>.74</td>
<td>.01</td>
</tr>
<tr>
<td>Priming × Time</td>
<td>1552.79</td>
<td>2</td>
<td>776.40</td>
<td>.06</td>
<td>.00</td>
</tr>
<tr>
<td>Error</td>
<td>1577862.15</td>
<td>113</td>
<td>13963.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27513742.00</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>