

DEPRAVITY AND THE PROTESTANT WORK ETHIC:  
CREATIVITY IN WESTERN RELIGIONS

BY

VERONIKA A. ZEPPENFELD

THESIS

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Adviser:

Professor Dov Cohen

## **ABSTRACT**

An experiment was run to test the effects of feelings of guilt and transgression on creativity and hard work. Protestant, Catholic, and Jewish male participants were given two different tasks designed to elicit a sense of temptation and transgression in specific conditions. Subsequently participants completed several tasks measuring creativity and concentrated hard work. Results showed that Protestants primed with dirty words in a lexical decision task produced more creative poems and clay sculptures than Protestants primed with clean words. Catholics and Jews produced more creative poems and sculptures when primed with clean words. These results are discussed in light of the Protestant Work Ethic.

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## TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION .....	1
1.1 The Protestant Work Ethic .....	2
1.2 Protestantism .....	3
1.3 Catholicism and Judaism .....	9
1.4 The Present Study .....	10
CHAPTER 2: METHODS .....	13
2.1 Participants .....	13
2.2 Experimental Setup .....	13
2.3 Manipulations .....	14
2.4 Dependent Measures .....	17
2.5 Creativity Judging .....	22
CHAPTER 3: RESULTS .....	25
CHAPTER 4: DISCUSSION .....	28
TABLES AND FIGURES .....	33
REFERENCES .....	40
APPENDIX: SCRIPT USED TO STANDARDIZE EXPERIMENTER-PARTICIPANT INTERACTIONS .....	43

# CHAPTER 1

## INTRODUCTION

*If you had done the right thing, you would be smiling; but because you have done evil,  
sin is crouching at your door. It wants to rule you, but you must overcome it.*

Genesis 4:7, Today's English Version

One of the first events in the Bible after man and woman have been created is the temptation of Eve by the snake. Adam and Eve succumb, and sin and pain are born. Whether in the tradition of the Bible, or in a secular sense, temptation and transgression are part of human life. They are equally a part of scholarship, from medieval monks down to modern psychologists. Attempts to deal with transgression and studies of how best to avoid temptation are part of life. In psychology, the work on transgression has ranged from defense mechanisms to deindividuation theory and beyond. Each of us must find a way to deal with temptation and transgression in our life, and find methods and institutions to help us.

Religion, at least in the West, has been concerned with minimizing sin from the Ten Commandments onwards. Repentance, confession, guilt – there are many ways to deal with transgression. In general, succumbing to temptation seems to require a halt for atonement before continuing on with life. However, there is an alternative to expecting sin and repenting afterwards. In Protestant Christianity, a tradition of hard work to ward off temptation – and anxieties about one's salvation – developed in the centuries after the Reformation. This tradition, together with other aspects of Protestantism, developed into what is now known as the Protestant Work Ethic. This ethic suggests that Protestants might respond to temptation and anxieties about salvation differently from members of other religious groups, and that this difference exists even in today's secularized society. This difference is the topic under

investigation in the following study. Given concerns about transgression and salvation, will Protestants respond differently from Catholics or Jews in a manner fitting with the Protestant Work Ethic? The paper begins with a discussion of the Protestant Work Ethic and the alternative responses to transgression, and then continues on to the current study.

### 1.1 The Protestant Work Ethic

The essay that began the discussion on the Protestant Work Ethic was *The Protestant Ethic and the Spirit of Capitalism*, published by Max Weber in 1904-5. Weber's work is arguably among the most influential in the social sciences, having attracted the attention of scholars in a wide variety of disciplines for over a century (Jones, 1997). Weber wrote about a wide variety of cultures, religions, and social practices. One of his most well-known studies, Weber's work on the Protestant Ethic dealt with Western religion and society in a manner that has led to attempts to defend and refute its hypotheses ever since it was first published.

Contrary to the interpretations of many critics, Weber never attempted to delineate the absolute truth of the relationship between Protestantism and capitalism. Rather, he noted that Catholicism at the time of the Reformation put few strictures on mundane affairs, so it should have been easier for the rising middle classes to remain in the Catholic tradition rather than internalize the strictures of Protestantism. The adoption of the Protestant faith not only set greater constraints on its adherents, but contradicted the historic trend that strong religious tendencies were incompatible with economic development, so the conversion to a new and reformed version of Christianity would not have been expected to yield economic benefits. Yet in spite of these strictures, Protestant economies bloomed. These are the apparent contradictions that Weber sought to explain in his study (Bendix, 1960).

Weber himself rejected the notion that Protestantism was a necessary precursor for the development of capitalism. Rather, his aim was to see what impact the new religion had on the development and expansion of capitalism as the basis of the Western world order (Weber, 1904/1958). In fact, personal gain has been a common goal throughout history. The new order differed from previous versions of capitalism in its focus on a widespread “way of life based upon rational, legal acquisition through individual effort” (Jones, 1997, p. 758).

Protestantism proved fertile ground to the development of modern capitalism due to the combination of several facets. New beliefs such as religious individualism, predestination, and work as having inherent meaning in the sense of a ‘calling’ built a base for economic activity (Heine, 2007; Sanchez-Burks, 2002). Ultimately, self-control combined with the idea of a ‘calling’ led to hard work, which in turn led to material prosperity (Jones, 1997).

## 1.2 Protestantism

The Reformation in the sixteenth century set the stage for Weber’s Spirit of Capitalism to develop. Luther’s ideas encouraged the new social order, while Calvin’s ideas cemented what is now known as the Protestant Work Ethic, or PWE (Giorgi & Marsh, 1990). Central to this ideology was the idea of a ‘calling’, which in the Protestant sense meant work as the ultimate moral activity. This gave everyday life new religious significance (Weber, 1904/1958). Thus the traditional separation between religious and secular activities was removed, and work became inherently meaningful rather than a necessity for other ends (Heine, 2007).

Both Luther’s and Calvin’s teachings stated that it was man’s duty to glorify God through his work on Earth. Constant hard work additionally served to defend against temptation (Bendix, 1960). Particularly in the Calvinist doctrine, each individual had to prove his faith through

asceticism, hard work, and objective results. Predestination further isolated individuals and required additional proof of membership among the Elect. Although earthly actions could not influence one's status as doomed or saved, true faith that one was saved could differentiate the Elect from the doomed. Doubt was seen as a sign of temptation and the work of the devil, which could be dispelled by hard work and self-control (Weber, 1904/1958). And importantly, though worldly success and one's status as Elect were only imperfectly correlated, worldly success could help dispel doubts about whether one was ultimately predestined for salvation. As Pye has noted, "Weber recognized that an account book approach to rewards and punishments got people off too easily, whereas with predestination there was a profound sense of psychic insecurity that would drive people to grasp for any possible sign that they might be among the 'elect.' The key drive was psychic anxiety" (Pye, 2000, p. 248).

These new Protestant beliefs featured several critical changes from Catholicism. Central was the focus on daily life – where Catholics were taught that the ultimate show of faith was to withdraw from the world and commit oneself to God, Protestants learned that one's primary responsibility was to work hard in one's calling. Further, spiritual affairs emphasized the earthly life, rather than the after-life. Religious action was not confined to isolated religious communities, but could be performed in the lay community (McClelland, 1961; Giorgi & Marsh, 1990; Jones, 1997). Thus secular work gained religious significance, spurring Protestants on to constant improvements.

With an emphasis on and ultimate motivation for hard work, Protestants were set for economic success. They were additionally favored by their piety – it would have been beneath them to be dishonest or corrupt, and so other believers and non-believers alike were only too happy to do business with them (Jones, 1997). Further, since work in one's calling was a moral



duty and success served God, progress, rather than tradition, was desired. This spurred development by compelling workers to look for the best method to complete a job, rather than following tradition. Finally, since profit was not to be used for one's own benefit, it was reinvested, leading to even more profit (Jones, 1997).

Thus hard work, self-discipline, and assurance were the defining features of a godly life. This fit perfectly with the emphasis on asceticism and the condemnation of self-indulgence. Resources and wealth were meant for God's glory, so material gain was laudable insofar as it was not used for one's own pleasure. Leisure and enjoyment not only squandered God's resources, but distracted from a spiritual life and from work in one's calling (Weber, 1904/1958). Activities such as sleep, recreation, and social interactions were sanctioned only as necessary for physical and mental health (Sanchez-Burks, 2002). This meant not only that hard work was prized, but that there was little use for material gains other than to reinvest them and continue to work hard.

Although hard work is central to the PWE, other facets characterize the ethic in addition to the emphasis on work. Hard work, delay of gratification, conserving resources, and attitude towards leisure are central (Christopher, Zabel, Jones, & Marek, 2008b). The careful use of time, the reinvestment of one's gains, innovation, and personal honesty further delineate the PWE (Jones, 1997). Miller, Woehr, and Hudspeth (2002) used factor analysis to create a multidimensional scale of work ethic consisting of seven factors: centrality of work, self-reliance, hard work, leisure, morality/ethics, delay of gratification, and wasted time. Mixed results on the validity of work ethic as a predictor variable may be due to use of the overall construct rather than its underlying facets, and in general using the separate factors of work ethic can help us understand the construct better (Christopher, Zabel, & Jones, 2008a).

PWE not only consists of multiple factors, but it relates to other constructs and variables. Individuals scoring high on self-report scales of work ethic are generally more conservative and more honest than individuals scoring low on work ethic (Jones, 1997). The expected relationship between PWE and job satisfaction and job involvement also seems clear, although Saal (1978) found that while job involvement was correlated with PWE, job performance was not. However, Jones (1997) suggests that PWE predicts personal commitment to hard work, which in turn leads to greater productivity.

Other work that relied on religion as the predictor variable rather than measuring PWE using self-report includes Sanchez-Burk's (2002) findings that North American Protestant culture separates work from social domains. Unlike members of most other, at least non-Western, cultures, American Protestant men were not affected by social cues in work settings, although they were equally adept socially as their Catholic counterparts in social settings. No differences between religious groups were found for women, which may be due to different socialization processes for boys and girls.

In general, PWE emphasizes high individualism and task orientation and deemphasizes socioemotional cues, at least in the work environment (Kitayama, Duffy, & Uchida, 2007). Taken together with other findings, it seems that PWE centers on a purely rational world view (e.g. Jones, 1997; McClelland, 1961). In fact, Weber (1904/1958) wrote that Calvinists rejected emotion and strongly valued rationality.

This may relate to a greater need for achievement in Protestants. McClelland (1961) suggests that the link between Protestantism and work ethic may be explained by need for achievement. Greater need for achievement in Protestants is inculcated early on – for example,

Protestant parents expect their children to be self-sufficient at least a year younger than Catholic parents do (McClelland, 1961).

The greater emphasis on reason and self-sufficiency may be traced back to the Protestant belief that each individual should read and interpret the Bible for him or herself (McClelland, 1961). Giorgi and Marsh (1990) also found that Protestants stay in school longer than Catholics do, which they suggest as a mediating variable that explains the link between Protestantism and greater work ethic. However, it also seems plausible that Protestants complete more schooling because they have a stronger work ethic. Finally, it seems that high PWE may be strongly related to an internal locus of control, in that individuals with high PWE are motivated by internal factors rather than external reinforcements (Jones, 1997).

Although religion is not, of course, the only factor influencing work ethic, research overall suggests that it is still correct to speak of a *Protestant* work ethic. Various historical data show that Protestant nations surpassed Catholic nations in power, wealth, and rate of industrialization after the Reformation (Heine, 2007). Such effects lasted long after the age of Luther and Calvin, and as of the middle of the twentieth century, Protestant countries were still more economically advanced than Catholic countries (McClelland, 1961). In analyses of the great minds of the past century, Berry (1999) found that those from predominately Protestant countries were much more productive in the sciences, and while those from predominately Catholic countries were more productive in the arts, this strength seemed to be due to the output of specific subgroups such as French painters. McClelland (1961) also found that Catholics favored a classical humanistic education for their children, while Protestant parents placed a greater emphasis on more directly practical subjects such as modern languages and sciences.

Specific to work ethic, Giorgi and Marsh (1990) found that Protestants had a higher focus on intrinsic work values. This was true both of individuals of Protestant versus Catholic faith, and of individuals from countries of primarily Protestant versus Catholic faith, with religion of the country having a slightly greater effect than that of the individual. Both groups valued intrinsic reasons for work, but Protestants emphasized them more strongly.

As society secularized, so did the work ethic. Sanchez-Burks suggests that beliefs about a “polite but impersonal and emotionally detached work style” secularized to become part of American society (2002, p. 921). However, there is still an ethic of work that is related to religion (e.g. Giorgi & Marsh, 1990; Jones, 1997). In fact, despite decreasing religiosity in many modern societies, at least some religious differences related to work ethic seem to be increasing. Berry (1999) found that the edge in scientific achievement for countries that are predominately Protestant has consistently increased rather than decreased during the twentieth century, though confounds with differing changes in wealth were not examined in Berry’s research.

Thus PWE is most characteristic of Protestants, but is part of modern Western society separate from religion as well. Weber wrote that “the types of moral conduct in which we are interested may be found in a similar manner among the adherents of the most various denominations” (1904/1958, p. 96). The values of hard work, thrift, and individual effort are likely prized among adherents of many religions. The differences between groups come in the extent to which these values take priority when they come into conflict with other values (such as sensitivity to relationships, community, emotional spontaneity and integrity, and so on).

### 1.3 Catholicism and Judaism

Protestants respond to temptation and threats of transgression by intensifying their work habits. How could we expect members of religions lacking the PWE and related doctrines to respond? The more general tradition in Western religions relies on repentance or confession to atone for sins and shortcomings. These processes are closely related to a sense of guilt. In fact, the idea of ‘Catholic guilt’ is commonly related to Catholicism (Tangney & Dearing, 2002). A guilt reaction to transgressions or to anxieties about one’s moral status should be qualitatively different than the reaction engendered by the PWE. Whereas transgressions and anxieties lead to hard work and a focus on productive activity in the PWE (for reasons described above), a guilt reaction would lead one to elaborate and dwell on one’s moral failings. This may ultimately spur one toward reparative actions – either trying to repair a damaged interpersonal relationship or trying to atone to G-d through repentance – but it does not lead to channeling energy toward one’s work or craft. In cultures where guilt is a highly elaborated emotion, one does not avoid it by focusing one’s attention elsewhere (such as on one’s work). The emotion is experienced and often expressed, and if successfully processed, results in some personal change. In the Catholic tradition, salvation is achieved through *works* (a good and virtuous life) not by *work* (a secular activity accorded quasi-religious significance in the PWE but not, generally speaking, in Catholicism). Thus, guilt for Catholics should not have the productive effects on work that anxiety does for Protestants, and if anything, it may impede productive activity by taking away cognitive resources and attention to work tasks immediately at hand.

Jews may also be particularly inclined to guilt as evidenced by the idea of the ‘guilt-inducing Jewish mother’ (Tangney & Dearing, 2002). Unlike Catholics, however, they are particularly high on need for achievement (McClelland, 1961). Additionally, Berry (1999) found

that Jews were highly overrepresented in achievements of the twentieth century in both scientific and artistic domains. Both Jewish and Protestant (e.g. the French Huguenots) minorities historically responded to marginalization by intensifying their economic activities, whereas Catholic groups in similar circumstances did not (Bendix, 1960). Finally, Jewish cultures have shared with Protestants a belief in the inherent meaningfulness of work, although they have differed from Protestants in other facets of the PWE (Sanchez-Burks, 2002). Thus Jews show similarities with both Protestants and Catholics, and can be expected to show similarities to both Christian groups in the subsequent study. Overall, however, Jews should respond more like Catholics in the face of transgression or anxiety because guilt is a highly elaborated emotion in their culture and because they ultimately do not attach as much religious significance to work as Protestants do. ('Learning' may have a quasi-religious or ethical significance for Jews, though work *per se* probably does not have the meaning that it does for Protestants.)

#### 1.4 The Present Study

A huge amount of work has been done on the PWE, but mostly it has focused on the facets of the PWE (e.g. Miller, Woehr, & Hudspeth, 2002), relating PWE to related measures (e.g. McClelland, 1961; Christopher et al., 2008a, 2008b), or PWE in a work context (e.g. Sanchez-Burks, 2002). In the subsequent study we sought to determine the impact of PWE on creative work and work requiring concentration, and how PWE interacts with anxieties about transgression. Where Catholics and Jews faced with such anxieties may fall prey to a sense of guilt, decreasing their ability to be productive and/or creative in subsequent tasks, Protestants in such a state are expected to be buffered by the PWE and its emphasis on hard work.

We looked at members of three religious groups in the United States – Protestants, Catholics, and Jews – to get a picture of the way in which religious background influences how participants react when primed with words suggesting transgression or depravity. Participants completed a variety of tasks in a lab setting. Three types of tasks were used: two tasks were designed to measure aesthetic preferences (choosing a complex, highbrow versus a simple, popular poem or piece of music), two were designed to measure diligence, focus, or concentrated hard work (a wordsearch and a lexical decision task), and two were designed to measure creativity (writing a poem and making a sculpture out of clay). In addition to studying members of the three religious groups, we assigned participants to several conditions meant to manipulate their sense of transgression, temptation, and moral and spiritual purity. Hypotheses were correspondingly complex.

Basic to our hypotheses was the PWE. We predicted that Protestants would work harder than non-Protestants, particularly when primed with a sense of transgression, since the PWE is based on the idea of hard work in the face of temptation. However, we expected the work ethic to take the form of more concentrated, rather than creative, work, since Protestant doctrine distinctly lacked a focus on creative experience (Bendix, 1960, p. 64). Furthermore, Christopher and colleagues (2008a) found a negative correlation between work ethic and imagination, while Mirels and Garrett (1971) found that individuals high in PWE tended to prefer jobs calling for little innovation. Thus, Protestants were expected to score higher on concentration tasks than on creative tasks, particularly in transgression conditions.

Catholics and Jews, on the other hand, were expected to be less imbued by the PWE. As compared to the Protestant participants, Catholic and Jewish participants should thus be less likely to have anxiety about transgression fuel hard work. Rather, both non-Protestant groups

were expected to score higher in the nontransgression conditions (as opposed to the transgression conditions) because they should not be distracted by the emotion of guilt.

Additionally, Catholics were expected to perform better on the creative tasks than on the noncreative tasks due to historic Catholic emphasis on and strength in the arts (e.g. Berry, 1999). There was less basis for strong prediction for Jews. They were expected to score similarly for both creative and noncreative endeavors (Berry, 1999; McClelland, 1961).



## CHAPTER 2

### METHODS

#### 2.1 Participants

A total of 213 participants were run over the course of two semesters at the University of Illinois in Champaign. Fifty-nine were removed due to not meeting our eligibility requirements (58)<sup>1</sup> or not following directions (1). We analyzed the results of the remaining 154 participants, consisting of 73 Protestants, 34 Catholics, and 47 Jews. All participants were male, as the manipulation of temptation (see below) was expected to have a greater effect on males than on females. Participants were university students of all years, ranging in age from 18 to 33 (mean 19.9 years). Participants were recruited either from the Psychology Participant Pool for course credit (61%), or for \$7-10 monetary compensation. Paid participants were recruited through the Psychology website, fliers posted around campus, email lists, and direct recruitment. Nine percent of participants were psychology majors.

#### 2.2 Experimental Setup

All participants were run in the same lab in the University of Illinois' Psychology Building. Participants completed most tasks while seated at a desk, moving to another desk for the two computer tasks. Eight different experimenters (two males) ran the participants individually and were blind to condition.

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<sup>1</sup> 2 gay men, 2 had participated previously, 15 did not meet our religious criteria (2 Muslims, 13 who could not be assigned to a specific religion or religious background), 6 white Catholics' poems and sculptures were not judged and therefore their data could not be used, and 34 did not have sisters. Because of our manipulation (discussed below), we planned to run only participants who had grown up with one or more sisters, but ended up loosening this restriction in an attempt to increase study n. For the current analyses, however, we only analyzed data from participants with sisters. The three religious groups did not differ in their likelihood of having a sister,  $F(2,163) = 0.242, p = .786$ .

Participants completed a total of seven different tasks, followed by a short series of surveys that included demographic information. The entire session took approximately fifty minutes. All tasks are described in further detail below, and the script used by the experimenters can be found in the appendix.

## 2.3 Manipulations

### Photo Album Task

In order to manipulate a sense of temptation or transgression, participants were randomly assigned to one of four conditions. SurveyMonkey was used to create a photo album task on the computer. The task consisted of five pages. Each page showed several photographs and one or two starter sentences. Participants were asked to write several paragraphs on each page that continued the starter sentences and related to the photographs. The photographs and starter sentences portrayed a fictional family, and participants were asked to pretend that this family was their own family. The family consisted of a mother, a father, a brother, and his younger sister, as well as, in two conditions, his girlfriend. The first three pages showed early childhood, middle childhood, and middle adolescence, while the final two pages showed later adolescence. The photos and starter sentences focused heavily on the sister/girlfriend. The first two pages were identical across conditions, and served to get the participant involved in the task and used to thinking of the fictional family as his own family. The latter three pages showed either a highly attractive young woman or a less attractive young woman, who was called (in the starter sentences) either the participant's sister or his girlfriend. See Figure 2.1 for sample pages.

A two-by-two design was used to create the four conditions. Participants were shown photographs of a young woman and were asked to pretend she was either their sister, or their

girlfriend. At the same time the young woman portrayed was either a highly attractive model dressed in bikinis and other relatively revealing clothes, or a relatively plain woman generally wearing Jeans and a t-shirt. Aside from these differences an attempt was made to make all conditions as similar as possible. The same starter sentences were used for each condition, with only the use of the word ‘sister’ or ‘girlfriend’ differing, and the pictures always revolved around the same theme, namely a beach vacation, summer scenes, and a cruise vacation.

Participants in the condition showing the attractive young woman who was called their girlfriend were expected to create and mentally elaborate on any fantasies they might have about the woman in the picture. In the other conditions participants were not expected to construct detailed mental fantasies as the woman in the picture was either relatively unattractive or was supposed to be thought of as a sister. Since it was important that participants feel tempted by the attractive girlfriend, only male participants were used. The attractiveness manipulation was expected to have a greater effect on men than a corresponding manipulation would on women because it is far easier to activate sexual thoughts using visual stimuli in men (Ellis & Symons, 1990).

Participants were given fifteen minutes for this task, and were asked to continue with the next page approximately every three minutes (slightly less time was given for the first two pages, and slightly more time for the last two focal pages).

### Lexical Decision Task

The second task was a lexical decision task (LDT), also completed at the computer. Participants were presented strings of letters, half of which were actual words, and half of which were not. They were asked to respond to each string by pressing a key to indicate whether it was a word or

a non-word. Participants were told to respond as quickly as possible, but without making too many mistakes.

After hearing and reading the instructions, participants were given four practice trials (two words and two non-words). These were followed by a repetition of the instruction screen. The rest of the task consisted of two parts, each composed of fifty strings. The task was run using DirectRT software. If participants took longer than 1500 milliseconds to respond to a string, the program flashed a reminder to respond faster. All response times were automatically recorded in milliseconds, along with whether the response was correct or not and the order in which the words were presented.

Half of the 100 strings were actual words, and half were not. Forty of the 50 actual words were neutral words such as city, narrow, and staple. The remaining 10 words were focal words, with two conditions. In the clean condition, the focal words related to physical, moral, or spiritual cleanliness, namely approval, clean, good, noble, prayer, pure, reward, soul, virtue, and worthy. In the dirty condition, the focal words related to physical, moral, or psychological transgressions, namely bad, condemn, dirty, forbid, guilt, prison, punish, reject, suffer, and vile. Of the 50 non-words, 46 were rearrangements of the letters from the actual words, arranged to be pronounceable. The remaining four non-words were composed to prime the self: mewill, meeiz, iwill, and iyam. These four strings were always followed by one of the focal words. Taking this restriction into account, all strings were presented in random order. See Figure 2.2 for a full list of all the strings used.

The LDT was used as both a dependent variable of concentration or hard work, and as a further manipulation. Mean response times in milliseconds were calculated for use as a

dependent variable. Additionally, participation in either the clean or the dirty condition was used as an independent variable for further analyses.

## 2.4 Dependent Measures

### Task Preference

After completing the LDT, participants were asked to return to the desk. Then they were asked whether they would prefer to do a task in which they would make something, or a worksheet. This question was used to determine preferences for creative versus diligent work. The participants' response actually had no effect on the pre-determined order of the following tasks: an appropriate rejoinder was given, after which the next task was introduced.

### Dependent Tasks

Participants completed five tasks measuring creativity, aesthetic sense, and/or diligence. Across participants the tasks were presented in different orders using half a balanced Latin Square design. Participants were randomly assigned to one of five pre-arranged orders. Two tasks were designed to measure aesthetic preferences (the music task and the poetry task), one task to measure concentration or hard work (the wordsearch task), and two tasks to measure creativity (the haiku task and the clay task)

### Music Task – Aesthetic Preferences

Participants were presented with two music segments approximately one minute in length. One segment consisted of *Danse de la Terre* from Igor Stravinsky's *The Rite of Spring*. The other segment consisted of the beginning of the *Millenium Theme* from Hans Zimmer's

soundtrack to Millenium: Tribal Wisdom and the Modern World. The two pieces were chosen to sound similar in instrumentation and overall feel, but Danse de la Terre was much more complex and intense than the Millenium Theme. The pieces were played in counter-balanced order across participants.

Participants were told that they would be listening to music during a later task, and that they should choose the music they would prefer to listen to. After they listened to the pieces, they were asked to make their choice. Additionally, participants were asked to answer four questions by circling a number from 1 (definitely prefer the first piece) to 6 (definitely prefer the second piece). The first two questions asked about their subjective preferences (“Which piece of music would you personally prefer to listen to?” and “Which piece of music do you like better?”), while the last two questions asked about their objective sense of the relative quality of the pieces (“If you had to grade the pieces of music on their objective quality, which would you grade higher?” and “Which piece of music do you think would be evaluated higher by experts?”).

The music chosen during this task was played during the final survey, which consisted of demographics that were not expected to be influenced by the music playing.

#### Poetry Task – Aesthetic Preferences

This task was similar to the music task, in that participants were asked to make choices about two different poems. The complex poem was Robert Frost’s *To Earthward*, while abbreviated lyrics to *I Will Follow You* by Night Ranger were chosen as the more straightforward, popular poem. The poems were matched on subject and general tone. The poems were presented on a single sheet of paper in counter-balanced order (left and right) across participants.

As in the music task, participants were asked to answer two questions about their subjective preference and two questions about the objective quality of the poems on a six-point scale.

#### Wordsearch Task – Concentration/Hard Work

This task was used to measure diligence. Participants were given a wordsearch created online (at <http://tools.atozteacherstuff.com/word-search-maker/wordsearch.php>). The wordsearch contained twenty neutral words, such as taxi, desk, and window. Words could be spelled in any direction, including diagonally and backwards. Participants were given four minutes to find and circle as many words as possible. Only words from the list were counted for their final score, words found by chance among the letters in the wordsearch were not counted.

#### Haiku Task – Creativity

This task was taken from Amabile (1996). Participants were asked to write a poem in a style called an American Haiku. This style consists of five lines: the first and last lines consists simply of a noun, the second line consists of two verbs describing the noun, the third line consists of three adjectives describing the noun, and the fourth line consists of a phrase or sentence of any length relating to the noun. To reduce variability and simplify judgments, all participants were asked to write about the noun ‘laughter’. Participants were provided with a sheet giving instructions, a sample poem (about the noun ‘ocean’), and five lines on which to write their final poem. Participants were given five minutes to complete the poem.

## Clay Task – Creativity

In this task, participants were asked to make something out of a ball of clay. Participants were presented with an orange ball of clay (roughly spherical and approximately 8 cm in diameter) on a piece of cardboard (used to protect the desk). Participants were told to make anything they liked, and that they would be asked to give a title to their piece. They were given seven minutes to complete the task. The only tool available was the ballpoint pen with cap used for the written tasks. Photographs were subsequently taken of each sculpture, and two to four photographs of each sculpture were chosen for later judgments.

## Surveys

After the fifth task, participants were given five survey sections (presented in three batches). The first section consisted of a manipulation check. Participants were asked to rate how well they were able to imagine that the mother, father, sister, and (if applicable) girlfriend in the photo album task was actually their mother, father, sister, or girlfriend. Response options ranged from 1 (not at all) to 5 (completely). Additionally, participants were asked to rate the attractiveness of the young woman (sister or girlfriend) on a five-point scale, from not at all attractive to highly attractive.

The second section measured participants' "morality of mentality" (Cohen & Rozin, 2001; Cohen, 2003). A paragraph was presented describing Mr. B., who is married and has been consciously thinking about having an affair with an attractive colleague. This vignette was adapted from Cohen and Rozin's Study 2 (2001). The vignette was followed by four questions. The first two measured participants' impression of Mr. B as a person based on his conscious thoughts ("How does it affect your judgment of Mr. B.'s *character* to know that Mr. B.



consciously entertains thoughts about having a sexual affair with his colleague?” and “Even if Mr. B. does *not* have a sexual affair with his colleague, he will probably be a bad person in other ways.”). The last two questions asked participants to compare the conscious thoughts with an actual action in line with those thoughts (“If Mr. B *did* have an affair with his colleague, this would be:” and “Consciously entertaining thoughts about doing something immoral is as bad as doing it.”). Three of the questions were taken directly from Cohen and Rozin (2001) with answer options ranging from -3 (very negatively or strongly disagree) to 3 (very positively or strongly agree). The third question was added as a second test of thought versus action, and possible answers ranged from -3 (actual affair would be “much worse than thinking about having an affair”) to 0 (actual affair would be “as bad as thinking about having an affair”).

The third section consisted of four questions measuring mature defense mechanisms taken from the Defense Style Questionnaire (Andrews, Singh, & Bond, 1993). Two questions measured use of suppression (“I’m able to keep a problem out of my mind until I have time to deal with it.” and “I can keep the lid on my feelings if letting them out would interfere with what I’m doing.”), and two questions measured use of sublimation (one creative: “I work out my anxiety through doing something constructive and creative like painting or woodwork.” and one diligent: “Sticking to the task at hand keeps me from feeling depressed or anxious.”). All four questions had answer options on a 9-point scale ranging from ‘strongly disagree’ to ‘strongly agree’.

The fourth section consisted of six questions taken from the Multidimensional Sexuality Questionnaire (Snell, Fisher, & Walters, 1993). Three questions measured sexual consciousness (“I am very aware of my sexual feelings.”, “I tend to think about my sexual feelings.”, and “I am

very aware of my sexual tendencies.”), and three measured sexual anxiety (“I feel anxious when I think about the sexual aspects of my life.”, “Thinking about the sexual aspects of my life leaves me with an uneasy feeling.”, and “I feel nervous when I think about the sexual aspects of my life.”). All answer options were on a scale from 1 (not at all characteristic of me) to 5 (very characteristic of me).

The final section consisted of demographic information. Participants were asked for their age, ethnicity, where they and both parents were born, whether they had sisters or brothers and their ages, whether they had a boyfriend or girlfriend, how often they saw their boyfriend or girlfriend, their religion, how religious or spiritual they were<sup>2</sup>, how frequently they attended church or their place of worship, and their year in school. The music chosen earlier was played during this survey section.

## Debriefing

After completing the surveys, participants were debriefed using the method recommended in Aronson, Brewer, and Carlsmith (1985). Participants were asked to briefly describe the study and any ideas they had about the hypotheses. Then they were asked for any suspicions, before being thoroughly debriefed.

## 2.5 Creativity Judging

The two creative tasks – haiku poem and clay sculpture – required a method to determine the creativity of the pieces produced. The Consensual Assessment Technique (CAT) was used. This technique rests on the assumption that creativity is a subjective construct that can be most validly measured by asking knowledgeable judges to make individual judgments of creative

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<sup>2</sup> taken from Cohen & Rozin (2001)

products (Amabile, 1996). Past research has shown that judges need not be particularly expert in the field, as long as they have some familiarity with the domain at hand. Amabile (1996) suggests, for example, that most educated Western adults would be sufficiently familiar with writing and poetry to make adequate judgments for a task such as the American haiku. However, expert judges with significant experience in the relevant fields were used in this study.

Six expert judges were used for each task. Additionally, the senior researcher on this study judged both the poems and the sculptures. All judges were blind to condition information. The six haiku judges consisted of five graduate students and one local poet. The graduate students ranged in age from 25 to 29 (mean 27.2 years) and included three women and two men. All had or were currently working towards Master's of Fine Arts (MFA) degrees in poetry or creative writing. The local poet was older (age 64), female, and had a college degree in English and French, with considerable writing and editing experience in poetry and fiction. Five poets had published poetry, all had editing experience (one in a domain other than poetry), and all of the graduate students had teaching experience in poetry, ranging from elementary school to college teaching.

The six sculpture judges were more variable and included four undergraduate (2 women) and two graduate (1 woman) students. They ranged in age from 21 to 27 (mean 22.8 years). All were pursuing Bachelor's or Master's degrees in Fine Arts, though the specific fields of specialization varied. All had at least some experience in sculpture/ceramics, and all had shown and/or sold their work publicly.

Each judge was asked to judge the output of all participants relative to the other products in the pool. The haiku poems were transcribed exactly, leaving spelling, punctuation, and capitalization intact and printed. Haikus were printed and shuffled to give each judge the poems

in a different random order, although due to printing constraints each poem always printed on a side of paper with one of two other poems. Powerpoint slides were created for the sculptures, with one slide for each sculpture containing 2-4 pictures and the title of the piece. Separate slides were created for each sculpture judge with the sculptures presented in a different random order. Sculpture judges were asked to view the slides full screen and to make their judgments based on the photographs and the titles.

Five dimensions were rated for each haiku (use of creativity, novelty of ideas, personal liking of the piece, goodness of word choice, and aesthetic quality of the poem) and for each sculpture (the first three dimensions remained the same, the final two were effort evident in the piece, and technical goodness or how much the piece looked like the work of someone adept in working with clay). All dimensions were judged on a scale from 1 (very low) to 5 (very high). For each dimension, the reliability of the judges ranged from Cronbach's alpha of .672 to .842 for the haikus, and from .740 to .814 for the sculptures. However, despite instructions to judge the dimensions as separately as possible from one another, correlations between the dimensions ranged from .777 to .941 for the haikus and from .566 to .932 for the sculptures. Therefore all dimensions were combined into a single item for both haikus and for sculptures. Judges' overall ratings were reliable with Cronbach's alpha of .836 for the haikus and .849 for the sculptures. The single item overall judgment scores were used for subsequent analyses.

## CHAPTER 3

### RESULTS

#### Differences Between Religious Groups – One-way ANOVAs

One-way ANOVAs were run on all variables to test for differences between religious groups. Of particular interest were the haiku task and the clay task. Overall scores did not differ between the three religious groups for the American haiku,  $F(2,146) = 0.167, p = .846$ , or for the clay sculptures,  $F(2,148) = 0.176, p = .838$ . Additionally, religious groups did not differ for the wordsearch task,  $F(2,151) = 0.366, p = .694$ , or for overall mean response times for the LDT,  $F(2,150) = 0.640, p = .529$ . The aesthetic preferences tasks also gave non-significant results. The religious groups did not differ on any of the tasks, so our hypotheses of relative Protestant strengths on diligence tasks and relative Catholic strengths on creative tasks were not supported.

Additionally, the self-report manipulation check variables from the surveys were tested for religious differences. No differences were found for connection to the girlfriend or sister,  $F(2,146) = 0.124, p = .883$ , or for perceived attractiveness of girlfriend or sister,  $F(2,150) = 0.646, p = .526$ , so there was no cause for suspicion that the photo album manipulation may have been more or less engaging or attractive to the three religious groups.

However, groups did differ on the morality of mentality dimensions, both for perception of Mr. B's character,  $F(2,150) = 5.219, p = .006$ , and for relative judgments of bad thoughts versus bad actions,  $F(2,150) = 3.219, p = .043$ . Post-hoc contrasts showed that as in Cohen and Rozin (2001; Cohen, 2003), Protestants ( $M = -0.208, SD = 1.141$ ) were more likely to think badly of Mr. B's character based on his thoughts about having an affair than were Jews ( $M = 0.457, SD = 0.932$ ),  $t(150) = 3.210, p = .002$ , Cohen's  $d = -0.638$  and Protestants ( $M = -1.986, SD = 1.088$ ) were more likely to consider immoral thoughts to be as bad as the immoral behavior

than were Jews ( $M = -2.426$ ,  $SD = 0.691$ ),  $t(150) = -2.527$ ,  $p = .013$ , *Cohen's d* = 0.482.

Catholics ( $M = 0.132$ ,  $SD = 1.245$  for the character questions,  $M = -2.118$ ,  $SD = 0.835$  for the thoughts versus actions questions) scored between Protestants and Jews on both dimensions, and did not differ significantly from either group (*Cohen's d* ranged from 0.136 to 0.402 for the four comparisons).

Also, religious groups differed on level of religiousness, as measured by compiled standardized responses to the questions "How religious or spiritual are you?" and "About how often do you attend church or your place of worship?",  $F(2,151) = 13.156$ ,  $p = .000$ . Post-hoc contrasts showed that Protestants ( $M = 0.327$ ,  $SD = 0.984$ ) were more religious than Jews ( $M = -0.477$ ,  $SD = 0.564$ ),  $t(151) = 5.063$ ,  $p = .000$ , *Cohen's d* = 1.003. Catholics ( $M = 0.149$ ,  $SD = 0.861$ ) were also more religious than Jews,  $t(151) = 3.277$ ,  $p = .001$ , *Cohen's d* = 0.860, but did not differ significantly from Protestants,  $t(151) = 1.007$ ,  $p = .316$ , *Cohen's d* = 0.193.

### Transgression Conditions

To test for the effects of transgression conditions, 3 (Protestant, Catholic, Jewish) by 2 (photo album attractive or unattractive) by 2 (photo album girlfriend or sister) by 2 (LDT dirty or clean) ANOVAs were run for each variable. Results were significant only for the two creativity tasks.

The omnibus ANOVA showed no main effects on the haiku task. There was, however, a significant interaction between religion and LDT,  $F(2,125) = 4.143$ ,  $p = .018$ . Post-hoc contrasts showed that Protestants scored higher in the dirty condition ( $M = 2.443$ ,  $SD = 0.681$ ) than in the clean condition ( $M = 2.155$ ,  $SD = 0.443$ ),  $t(125) = 2.015$ ,  $p = .046$ , *Cohen's d* = 0.501. Catholics, on the other hand, scored lower in the dirty condition ( $M = 2.020$ ,  $SD = 0.544$ ) than in the clean condition ( $M = 2.525$ ,  $SD = 0.754$ ),  $t(125) = -2.399$ ,  $p = .018$ , *Cohen's d* = -

0.768. There was no difference between Jews in the dirty condition ( $M = 2.279$ ,  $SD = .613$ ) and the clean condition ( $M = 2.401$ ,  $SD = 0.552$ ),  $t(125) = -0.670$ ,  $p = .504$ , *Cohen's d* = 0.209, although Jews in the dirty condition scored relatively lower. Additionally, Protestants scored higher than Catholics or Jews in the dirty condition,  $t(125) = 2.047$ ,  $p = .043$  and lower than Catholics or Jews in the clean condition,  $t(125) = -2.221$ ,  $p = .028$ . See Table 3.1 and Figure 3.2 for a summary of these findings.

As in the haiku task, the omnibus test for the clay task did not show main effects, but did show a marginally significant interaction between religion and LDT,  $F(2,127) = 2.975$ ,  $p = .055$ . Post-hoc comparisons showed that Protestants scored marginally higher in the dirty condition ( $M = 2.687$ ,  $SD = 0.640$ ) than in the clean condition ( $M = 2.426$ ,  $SD = 0.617$ ),  $t(127) = 1.729$ ,  $p = .086$ , *Cohen's d* = 0.415. Catholic and Jewish scores did not differ between the dirty condition (Catholics:  $M = 2.575$ ,  $SD = 0.633$ ; Jews:  $M = 2.488$ ,  $SD = 0.460$ ) and the clean condition (Catholics:  $M = 2.678$ ,  $SD = 0.882$ ; Jews:  $M = 2.664$ ,  $SD = 0.537$ ),  $t(127) = -0.469$ ,  $p = .640$ , *Cohen's d* = 0.134 for Catholics and  $t(127) = -0.955$ ,  $p = .341$ , *Cohen's d* = -0.352 for Jews, although both showed a trend to score higher in the clean condition. Protestants did not score differently from Catholics and Jews in the dirty condition,  $t(127) = 1.045$ ,  $p = .298$ , and showed only a marginal trend to score lower in the clean condition,  $t(127) = -1.680$ ,  $p = .095$ . See Table 3.3 and Figure 3.4 for a summary of these findings. Tables 3.5 through 3.8 show summaries of the aesthetic preference and hard work tasks.

## **CHAPTER 4**

### **DISCUSSION**

Overall the three religious groups performed similarly on the various tasks. However, there was an effect of sense of transgression on the creativity tasks. Protestants created relatively better American haiku poems and clay sculptures when they had been primed with dirty words in the LDT, while Catholics and Jews created relatively better poems and sculptures when primed with clean words.

Unfortunately viewing pictures of a highly attractive young woman and imagining her as their girlfriend did not affect participants' scores. It is possible that participants were not fully able to internalize the manipulation scenario or that any impact of the scenario did not translate to the rest of the study. It seems more plausible, however, that imagining a very attractive young woman as their girlfriend did not make participants feel deprived, and that any other effects of this condition – such as increased arousal – did not have an effect on creativity or the other tasks. Thus our supraliminal manipulation did not work out. However, priming with clean or dirty words in the lexical decision task did have a clear effect.

Why does being primed with dirty words lead Protestants to produce better creative works, while Jews and Catholics create better pieces when primed with clean words? This result was not consistent with our hypotheses about the Protestant Work Ethic, insofar as we expected Protestants to work harder but to be less creative. It seems plausible that the effect may have been driven by differences in religiousness of the three religious groups. However, the interaction between religion and LDT remained even when religiousness was controlled for. Ultimately, we still interpret the results in line with the PWE.



The PWE suggests that Protestants should work harder than non-Protestants. This should especially be the case in the face of transgression, because the doctrinal basis of the PWE recommends hard work in the face of temptation and because – in practice – hard work and success were often used as a means to reassure oneself of one’s salvation (Weber, 1904/1958). Although Protestants did not work more diligently on any of our concentration measures, they did work more productively – in the sense of creating better poems and sculptures – when primed with impurity. Despite suggestions that Protestants (Bendix, 1960) and individuals high on work ethic (Christopher et al., 2008a) should be lower on creativity, it appears that PWE may lead to more creative work, at least when issues of impurity have been raised.

On the other hand, Catholics and Jews, who would be expected to be lower in PWE, were less creative when primed with impurity. Being primed with impurity may have led them to feel guilty and thus stifled their creativity rather than stimulating their productivity. It would be important to include a control group on the LDT, however. Since all participants were primed with either clean or dirty words, we don’t know which prime was driving the effect, or whether both primes influenced participants’ creativity. In future studies, a control group should complete an LDT task consisting only of neutral words.

Another confound that should be controlled for in future studies is that all of our Catholics were Latino or of Hispanic origin. This was in part so that we could provide maximum differentiation between our Protestant and Catholic groups in this initial study. In the future, participants of more varied ethnicities – such as Caucasian Catholics or Asian Protestants – should be used to determine whether the effect is actually due to religion itself or to some combination of religion and culture.

Many other questions also remain. Why did we get such strong results for the creative tasks, but no differences for the diligence tasks? Would we find differences between Protestants and non-Protestants in diligence or hard work measured in a different way? In general it would be interesting to further explore the differences between harder work and better work and how they relate to the PWE. For example, Saal (1978) found that PWE, along with a number of other variables such as age and type of job, predicted job involvement, but not job performance.

Further, would we get the same results for females as for males? We used only male participants in this study because we expected the photo album manipulation to have a stronger effect for men. However, the LDT manipulation could be expected to work as well for women. Sanchez-Burks (2002) found an effect of Protestantism only in men. On the other hand, Sanchez-Burks' dependent variables were in a domain that is generally stronger in women, namely social sensitivity. Therefore it would be interesting to see whether we would get the same pattern of results in women, or whether PWE works differently in women than in men. Looking at gender may also be complicated if the effect of the LDT manipulation only works within the context created by the photo album task, since this context would be hard to transfer to women. In part for this reason it would be important to see whether the effect of the LDT holds when it is completed outside the context of the photo album family task.

Another dimension to explore would be potential differences between different groups of Protestants, such as Lutherans, Calvinists, and Arminians. Since the PWE is based on doctrines that are much stronger in Calvinist than in Lutheran teachings, for example, we might expect the current finding to be stronger in Calvinist than in Lutheran Protestants. Sanchez-Burks (2002) studied only Calvinist Protestants for this reason. However, the largest sub-group of our Protestant participants were Lutherans (26 individuals), while only 4 Presbyterians were clearly

Calvinist in orientation. If specifically Calvinist doctrines, particularly predestination and the ensuing anxiety about one's salvation, drive the PWE, we might expect an even stronger effect with a sample of specifically Calvinist Protestants. Arminian doctrines and history are closely related to Calvinism, but they reject absolute predestination, so Arminians would be expected to show an effect more like that of Lutheran than of Calvinist Protestants.

Our results depend on the assumption that Protestants are higher in PWE than non-Protestants. Although this assumption has been supported in other research (e.g. Giorgi & Marsh, 1990), it would still be informative to measure PWE in participants. It may be that measured PWE would further our understanding of creativity in different populations either as a more reliable method of distinguishing individuals (in place of religion), or as a more specific trait (in addition to religion). However, probably for a variety of reasons, past research on the PWE has been equivocal when self-report measures have been used, and perhaps behavioral measures may be a better method of investigating the effects of PWE (see Heine, 2007).

Insofar as self-report measures and other individual measures of PWE can be used, it would be interesting to look at individual facets of PWE, such as those determined by Miller et al. (2002). Christopher and colleagues (2008a, 2008b) suggest that use of the individual facets of PWE can give us a much better understanding of the related social characteristics, and in fact the different facets of PWE are at best moderately correlated (Miller et al., 2002). It is easy to imagine, for example, that the current result of improved creative production in Protestants primed with dirty words might be more strongly related to morality/ethics than to attitudes towards leisure (see Miller et al., 2002, p. 464 for a complete description of all their PWE facets).

There are many interesting directions which the current research could take. However, the current findings are also interesting in their own right. The relationship between PWE and creativity has barely been studied. In a search of the PsycInfo database, the closest link between PWE and creativity was Berry's (1999) analysis of the religious background of prominent scientific and artistic achievers. At least as important is the finding of an interaction between religion and the clean/dirty prime. Studying the interaction of PWE and factors such as transgression, guilt, or concern with one's salvation may greatly enhance our understanding of work ethic and related measures.

## TABLES AND FIGURES

Figure 2.1 – Examples of Stimuli in Photo Album Task

(a) Page 2 – Middle Childhood – The accompanying starter sentences read: “My family used to go on vacation to the beach every summer. We always had a great time...”



Figure 2.1 Cont.

(b) Page 4 – Attractive Conditions – The accompanying starter sentences read: “My sister always loved the color red. One summer she even dyed her hair red. That was a crazy summer...”





Figure 2.1 Cont.

(c) Page 4 – Unattractive Conditions



Figure 2.2 – Complete List of Letter Strings Used in Lexical Decision Task

Clean Words	Neutral Words	Non-Words	Non-Words Cont.
clean	printer	nirpter	reuvit
pure	wheat	wetha	bolne
good	umbrella	llembura	werdar
soul	city	ticy	wythor
virtue	tablet	batlet	oppraval
noble	monkey	kemony	peryar
reward	firework	frikrow	tirdy
worthy	sunset	snutse	suniph
approval	present	penster	leiv
prayer	cloudy	cudoly	tugil
	narrow	orrwan	abd
	declare	lardece	seffur
	suit	itsu	bordif
	twice	wicet	sropin
	garage	gegaar	denmonc
	weather	wheetha	tejerc
	vacuum	cuvuma	
	leave	evela	
	staple	laspert	
	chairs	rischa	
	taxi	axit	
	brick	birck	
	bike	beik	
	phrase	shearp	
	next	xent	
	eight	thegi	
	coal	olca	
	broom	ormbo	
	joke	jeko	
	road	daro	
	acre	crea	
	years	aryes	
	are	rea	
	mobile	limebo	
	folder	delfer	
	square	quarse	
	willis	nacle	
	yam	erup	
	maze	dogo	
	mellow	olsu	

Dirty Words
dirty
punish
vile
guilt
bad
suffer
forbid
prison
condemn
reject

Self-Prime Words
iwill
iyam
meeiz
mewill



Table 3.1 – Mean Scores for Religion by LDT Interaction on Haiku Task

	Dirt Prime	Clean Prime	Difference in Scores Across LDT Conditions
<b>Protestants</b>	2.443 (n=33)	2.155 (n=39)	-0.288
<b>Catholics</b>	2.020 (n=17)	2.525 (n =16)	0.505
<b>Jews</b>	2.279 (n = 22)	2.401 (n = 22)	0.122

Figure 3.2 – Mean Scores for Religion by LDT Interaction on Haiku Task

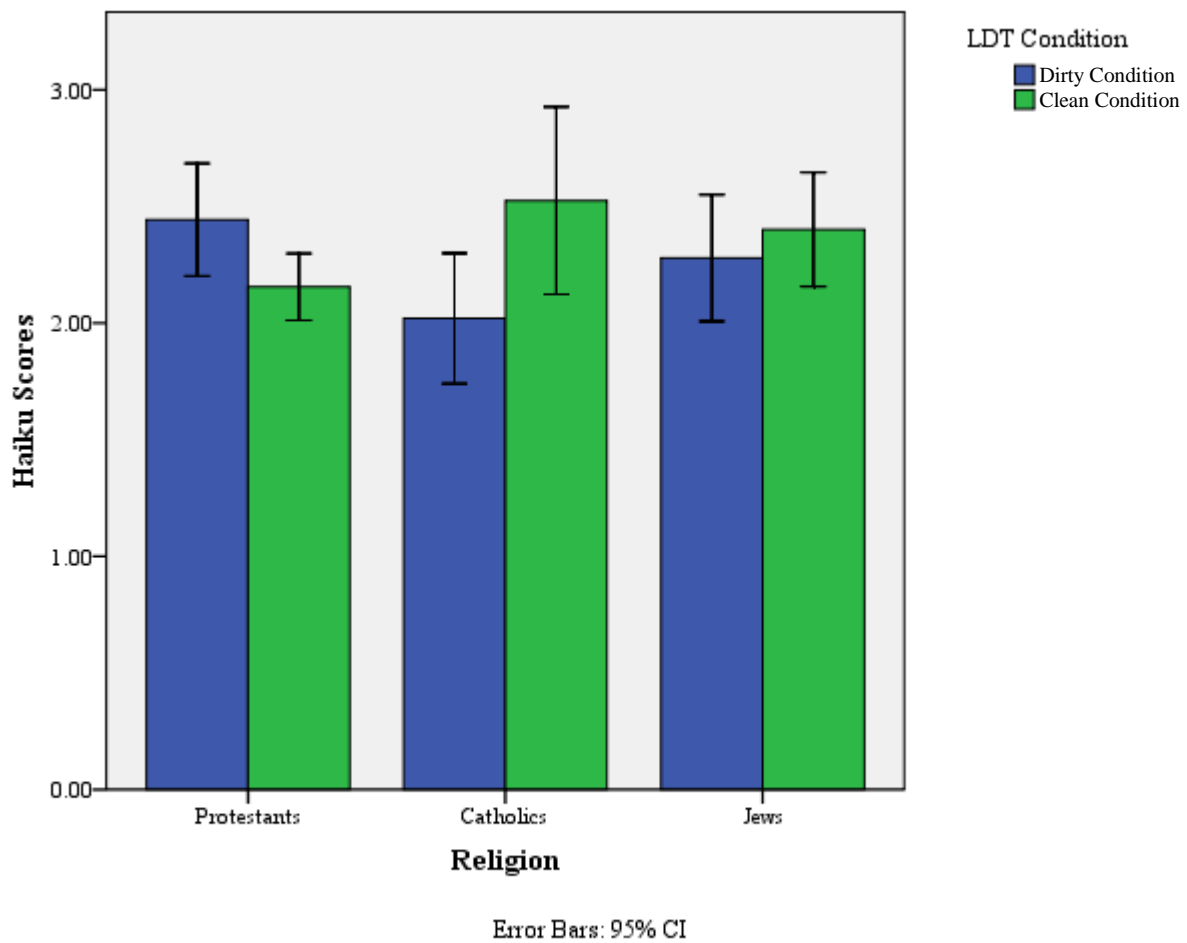


Table 3.3 – Mean Scores for Religion by LDT Interaction on Clay Task

	Dirty Prime	Clean Prime	Difference in Scores Across LDT Conditions
<b>Protestants</b>	2.687 (n=32)	2.426 (n=39)	-0.261
<b>Catholics</b>	2.575 (n=15)	2.678 (n =15)	0.103
<b>Jews</b>	2.488 (n = 24)	2.664 (n = 23)	0.176

Figure 3.4 – Mean Scores for Religion by LDT Interaction on Clay Task

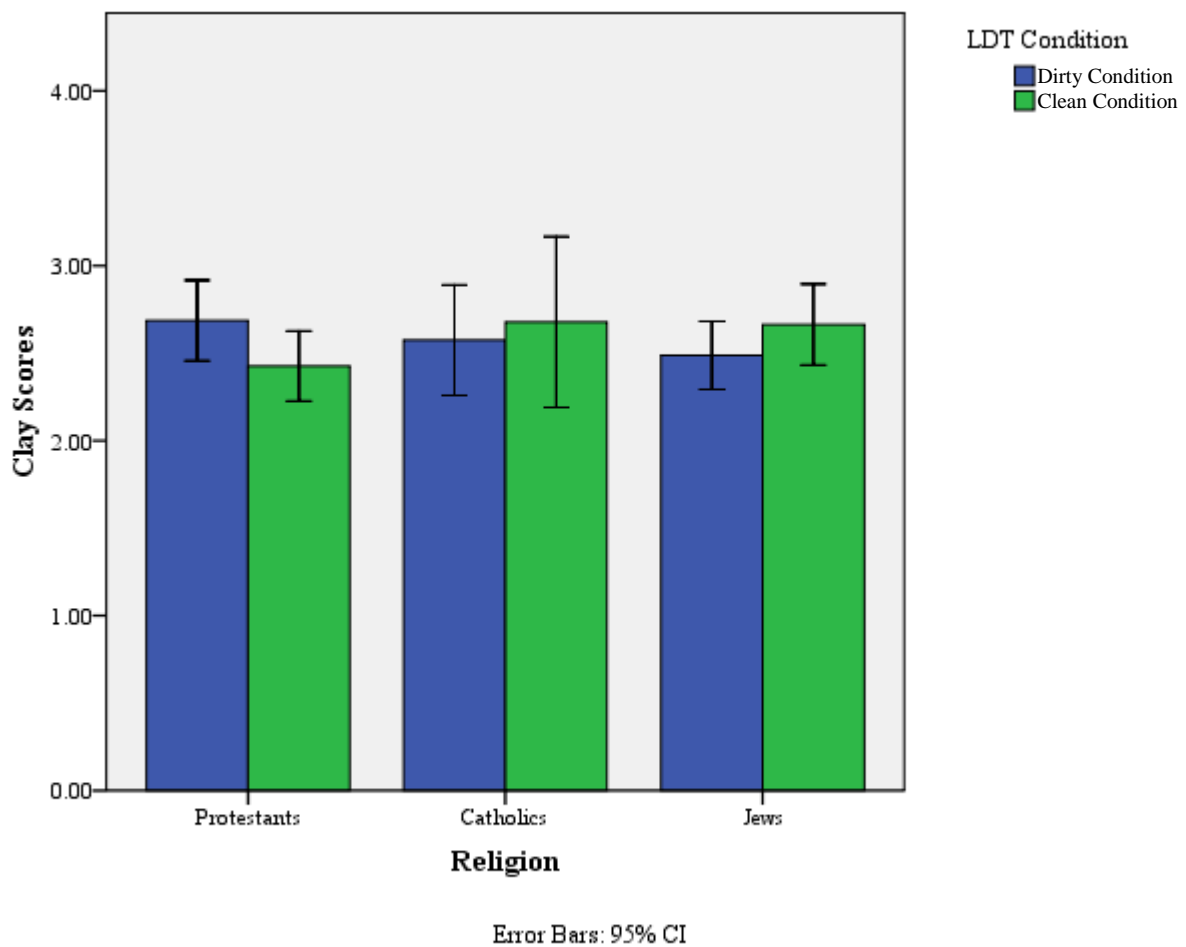


Table 3.5 – Mean Scores for Religion by LDT Interaction on Music Preferences (Music Task)

	<b>Dirty Prime</b>	<b>Clean Prime</b>	<b>Difference in Scores Across LDT Conditions</b>
<b>Protestants</b>	3.091 (n=33)	3.372 (n=39)	0.281
<b>Catholics</b>	3.667 (n=18)	3.469 (n =16)	-0.198
<b>Jews</b>	3.104 (n = 24)	3.326 (n = 23)	0.222

Higher numbers indicate a stronger preference for the complex piece of music (Stravinsky).

Table 3.6 – Mean Scores for Religion by LDT Interaction on Poetry Preferences (Poetry Task)

	<b>Dirty Prime</b>	<b>Clean Prime</b>	<b>Difference in Scores Across LDT Conditions</b>
<b>Protestants</b>	2.647 (n=34)	2.577 (n=39)	-0.070
<b>Catholics</b>	2.639 (n=18)	2.344 (n =16)	-0.295
<b>Jews</b>	2.708 (n = 24)	3.109 (n = 23)	0.401

Higher numbers indicate a stronger preference for the complex poem (Frost).

Table 3.7 – Mean Scores for Religion by LDT Interaction on Wordsearch Task

	<b>Dirty Prime</b>	<b>Clean Prime</b>	<b>Difference in Scores Across LDT Conditions</b>
<b>Protestants</b>	9.12 (n=34)	8.23 (n=39)	-0.89
<b>Catholics</b>	9.28 (n=18)	8.88 (n =16)	-0.40
<b>Jews</b>	8.17 (n = 24)	9.00 (n = 23)	0.83

Table 3.8 – Mean Scores for Religion by LDT Interaction on Overall LDT Mean Response  
Times (in milliseconds)

	<b>Dirty Prime</b>	<b>Clean Prime</b>	<b>Difference in Scores Across LDT Conditions</b>
<b>Protestants</b>	614 (n=34)	618 (n=39)	4
<b>Catholics</b>	660 (n=18)	607 (n =16)	-53
<b>Jews</b>	623 (n = 23)	613 (n = 23)	-10

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## **APPENDIX: SCRIPT USED TO STANDARDIZE EXPERIMENTER-PARTICIPANT INTERACTIONS**

After greeting participant and asking him to sign in, experimenter continued as follows:

“Great, let’s get started. Why don’t you have a seat at this desk over here.”

Once participant is seated:

“We’re doing a study today that consists of a variety of tasks. Some ask you to make or write something, one is a computer task, and we have some decision tasks as well as three short surveys. We want to see if there are any relationships between the way we perceive the world, process stimuli, and make things. Researchers don’t know what kind of relationships there might be, or if there are even any relationships at all between these sorts of tasks. But before we start, I’d like you to read through this informed consent form and sign it. Let me know if you have any questions, at any time.”

When consent form is signed, take it and proceed to first task.

Photo Album Task:

“The first task is a writing task at the computer, so if you could please have a seat over here...”  
When participant has moved to the computer, turn on monitor. “There are five pages in this task. Each page consists of a number of photographs as well as one or two starter sentences. I would like you to write a few paragraphs on each page that complete the starter sentences and relate to the photographs. The photographs and sentences will relate to a fictional family, and I would like you to pretend that this family is *your own family*. So you will be writing about family memories based on these photos *as though they were your own*. We need you to really get into your role, really imagine that this is *your life* and *your memories* that you are writing about. Feel free to improvise. Just keep writing to make a story related to the pictures. I will give you fifteen minutes for these five pages, and I will let you know every three minutes to go on to the next page. If you’re in the middle of a sentence when I tell you to go on, that’s okay, just continue to the next page. Do you have any questions? Great, then go ahead and click ‘next’.”

Start timer. At 2:45 (minutes:seconds), 5:30, 8:30, and 11:45, say “Okay, another three minutes are up. You should go on to the next page please.”

After 15 minutes tell participant:

“Okay, time’s up. Please go on to the final screen.” Do NOT look at the computer screen until you are certain participant has gone to final screen. If you can see bright colors out of the corner of your eye, they haven’t gone on. “Were you able to finish everything? Great (or) That’s okay.” Either way, note answer on experimenter sheet. “Let’s go on to the next task.”

Lexical Decision Task – open DirectRT → file → select and run input file → choose correct version (X or Y) → enter correct participant number:

“This task asks you to respond to different letter combinations by pressing either the 1 or the 3 on the number pad.” point to NUMBER PAD “Some of the letter combinations will be actual words, and some will not be actual words. If you see an actual word, like banana, press the 1. If you

see a letter combination that is not an actual word, like nabana, press the 3. The task has two parts, so in the middle you will see the instruction screen again. You'll know you have finished when the screen says 'End of Task'. Go ahead and review the instructions, and try to respond as quickly as you can, but without making too many mistakes. Any questions? Great, then just let me know when you're finished."

When participant is finished:

"Great. Then why don't you have a seat at the desk again."

"Now before we go on to the next task, I'd like to know whether you would prefer to do a task in which you have to make something, or a worksheet?"

If make something:

"Great. Then let's start with that."

If worksheet:

"Great, then why don't we start by making something so we can finish up with your favorite."

Note choice on experimenter sheet.

Clay Task – bring clay and piece of cardboard:

"Now let's continue with the next task. I'd like you to take this piece of clay and to make something out of it. I am going to give you 7 minutes to make anything you like, and at the end of the 7 minutes, I am going to ask you to give a title to your piece. Any questions? Great, then go right ahead, just please keep the clay over the piece of cardboard."

Start timer. After 7 minutes, return to participant, with hand sanitizer and some paper towels.

"Okay, time's up. Do you have a title for your piece? Great, thanks. If your hands are goopy, feel free to use some hand-sanitizer and a paper towel. That works pretty well." Write title on comments sheet. Remove clay on cardboard, and hand sanitizer and paper towel.

Music Task – turn on boombox before instructions:

"I am going to have you listen to some music during a later task. To help me prepare for that, I'd like you to choose the music you would prefer to listen to. I have two samples, and I'd like you to answer the questions on this sheet regarding the two samples. Do you have any questions? Okay, then here are the pieces."

After second sample, ask "Okay, now do you know which of these pieces you would prefer to listen to during the later task?" If participant wants to hear one of the samples again, play the sample for 15-20 seconds. If participant asks to hear a second sample again, say "Okay, but after that, I would like you to make your choice" and play sample for 15-20 seconds. Note participant's choice.

Poetry Task:

"Now the next task is a choice between different poems. I have a sheet with two poems and some questions here. I'd like you to read the two poems and answer the questions at the bottom. Okay? Then I will give you three minutes, or let me know when you have finished." Start timer.



When participant is finished, or after three minutes, collect sheet and proceed to next task.

#### Haiku Task:

“For the next task I’m going to ask you to write a poem. The poem should be in a specific style, known as an American haiku.” Hand sheet to participant, and point at each line in turn. “The American haiku consists of five lines, as you can see in this sample. The first and last line consist simply of a noun, in this case the noun ‘ocean’. The second line consists of two adjectives describing the noun, in this case ‘wavy’ and ‘foamy’. The third line consists of three verbs relating to the noun, in this case ‘roll’, ‘tumble’, and ‘crash’. The fourth line consists of a phrase or sentence relating to the noun, in this case ‘all captured in this shell at my ear’.”

“Now I would like you to write an American haiku of your own, about the noun ‘laughter’. So remember, the first and last lines should be the noun, laughter, and the other three lines should follow the pattern I just described. I will give you five minutes to complete the task. Any questions? Great, then please begin.”

Start timer. After 5 minutes return to participant.

“Okay, time’s up. Thank you.” Collect sheet.

#### Word Search Task:

“Okay, this task is a word search. Hidden amongst these letters are the words found in this column at the right. The words can be spelled in any direction, including diagonally and backwards. I’m going to give you four minutes to find and circle as many of these words as you can. Any questions? Okay, then please begin.”

Start timer. After 4 minutes return to participant.

“Time’s up. Great.” Collect sheet.

Demographics – put surveys down on desk with first side facing up – when collecting, make sure all surveys are completed on both sides:

“Okay, now I just have three quick surveys, and then we’re done. Here is the first survey. Please try to answer as best you can. These should only take a couple of minutes.” Give participant survey 1. Put in correct CD with full tracks.

When participant is finished, take survey 1 and give survey 2. When participant is finished, take survey 2, give survey 3, and say “I will be playing you the music you chose earlier during this survey. Please let me know when you are finished, or if you have any questions.” Play music.

When participant is finished, take survey 3.

Debriefing – turn off music and draw up a chair:

“Thanks so much. Now before we finish up, I’d like to ask you a few questions if that’s okay.”

Begin debriefing by asking the following questions, in order.

Record what participant says on experimenter comments sheet.

- Please describe what happened in today's experiment.
- Can you summarize what study was about? (encourage if necessary)
  - What did/do you think the study is about?
  - Do you have an idea what the hypothesis might be?
- Was there anything more to the study than met the eye?
  - Anything more than what we told you?
- Were you suspicious of anything in the experiment?

Record what participant says on experimenter comments sheet.

“So do you have any questions for me?”

A complete debriefing completed the study.