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ANTECEDENTS TO TAXPAYER COMPLIANCE:  
ESSAYS EXPLORING THE INFLUENCE OF PERSONALITY AND CULTURE

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By:  
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ANTECEDENTS TO TAXPAYER COMPLIANCE:  
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ABSTRACT

The topic and “problem of tax compliance is as old as taxes themselves” (Andreoni, Erard, & Feinstein, 1998, p. 816). This statement helps explain why tax compliance issues remain such popular topics in the stream of academic and practitioner research. Much of the past research on tax compliance or non-compliance can be grouped into three main categories that relate to deterrence, economic reasons, and social or psychological theories (Cuccia, 1994). In a review of extant literature in these areas, research gaps remained to which this dissertation contributed. Specifically, gaps related to the relationship between tax compliance and personality traits, as well as a deeper understanding of the moderating influence of national culture on known influential variables related to tax compliance intentions were assessed. Two separate but interrelated studies were conducted to shed new light on the tax compliance issue: One study used survey data collected from individuals that file taxes in the United States while the other study employed secondary data from available archival sources (i.e., wave six of the World Values Survey). Various statistical techniques were employed including multilevel analysis

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(hierarchical linear modeling) as well as multivariate linear regression. Findings indicate that personality, specifically the trait of extraversion, bears a relationship with taxpayer non-compliance intentions. Furthermore, results provide support for certain national cultural dimensions (masculinity, individualism, and uncertainty avoidance) having a moderating influence between several demographic predictors and taxpayer compliance intentions. Implications and limitations of this research are also provided.

*Keywords:* tax compliance, tax evasion, personality, Big Five, national culture, Hofstede

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## CHAPTER I—SUMMARY OF RESEARCH

The total underreported individual tax liability in the United States approximates \$264 billion per year (Internal Revenue Service, 2016b). This amount is in fact so large that if it could be eliminated, it would make a significant impact in U.S. budget deficit reduction (Kite, 1996). Globally speaking, the damage being caused by non-compliant taxpayers may be even more severe. For example, in the U.S. the non-compliance rate of taxpayers equals 0.5% of gross domestic product (GDP) while in countries like Mexico and Turkey the rates are far greater, measuring in at 6.8% and 6.7%, respectively (Bühn & Schneider, 2016). Regardless of country, however, income tax is a vital component to the funding of an economy (Bame-Aldred, Cullen, Martin, & Parboteeah, 2013). These numbers and percentages highlight the damage that is occurring across countries due to non-compliant taxpayers. This dissertation seeks to help provide additional insights as to variables that bear a meaningful relationship with taxpayer compliance intentions so that both academia and practice can better be prepared to profile, interact, and assess compliant versus non-compliant taxpayers.

In trying to better understand the profile of a compliant taxpayer, research has been done that has looked at many of the key demographic characteristics held by taxpayers (Jackson & Milliron, 1986; McGee & Tyler, 2006; Pickhardt & Prinz, 2014; M. Richardson & Sawyer, 2001). These studies have looked at features such as age, gender, income level, education level, and tax fairness perception, to name a few. Looking at more recent literature, topics related to the influence that social norms, ethics, and tax morale have on taxpayer compliance have gained traction (Alm & Torgler, 2011; Bobek, Hageman, & Kelliher, 2013; Torgler, 2003), while more dated models have looked at understanding how the fear of sanction or penalty influences the decisions made by taxpayers (Allingham & Sandmo, 1974).

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Building on this, calls for additional tax compliance research in a cross-country setting have been made over the last two decades (Andreoni, Erard, & Feinstein, 1998; Tan & Sawyer, 2003; Torgler, 2002). These calls have created a foundation on which studies have built to better understand the influence that national culture has on taxpayer compliance intentions (Alm & Torgler, 2006; Riahi-Belkaoui, 2004; G. Richardson, 2008; Tsakumis, Curatola, & Porcano, 2007). In combination, these various research streams call attention to the significant amount of focus that extant literature has given to variables that have a relationship with taxpayer compliance intentions.

In a review of this same literature, however, gaps remain. Specifically, the topics of personality and national culture related to individual taxpayer compliance have not yet been fully investigated. Related to personality, in looking at the widely applied Big Five personality traits (extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience) the closest publication related to taxpayer compliance does so under the overarching concept of white-collar crime (Turner, 2014). The Turner (2014) study measured white-collar crime and, in turn, made some generalizations that upon deeper analysis may not hold true when removing the topic of taxpayer non-compliance from the umbrella topic of white-collar crime. Related to the influence of national culture, a review of published studies highlights that national culture has been looked at related to the main effect influences only (G. Richardson, 2008; Tsakumis et al., 2007).

Noting these areas for which additional research is needed, this dissertation explored the relationships that individual personality traits and national cultural dimensions have with individual taxpayer compliance intentions. In order to provide adequate coverage of both topics, this dissertation proceeds by using a two-essay format. The first essay looks at the relationship

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between the Big Five personality traits and individual taxpayer compliance intentions across a gamut of taxing scenarios. The second essay explores the moderating role that national culture has in the relationship with individual taxpayer compliance intentions. Both essays are described in the following pages.

### **Essay 1: Personality Traits and Individual Taxpayer Compliance**

For the 2013 tax year, over 147 million individual tax returns were filed with the Internal Revenue Service (2013). These filings generate approximately 46% of all federal tax revenue for the government (Internal Revenue Service, 2016b) and indicate that a substantial number of taxpayers are filing tax returns and paying tax to support the operations of government. Many reasons exist for why individual filers may strive to comply with tax regulations. Some of these reasons include the fear of being assessed penalties as well as the chance of being selected for audit in the event of non-compliance. Unfortunately, gaps in this type of reasoning remain as the current risk of the latter possibility (i.e., being audited) is less than 1% (Internal Revenue Service, 2016a; Violette, 1989; Wilbur & Grasmick, 1981). Borrowing from the *economics-of-crime* approach, this raises the question as to why there is so little cheating as this low rate of audit in the U.S. lends support to the idea that more taxpayers would choose to cheat as the likelihood of being caught is minimal (Alm & Torgler, 2011).

One possible answer to this compliance question could be the component of personality. Personality has been shown to have predictive capabilities over how people will respond in certain situations (John, Robins, & Pervin, 2008) providing support that personality is a “predisposition to behave systematically” (Taggar & Parkinson, 2007, p. 123). As the tax filing process is essentially a system related to the collection of information and presentation of it in a logical form—a tax return—it is believable that personality may have a relationship between

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those that choose to comply and those that do not. To date, tax compliance research has loosely looked at the effects of personality in studies; however, one of the largest measures of personality—the Big Five—has not yet received attention specific to tax compliance intentions.

Also, within the realm of tax compliance research, studies have typically relied on single-item measures (Blanthorne & Kaplan, 2008; Bobek, Roberts, & Sweeney, 2007) that do not accurately reflect the plethora of pieces that might exist in the filing of a real-world tax return. For a taxpayer to come up with a correct tax return, it is necessary to properly comply with income reporting and deduction claiming (Roth, Scholz, & Witte, 1989). In a research setting, single-item measures of tax compliance may not be accurate because taxpayers may make a correct decision on one item but not on another. Therefore, this study introduced a combined measure that revealed taxpayer compliance intent related to the individual and combined analysis of six different taxing scenarios covering decisions related to income reporting, deduction claiming, and credit usage. In addition, this study captured the variance of taxpayer non-compliance decisions related to the difference between lack of knowledge and willful intent.

Extant research related to tax compliance and personality is presented to lay the foundation for this study. Five hypotheses are presented that represent posited relationships between tax non-compliance and each of the five Big Five personality traits. Proposed relationships for taxpayers are that extraverts and those more open to experience would be more likely to engage in non-compliance. Other posited relationships are that lower-scoring individuals on scales of neuroticism, agreeableness, and conscientiousness will also display intentions of non-compliance.

Testing these hypotheses and closing some of the gaps in the extant literature, this study employed survey methodology to look at the influence that the Big Five personality traits had on

taxpayer compliance intentions across a variety of taxing scenarios. In summary, this essay sought to answer the question: How are personality traits related to individual taxpayer compliance intentions?

### **Essay 2: Moderating Role of National Culture on Individual Tax Compliance**

Studies have looked at the influence that national culture has on tax compliance (Riahi-Belkaoui, 2004; G. Richardson, 2008; Tsakumis et al., 2007). Analysis within these studies was typically done via the use of aggregated data narrowed to a country-level while only considering culture's main effect influence. These studies showed support for national culture having predictive compatibilities related to tax compliance. As culture refers to a "collective programming of the mind which distinguishes the members of one human group from another" (Hofstede, 1980, p. 21), these findings are logical.

Furthermore, individuals within these cultures have values instilled in them. These values are typically introduced during youth and retained for a lifetime (Hofstede, Neuijen, Ohayv, & Sanders, 1990). The source of these values can come from various places (occupation, family, school, etc.) but the uniqueness to each country is the influence that culture has on the development of the citizens. As the culture of a country is all-surrounding, it impresses upon individuals and has a profound impact as they grow and develop. Although research has supported a main effect relationship, research opportunities remained as to how national culture may moderate relationships with other variables.

Looking at tax compliance research, some of the most common variables included in studies are demographic in nature. These variables include items such as age, gender, income source, education level, and income level. Published literature reviews over the past few decades highlight the frequency for which these variables have been researched (Borrego, Lopes, &



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Ferreira, 2013; Jackson & Milliron, 1986; Richardson & Sawyer, 2001). Findings across studies, as summarized in these reviews, lend support that younger, self-employed, male individuals are typically more likely to engage in unethical behavior. This behavior includes decisions related to tax non-compliance.

This second essay looked to move beyond main effect relationships of the previously presented items and sought to better understand how demographic variables that could be used for profiling purposes interact with national cultural dimensions. Borrowing from literature outside of the field of tax compliance, national culture has been shown to moderate the relationship between certain demographic variables (Taras, Kirkman, & Steel, 2010). However, research is needed related to tax compliance.

Twelve hypotheses are presented, which consider the following Hofstede national cultural dimensions: (1) masculinity, (2) uncertainty avoidance, (3) power distance, and (4) individualism. These hypotheses propose relationships between each of the four cultural dimensions and their respective interaction with the demographic variables of age, gender, and income source. Posited relationships are that the cultural dimensions of masculinity, uncertainty avoidance, and power distance will all provide negative moderating influences on tax compliance intentions of older, female individuals, and a positive moderating influence on self-employed individuals. The culture dimension of individualism is anticipated to provide a positive, or strengthening influence, with the same independent variables.

This study is the first that I am aware to have examined the potential moderating effect of national culture while retaining the important individual level characteristics of respondents. Specifically, a statistical method, hierarchical linear modeling (HLM), designed to deal with

cross-level data was employed to investigate the question: Does national culture moderate the relationship between individual determinants and taxpayer compliance intentions?

### **Conclusion**

Answering the questions and testing the hypotheses alluded previously, this research found support that personality does have a relationship with taxpayer compliance intentions. Specifically, the Big Five trait of extraversion displayed a positive relationship with many taxing situations related to taxpayer non-compliance. Also, this dissertation supported that the Hofstede cultural dimensions of masculinity, individualism, and uncertainty avoidance bear moderating relationships with age and gender, gender, and income source, respectively. Findings and implications related to both essays as well as accompanying limitations are presented in the following chapters.

In addition, this dissertation provided support to show the usefulness of a multi-item non-compliance measure. Single-item compliance measures may not always be appropriate to adequately capture non-compliance intentions. Also, this dissertation added to research a better understanding of the influence of taxpayer knowledge as well as the negative impact that frequency of exposure has on non-compliance tax decisions. Finally, added support to extant literature was provided as to the benefit and usefulness of third party reported tax documents.

In summary, this dissertation contributed in several areas. Specifically, a better understanding of the influence that individual personality traits and national cultural dimensions have on individual taxpayer compliance intentions was obtained. The goal of this research was to provide information that can feedback into practice and academia to provide a contribution as to a deeper understanding of the profile of a compliant versus noncompliant taxpayer. The essays as presented provide such a contribution. As we seek to be able to better profile, interact,

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and assess compliant versus non-compliant taxpayers, this dissertation lends support to the explanatory power added by embracing the direct influence that personality and moderating influence that national culture bring to taxpayer compliance behavior.

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CHAPTER II—ESSAY 1

AN INVESTIGATION OF BIG FIVE PERSONALITY TRAITS  
AND INDIVIDUAL TAXPAYER COMPLIANCE

Abstract

The purpose of this study was to empirically examine the relationships between the Big Five personality traits and individual taxpayer compliance intentions in the United States. Past studies that examined the Big Five personality traits have grouped tax evasion with other white-collar crimes (Blickle, Schlegel, Fassbender, & Klein, 2006; Turner, 2014). Unfortunately, white-collar crime is often treated broadly and may not adequately represent the tax filing process and the plethora of tax situations and decisions that individual taxpayers frequently make. This study attempted to better understand the relationship between the Big Five personality traits of extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience across various individual taxpayer scenarios. Specifically, this study examined the underlying relationship between personality differences and tax compliance (or non-compliance) nested within taxpayer situations related to the potential underreporting of income, overstatement of expenses, and abuse of tax credits. Results provide support that the extraversion trait bears a positive relationship with taxpayer non-compliance intentions. Implications for future research and practice are discussed.

*Keywords:* tax compliance, tax evasion, personality, Big Five



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The individual taxpayer's tax gap, defined as the difference between what an individual taxpayer owes and what is voluntarily and timely reported and paid (Andreoni, Erard, & Feinstein, 1998), amounts to a total volume of approximately \$319 billion per year in the U.S. (Internal Revenue Service, 2016b). This amount represents over 69% of the entire U.S. tax system gap. The tax revenue generated from individual taxpayers in the U.S. represents over 47% of total budget revenue for the federal government (U.S. Office of Management and Budget, 2017). Taken together, these figures not only highlight the important role that individual taxpayers play related to revenue generation for the U.S. government, but they also shed light on the damage resulting from non-compliant taxpayers.

Currently, the Internal Revenue Service measures the tax gap by subdividing taxpayer non-compliance (both willful and accidental) into three categories: non-filing, underpayment, and underreporting. The first two categories (non-filing and underpayment) together represent just over 17% of the tax gap explained previously (Internal Revenue Service, 2016b). Therefore, 83% of the lost annual tax revenue results from the underreporting of income tax (the net result of taxable income, allowable deductions, and credits). Although studies have looked at various components of personality and individual taxpayer compliance (Collins, Milliron, & Toy, 1992; Hessing, Elffers, & Weigel, 1988; Tittle, 1977; Trivedi, Shehata, & Lynn, 2003; Webley, Cole, & Eidjar, 2001), none have specifically looked at the Big Five personality traits.

The Big Five personality traits, which include (1) extraversion, (2) neuroticism, (3) agreeableness, (4) conscientiousness, and (5) openness to experience (McCrae & Costa, 2003), have been successfully shown to predict behavioral outcomes in other areas such as schooling, wages, crime, leadership, and job performance (Borghans, Duckworth, Heckman, & Weel, 2008). As personality traits have been shown to have a relationship with certain behaviors, the

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added understanding as to how these personality traits relate to taxpayer compliance is a valuable contribution to the scholarly literature. This study sought to contribute to gaps that existed in current literature by focusing on two areas. The first related to the link between the Big Five personality traits and taxpayer compliance; the second considered providing a more accurate measure of taxpayer compliance intent.

The most recent study that looked at the relationship between the Big Five personality traits and tax evasion included tax evasion under the umbrella of white-collar crime (Turner, 2014). This expansive term (i.e., white-collar crime) refers to several different types of illegal activity including bank fraud, tax fraud, mail fraud, illegal credit card activity, false statements, bribery, security fraud, and antitrust violations (Wheeler, Weisburd, & Bode, 1982). Generalizing the findings of the overarching white-collar crime concept across the gamut of tax compliance-related decisions is inappropriate. Further research into the specifics of each area was required. Furthermore, personality (specifically the Big Five personality traits) has received “only a limited amount of research” (Taggar & Parkinson, 2007; Turner, 2014, p. 59) as being a possible explanatory variable related to taxpayer compliance.

Past studies that attempted to measure tax compliance have done so using single-item measures. For example, Bobek, Roberts, and Sweeney (2007) measured tax compliance in the context of the amount of business use of a personal automobile by asking, “How much of the additional \$1,400 in automobile expense do you think is closest to the amount you would deduct if you were in a similar situation?” (p. 56). Blanthorne and Kaplan (2008) measured intent by asking, “How much of the income that you believed was taxable did you include on your tax return?” (p. 692). These measures, although useful, are single-item measures. A taxpayer will rarely have one isolated decision as to compliance when filing a tax return; rather, it is a mix of

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income, deduction, and credit decisions that combine to create a tax return. Therefore, another focus of this study was to provide a more thorough measure of taxpayer compliance intent that aimed to encompass the various decisions that must be made when filing a tax return. These are reporting income, claiming expenses, and calculating tax credits. These general categories were selected because the majority of tax situations falls within one of these (Internal Revenue Service, 2016b; Slemrod, 2007).

Researchers have looked at the effect of audit risk on taxpayer compliance (Trivedi et al., 2003). Unfortunately, the mere fear of being caught does not fully explain the reasons behind individual tax compliance choices (Davis, Hecht, & Perkins, 2003). The requirement to file an individual tax return is something that applies to a substantial number of people in the U.S. However, the puzzle as to why one taxpayer chooses to be compliant and another non-compliant is not completely understood. This study aimed to close this gap by looking at the widely-used Big Five Inventory (BFI) of personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) and the relationship with six different individual tax situations representing tax decisions related to the reporting of income, the claiming of expenses, and the calculation of credits. This study sought to answer the question: How are personality traits related to individual taxpayer compliance intentions?

The contribution from answering this question will prove useful to practice and academia. Specifically, a better understanding of the personality traits that generally would be held by non-compliers would provide useful information to auditors and tax professionals in how they assess the risk in processing information provided to them by taxpayers. Furthermore, a more robust measure of taxpayer non-compliance will prove useful to academics to better

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measure and understand the diverse range of non-compliance decisions that may be made by taxpayers.

Next, this study will highlight some of the existing literature related to taxpayer compliance intentions and personality traits. Theoretical aspects will then be discussed, and hypotheses will be proposed about the perceived relationship between personality traits and taxpayer compliance intentions. To conclude, research methods and findings will be provided, and limitations and implications for future research will be discussed.

### **Review of Relevant Literature and Theory Development**

#### **Taxpayer Compliance and the Tax Gap**

The tax gap represents the “difference between the federal income taxes households actually owe, and what they report and pay voluntarily on a timely basis” (Andreoni et al., 1998, p. 819). The definition used is subject to some debate as the word voluntary raises questions because filing and paying taxes are required by law (Manhire, 2015). In lay terms, however, taxpayer compliance is essentially reporting what is required, doing it when required, and paying any resulting tax liability. Non-compliance can be defined as the intentional or unintentional failure of a taxpayer to meet their tax obligations (Kinsey, 1987).

The realm of non-compliance covers both intentional and unintentional acts. Based on an informal survey of practicing Certified Public Accountants, and supported by tax accounting literature, unintentional acts include mistakes related to mathematical errors, accidents in incorrect form preparation, lack of knowledge of the topic, as well as memory lapse about the situational facts (Loftus, 1985; Smith & Kinsey, 1987). Intentional acts are often referred to as *tax cheating* and *tax evasion* (Weigel, Hessing, & Elffers, 1987). Tax fraud is another commonly used term referring to intentional non-compliance. The aforementioned terms (i.e.,

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cheating, evasion, and fraud) are somewhat similar and should be considered synonyms in the context of this study. Furthermore, when thinking of tax compliance, it is necessary to think beyond just the net result of a filed tax return. As explained by Roth, Scholz, and Witte (1989), proper compliance involves “accurate reporting of taxable income, accurate claims of subtractions such as income adjustments and itemized deductions, correct computation of tax liability, and timely filing of the tax return” (p. 1). Looking only at single tax decisions is not sufficient to fully understand the complexity of the tax filing process and the various choices that many taxpayers must make. With a shared understanding of the focus of this study, the goal of this research was to look at new relationships that might explain why taxpayers make the decisions they do regarding compliance and non-compliance, specifically looking at the effects of personality traits.

Andreoni et al. said, “The problem of tax compliance is as old as taxes themselves” (1998, p. 816). The majority of early studies looked at the economics behind tax evasion and attempted to develop models that provide accurate calculation of the tax gap. Two of the most common areas of study relate to economic deterrence and fiscal psychology, both of which tend to overestimate the amount of tax evasion (Hasseldine & Li, 1999). Other research has looked at enforcement initiatives and the relationship with taxpayers’ fear of detection (Davis et al., 2003). These studies showed that taxpayers who fear being audited or caught are more likely to comply. Interestingly enough, the perception of taxpayers and the reality of the likelihood that they will be caught is very different. Studies have shown that individual taxpayers perceive the likelihood of an audit to be as high as 19% (Bobek, Hageman, & Kelliher, 2013). The actual audit rate percentage has experienced a steady decline over the years and is now likely to be less than 1% for the current year (Internal Revenue Service, 2016a).

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Searching for other predictors of tax compliance, researchers have looked at the demographics of taxpayers (McGee & Tyler, 2006; Pickhardt & Prinz, 2014). The majority of studies that have focused on demographic variables have shown that minor correlations with illegal tax filing choices exist for individuals who are male, younger, wealthier, and with more education (Ragatz, Fremouw, & Baker, 2012). Looking at studies related to white-collar crime, these same demographic variables also appear to show a relationship with unethical behavior (Ragatz et al., 2012). Other recent research has focused on issues beyond demographics and deterrence, such as the importance of ethical influences, social norms, and moral components as predictors of compliant and non-compliant behavior (Alm et al., 2012; Bobek et al., 2013; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007).

### **Personality Traits**

Personality has been shown to be an important antecedent in a variety of settings, such as, job performance, social media usage, technology acceptance, use of alcohol, and consumer brand preference (Hakulinen et al., 2015; Lin, 2010; T. Ryan & Xenos, 2011; Svendsen, Johnsen, Almas-Sorensen, & Vitterso, 2011; Tett, Jackson, & Rothstein, 2001). In addition, and perhaps more importantly, personality is defined as a “predisposition to behave systematically” (Taggar & Parkinson, 2007, p. 123) and has been shown to be a key factor in understanding how people will react in certain situations (John, Robins, & Pervin, 2008). As the tax filing process is the culmination and combination of a variety of situations and decisions that a taxpayer has been through, understanding how personality might influence or predict certain behaviors is of interest.

Early research relating to crimes such as tax evasion excluded the possibility that personality could be an influencing element. Edward Sutherland’s work in the 1940’s raised

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support for the concept that individual criminal activity was fostered through learning that occurred in social relationships. This meant that personality was not considered to be a root driver behind unethical decision-making (Sutherland, 1940). As Sutherland's research focused on how individuals learned about crime versus why it was committed in the first place, it took some time before researchers began to consider the possibility that an individual's personality could be a factor in unethical behavior (Turner, 2014). As the aforementioned research has shown, recent scholars suggested that personality might influence individual taxpayer compliance intentions.

In looking at personality, past research used many different measures for assessing the traits and characteristics of individuals (Taggar & Parkinson, 2007). This has been one of the issues in how personality is viewed when determining possible relationships with various dependent variables. For example, personality has been researched using a variety of instruments including the Myers-Briggs Type Indicator® (MBTI), A/B personality types, Big Seven traits, and the Five Factor Indicator model (Alalehto, 2003; Elliott, 2010; Taggar & Parkinson, 2007). The Five Factor Indicator (FFI), chosen for use in this study, is also referred to as the measure of the Big Five Inventory (BFI) of personality traits. Taking into consideration the personality attributed to an individual is a logical way to suggest that certain traits are more likely to correlate with unethical behavior, such as tax evasion. Past studies have shown, for example, that individuals with lower scores in conscientiousness are more likely to morally disengage in work settings (Colbert, Mount, Harter, & Barrick, 2004).

To build a base for understanding personality in this study, the best set of available measures is the (BFI). The BFI has not been used in tax compliance research to predict the making of unethical decisions. Compared to other instruments, such as the MBTI, past research

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has demonstrated significant predictive validity of the BFI measure—making it the “superior indicator when answering questions of a causative or explanatory nature” (Goldberg, 1982; Taggar & Parkinson, 2007; Turner, 2014, p. 64). As one of the goals of this study is to understand how personality may influence or explain tax compliance, the BFI measure is well aligned. Further, the BFI is a result of much work from various researchers such as Cattell (1946), Tupes and Christal (1961), Norman (1963), and Goldberg (1971). The combined efforts of this work over the last half-century has gravitated towards a set of five personality factors (McCrae & John, 1992). Each factor is a strong indicator of various *individual traits*. Finally, the Big Five model “seeks to establish causes and associations” and is becoming the “trend in academic researchers” (Taggar & Parkinson, 2007, p. 142). This study has selected this as a measure not only because of the research trend but also because of the importance of being able to understand what causes one taxpayer to comply and another not to do so. This trend and lack of past study using the BFI is simply added fuel for investigating the relationship. The five personality traits are shown and defined in Table 1.



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Table 1

*Big Five Personality Factors and Traits Displayed*

Factor	Traits displayed
Extraversion	Extraverts are assertive, active, sociable, and talkative. Introverts on the other hand tend to be reserved, even-paced, and independent.
Neuroticism	Individuals who score high on this trait tend to experience effects such as fear, sadness, embarrassment, disgust, anger, and guilt. Those who score low in this area are usually calm, relaxed and even-tempered.
Agreeableness	Those who are agreeable are sympathetic to others, cooperative, and expect others to be accommodating in return. Disagreeable individuals are egocentric, competitive, and skeptical of others' intentions.
Conscientiousness	A high score in this area denotes that the subject is determined, strong-willed, reliable, and punctual. A low score in this area suggests that the individual is less precise in applying moral principles and less directed when working toward goals.
Openness to experience	High scores for this factor generally mean the individual has an active imagination, enjoys variety, is attentive to feelings, and demonstrates intellectual curiosity. Those who score low on openness tend to act more conventionally and have a more conservative outlook.

*Note.* Adapted from McCrae & Costa (2003) and Taggar & Parkinson (2007).

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The underlying strength of the BFI is that all personality traits are either part of the scales of the traits used by the instrument, or can be explained by them (McCrae & John, 1992). These dimensions can be used to show relationships with choices and decisions that individuals make. For example, past research has shown that certain unethical choices have a strong relationship with lower scores of conscientiousness, as well as lower scores of agreeableness (Alalehto, 2003; Turner, 2014). In looking how to best apply the BFI factors for a broad understanding of tax compliance decisions, relationships between all five factors and individual taxpayer compliance were investigated.

The proposed visual model (see Figure 1) for this study, as well as added literature and related hypotheses to the expected relationships are described next.

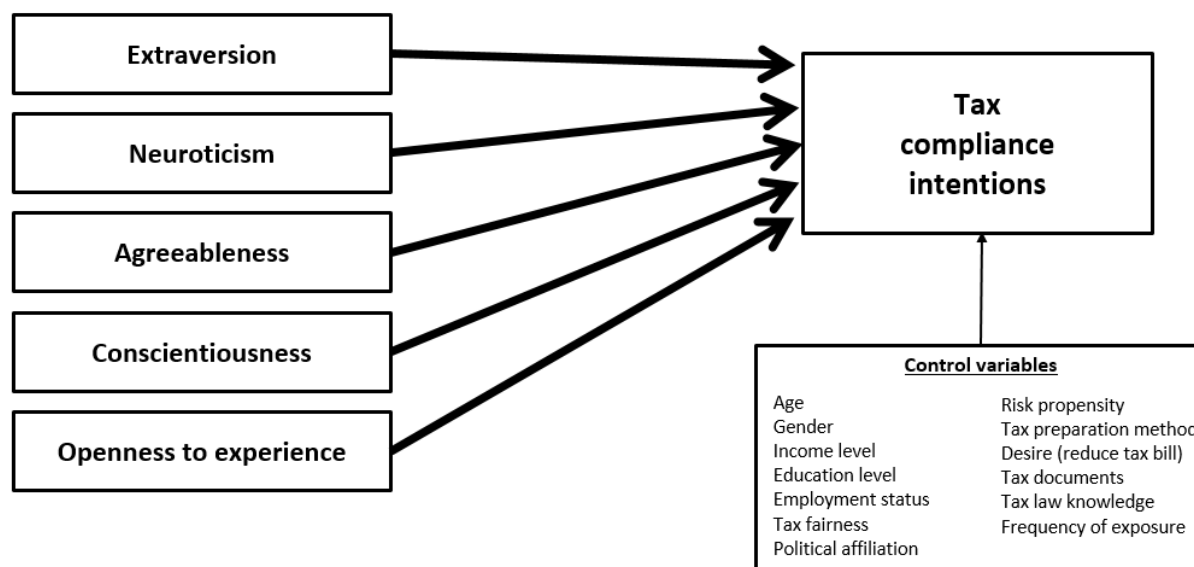


Figure 1. Research model.

### **Extraversion.**

Extraversion builds on the traditional definition that “implies an energetic approach toward the social and material world” (Pervin & John, 1999, p. 117). Extraverts are more likely to be active, social, and assertive. Introverts are more likely to be reserved and independent. Previous research on white-collar crime has shown that individuals who demonstrate extravert personality traits are more likely to engage in unethical activities (Alalehto, 2003; Turner, 2014). Fraud research has supported this finding by showing that typical offenders are personable, outgoing, and social, displaying many of the traits that would score high on the scale of extraversion (Wolfe & Hermanson, 2004).

Although tax evasion is grouped under white-collar crime, its uniqueness is that it is easier to commit. Specifically, tax return filing is typically done in private and there is no need to gain the trust of other parties to manipulate the circumstances and create opportunity for non-compliance. The opportunity exists for taxpayers, and is as simple as an individual deciding not to comply when preparing and filing their tax return. As Manhire (2015) noted, “taxpayers have two conscious choices when faced with the decision whether to comply with the tax laws: cooperate or evade” (p. 16). Examples of evasion could include not reporting income received for services provided during the year, exaggerating the amount of charitable donations made, or taking a deduction to which one may not be entitled. Therefore, although white-collar crime has shown a relationship with extraverted personality types, there is a question if this same relationship will hold when looking at only taxpayer compliance.

The overarching umbrella of white-collar crime includes aspects of illegal activity related to embezzlement, mail fraud, false claims, bribery, securities fraud, money laundering, as well as tax evasion (Lesha & Lesha, 2012). Though all these activities are unethical, tax evasion is the

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simplest in which to engage. As stated previously, a taxpayer simply can make a choice to cooperate or evade taxes. The ease of being able to choose non-compliance raises questions as to the relationship with the extraversion personality trait. It is reasonable to assume that individuals who have an “energetic approach toward the social and material world” (Pervin & John, 1999, p. 117) will be more interested in monetary and social success. Therefore, individuals who display a higher level of extraversion will also be more likely to engage in activities that could facilitate accomplishing such success. Essentially, extraverts will be more focused on the social and material world, which may cause a willingness to engage in non-compliant behavior to obtain success. This is stated in the following hypothesis:

*H1: Higher levels of extraversion will be associated with a higher likelihood to engage in tax non-compliance.*

### **Neuroticism.**

Neuroticism “represents individual differences in the tendency to experience distress, and in the cognitive and behavioral styles that follow this tendency” (McCrae & John, 1992, p. 195). Higher levels of neuroticism would be reflected by characteristics of “tension, depression, frustration, guilt, and self-consciousness” (McCrae & John, 1992, p. 195). Alternatively, less neurotic individuals would tend to be defined as being calm, relaxed and more emotionally stable. Alalehto (2003) showed a relationship between illegal behavior and individuals who rank higher on the scale of neuroticism. Contrary to this, Turner (2014) found that in certain situations individuals who scored low on a scale of neuroticism were more likely to engage in crime, while in other areas no significant relationship was found. A plausible reason for these contrasting results could be the method of data collection. Specifically, data gathered in the

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Turner study was sourced directly from respondents, while Alalehto relied on responses relating to a friend or colleague of study participants.

Tax evasion is an illegal activity; however, the unique aspect of the tax filing process is that many taxpayers are put in decision-making situations where they get to choose compliance. As being noncompliant is illegal, it is logical to think that taxpayers would choose to be compliant; however, the magnitude of the tax gap has shown that this is not always the case. Building on what is referred to as the fraud triangle, the opportunity to be non-compliant is one of three pieces that must be present for taxpayers to make an unethical choice (Cressey, 1953; Johnstone, Gramling, & Rittenberg, 2014). The second two pieces would be some sort of motivation and the ability to rationalize the act. Relating the fraud triangle to tax fraud, this would mean there is an “incentive to cheat, the opportunity to commit fraud and the attitude/rationalization of fraudulent behavior” (Pickhardt & Prinz, 2014, p. 13). Much accounting research looks at ways to remove the *opportunity* component from the triangle, which in turn would minimize the possibility of fraud. Even if there is motivation to evade and ability to rationalize, the lack of opportunity to commit fraud makes it unlikely that the crime will occur.

In the U.S. tax filing process, the opportunity to evade is prevalent because taxpayers are faced with a decision to “cooperate or evade” (Manhire, 2015, p. 16). The decision that is made may have consequences (being selected for audit or receiving a notice of penalty); however, the initial opportunity to choose compliance over non-compliance exists for all taxpayers required to file a tax return. As neuroticism relates to how individuals experience distress and the behavioral styles related to that experience, understanding how this personality trait relates to compliant or non-compliant taxpayer behavior is important. For this reason, the relationship with neuroticism will be investigated.

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This study hypothesizes that individuals who display lower levels of neuroticism will be likely to engage in tax non-compliance. Such people are more emotionally stable, calmer, and relaxed and may, therefore, be more comfortable making deviant choices regarding non-compliance. As noted previously, the opportunity to be non-compliant exists for all taxpayers. Therefore, individuals who are more emotionally stable will be more comfortable making a non-compliant choice and dealing with any resulting distress. The possibility of this relationship existing has been discussed in white-collar crime research, although not yet statistically proven (Turner, 2014). It is expected that when looking specifically at the narrow realm of individual taxpayer compliance decisions a significant positive relationship will emerge related to the level of neuroticism and taxpayer non-compliance. This relationship is hypothesized as follows

*H2: Lower neuroticism will be associated with a higher likelihood to engage in tax non-compliance.*

### **Agreeableness.**

Agreeableness is best understood by looking at traits of social adaptability, likability, compliance, and love (Pervin & John, 1999). High agreeableness scorers tend to be sympathetic, considerate, warm, and compassionate. Lower scorers in this dimension are more critical, skeptical, and are more likely to display condescending behavior (McCrae & Costa, 2003).

Past research has shown that white-collar criminals are likely to score lower on this trait; specifically, lower scorers would be more likely to hold grudges, doubt others, and be defensive in the choices and actions they make (Alalehto, 2003). Turner (2014) found similar outcomes. The question remains as to why some taxpayers choose to comply voluntarily and others do not. Some reasons for non-compliance may include the perception that taxes may not be fair, taxes are a guarantee of social welfare, and the tax system is designed to benefit the wealthy

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(Hofmann, Hoelzl, & Kirchler, 2008). On the other hand, others comply because they believe that cheating is wrong and that proper tax filing is a civic duty (Alm, 1991).

Based on the preceding information, individuals that score high on the scale of agreeableness are more likely to be compassionate and caring. Compassionate and caring individuals, in turn, are more likely to want to do the right thing. These same individuals are expected to be sympathetic and considerate. Being sympathetic would lay claim that individuals are more likely to be conscious of the harm that occurs to the social wellbeing of others by not paying their fair share of taxes. Based on these arguments, and looking at various tax scenarios, it is expected that individuals with higher agreeableness are more likely to engage in proper tax compliance. Individuals who score lower in agreeableness may be more critical of the tax filing process and the end use of the tax revenue generated, resulting in decisions of non-compliance. This is stated by the following hypothesis:

*H3: Lower agreeableness will be associated with a higher likelihood to engage in tax non-compliance.*

### **Conscientiousness.**

Conscientiousness is best described as a “socially prescribed impulse control that facilitates task-and goal-directed behavior” (Pervin & John, 1999, p. 117). Higher-scoring, more conscientiousness, individuals are likely to behave more ethically, responsibly, and maintain higher levels of aspiration (McCrae & Costa, 2003). Conversely, lower-scoring individuals will be self-indulgent and less likely to apply moral principles in making decisions (McCrae & Costa, 2003; Taggar & Parkinson, 2007).

Compliance with rules and regulations is something that involves a legal, moral, and ethical decision-making process. Responsible individuals will be more likely to obey the rules,

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aspire to be moral citizens, and make decisions that benefit those around them. In addition, conscientious individuals would be expected to behave ethically and responsibly. More self-centered individuals will be less concerned with the ethics behind compliance and more focused on personal gain.

In a tax setting, it is obvious that the ethical and responsible behavior would be decisions of compliance. In addition, when considering levels of aspiration, few individuals looking to aspire socially would seek out paths leading to morally subpar citizenship. As tax “compliance is undoubtedly motivated by moral beliefs” (Hite, 1996, p. 77), it is expected that individuals who display higher levels of conscientiousness will show increased tax compliance. This position is summarized in the following hypothesis:

*H4: Lower conscientiousness will be associated with a higher likelihood to engage in tax non-compliance.*

### **Openness to experience.**

Openness to experience is best described by looking at “the breadth, depth, originality, and complexity of an individual’s mental and experiential life” (Pervin & John, 1999, p. 117). Individuals who score high on openness to experience are more likely to be rebellious and nonconforming (McCrae & Costa, 2003). These same individuals are prone to have active imaginations and demonstrate higher levels of curiosity. The opposite end of this spectrum would be individuals who are inclined to act conventionally and carry with them a more conservative outlook on life.

Relating this to tax filing, non-compliance is a violation of tax law. By definition, a compliant taxpayer files their taxes on time, calculates the proper amount of taxable income, and pays the appropriate amount of tax due in a timely manner. Rebellious individuals may choose



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not to file their tax returns when due or may make decisions when filing their tax returns that understate the final tax liability. If caught, non-compliant taxpayers bear the risk of being assessed penalties, fines, and other formal sanctions, including criminal charges (Carnes & Englebrecht, 1995).

Though not everyone who scores high in openness to experience will engage in illegal activity, it is still anticipated that individuals who demonstrate non-compliance intentions will be more open to the experience. Individuals anticipated to be more compliant will demonstrate traits of conservatism associated with lower scores for this personality trait. Therefore, this study posits that there will be a direct relationship between high scores in openness to experience and taxpayer non-compliance, as stated in the following hypothesis:

*H5: Higher openness to experience will be associated with a higher likelihood to engage in tax non-compliance.*

### **Methods**

#### **Participants and Research Design**

This study employed an online questionnaire to gather information from taxpayers regarding their personality, taxpayer compliance intentions, and a variety of other questions. Before deploying the final survey, a small pilot study was performed. This pilot study gathered responses from 50 respondents using Amazon's Mechanical Turk (MTurk) consumer panel. These responses were used to confirm the utility of questions being used and to provide support for this study's methodology. As most questions used in this study were based on past research, their relevance was anticipated; however, the usage of the pilot study did bring forward the need for some minor adjustments. Specifically, a more rigorous measure of tax knowledge, as well as a scale to help measure social desirability. Both changes were added to the final survey. The

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actual data and results from the pilot study did not influence any changes to the questionnaire.

The methods presented reflect the final administered survey for which the University of Wisconsin—Whitewater’s Institutional Review Board (IRB) approval was obtained.

The MTurk platform provides access to a large number of participants at a reasonable cost (Paolacci & Chandler, 2014). In addition, in a comparison of psychometric standards, research has shown that MTurk is comparable to traditional samples while also being more diverse and representative (Buhrmester, Kwang, & Gosling, 2011). Also, the MTurk platform is a quickly growing method used for social science research that is showing results similar to more traditional methods (Casler, Bickel, & Hackett, 2013). The combination of its ability to quickly recruit participants, its reasonable cost, and the acceptability of the respondent pool are all reasons for which this method was employed.

Using the MTurk platform, the survey was restricted to workers from the U.S. As this study sought to generalize its findings to taxpayers that file in the U.S., this limitation on the sample was appropriate. An additional restriction was also implemented that required “Turkers” to hold a past approval rate of 70% on previous surveys, referred to by MTurk as human intelligence tasks (HITs), they had completed. This qualification provided some assurance that survey respondents would take the survey seriously as their approval rate reflects their historical acceptance rate for previously completed surveys.

Taxpayer non-compliance can be done willfully or accidentally (Kinsey, 1987). Regardless of the intent, however, the fact that a tax return is not filed properly is of concern because tax revenue is lost. To help control for willful versus accidental actions, the survey included a 14-question measure designed to assess taxpayer knowledge. The measure was assembled and refined based upon consultation with six Certified Public Accountants located in

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the Midwest who focus on individual taxation. This 14-item measure asked multiple choice questions that covered tax law knowledge related to components such as the proper treatment of taxable income, allowable deductions and credits, as well as general tax law knowledge. Respondents were asked to answer the questions based upon their knowledge of current tax law. These questions were placed near the end of the survey. The instructions and questions related to this measure are included in Appendix A.

The study also included a scale for social desirability. As the study relied on self-reported information, there was concern that respondents may not have answered honestly regarding their tax compliance intentions, thus producing bias. Therefore, a 16-item scale was included in which respondents were asked to answer whether they had engaged in certain activities. Past research has supported this scale related to its ability to measure the presence of social desirability influencing decisions made by respondents (Stober, 2001). The questions in this scale, including the related instructions, are listed in Appendix B.

Survey respondents, Turkers, completed the survey in late 2016. They were first greeted with a short welcome and introduction that described in general terms the layout of the study. The welcome and introduction screen read as follows:

Thank you for choosing to take part in this HIT. The survey you are about to complete has been prepared by Brian Huels who is a doctoral student at the University of Wisconsin—Whitewater.

The survey will start by asking some generic questions about income tax filing. After this you will be presented with some additional questions related to the filing of a hypothetical income tax return. You will be presented with a short story after which you can provide your opinion on how you would file a tax return based upon the

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given scenario. This will be followed by several pages of generic questions that will capture your viewpoints on various topics.

The survey should take around twenty minutes to complete and your participation is greatly appreciated. In addition, your participation in this survey will remain anonymous, is completely voluntary, and you can stop at any time. Any results from this study will only be discussed in summary form.

If you have any questions or concerns about this research project, please feel free to contact Brian Huels at [huelsbw15@uww.edu](mailto:huelsbw15@uww.edu).

Please click on the "next" button below to proceed. You will first be presented with a page that confirms your consent to participate in this study after which you will begin the actual survey completion. Thank you again for your participation!

Following these instructions, participants were presented with an IRB disclosure and were required to consent to participate to be eligible to move forward with the survey. A copy of the IRB disclosure and the consent to participate form that was displayed to survey participants can be seen in Appendix C.

### **Measurement of Variables**

This study's dependent variable of interest is taxpayer compliance intentions. This variable was measured by analyzing respondents' answers after being presented with a short scenario related to a hypothetical taxpayer and tax filing situation. The short story described several different tax decisions, all of which a taxpayer could be exposed to in filing an income tax return. The six different decisions were purposely designed to attempt to capture the varying decisions that can occur when filing an actual tax return.

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Frequently, many choices must be made in the tax filing process, including reporting income, figuring deductions, and properly selecting and applying tax credits. This study sought to gain a better understanding of the various decisions that are made and how the context of situations combines to create a composite measure of taxpayer compliance. The study proposed that the only way to get a true measure of taxpayer compliance intent is to combine a variety of decisions that comprise a spectrum of possible tax decisions. This method of using multiple measures of tax compliance has been used in past research and appears well supported. Many studies have asked questions regarding both income and expense decisions for which combined analysis was then performed (Christensen & Hite, 1997; Kaplan, Newberry, & J. Reckers, 1997; Webley et al., 2001). Acknowledging that filing taxes can be a complex activity, this study combined multiple tax compliance decisions, including choices about income, deductions, and credit usage. These decisions cover various aspects of the tax filing decision-making spectrum, ranging from forgetfulness all the way to fabrication or outright lies. Figure 2 illustrates this range:



*Figure 2.* Tax decision-making spectrum.

Choosing any of the previously mentioned spectrum decisions would cause non-compliance. However, all the decisions that a taxpayer might make need to be combined to have an accurate picture of a complete tax return. For example, a taxpayer may make a decision in one area that causes underreported income. However, a separate choice on another tax decision

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may cause the opposite, an overreporting of taxable income. This is one of the reasons that single-item measures of taxpayer compliance may not be adequate. If a taxpayer faces a variety of different, but realistic situations, one of the decisions may be answered in a different way and lead to a non-compliant result. This study seeks to provide answers to these statements by analyzing the uniqueness of predictors to both stand-alone decisions and the net combined tax compliance measure.

In this study, respondents were first primed with a story to set a tone to introduce the various tax decisions. The vignette, as follows, attempts to remain gender neutral:

*Story:* Jesse has recently moved from Florida to Illinois to start a job as a graphic designer working for a large company. In addition to the full-time job, Jesse performs some small graphic design work for various people in the neighborhood. Jesse is always paid in cash for this work. Outside of these regular income-generating jobs, Jesse has also been lucky over the past year with some cash winnings at the local casino. Finally, Jesse has also recently enrolled at a local community college.

At the end of the year, Jesse sits down to file a tax return. The table below is a summary of the various pieces that Jesse thinks might be helpful in the filing process. Please look through this table and answer the questions below as to how you would file the tax return if you were in Jesse's position.

The table mentioned at the end of the story contains breakouts of the vignette that highlight the respective decisions and dollar amounts that respondents must choose. This information is included in Table 2.

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Table 2

*Tax Scenarios for Survey*

Item	Information on item
Wages	\$50,000 in wages was earned. Jesse had health insurance all year. On these wages, Jesse had \$5,800 in federal taxes withheld.
Side design income	\$5,000 in cash was received during the year. The majority relates to one large job performed for \$3,000. The remainder came from multiple smaller jobs completed during the year.
Side design expenses	To perform the side design work, Jesse thought \$2,000 was spent on materials. However, in review of the records Jesse has receipts for only \$1,000.
Gambling winnings	Winning various small jackpots throughout the year, Jesse accumulated a total of \$1,000 in net gambling winnings.
Moving expenses	Jesse feels that the move should have cost \$1,000. However, to save money Jesse stayed with friends while traveling and only spent \$500 on the move.
Tuition costs	Jesse took one class at the local community college. Jesse paid the tuition up front but was later reimbursed 100% of the cost. A tax form was received showing that \$2,000 was spent on tuition but it did not reference the reimbursement.
Home improvement costs	Jesse spent \$5,000 on home improvements this year. In review of the records, only \$2,500 of these costs were related to energy efficient improvements.

The breakouts of the story were presented without indicating what would cause a correct or incorrect compliance decision. In addition, the tax scenario questions were randomized so that the order in which the scenarios were presented varied among respondents. Finally, two versions of the survey were administered. The versions differed as to reference if tax forms had been provided to the taxpayer. One version said that tax forms had been received by the

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taxpayer related to both side and gambling income. The second version stated that no tax forms were received.

As survey respondents continued beyond the short story, they were asked to review each of the six randomized tax scenarios (two that involved income, two that considered deductions, and two that focused on credits). Following a review of the situations, they were asked to decide how they would file a tax return related to each respective scenario if they were Jesse, the vignette character. The decisions were made by placing a slider bar in the position that was selected. Following completion of the six slider bars, participants were presented with a calculation (based on 2016 tax law) of the amount of tax due (or refund) that would result based on their selections. Proper tax compliance decisions would have placed respondents in a tax due situation. After being presented with their respective tax position, respondents were asked if they wanted to make any changes to the answers they originally submitted. Twenty-seven did make changes. Outside of this specific study, previous research addressed how taxpayers prefer refunds (Bobek & Hatfield, 2003; Reckers, Sanders, & Roark, 1994). Allowing respondents the ability to change their initial answers was done to both capture information related to how a tax due versus refund situation may influence a taxpayer's compliance intentions, as well as judge the actions of the survey respondent for believability.

Measuring six different tax compliance decisions allowed for a variety of analyses to be performed, including individual decision analyses, combined analysis, as well as factor analysis of the various situations. The vignette provided each respondent a common starting point that used Jesse's base wages of \$50,000, of which \$5,800 in federal income tax was withheld. The composite compliance score used for analysis is a calculation of all decisions made by the respondent in comparison to what the actual tax (assuming proper compliance) would have been.



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The larger the composite score, the greater the degree of taxpayer non-compliance in absolute tax dollars. A negative score indicated a situation of over-compliance (i.e., over-payment, which occurred twice). In addition to the composite score, each tax decision could also be viewed independently to determine non-compliance. Finally, factor analysis of the relationship between the various decisions could be done. Combining the aforementioned measures provided a unique ability to compare demographic and personality traits by looking at specific tax situations, factor analysis, as well as the combined result of taxpayer filings.

Continuing through the survey, respondents were asked how frequently they had been exposed to each of the six tax decisions over the last five years. Including these six questions (one related to each scenario) provided a measure of the frequency that respondents had been exposed to these tax issues. These questions are presented in Appendix D. Scoring of these measures was as follows: a score of zero indicated that the respondent had never seen that tax situation, while a score of five indicated that the respondent had experienced the situation in each of the last five years.

The independent variables in this study are the Big Five personality traits. Relationships with extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience were explored. To measure these variables, this study used a 20-item International Personality Item Pool (Mini-IPIP) scale, which consisted of four indicator items per personality trait. This shorter measure, based on a 50-item pool (Goldberg, 1999), has shown proper validity in past studies (Donnellan, Oswald, Baird, & Lucas, 2006) and provided this study with an ideal number of questions to prevent survey fatigue.

Participants were asked to score each of the questions in the Mini-IPIP measure using a five-point, Likert-type scale. This scale allowed respondents to provide answers ranging from 1

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(strongly disagree) to 5 (strongly agree). Eleven questions were reverse-coded. Two of the statements presented were “I am the life of the party” and “I have frequent mood swings.” The questions were divided between two screens in the online survey and can be seen in printed form in Appendix E.

After measuring the Big Five traits, several more general questions were presented to respondents. These questions served as control variables and are explained hereafter. In addition, to help provide assurance that respondents were attentive throughout the completion of the questionnaire, three check questions were embedded at various intervals. These questions were: “Mark your selection strongly disagree for this line”; “Please answer this question by selecting 60%”; and “Mark a false response for this line item.” Past research has supported using these types of *attention* or *instructional manipulation check* questions to identify inattentive participants (Aust, Diedenhofen, Ullrich, & Musch, 2012; Hauser & Schwarz, 2016; Oppenheimer, Meyvis, & Davidenko, 2009).

As stated previously, several control variables were included in the model of this study. The control variables included were those that are typical in the field of tax compliance research. Specifically, the following demographic variables were controlled for: age, gender, income level, education level, employment status, political affiliation, risk propensity, and tax law knowledge. Past literature reviews have summarized the importance and commonality of inclusion of these variables (Jackson & Milliron, 1986; Richardson & Sawyer, 2001). Additional questions were added to gather information about the attitudes and feelings of the participants. These questions, many borrowed from previous research (Bobek, Hageman, & Kelliher, 2011), captured respondents’ opinions on the fairness of the U.S. income tax system, their thoughts as to what

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percentage of taxpayers pay less tax than they owe, as well as a self-reported measure about their tax law knowledge. A list of the supplemental questions is in Appendix F.

Based on the number of predictor variables in this study, a priori power analysis using the G\*Power 3.1 software indicated that 95% power for a medium effect size would require a sample size of 213 responses (Faul, Erdfelder, Buchner, & Lang, 2009). To be certain that adequate power was maintained and to provide a cushion for any additional analysis a sample size of 300 participants was targeted. A continuous review of the submitted responses was performed and additional questionnaires were deployed to the Amazon platform to ensure that the desired sample would be obtained. This process resulted in 388 completed surveys. This number was deemed sufficient to allow for any potential data trimming that might be needed. Results were downloaded and coded for statistical analysis. Surveys with incorrectly answered check questions or responses that lacked believability were removed and excluded from analysis. The results section highlights the methodology used for response exclusion. Finally, statistical analysis of the cleaned dataset was performed with IBM SPSS Statistics 24.

### **Results and Analysis**

The results and analysis of this essay are based upon the previously referenced survey that was given via Amazon MTurk in late 2016. This study had an end goal of 300 useable responses. To provide confidence that this sample total would be obtained, a total of 388 responses were gathered. The overage was intentional because it allowed for removing up to 30% of responses that did not appear to be believable or showed erroneous check questions.

After reviewing the 388 responses, 15 surveys were removed because respondents had missed one of the embedded attention questions. Five additional responses were removed because their respective internet protocol (IP) addresses indicated that the survey was submitted

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from overseas, and the study was restricted to individuals that file taxes in the U.S. Although not a certainty, the concern that these foreign IP addresses may be from non-U.S. taxpayers led to those surveys being disqualified. Other surveys were deleted for the following reasons:

- Four responses were removed due to the respondents' indication that they did not file a tax return.
- Four other responses had completion times under six minutes. As the average completion time for the survey was just over 15 minutes, accurate completion in this short amount of time did not seem possible.
- Another group of surveys showed inconsistencies in the way responses were submitted. Specifically, the respondents scored high on tax law knowledge, but the tax decisions they made did not align with any logical pattern. Therefore, these four responses were also removed.
- Finally, 50 surveys were excluded from analysis because respondents did not answer all questions. Acknowledging that this group was a bit large, mean substitution was performed during analysis with these responses being included for most regressions run. The results did not display any significant differences in comparison to the trimmed sample. Removing these responses still left a sample size with adequate statistical power. As mean substitution did not provide significantly different findings, the narrowed sample was deemed suitable for analysis.

Table 3 includes a summary of why surveys were excluded from the final sample.

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Table 3

*Narrowing of Final Sample*

Label	Number of responses	
Completed surveys	388	
<i>Reason for removal</i>		
Missed "strongly disagree" check question (#1)	6	
Missed “by selecting 60%” check question (#2)	8	
Missed "false" check question (#3)	1	
IP address outside of United States	5	
Did not file a tax return	4	
Removed for inconsistency of answers	4	
Removed for short survey time	4	
Questions not answered		
Question not answered – gender	1	
Question not answered – employment status	1	
Question not answered – income level	9	
Question not answered – education level	1	
Question not answered – political affiliation	1	
Question not answered – desire to reduce tax bill	1	
Question not answered – frequency of exposure	20	
Questions not answered – tax compliance decision(s)	13	
Questions not answered – personality question(s)	3	50
Total removed responses	82	
Total responses in final sample	306	

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Table 4 includes a comparison of the demographics from the resulting sample to current national averages. Of note, the analyzed sample included 306 responses from throughout the U.S. (42 states, the District of Columbia, and 26 different occupational categories were represented). Comparing the demographics of this sample to national averages showed that the study sample had a slightly lower household income than the national average and included taxpayers who are slightly younger and more educated. The sample also had more males than females responding. In addition, a large percentage of survey respondents indicated that they prepared their own tax returns. Although it does not fully mirror the demographics of other nationwide studies, the sample does reflect diversity in terms of age, gender, income, and education. This diversity, as well as the plausibility of study responses, supports the decision to use the MTurk platform.

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Table 4

## *Sample Demographics*

Category	Sample (N = 306) <sup>a</sup>	National population <sup>b</sup>	Category	Sample (N = 306) <sup>a</sup>	National population <sup>b</sup>
<i>Age</i>					
18 to 24 years	3.60%	12.43%	45 to 54 years	16.67%	17.67%
25 to 34 years	37.25%	17.75%	55 to 64 years	12.09%	16.68%
35 to 44 years	27.12%	16.48%	65 or older	3.27%	18.99%
<i>Household Income</i>					
Less than \$25,000	21.60%	17.65%	\$75,000 to \$99,000	11.40%	13.04%
\$25,000 - \$49,999	34.00%	26.12%	Over \$100,000	9.10%	24.44%
\$50,000 to \$74,999	23.90%	18.76%			
<i>Gender</i>					
Male	53.90%	48.32%	Female	46.10%	51.68%
<i>Education</i>					
Did Not Finish H.S.	0.33%	12.41%	Bachelor's degree	39.54%	19.47%
High School Graduate	13.40%	30.00%	Master's degree	7.84%	7.82%
Some College	24.84%	19.35%	Doctoral degree	1.96%	1.51%
Associate's degree	12.09%	9.44%			
<i>Prepare Your Own Tax Return? (from sample)</i>					
Yes	78.10%		No	21.90%	

<sup>a</sup> Numbers are expressed as a percentage of the total sample of respondents providing information for each demographic question. Note, sample demographics are based on results of 306 analyzed responses. IRB approval was obtained prior to the distribution of the survey referenced in this essay.

<sup>b</sup> National population percentages determined based upon review of 2015 current population survey, 2015 annual social and economic supplement (U.S. Census Bureau, 2015) and 2014 tax filing statistics (Internal Revenue Service, 2014).

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The five hypotheses presented in this paper relate to posited relationships between each of the Big Five personality traits and taxpayer compliance intentions. To provide a better measure of tax compliance, six different tax situations were posed and participants were asked to answer how they would file a tax return. The six different situations consisted of two related to taxable income, two related to expenses, and two related to claiming credits. These separate questions allowed for detailed comparison of how the Big Five traits related to each specific tax scenario.

Each tax situation allowed respondents to score how they would comply on an 11-point Likert scale (displayed as a slider bar). The Likert scale was derived from the tax situation and represented income, deductions, or credit amounts that the taxpayer would claim based upon the story presented. For analysis, the resulting Likert answers were converted to tax dollars based upon details provided in the vignette. A score of zero (Likert of 1) would indicate full compliance. The greater the converted score, the greater the level of tax non-compliance. Essentially, for purposes of this study, the larger the number, the greater the tax gap for that respondent for each tax situation.

To provide a complete tax return view, a composite compliance score was also calculated. This calculation was done by adding each of the six individual tax decisions. A combined score of zero would indicate proper compliance across all tax decisions. This situation would be possible only if the respondent answered each of the six questions accurately (i.e., was fully compliant). In reviewing the sample, only 20.9% of respondents provided answers that indicated proper tax compliance intentions in all tax decisions. For each decision, the level of compliance ranged between 40.8% and 81.0%. The percentage of compliant versus non-compliant intentions (by scenario) is shown in Table 5.



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Table 5

*Percentage of Compliance versus Non-compliance (Combined and by Decision)*

Variable	Decision	
	Compliant	Non-compliant
Cash income	40.8%	59.2%
Business expenses	81.0%	19.0%
Gambling income	41.5%	58.5%
Moving costs	80.1%	19.9%
Tuition paid	58.8%	41.2%
Energy efficient improvements	82.7%	17.3%
All decisions (combined)	20.9%	79.1%

This range of compliance on individual decisions in comparison to the combined compliance rate provides evidence of the need for robust tax compliance measures. Simply because a taxpayer is compliant in one area does not mean that level of compliance exists across all tax decisions.

In review of the responses, two respondents provided answers that placed them in an over-compliance situation. Over-compliance occurs when a taxpayer pays more tax than would legally be required. Typically, such over compliance happens because of lack of knowledge or error (Logue, 2005). As real-world tax filing sees this phenomenon, these over-compliers were included in the data pool because their completed questionnaires did not warrant exclusion.

An initial analysis was performed by examining the relationship between the control variables and the combined tax non-compliance score. Control variables included in the model were: age, gender, income level, education level, employment status, tax fairness, political affiliation, risk propensity, tax preparation method, tax law knowledge, and frequency of

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exposure to various tax decisions in relation to the combined level of taxpayer non-compliance.

Most of these control variables were not difficult to quantify, with the exception of tax law knowledge. Therefore, this study used a 14-point additive index that measured a respondent's knowledge on questions related to income, deductions, and general tax knowledge. Results of this measure of tax law knowledge are shown in Table 6.

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Table 6

### *Results of Additive Index (Taxpayer Knowledge)*

#	Category	Question	Right	Wrong	Not sure
1	General	Assuming income and deductions are equal, who would pay less in taxes: a single person with no children or a single person with one child?	86.30%	12.10%	1.60%
2	Deductions	Which of the following statements is true regarding cash contributions made to a charity by a taxpayer?	68.00%	17.00%	15.00%
3	Income	Which of the following is a correct statement regarding gambling winnings?	32.00%	52.30%	15.70%
4	Income	If a taxpayer receives cash for miscellaneous jobs performed during the year, what is the proper treatment for tax purposes?	44.80%	49.30%	5.90%
5	General	Employees typically receive a tax form at the end of the year that is a summary of the wages they earned for the year. What is this tax form called?	93.50%	6.20%	0.30%
6	Deductions	If a taxpayer wants to deduct business expenses on his/her tax return. Which of the statements below is correct?	80.40%	9.80%	9.80%
7	Income	Which of the following statements in regard to tips a taxpayer receives is correct?	80.70%	5.90%	13.40%
8	Deductions	Which of the following is a correct statement in regard to home improvement costs?	86.60%	2.29%	11.11%
9	Deductions	Which of the following is a correct statement regarding college tuition paid?	70.50%	7.90%	21.60%
10	General	A taxpayer qualifies for both a \$100 tax deduction and a \$100 tax credit. Which of the following statements is true?	39.50%	26.80%	33.70%
11	General	A taxpayer owed money on his/her previous year's tax return. The taxpayer wants to adjust his/her withholding allowances to prevent this from happening again. Which of the following statements is correct?	45.10%	35.30%	19.60%
12	Income	Your employer gives you a \$100 gift certificate for the holidays. Which of the following statements is correct?	28.10%	58.20%	13.70%
13	Deductions	Which of the following is a correct statement related to being able to deduct moving expenses on your tax return?	72.20%	7.50%	20.30%
14	General	What is the due date each year for the filing of an individual income tax return (without extension)?	97.70%	2.30%	0.00%
Average taxpayer knowledge (based on Additive Index)			70.49%		
Average taxpayer knowledge (based on self-report composite)			66.07%		
I am knowledgeable in what income is supposed to be reported on my tax return.			75.14%		
I am knowledgeable in what deductions I am allowed to take on my tax return.			70.43%		
I am knowledgeable in what credits I am allowed to take on my tax return.			67.57%		
Overall, I consider myself a knowledgeable taxpayer.			68.43%		

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After obtaining measures for all variables, the first step of analysis was to review a base model that looked at the control variables in relation to the combined level of taxpayer compliance or non-compliance. The results of this analysis are given in Table 7.

Table 7

### *OLS Parameter Estimates for Base Model*

Variables <sup>a, b</sup>	Total tax Non-compliance	
Constant	579.413	(484.550)
Age	-44.320	(62.064)
Gender	193.485*	(140.855)
Income level	56.413	(45.027)
Education level	25.185	(56.506)
Employment status	-121.856	(168.471)
Tax fairness	-26.057	(49.596)
Political affiliation	-34.835	(43.488)
Risk propensity	102.543****	(32.584)
Tax preparation method	179.589	(171.295)
Reduce tax bill	231.263****	(40.763)
Tax documents	34.077	(136.375)
Knowledge	-57.354**	(31.272)
Frequency	49.758***	(18.57)
$R^2$	0.263	
Adjusted $R^2$	0.217	
$F$ (sig.)	7.689 ***	
Maximum VIF <sup>c</sup>	1.255	

Note.  $N = 306$

<sup>a</sup> Dependent variable equals combined level of tax non-compliance.

<sup>b</sup> Standard errors are given in parenthesis. Unstandardized coefficients are displayed.

<sup>c</sup> VIF = variance inflation factor

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$

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This base model was deemed necessary to ensure that any additional analysis, including personality, could be compared to a more parsimonious model to gauge whether meaningful improvement occurred. Review of the base model presented in Table 7 showed statistically significant relationships between tax non-compliance and gender (unstandardized coefficient of 193.485,  $p < .1$ ), risk propensity (102.543,  $p < .001$ ), desire to reduce taxes (231.263,  $p < .001$ ), and frequency of exposure (49.758,  $p < .01$ ). These variables showed a positive relationship with non-compliance intentions. Specifically, males are more likely to engage in tax non-compliance than females. Those with a higher risk tolerance and a greater desire to reduce their taxes will also engage in non-compliance. Each of these relationships is logical and has support from past research (Jackson & Milliron, 1986; Richardson & Sawyer, 2001; Trivedi et al., 2003). As stated, this base model also indicated that more frequent exposure to various tax decisions relates to increased levels of non-compliance. Finally, the base model displayed a negative relationship between knowledge and taxpayer non-compliance (-57.354,  $p < .05$ ).

Before analyzing any potential improvement from the Big Five personality traits, factor analysis of the 20-item Mini-IPIP measure was performed. Principal component analysis using Oblimin with Kaiser normalization rotation showed proper loading of each of the four questions on their respective personality trait. Cross-loading of questions was not an issue and all loaded on the anticipated factor, at or above .688. Cronbach alpha scores for each of the scales were as follows: extraversion (.884), neuroticism (.879), agreeableness (.893), conscientiousness (.793), and openness to experience (.820). These resulting scores, all above .70, support using the indicators (Cortina, 1993). The average scores for the respective personality traits, descriptive statistics of the measures, and the factor loading matrix are presented in Table 8.

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Table 8

## *Factor Analysis and Descriptive Analysis for Big Five Factors*

Big Five indicator and loadings <sup>a</sup>	<i>M</i>	<i>SD</i>	Component				
			1	2	3	4	5
Extraversion (Cronbach .884)							
16 - keep in the background. <sup>b</sup>	2.46	1.27				0.890	
1 - am the life of the party.	2.01	1.17				0.884	
6 - do NOT talk a lot. <sup>b</sup>	2.73	1.36				0.838	
11 - talk to a lot of different people at parties.	2.56	1.38				0.826	
Extraversion (average)	2.44	1.13					
Neuroticism (Cronbach .879)							
9 - am relaxed most of the time. <sup>b</sup>	2.32	1.10		0.878			
14 - get upset easily.	2.32	1.29		0.873			
4 - have frequent mood swings.	2.16	1.27		0.857			
19 - seldom feel blue. <sup>b</sup>	2.83	1.37		0.805			
Neuroticism (average)	2.41	1.08					
Agreeableness (Cronbach .893)							
7 - NOT . . . other people's problems. <sup>b</sup>	3.71	1.19	0.924				
2 - sympathize with others' feelings.	4.14	0.94	0.877				
17 - NOT really interested in others. <sup>b</sup>	3.86	1.08	0.856				
12 - feel others' emotions.	3.74	1.10	0.795				
Agreeableness (average)	3.86	0.95					
Conscientiousness (Cronbach .793)							
8 - things back in their proper place. <sup>b</sup>	3.74	1.21			0.859		
13 - like order.	4.03	0.94			0.778		
3 - get chores done right away.	3.51	1.20			0.736		
18 - make a mess out of things. <sup>b</sup>	4.04	1.05			0.700		
Conscientiousness (average)	3.83	0.87					
Openness to experience (Cronbach .820)							
20 - do NOT have a good imagination. <sup>b</sup>	4.08	1.17					0.893
5 - have a vivid imagination.	3.87	1.20					0.841
15 - understanding abstract ideas. <sup>b</sup>	3.90	1.13					0.756
10 - NOT interested in abstract ideas. <sup>b</sup>	3.76	1.23					0.688
Openness to experience (average)	3.90	0.96					
Percentage of variance explained			26.4%	10.7%	10.8%	9.7%	8.4%

<sup>a</sup> Extraction method: Principal component analysis. Rotation Method: Oblimin with Kaiser normalization.

<sup>b</sup> Item was reverse coded.

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Acknowledging the proper loading of the measures on the respective Big Five personality traits, a composite score for each respondent was calculated by averaging responses to each of the four measures per personality trait. These mean scores were retained and are the source of measure for subsequent analysis. Descriptive statistics and correlation information for the resulting mean scores, control variables, and combined tax non-compliance are presented in the correlation matrix shown in Table 9. In addition, as subsequent analysis compared the individual tax decisions in stand-alone format, descriptive statistics and correlation matrices related to the tax gap and frequency of each tax decision are presented in Tables 10 and 11.

Table 9

### *Descriptive Statistics and Correlation Matrix for Total Tax Non-compliance Intentions*

Variable	Mean	SD	Tax	Age	Sex	Inc	Educ
Tax gap	1569.24	1326.03	1.000				
Age	3.06	1.21	-0.142**	1.000			
Gender (1 = Male)	0.54	0.50	0.141 **	-0.197 ***	1.000		
Income level	3.19	1.66	0.098	-0.066	0.053	1.000	
Education	4.08	1.30	0.003	0.092	0.040	0.320 ***	1.000
Self-employ = 1	0.22	0.42	-0.096	-0.014	-0.058	-0.217 ***	-0.083
Fairness	3.47	1.42	-0.043	-0.151 ***	0.055	0.115 **	0.028
Political	3.43	1.65	-0.037	0.185 ***	0.123 **	0.078	-0.009
Risk propensity	3.08	2.24	0.320 ***	-0.187 ***	0.064	0.071	-0.006
Self-prepare = 1	0.78	0.41	0.025	0.021	0.002	-0.141 **	-0.008
Reduce tax bill	3.71	1.78	0.396 ***	-0.026	0.098	0.008	-0.039
Tax docs = 1	0.51	0.50	0.003	0.018	-0.008	-0.031	0.029
Knowledge	9.25	2.34	-0.125 **	0.239 ***	0.010	0.116 **	0.262 ***
Frequency	3.53	3.79	0.232 ***	-0.126 **	0.138 **	0.115 **	-0.049
Extraversion	2.44	1.13	0.114 **	-0.061	0.054	0.267 ***	0.084
Neuroticism	2.41	1.08	0.029	-0.018	-0.177 ***	-0.231 ***	-0.056
Agreeableness	3.86	0.95	-0.095	0.093	-0.254 ***	0.020	-0.042
Conscientiousness	3.83	0.87	-0.007	0.034	0.062	0.198 ***	0.089
Openness	3.90	0.96	-0.052	-0.079	0.105	0.001	0.030

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Table 9 Continued

Variable	Emp	Fair	Poli	Risk	Prep	Red	Docs
Self-Employ = 1	1.000						
Fairness	-0.126 **	1.000					
Political	-0.059	0.049	1.000				
Risk propensity	-0.107	0.047	-0.059	1.000			
Self-prepare = 1	0.112	0.013	-0.202 ***	0.002	1.000		
Reduce tax bill	-0.079	-0.160 ***	0.060	0.297 ***	-0.083	1.000	
Tax docs = 1	0.072	0.039	-0.091	-0.099	0.062	-0.005	1.000
Knowledge	0.030	-0.061	-0.010	-0.097	0.138 **	-0.085	-0.053
Frequency	-0.023	-0.021	0.011	0.163 ***	0.101	0.120 **	-0.026
Extraversion	-0.125 **	0.059	0.010	-0.011	-0.007	0.006	0.039
Neuroticism	0.199 ***	-0.100	-0.082	0.042	0.068	0.098	-0.050
Agreeableness	0.108	-0.059	-0.079	-0.166 ***	0.048	-0.157 ***	0.025
Conscientiousness	-0.116 **	0.059	0.108	-0.107	-0.017	-0.089	-0.035
Openness	0.093	-0.034	-0.121 **	-0.160 ***	0.061	-0.134 **	0.076



# TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Table 9 Continued

Variable	Know	Freq	Extra	Neuro	Agree	Consc
Knowledge	1.000					
Frequency	0.043	1.000				
Extraversion	-0.038	0.125 **	1.000			
Neuroticism	-0.113 **	-0.010	-0.265 ***	1.000		
Agreeableness	-0.042	0.027	0.299 ***	-0.075	1.000	
Conscientiousness	0.106	0.037	0.184 ***	-0.319 ***	0.070	1.000
Openness	-0.108	0.080	0.297 ***	-0.146 **	0.309 ***	-0.011

*Note.* Tax non-compliance (total tax) represents the actual amount the tax liability would change based upon the respondents answering. A higher number indicates greater tax non-compliance. The combined tax return score is reflected here. The calculation of each item takes into account all relevant tax information such as self-employment tax, credit versus deduction, etc. The level of tax non-compliance (combined tax return) ranged from a change in liability ranging from \$-125 (over compliance) to \$4,868. For the 306 responses in the sample, only 64 responses filed a tax return that would have been deemed 100% complaint based upon 2016 tax law. Age was measured by grouping individuals using a 7-point Likert scale. A score of 1 would be equal to someone between the age of 18 to 24 years, scores of 2 through 7 were used to represent ten-year age groupings from 25-34, 35-44, 45-54, 55-64, 65-74, over 75, respectively. Income level was measured using an 8-point Likert scale. Groupings used were 1 for less than \$25,000, 2 for income between \$25,000 and \$34,999, 3 for income between \$35,000 and \$49,999, 4 for income between \$50,000 and \$74,999, 5 for income between \$75,000 and \$99,000, 6 for income between \$100,000 and \$149,999, 7 for income between \$150,000 and \$199,999, 8 for income \$200,000 to \$299,999. This study did not have respondents with income above this level. Education was measured by using a 7-point Likert scale. A score of 1 represented not being a high school graduate, a score of 2 being a high school graduate, 3 being some college, 4 being an associate's degree, 5 being a bachelor's degree, 6 being a master's degree, and 7 being a doctoral degree. Fairness reflects a composite score of three questions that were measured on a 7-point Likert scale. Factor analysis of the three questions showed proper loading on one factor and resulted in a Cronbach alpha of .883. The three questions were averaged. Scores of 1 indicated strongly disagree with a score of 7 equaling strongly agree. Political affiliation is measured by a single-item question scored using a 7-point Likert scale. A score of 1 indicates a self-report of "very liberal" while a score of 7 would indicate "very conservative". Risk propensity is a composite score of three questions that were asked using a 11-point Likert scale. As presented, a higher score would equal a lower level of willingness to take risk. For ease of interpretation, this variable was reverse coded; therefore, a higher score reflects a higher level of risk propensity. Reduce tax bill was based upon a single-item measure asking the respondent to score "I would really enjoy reducing my tax bill regardless of whether it was illegal or not" on a 7-point Likert scale. A score of 1 would equal "Strongly Disagree" while a score of 7 would equal "Strongly Agree". Knowledge is calculated based upon a 14-item additive index. The mean score was 9.252 out of total possible 14 points. The score was calculated by awarding one point for each correct question. Incorrect questions or answers in which the respondent was "not sure" did not receive points. Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience, respectively, each reflect composite scores that were sourced four personality questions that were scored on 5-point Likert scales, with 1 = "Strongly Disagree" and 5 = "Strongly Agree". Per the original measure design several items were reverse coded. Each personality trait had four questions in the original survey.

\*\* $p < .05$  (2-tailed). \*\*\* $p < .01$  (2-tailed)

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Table 10

*Descriptive Statistics and Correlation Matrix for Tax Scenarios (Correlation Based on z-scores)*

Tax scenario	$M^a$	$SD^a$	Min <sup>a</sup>	Max <sup>a</sup>	Range low <sup>b</sup>	Range high <sup>b</sup>	Total <sup>c</sup>
Combined measure	1569.236	1326.030	-125.00	4868.25	-748.87	5,989.87	1.000
Cash income	594.412	623.879	0.00	1869.37	0	1,869.37	0.501***
Business expenses	44.596	199.560	-373.87	1495.50	-373.87	1,495.50	0.463***
Gambling income	102.451	107.934	0.00	250.00	0	250	0.571***
Moving expenses	18.301	56.504	-125.00	125.00	-125	125	0.603***
Tuition credit	779.739	956.350	0.00	2000.00	0	2,000	0.580***
Energy credit	29.739	88.972	-250.00	250.00	-250	250	0.560***
Social desirability <sup>d</sup>	8.114	4.404	0.00	16.00	—	—	—

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Table 10 Continued

Tax scenario	Side income <sup>c</sup>	Expenses <sup>c</sup>	Gambling <sup>c</sup>	Moving <sup>c</sup>	Tuition <sup>c</sup>
Cash income	1.000				
Business expenses	-0.201***	1.000			
Gambling income	0.606***	0.043	1.000		
Moving expenses	0.075	0.316***	0.074	1.000	
Tuition credit	0.165***	0.088	0.155***	0.217***	1.000
Energy credit	-0.001	0.274***	-0.006	0.294***	0.276***
Social desirability <sup>d</sup>	-0.086	-0.077	-0.098	-0.167**	0.013

*Note.*  $N = 306$

<sup>a</sup> Mean, standard deviation, minimum, and maximum numbers are based upon review of level of non-compliance based upon calculated tax dollars of respondents.

<sup>b</sup> Range (low and high) is a reflection of what the level of non-compliance could have been based upon the vignette presented.

<sup>c</sup> Correlation results are based upon the usage of  $z$ -scores for each tax scenario.  $z$ -scores were used to standardize the level of non-compliance across decisions.

<sup>d</sup> Social desirability scale (Stober, 2001) was included to provide a measure as to the honesty in responses of survey participants. Cronbach alpha for the scale was .865.

\*\* $p < .05$  (2-tailed). \*\*\* $p < .01$  (2-tailed).

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Table 11

*Descriptive Statistics and Correlation Matrix for Tax Scenarios (Frequency of Exposure)*

Tax scenario	<i>M</i>	<i>SD</i>	Side income	Expenses	Gambling	Moving	Tuition
Side income	1.601	1.985	1.000				
Business expenses	1.078	1.695	0.441 ***	1.000			
Gambling income	0.291	0.907	0.134 **	0.136 **	1.000		
Moving expenses	0.121	0.415	-0.037	0.010	0.063	1.000	
Tuition credit	0.069	0.456	0.135 **	0.027	0.181 ***	0.025	1.000
Energy credit	0.373	0.805	0.171 ***	0.277 ***	0.008	0.041	-0.016

*Note.*  $N = 306$ . Table reflects the answers of respondents based upon the frequency they have experienced the tax situation in the last five years. A score of 0 by respondent would be equivalent to not having experienced the situation while a score of five would indicate exposure in each of the last five years.

\*\* $p < .05$  (2-tailed). \*\*\* $p < .01$  (2-tailed).

Reviewing Table 9, the highest correlation between variables was .396 ( $p < .01$ ) and was related to tax compliance intentions and desire to reduce the tax bill. The other correlation statistics were lower, indicating that multicollinearity does not appear to be a problem in the model. Concerning personality traits, extraversion correlates with the other four personality traits. All traits but neuroticism relate in a positive direction. The negative correlation with neuroticism exists with all other personality traits, although the relationship between neuroticism and agreeableness does not reach the level of significance. The personality trait of agreeableness displays a positive, significant correlation with openness to experience. As these five traits provide a measure of personality, the significance of the correlations between them is understandable and mirrors the majority of the relationships seen in past research (Turner, 2014).

The descriptive statistics presented in Table 9 emphasize that participants scored high in the personality traits of openness to experience ( $M = 3.90$ ,  $SD = .96$ ), agreeableness ( $M = 3.86$ ,

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

$SD = .95$ ), and conscientiousness ( $M = 3.83$ ,  $SD = .87$ ). Lower scores were found for extraversion ( $M = 2.44$ ,  $SD = 1.13$ ) and neuroticism ( $M = 2.41$ ,  $SD = 1.08$ ). The standard deviations of this study display slightly larger variation than in previous research. However, the personality profile of this study's participants was consistent with previous studies (Srivastava, John, Gosling, & Potter, 2003; Turner, 2014).

Regarding the control variables, significant positive correlation is seen between desire to reduce taxes and risk propensity of taxpayer with non-compliance intentions. In addition, there is also a positive correlation between the desire to reduce taxes and the risk propensity of respondents. These relationships are believable based on the dynamics of filing a tax return. In the final review of data, none of the correlations was greater than  $\pm .4$ . Therefore, all variables were retained for regression analysis. Subsequent review of the variance inflation factor (VIF) scores generated during regression analysis reinforced the fact that including all variables would not cause any problems related to multicollinearity.

To address the concern for social desirability, correlations between taxpayer compliance decisions and the embedded social desirability scale were analyzed. The resulting correlations related to cash income, business expenses, gambling income, tuition credit, and energy credit were all negative with no level of significance found. This information is presented in Table 10. The compliance decision related to moving expenses was the only variable that showed significant correlation ( $-.167$ ,  $p < .05$ ). These results, especially when combined with the overall non-compliance rate of this study, indicate that social desirability did not influence respondents. No additional analysis was done related to social desirability and this variable was excluded from any regression analysis.

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Building on the base model shown in Table 7, the next step in analysis was to look at the relationship that resulted from adding the Big Five personality traits. Table 12 details the results of these ordinary least squares (OLS) regressions. First, each tax situation was analyzed independently, followed by analysis of a combined tax gap score (resulting from the net of the six situations).

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Table 12

*OLS Parameter Estimates for Big Five Personality Traits and Compliance*

Variables <sup>a, b</sup>	Side income	Business expenses	Gambling income
Constant	-171.602 (350.066)	244.199 (127.047)	-8.829 (60.552)
Age	-21.436 (28.980)	-10.367 (10.259)	3.991 (4.996)
Gender	63.412 (70.016)	9.139 (25.275)	22.339** (12.192)
Income	-5.181 (21.871)	7.087 (7.863)	4.029 (3.799)
Education	27.682 (25.991)	-14.908* (9.457)	1.105 (4.491)
Employment	-40.146 (82.014)	-28.561 (29.125)	-33.599*** (14.071)
Tax fairness	-32.863* (23.346)	9.073 (8.363)	-1.834 (4.087)
Political	-16.864 (20.603)	-11.482* (7.392)	-6.216** (3.574)
Risk	41.235*** (15.522)	-1.498 (5.701)	1.757 (2.706)
Tax prep	86.501 (79.700)	9.318 (28.716)	15.967 (13.721)
Reduce tax	119.059**** (19.384)	4.821 (6.968)	18.440**** (3.394)
Tax docs	-147.140** (64.158)	-10.362 (23.070)	-56.795**** (11.128)
Knowledge	-88.618* (66.089)	50.552** (29.943)	-19.849* (12.133)
Frequency	36.337** (16.285)	16.196** (7.041)	10.449* (6.352)
Extraversion	62.078** (32.583)	3.115 (11.633)	6.439 (5.659)
Neuroticism	17.084 (33.283)	0.851 (11.929)	7.699* (5.780)
Agreeableness	-2.839 (38.783)	-8.813 (13.937)	-3.709 (6.705)
Conscientiousness	71.896** (39.215)	-19.118* (14.069)	8.642 (6.797)
Openness to experience	-39.805 (37.420)	-24.592** (13.462)	-0.602 (6.481)
$R^2$	0.271	0.085	0.269
Adj. $R^2$	0.226 <sup>c</sup>	0.028	0.223
$F$ (sig.)	5.938 ***	1.480 *	5.870 ***
Maximum VIF <sup>d</sup>	1.366	1.338	1.360

# TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Table 12 Continued

Variables <sup>a, b</sup>	Moving expenses	Tuition credit	Energy credit	Total tax gap
Constant	-34.027 (34.509)	-62.284 (578.265)	70.062 (57.532)	552.355 (795.294)
Age	-2.526 (2.858)	-8.665 (47.403)	-12.141 *** (4.514)	-40.696 (62.567)
Gender	15.018 ** (6.962)	80.818 (115.689)	8.158 (11.068)	197.612 * (150.195)
Income	-1.782 (2.162)	49.285 * (35.975)	-7.585 ** (3.472)	41.726 (47.059)
Education	0.706 (2.577)	4.486 (43.821)	-1.531 (4.098)	22.878 (57.108)
Employment	-12.185 * (8.018)	20.729 (133.586)	-10.525 (12.827)	-90.822 (173.585)
Tax fairness	0.403 (2.308)	-10.117 (38.508)	1.408 (3.687)	-30.137 (49.974)
Political	-1.070 (2.042)	4.261 (34.011)	-4.607 * (3.295)	-40.510 (44.134)
Risk	3.320 ** (1.531)	69.918 *** (25.878)	-3.024 (2.523)	101.237 *** (33.411)
Tax prep	6.661 (7.865)	66.707 (131.495)	-12.548 (12.554)	171.562 (172.407)
Reduce tax	5.203 *** (1.928)	79.241 *** (32.173)	5.930 ** (3.060)	224.500 **** (41.594)
Tax docs	17.905 *** (6.390)	235.417 ** (106.721)	13.474 * (10.132)	35.582 (137.548)
Knowledge	7.421 (7.196)	-423.887 *** (120.077)	-2.905 (15.404)	-57.845 ** (32.128)
Frequency	(5.741) (7.716)	278.971 *** (118.162)	6.733 (6.519)	48.379 *** (18.848)
Extraversion	1.884 (3.212)	17.330 (54.015)	12.398 *** (5.137)	108.071 * (69.527)
Neuroticism	0.273 (3.284)	18.404 (54.841)	-0.700 (5.234)	34.289 (71.468)
Agreeableness	1.998 (3.835)	-5.035 (64.267)	-2.196 (6.110)	-34.062 (82.864)
Conscientiousness	-3.145 (3.905)	10.098 (65.276)	4.554 (6.206)	40.108 (83.900)
Openness to experience	2.663 (3.708)	41.268 (61.861)	-2.833 (5.944)	-58.329 (80.792)
$R^2$	0.130	0.158	0.107	0.263
Adj. $R^2$	0.075	0.105	0.050	0.217
$F$ (sig.)	2.376 **	2.977 ***	1.901 **	5.687 ***
Maximum VIF <sup>d</sup>	1.364	1.380	1.360	1.365

Note.  $N = 306$ .

<sup>a</sup> Dependent variables reflect the level of tax non-compliance (based on calculated tax dollars) for the stated tax decision. The combined non-compliance (based on calculated tax dollars) is reflected in the far-right column.

<sup>b</sup> Standard errors are given in parenthesis. Unstandardized coefficients are displayed.

<sup>c</sup> Significance of  $F$  change over base model for Side Income scenario was .133.

<sup>d</sup> VIF = variance inflation factor

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$



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Reviewing Table 12 for the combined tax non-compliance (total tax gap), gender (197.612,  $p < .1$ ), risk propensity (101.237,  $p < .01$ ), desire to reduce tax bill (224.5,  $p < .001$ ), and frequency of exposure (48.379,  $p < .01$ ) all showed positive relationships with taxpayer non-compliance. Taxpayers with more knowledge showed a negative relationship with taxpayer non-compliance (-57.845,  $p < .05$ ). These five variables were also significant in the base model.

Unfortunately, the addition of the Big Five personality traits did not have as much of an impact on taxpayer compliance as the study had posited. As seen in Table 12, only a marginally significant relationship between extraversion (108.071,  $p < .1$ ) and taxpayer non-compliance was observed. This finding related to extraversion substantiated the hypothesized relationship between extraversion and tax non-compliance or compliance, supporting H1 of this study. The other four traits showed no significant relationship related to the total level of taxpayer non-compliance.

As mentioned, the tax filing process can be complex and requires a multitude of decisions. Acknowledging this, Table 12 also displays the influence that the Big Five traits have on each of the stand-alone tax decisions. OLS regressions generated significant model results for all tax decisions except business expenses. The model for business expenses showed only a marginally significant model fit ( $p < .1$ ), resulting in an exceptionally low  $R^2$  (.028). The  $R^2$  for the models relating to side income and gambling income were the highest (.226 and .223, respectively).

In comparison, OLS regressions for moving expenses, tuition credit, and energy credit, although significant models ( $p < .05$ ), produced surprisingly low  $R^2$  numbers (.075, .105, and .05, respectively). As with the combined tax compliance measure, adding the Big Five

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personality traits to individual tax decision models did not provide any significant improvement over the lower level model which excluded them.

The model for side income was closest to showing marginal improvement (significance of  $F$  change reported at .133) over the base model that excluded the Big Five personality traits. Acknowledging the marginal model change, continued review indicated that some variables do show a relationship with taxpayer compliance intentions. Respondents who had a greater tolerance for risk showed a significant, positive relationship with tax non-compliance for cash income (41.235,  $p < .001$ ), moving expenses (3.320,  $p < .05$ ), and tuition credit (69.918,  $p < .001$ ). Business expenses, gambling income, and moving expenses did not produce any significant relationships related to risk tolerance.

Another variable that displayed a significant relationship with taxpayer compliance was the receipt of tax documents. For tax decisions related to side income and gambling income, half the participants were told that they had received tax documents that reported the amount of income received. The other half were told that they did not receive any tax documents. This manipulation showed significant findings. Taxpayers who received tax documents were more likely to comply with the tax law related to the reporting of side income (-147.14,  $p < .01$ ) and gambling income (-56.795,  $p < .001$ ). Opposite to this, three of the four tax decisions showed significant and negative relationships with receipt of tax documents. Specifically, moving expenses (17.905,  $p < .01$ ), tuition credit (235.417,  $p < .05$ ), and energy credit (13.474,  $p < .10$ ) showed negative relationships between receiving tax documents and compliance decisions. Business expenses did not display any statistically significant relationships.

Results indicated that when a taxpayer receives tax documents related to a taxable income item, there is significant increase in compliance on said item. For the \$5,000 in side

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income tax decision, the average amount reported moved from \$3,168.88 to \$3,645.15 ( $p < .05$ ), while the \$1,000 of gambling decision experienced a shift from \$470.44 to \$705.80 ( $p < .05$ ).

Table 13 shows the results of the mean difference in tax dollars avoided, as well as the mean amount reported on the return by respondents.

Table 13

### *T-test for Tax Documents*

Variables	No tax docs <sup>c</sup> <i>n</i> = 151	Tax docs <sup>d</sup> <i>n</i> = 155	Mean diff <sup>‡</sup>	<i>t</i> stat
Cash income				
Tax avoided (mean) <sup>a</sup>	684.61	506.54	178.07	2.504 **
Tax avoided (std. dev) <sup>a</sup>	737.67	474.43		
Amount reported (Mean) <sup>b</sup>	3,168.88	3,645.15		
Gambling income				
Tax avoided (mean) <sup>a</sup>	132.12	73.55	58.57	4.900 **
Tax avoided (std. dev) <sup>a</sup>	122.04	82.83		
Amount Reported (Mean) <sup>b</sup>	470.44	705.80		

<sup>‡</sup> The Levene's Test for Equality of Variances resulted in an *F* statistic of 34.067,  $p < .001$ .

Therefore, the table reflects the statistical results based upon the assumption that variances within groups are not equal.

<sup>a</sup> Numbers provided reflect the level of tax non-compliance (in calculated tax dollars) for each decision (cash income and gambling income, respectively).

<sup>b</sup> Numbers provided reflect the amount selected to be reported by respondent (which was then converted to tax dollars) and reported with mean and standard deviation in the table.

<sup>c</sup> Respondents that did not receive tax documents were asked to make a decision on the amount of cash income (\$5,000 in total) as well as gambling income (\$1,000 in total) that they would report.

<sup>d</sup> Respondents were told that they received tax documents reporting cash income of \$3,000 and gambling income of \$700. These amounts were intentionally made less than the full amount that the vignette presented. Respondents that did receive the tax document survey were still told that the total amount of cash income was \$5,000 and gambling income was \$1,000.

\*\* $p < .05$ .

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

Knowledge of the specific tax situation also provided a conflicting result. Although the findings were only marginally significant, an increase in knowledge related to tax law increased compliance related to the reporting of cash income (-88.618,  $p < .10$ ), gambling income (-19.849,  $p < .01$ ), and tuition credit (-423.887,  $p < .001$ ). An increase in tax knowledge related to business expenses increased levels of non-compliance (50.552,  $p < .05$ ).

The frequency of exposure to items, when significant, indicated that the more a taxpayer is exposed to a tax scenario, the less likely they are to remain compliant. Increased exposure to side income (36.337,  $p < .05$ ), business expense (16.196,  $p < .05$ ), gambling income (10.449,  $p < .10$ ), and tuition credit (278.971,  $p < .01$ ) were all significantly related with non-compliance.

Concerning the influence of the Big Five personality traits, the only models that had larger  $R^2$  results were decisions related to side income, gambling income, and energy credit. Extraversion was the only trait that repeatedly showed significant relationships; the trait had positive relationships with non-compliance for side income (62.078,  $p < .01$ ) and energy credits (12.398,  $p < .01$ ). For side income, conscientiousness (71.896,  $p < .05$ ) also showed a relationship with increased levels of non-compliance. The model related to gambling income showed that higher-scoring, neurotic individuals are more likely to be non-compliant (7.699,  $p < .10$ ), although this variable had only marginal significance.

The fact that the current average time to complete an individual income tax return is 13 hours (Taxpayer Advocate Service, 2016) underscores the potential difficulty and complexity involved in the tax filing process. Analysis of results for each of the six individual tax decisions highlights the commonalities (desire to reduce tax bill, frequency of exposure to the tax decision) and differences (tax knowledge, extraversion trait) that exist in predicting tax compliance. Furthermore, in comparison to the combined result (total tax gap), additional relationships

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between variables emerge (or disappear). Realizing many tax decisions need to be made, factor analysis was performed on the dataset to seek better understanding of any underlying relationships.

Before performing the analysis, it was necessary to standardize the compliance variables. Addressing this point, reported information reflected that the tax avoided was based on decisions made by respondents. However, as certain decisions carry different tax ramifications (self-employment versus earned income, credits versus deductions), the decisions were all standardized to simplify the weighting that would result when running factor analysis. After z-scores were calculated, principal component analysis was performed using Varimax with Kaiser normalization. Two factors emerged from the analysis with no significant cross-loadings. One factor received the loading of side income and gambling income. The second factor observed loading of the remaining four decisions (home improvement credit, moving costs, business expenses, and education tuition credit). Being exploratory in nature, all items were included in this factor loading. The final output can be seen in Table 14.

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Table 14

### *Factor Analysis of Tax Situations*

Big Five indicator and loadings <sup>a</sup>	Component	
	1	2
Income items (Cronbach .755)		
Cash income	0.899	
Gambling income	0.848	
Expense/credit items (Cronbach .564)		
Home improvement credit		0.720
Moving costs		0.709
Business expenses		0.672
Tuition credit		0.513
Percentage of variance explained	29.0%	28.3%

<sup>a</sup> Extraction method: Principal component analysis. Rotation Method: Varimax with Kaiser Normalization.

Table 14 shows that except for tuition credit (which loaded at .513), all loadings were at or above .672. Cronbach alpha for the income factor was .755, while the expense/credit factor was .564. The low Cronbach for the expense/credit factor points to a low level of internal consistency between items. However, this score is an improvement on what would result if all six factors were forced to load on one measure (tax compliance). Therefore, being exploratory in nature, the two factors (income and expense/credit) were retained for additional analysis.

Using the aforementioned split in items resulting from the principal component analysis, the decisions made by respondents were weighted to provide a compliance score from 0 to 100, with a score of 100 indicating complete non-compliance. Regressions were then performed using the same variables displayed in earlier presented models. To allow for better alignment of the control variables, some adjustment was made to the knowledge and frequency variables. Specifically, the knowledge factor related to the income items was modified to reflect only the

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total of the four questions relevant to taxable income knowledge. The deduction knowledge was a result of the five expense/credit questions. Overall taxpayer knowledge remained a combination of the full 14-item measure. Like knowledge, calculation of frequency of exposure to the tax decision was bifurcated based upon the factor loading. Table 15 shows the results of each regression.

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Table 15

*OLS Regressions Based on Factoring of Situations*

Variables <sup>a, b</sup>	Income factor		Expense/credit factor		Combined	
Constant	-6.125	(18.344)	17.421	(16.961)	9.222	(13.278)
Age	-0.646	(1.496)	-0.877	(1.359)	-0.679	(1.045)
Gender	3.871	(3.624)	2.494	(3.317)	3.299*	(2.508)
Income level	-0.201	(1.129)	1.079	(1.041)	0.697	(0.786)
Education level	1.539	(1.348)	-0.438	(1.25)	0.382	(0.953)
Employment status	-3.948	(4.212)	-0.263	(3.826)	-1.516	(2.898)
Tax fairness	-1.451	(1.206)	0.090	(1.111)	-0.503	(0.834)
Political affiliation	-1.138	(1.065)	-0.415	(0.972)	-0.676	(0.737)
Risk propensity	2.025***	(0.799)	1.338**	(0.747)	1.690***	(0.558)
Tax prep method	4.884	(4.111)	0.372	(3.804)	2.864	(2.879)
Reduce tax bill	6.427***	(1.001)	2.201***	(0.924)	3.748***	(0.694)
Tax documents	-9.625***	(3.313)	5.764**	(3.054)	0.594	(2.297)
Knowledge	-2.283*	(1.545)	-2.371**	(1.249)	-0.966**	(0.536)
Frequency	1.949***	(0.738)	2.039***	(0.740)	0.808**	(0.315)
Extraversion	3.181**	(1.681)	1.064	(1.543)	1.804*	(1.161)
Neuroticism	1.082	(1.724)	0.453	(1.565)	0.573	(1.193)
Agreeableness	-0.327	(2.001)	-0.585	(1.824)	-0.569	(1.384)
Conscientiousness	3.702**	(2.026)	-0.837	(1.855)	0.670	(1.401)
Open to experience	-2.223	(1.951)	-0.473	(1.776)	-0.974	(1.349)
$R^2$	0.296		0.144		0.263	
Adjusted $R^2$	0.252		0.089		0.217	
$F$ (sig.)	6.705 ***		2.640***		5.687 ***	
Maximum VIF <sup>c</sup>	1.365		1.369		1.365	

Note.  $N = 306$

<sup>a</sup> Dependent variables are based upon the income factor, expense factor, and combined factor as a result of the standardized tax compliance used in the factor analysis (see Table 14). Scenarios that loaded on each factor were summed together to provide the dependent variables used for regression analysis.

<sup>b</sup> Standard errors are given in parenthesis. Unstandardized coefficients are displayed.

<sup>c</sup> VIF = variance inflation factor

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .



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Regardless of the dependent variable, risk propensity and desire to reduce taxes remained positive and significant explanatory variables ( $p < .05$ ). Knowledge showed a significant relationship with each of the factors, but the relationship was negative—thereby indicating that the more knowledge taxpayers have, the more likely they are to comply. Another consistent relationship was the effect that exposure had on taxpayer compliance. For all regressions, the more frequently taxpayers were exposed to a related tax decision, the more likely they were to be non-compliant.

Further analyzing the results of Table 15, three variables displayed different results depending on the outcome measure. The first variable of interest is tax documents. The combined tax score showed there is no significance whether tax documents are received. However, review of the two split factors indicated that tax documents are in fact a significant explanatory variable. The findings, however, move in an opposite direction when respondents who received tax documents were more likely to be compliant in reporting income ( $-9.625, p < .01$ ) and less likely to be compliant in making expense/credit decisions ( $5.764, p < .05$ ). Finally, comparison of income versus expense/credit models highlights that the personality traits of extraversion ( $3.181, p < .05$ ) and conscientiousness ( $3.702, p < .05$ ) both have a positive and significant relationship in predicting the income factor. There was no relationship with any of the Big Five traits when analyzing the expense/credit factor.

Seeking to better understand the specific relationship with the Big Five traits, factor regressions were also analyzed to consider the significance in model change with the inclusion or exclusion of personality. The income factor resulted in a significance of  $F$  change of .133, while the expense/credit and overall models showed almost no improvement in model fit when the Big Five traits were added.

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Review of the error terms from any of the previously mentioned models pointed to the fact that non-normal distributions appear to exist. Before eliminating personality as having significance in tax compliance research, an attempt to provide statistical analysis that would help with the non-normal distributions was implemented. Specifically, bootstrapping was performed in an attempt to rectify the non-normal distribution of error terms. The income factor was solely analyzed as this was the only model where personality may have had any meaningful influence. Table 16 provides a summary of the output from the bootstrapped analysis.

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Table 16

*OLS Regression of Income Factor with Bootstrapping*

Variables <sup>a, b</sup>	Income factor	
Constant	-6.125	(16.798)
Age	-.646	(1.290)
Gender	3.871	(3.406)
Income level	-0.201	(1.000)
Education level	1.539	(1.290)
Employment status	-3.948	(4.044)
Tax fairness	-1.451	(1.298)
Political affiliation	-1.138	(1.031)
Risk propensity	2.025 ***	(0.871)
Tax preparation method	4.884	(3.778)
Reduce tax bill	6.427 ****	(1.083)
Tax documents	-9.625 ***	(3.524)
Knowledge	-2.283**	(1.390)
Frequency	1.949 ***	(0.816)
Extraversion	3.181 ***	(1.574)
Neuroticism	1.082	(1.769)
Agreeableness	-0.327	(2.019)
Conscientiousness	3.702 **	(2.034)
Openness to experience	-2.223	(2.000)
$R^2$	0.296	
Adjusted $R^2$	0.2519 <sup>c</sup>	
Wald $\chi^2$	171.64 ***	

*Note.*  $N = 306$ ; Model bootstrapped with 150 repetitions using Stata (Version 14).

<sup>a</sup> Dependent variables is weighted income non-compliance factor.

<sup>b</sup> Standard errors are given in parenthesis.

<sup>c</sup> Addition of Big Five traits provide a significant model improvement ( $p < .05$ ).

\*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

Review of the individual tax decisions, the combined tax measure, and the resulting factor analysis of the various tax decisions highlight that extraversion (H1) does appear to have a

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marginally significant relationship with taxpayer non-compliance or compliance intentions. The hypotheses related to neuroticism (H2), agreeableness (H3), conscientiousness (H4), and openness to experience (H5) did not show significant results across the various decisions (or combined tax gap). A summary of the hypothesized relationships of this essay and resulting outcomes from the OLS regression analysis are shown in Table 17.

Table 17

### *Summary of Posited Relationships and Findings*

H	Trait	Scale direction	POS	Findings						
				INC	EXP	GAM	MOV	TUI	ENG	TOT
1	E	Introvert ---> Extravert	+	+	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	+	+
2	N	Emotionally Stable ----> Neurotic	-	<i>not sig</i>	+	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>
3	A	Critical ---> Agreeable	-	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>
4	C	Self-Indulgent ---> Responsible	-	+	<i>not sig</i>	-	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>
5	O	Conforming ---> Nonconforming	+	<i>not sig</i>	<i>not sig</i>	-	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>	<i>not sig</i>

*Note.* H=Hypothesis, Trait=Personality trait, E=Extraversion, N=Neuroticism, A=Agreeableness, C=Conscientiousness, O=Openness to experience, INC = Side graphic designer income, EXP=Side construction expenses, GAM=Gambling winnings, MOV=Moving expenses, TUI=Tuition costs, ENG=Home improvement costs, TOT=Total combined tax.

## **Discussion, Limitations, and Conclusions**

This study considered the relationship between the Big Five personality traits and taxpayer compliance intentions. Having received limited attention in previous literature, the subject was updated in this study and some unique findings were discovered (as well as some justification as to why the Big Five personality traits have not been published in the tax compliance realm as frequently as seen in other disciplines). This section will first outline the

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general findings of this study, followed by a discussion related to personality findings. Lastly, limitations of this study will be presented.

Concerning the Big Five personality traits, this study showed only marginal support for a relationship between extraversion and taxpayer non-compliance. The relationship is significant only when looking at the factor loading related to income or the standalone decisions for both side income and energy credit. It is therefore possible that tax compliance and the relationship with personality has not seen much published research because significant relationships are lacking. Nevertheless, the findings of this study do support that extraversion has a relationship with some non-compliance decisions. Although not always significant, being aware that extraverted personalities might be more likely to engage in non-compliance is useful for practitioners.

Another finding related to personality is that in the context of side income (and the income factor of this study), the personality trait of conscientiousness displays a marginally significant and positive relationship with non-compliance. The direction of this relationship contradicts Turner's (2014) research on white-collar crime. Additional research in this area would prove useful, as this finding indicates that individuals who are more reliable and careful may be more likely to cheat on their taxes. As the filing of a tax return can be a private process, perhaps individuals who are more conscientious keep better records, which facilitates creating a non-compliant tax return.

In the context of the study, both personality traits (extraversion and conscientiousness) showed the strongest relationship with side income. The other five tax situations displayed marginal or no relationships with the remaining personality traits. However, as side income does represent one of the largest pieces of the annual U.S. tax gap (Internal Revenue Service, 2016b),

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the findings of this study are still meaningful. Furthermore, based on the responses from this study, the receipt of side income is also the most common tax scenario seen by taxpayers (mean occurrence of 1.601 times over the last five years).

As mentioned, the hypotheses related to the personality traits of neuroticism (H2), agreeableness (H3), and openness to experience (H5) were not supported. For the personality trait of neuroticism, lower-scoring individuals are more likely to be calm and relaxed while higher scorers are more likely to display traits of fear, sadness, and anger (McCrae & Costa, 2003). This study hypothesized that emotionally stable individuals would be more comfortable making decisions of non-compliance due to being in a position of comfort. Arguably, these same individuals may be so calm and relaxed that there is no justification to make a choice of non-compliance. On the other hand, neurotic individuals may be in such a state of sadness, disgust, and anger that they are more willing to engage in acts of non-compliance. These conflicting postulations, especially when combined with the high percentage of non-compliance that occurred in this study, can explain why no significant relationship was found. Essentially, emotionally stable and neurotic individuals may all engage in non-compliance with no way to predict such behavior from this personality trait.

The hypothesis related to openness to experience (H5) was also not supported. This relationship was tested for belief that the context of tax evasion might be different from past research related to white-collar crime. However, the findings seen in past research (Turner, 2014) also proved true for tax compliance in that openness to experience is not a significant predictor of an individual choosing not to comply.

The coefficient for agreeableness, although not significant, was negative for almost all tax scenarios. The direction of the relationship is in line with past research (Turner, 2014). As

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this study controlled for a significant number of variables that past studies excluded, the question is raised if omitted variable bias might exist in past studies. Statistical analysis of this study's model, looking at an overly-simplified version of research model, does show that removing certain control variables can change the significance of the influence of the Big Five personality traits. Alternatively, personality traits may not provide significant direct effects on a dependent variable, but rather relate through moderation or mediation. Finally, it is important to highlight that the mean score of study participants for both openness to experience and agreeableness were at the upper end of the Likert scale used (3.90 and 3.86, respectively). While the mean of personality traits in this study mirrored past research (Srivastava et al., 2003; Turner, 2014), the upper range of scores, specifically for the personality traits of openness to experience and agreeableness, may provide a partial explanation for the non-significant findings. Future research should explore these possibilities, especially those related to the personality trait of agreeableness.

A foundational component of this research was built on the argument that tax compliance should not be analyzed under the same umbrella as white-collar crime. Although the findings from this research are limited, they do suggest that tax non-compliance differs from other types of white-collar crime. Specifically, the personality trait of extraversion showed a significant relationship with tax non-compliance. Past research that considered white-collar crime more generally did not find this relationship. Furthermore, the personality traits of agreeableness and conscientiousness, though showing significance in the context of white-collar crime by Turner (2014), did not reveal this result when focused on tax non-compliance.

In addition, this study sought to provide a more thorough measure of tax compliance intentions. The short story presented in this study and the six tax decisions presented to

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respondents did accomplish that goal. Filing a tax return is a complex process. To overgeneralize the relationships that exist between variables and taxpayer compliance is incorrect. The findings across the varying six decisions support differences, while also identifying some of the commonalities of the tax filing process. Additional research would prove useful to understand more fully the many tax decisions and what may lead to non-compliance or compliance.

This study brings to the forefront several interesting pieces of information beyond the Big Five personality traits. First, it confirmed that taxpayers who have a higher tolerance for risk will be more likely to engage in non-compliance. This finding is logical and supports past research related to models that have applied theories of deterrence and utility maximization (Allingham & Sandmo, 1974; Cowell, 1990; Slemrod, 2007). The average perception, based upon survey results, is that 10.58% (standard deviation of 9.254) of returns are subject to audit. In reality, the risk of audit is less than 1% (Internal Revenue Service, 2016a). Although survey respondents perceive the risk of audit to be higher than it really is, the 10.58% figure still indicates that taxpayers realize a large number of returns are not subject to audit. Filing a non-compliant tax return is a bit of a gamble as to whether it will be subject to future audit. Taxpayers with a higher risk tolerance will take more risk and, therefore, make more non-compliant tax decisions. Secondly, as anticipated, the more a taxpayer would like to reduce their tax bill, the more likely they are to engage in non-compliant acts. Risk tolerance and desire to reduce taxes both demonstrate logical relationships with their impact on tax non-compliance. Building on these results could be an avenue for future research to help provide a better understanding of what drives risk propensity and the desire to reduce taxes.



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This study contained numerous variables. To better understand tax compliance, post hoc analysis was performed on the influence that information reporting documents have on the act of compliance. Study results showed that receiving a tax document causes a taxpayer to demonstrate an increased level of compliance for the reported item. Typical tax documents that would be received by taxpayers are those such as a Form W-2, which reports wages, salary, and tax information, and Form 1099, which reports miscellaneous income. The creation and distribution of these forms is the responsibility of the payer.

For example, if a taxpayer works for an employer, it would be the employer's responsibility to generate a W-2 form at year's end and issue it to the employee. Furthermore, the employer would also be required to submit the form to the appropriate level of government (i.e., federal, state, local). This submission is a key piece of the compliance process, as it provides the government with records that can be used to match information with what a taxpayer might provide. This process increases compliance because if a taxpayer is non-compliant (either by choice or accident), a notice would typically be generated by the government after discovering an inability to match the reported income to the filed tax return. The process of this information reporting has proven to be a significant contributor to increased levels of tax compliance (Andreoni et al., 1998), as this study showed.

A second post hoc finding related to tax documents showed taxpayers who receive these items are more likely to display increased levels of non-compliance in other areas such as expenses and credits during the filing process. Justification for this relationship could be that taxpayers are seeking to be at a certain level of tax due (or refund), and therefore structure decisions to obtain such a result. If a taxpayer is aware of the information reporting process, decisions could be structured to avoid said matching. Applying this finding, it is important to

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note that although self-employed taxpayers may be more likely to have access to income that is not subject to information reporting, results from this study did not reveal that self-employed individuals are more likely to be non-compliant. Although not significant, this study showed that self-employed taxpayers may be more compliant. This is an area which needs additional research, as many studies view self-employed individuals as a group that is less compliant. This study provides information that the root of non-compliance is not a demographic characteristic, but rather the receipt (or lack thereof) of a tax document.

One of the main limitations of this study is that an online survey was used to gather information to attempt to measure taxpayer intentions. The results of this research showed that a significant number of taxpayers demonstrate intent not to comply in proper tax return filing. The fact that only 20.9% of the sample was compliant is alarming. Unfortunately, as this information was gathered in a survey environment, it is not possible to know what these same taxpayers would do if faced with these decisions in a real-life tax filing situation. However, as this study controlled for frequency of past exposure, there is concern that taxpayers are seeing these issues and making non-compliant choices (as they did in this study).

Another limitation of this study is that many taxpayers may never be exposed to all (or even any) of the situations presented in the vignette. The goal of this study was to measure intent, but it needs to be acknowledged that a real-world situation may not present itself. Furthermore, even if such a similar situation did occur, the actual decisions might differ. As noted previously, several respondents did acknowledge that they had seen these tax situations within the last five years.

Finally, this study is based upon the self-report of respondents. Findings showed that many individuals demonstrate non-compliance intentions. It is possible that individuals were

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considering the online questionnaire as a game and not providing honest answers. In terms of self-reporting and social desirability bias, the belief would be that these items would influence a respondent in a favorable (compliant) manner. However, this result was not observed. In addition, the study included a measure to control for social desirability. Again, no significant influence was found.

Despite these limitations, this study provides several areas for future research. First, additional research is needed that emphasizes the personality trait of conscientiousness. The findings of this study showed a marginally significant, positive relationship between higher-scoring conscientious individuals and the ability to justify non-compliance. This finding is similar to that found by Blickle et al. (2006), but contrasts with Turner (2014) and Collins and Schmidt (1993). Turner (2014) made a call for additional research in this same area, based on differences in how the dependent variable was operationalized. All these studies examined white-collar crime; however, Blickle et al. included context in which the interest of the corporation (the victim of the white-collar crime) was considered. Although this task may be difficult in the context of individual tax compliance research, additional studies that varied whose interest was being protected would prove useful to better understand how the personality trait of conscientiousness relates to tax compliance.

A second area for future research includes additional investigation of the personality trait of extraversion. Past studies related to economic crime have produced varied results. For example, Alalehto (2003) referenced a relationship between extraverted individuals and increased economic crime activity, while other studies have shown no such correlation (Turner, 2014). In the slightly different context of academic cheating, conflicting results have also been seen (Giluk & Postlethwaite, 2015). These varying results are not surprising, however, as this

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study had different results related to the level of significance of this personality trait across the various tax scenarios. As this study showed, extraversion appears to have a positive relationship with tax non-compliance (although not a consistently significant relationship). Further research should expand on this trait to gain a better understanding as to which situations generate a statistically significant relationship. In addition, personality does not exist in a vacuum. Therefore, how extraversion interacts with other explanatory variables could provide beneficial findings.

A third area of future research could explore the relationship between tax compliance and alternative personality frameworks. This research explored the relationship between tax compliance and the Big Five personality traits. Although this framework attempts to provide an all-encompassing measure of personality, limitations do exist (Paunonen & Jackson, 2000). Specifically, “socially malevolent traits” are not adequately represented in the Big Five model (Veselka, Schermer, & Vernon, 2012, p. 417). Acknowledging such limitations and the fact that a multitude of personality frameworks exist (e.g., Myers-Briggs Type Indicator® [MBTI], A/B personality types, Big Seven traits, and the Dark Triad personality cluster), added research related to these alternative measures may provide more robust findings in seeking to better understand how personality relates to taxpayer compliance decisions.

Furthermore, although not direct aims of this study, several additional avenues for future research are revealed. One potential area of future research may be to examine the effect that the receipt of tax documents has on taxpayer compliance. It is acknowledged that the receipt of a tax document increases compliance; however, this study provided preliminary support that taxpayers may seek alternative ways to reduce their tax burden when they receive income that is reported to the government. Specifically, a study that looked beyond the third party-reported information

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to the surrounding tax decisions and the aggressiveness displayed by taxpayers on those items could prove beneficial.

Another area of potential research could explore the relationship between taxpayer compliance and political affiliation. This study appears to lay a foundation that a more conservative political affiliation may relate to a greater likelihood of being a compliant taxpayer. Qualitative research should also be considered to provide a better foundation for the various reasons taxpayers want to reduce their tax bill. This study included their desire to reduce their tax bill as a control variable and observed a significant and positive relationship across almost all tax scenarios. Added research to understand why this desire exists would prove beneficial in the search to better understand compliance.

Finally, this study could also be replicated in an experiment that provides more opportunity for economic risk or gain by participants. A limitation of this study was that data was gathered via survey without giving respondents the opportunity to bear economic gain or loss. Although this study design measured respondents' past exposure to the various tax decisions, mere exposure does not imply that the answer given on the survey matches what they did in the past.

In conclusion, this study was one of the first to explore the relationship between the Big Five personality traits and taxpayer compliance intentions. The study supported the fact that individuals who display traits of extraversion may be more likely to engage in non-compliant tax filings. These findings differ from what has been shown in the literature related to white-collar crime and emphasize the need for additional research that considers explanatory variables that relate specifically to personality and tax compliance. Furthermore, the findings of this study

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showed only marginal support as to the benefit that the Big Five traits provide over lower level models.

In summary, tax revenue remains a critical piece of revenue generation for the U.S. government. The fact that the current underreporting tax gap in the U.S. related to individual taxpayers is increasing (average of \$264 billion dollars per year from 2008 to 2010, which is an increase over the \$235 billion previously reported in 2006) while the number of individuals in voluntary compliance is decreasing (Internal Revenue Service, 2012b, 2016b) highlights the need for a better understanding of the predictors that cause non-compliance or compliance.

The goal of this study was to highlight the relationship between personality and taxpayer compliance intentions while also providing a more robust measure of tax compliance. This appears to be the first study to explore this relationship, showing that extraversion displays a positive and significant relationship in several areas of tax compliance; other personality traits provide little predictive ability. In addition, this study highlighted the differences between six different tax decisions. Future research needs to address these distinctions while finding better ways to predict and educate taxpayers and tax professionals on tax compliance. The personality trait of extraversion may be a small piece that can contribute to this goal.

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## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

### Appendix A

#### Tax Knowledge—Additive Index

*Instructions:* This will be the final set of questions you will complete for this survey. There are fourteen questions in total. These questions relate to your understanding of current tax law. Please read each question presented and select the answer you think is best. In completing these questions, please answer based upon your knowledge of current tax law and not what you would do if you were in a given situation. If you are not sure you can answer as such.

- 1) Assuming income and deductions are equal who would pay less in taxes: a single person with no children or a single person with one child?
  - a. a single person with no children.
  - b. a single person with one child.
  - c. their taxes would be the same.
  - d. I am not sure.
  
- 2) Which of the following statements is true regarding cash contributions made to a charity by a taxpayer?
  - a. Any taxpayer that makes cash charitable contributions will be able to deduct (and receive a benefit) on his/her tax return.
  - b. Only a taxpayer that itemizes his/her deductions will be able to deduct cash charitable contributions on his/her tax return.
  - c. I am not sure.
  
- 3) Which of the following is a correct statement regarding gambling winnings?
  - a. Only gambling winnings for which a form is received (such as a W-2G) must be reported on a tax return.
  - b. All gambling winnings must be reported on a tax return.
  - c. Only gambling winnings in excess of gambling losses have to be reported on a tax return.
  - d. I am not sure.
  
- 4) If a taxpayer receives cash for miscellaneous jobs performed during the year, what is the proper treatment for tax purposes?
  - a. Any and all cash received should be included in taxable income.
  - b. Any amount over \$600 should be included in taxable income.
  - c. The cash only needs to be reported in taxable income if a 1099 is received.
  - d. I am not sure.

Appendix A Continued

- 5) Employees typically receive a tax form at the end of the year that is a summary of the wages they earned for the year. What is this tax form called?
  - a. W-2
  - b. W-4
  - c. 1099
  - d. I am not sure.
  
- 6) If a taxpayer wants to deduct business expenses on his/her tax return. Which of the statements below is correct?
  - a. In order to deduct business expenses, proof of the item's existence and payment is needed (such as a receipt).
  - b. A business expense can be deducted as long as a taxpayer is positive it was paid (even if a receipt does not exist).
  - c. I am not sure.
  
- 7) Which of the following statements in regard to tips a taxpayer receives is correct?
  - a. Only tips paid in cash are taxable.
  - b. Only tips reported on a year-end form are taxable.
  - c. Tip income is not taxable.
  - d. All tip income is taxable.
  - e. I am not sure.
  
- 8) Which of the following is a correct statement in regard to home improvement costs?
  - a. Home improvements costs related to energy efficient improvements may qualify for a tax credit when filing a tax return.
  - b. Any home improvement regardless of its energy efficiency is deductible on a tax return.
  - c. I am not sure.
  
- 9) Which of the following is a correct statement regarding college tuition paid?
  - a. A taxpayer that goes to college may be eligible to deduct the college tuition expenses regardless of who paid for them.
  - b. A taxpayer may be able to deduct college tuition expenses on his/her tax return as long as the expenses are not reimbursed for by another party.
  - c. I am not sure.

Appendix A Continued

- 10) A taxpayer qualifies for both a \$100 tax deduction and a \$100 tax credit. Which of the following statements is true?
- a. The \$100 deduction and \$100 credit provide an equal amount of tax savings.
  - b. The \$100 deduction provides more tax savings.
  - c. The \$100 credit provides more tax savings.
  - d. I am not sure.
- 11) A taxpayer owed money on his/her previous year's tax return. The taxpayer wants to adjust his/her withholding allowances to prevent this from happening again. Which of the following statements is correct?
- a. The number of withholding allowances claimed should be increased.
  - b. The number of withholding allowances claimed should be decreased.
  - c. I am not sure.
- 12) Your employer gives you a \$100 gift certificate for the holidays. Which of the following statements is correct?
- a. Because the gift certificate is for a small amount, it is not taxable.
  - b. Because the gift certificate is a gift, it is not taxable.
  - c. The gift certificate should be included in taxable income.
  - d. I am not sure.
- 13) Which of the following is a correct statement related to being able to deduct moving expenses on your tax return?
- a. Any costs related to moving (paid or not paid) may be deductible when filing a tax return.
  - b. Moving costs that are paid (and not reimbursed for) may be deductible when filing a tax return.
  - c. I am not sure.
- 14) What is the due date each year for the filing of an individual income tax return (without extension)?
- a. March 15
  - b. April 15
  - c. October 15
  - d. I am not sure.

Appendix B

Social Desirability Scale

*Instructions:* Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, check the word "true"; if not, check the word "false".

1. I sometimes litter.
2. I always admit my mistakes openly and face the potential negative consequences.
3. In traffic I am always polite and considerate of others.
4. I always accept others' opinions, even when they don't agree with my own.
5. I take out my bad moods on others now and then.
6. There has been an occasion when I took advantage of someone else.
7. In conversations I always listen attentively and let others finish their sentences.
8. I never hesitate to help someone in case of emergency.
9. When I have made a promise, I keep it – no ifs, ands, or buts.
10. I occasionally speak badly of others behind their back.
11. I would never live off other people.
12. I always stay friendly and courteous with other people, even when I am stressed out.
13. During arguments I always stay objective and matter-of-fact.
14. There has been at least one occasion when I failed to return an item that I borrowed.
15. I always eat a healthy diet.
16. Sometimes I only help because I expect something in return.

*Note.* Adapted from Stober (2001). For scoring purposes each “true” response on items 2, 3, 4, 7, 8, 9, 11, 12, 13, and 15 and each “false” response on items 1, 5, 6, 10, 14, and 16 was awarded 1 point. Then points were summed across items. Thus, raw scores could range from 0-16.

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

### Appendix C

#### Consent to Participate

The information below provides a summary of this HIT. Please read the information presented and acknowledge your consent prior to moving forward.

Title: Survey on Tax Filing

Researcher: Brian Huels    Time Commitment: Under twenty minutes.

**Risks and Benefits:** This study seeks to gather information about taxpayer personality and compliance intentions. The study will present you with a short story after which you are asked questions as to how you would react. As the study relates to tax compliance, you may feel some stress in making some of your selections. Please note, however, that no confidential information will be obtained and you will be providing a great benefit to the literature in understanding of how personality interacts with compliance intentions.

**Safeguarding of Identity:** The survey does not request any specific identifying information. In addition, all information that is generated by this study will be analyzed and presented in summary form only. Please note, however, as an online participant in this research, there is always a risk of intrusion by outside agents, i.e., hacking, and therefore the possibility of being identified. Such a statement highlights concerns related to data confidentiality and the risk/benefit of participation in the study. Finally, upon completion of this HIT, the responses will be removed from online storage and stored locally by the researchers shown above.

**Right to Withdraw:** Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. However, should you choose to participate and later wish to withdraw from the study, there is no way to identify your anonymous document after it has been submitted.

**IRB Approval:** This study has been reviewed and approved by The University of Wisconsin-Whitewater's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Researcher. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Chair via email at [katchc@uww.edu](mailto:katchc@uww.edu).

By completing the survey I certify that I am at least 18 years of age, and I agree to participate in the project as outlined above. \*This question is required.

☐ YES    ☐ NO

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

### Appendix D

#### Supplemental Survey Questions

Please select the frequency (in number of years) as to each of the situations listed below over the past five year period. Record your answer as to the total number of year(s) that you had the situation listed apply to you.

Question	Variable	Scale
a. You were paid cash for work you performed.	Informational in Nature	am not sure or prefer not to answer, 1 Year, 2 Years, 3 Years, 4 Years, 5 Years
b. You had expenses related to the work performed in (a) work that you did not have receipts for.	Informational in Nature	am not sure or prefer not to answer, 1 Year, 2 Years, 3 Years, 4 Years, 5 Years
c. You received gambling winnings that were in excess of your gambling losses.	Informational in Nature	am not sure or prefer not to answer, 1 Year, 2 Years, 3 Years, 4 Years, 5 Years
d. You relocated (moved) to start a new job that was over 50 miles away from where you previously worked.	Informational in Nature	am not sure or prefer not to answer, 1 Year, 2 Years, 3 Years, 4 Years, 5 Years
e. You paid college tuition that was reimbursed for by your employer.	Informational in Nature	am not sure or prefer not to answer, 1 Year, 2 Years, 3 Years, 4 Years, 5 Years
f. You performed energy efficient improvements on your home.	Informational in Nature	am not sure or prefer not to answer, 1 Year, 2 Years, 3 Years, 4 Years, 5 Years

## TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

### Appendix D Continued

Question	Variable	Available Responses
In your opinion, what percentage of tax returns that are filed are audited?	Informational in Nature	Continuous Slider Bar (0 to 50%)
Do you prepare your own tax return?	Tax Preparation Method	Yes; No, my spouse prepares it; No, a tax professional/preparer prepares it; No, I do not file a tax return.
What is your gender?	Gender	Male; Female, Other – Write In
What is your age?	Age	18 to 24; 25 to 34; 35 to 44; 45 to 54; 55 to 64; 65 to 74; Age 75 or older
How would you describe your political philosophy?	Political Philosophy	7 Point Likert Scale ( <i>Very Liberal</i> – <i>Very Conservative</i> )
What is your ethnicity origin (or race)?	Ethnicity / Race <i>Note:</i> <i>1 = White</i> <i>0 = Non-White</i>	White; Hispanic or Latino; Black or African American; Native American or American Indian; Asian / Pacific Islander; Other
Where were you born?	Place of Birth	In the United States; Outside the United States
Are you a United States citizen?	Citizenship	Yes, born in the United States; Yes – born in Puerto Rico, Guam, the U.S. Virgin Islands, or Northern Marianas; Yes – born abroad of U.S. citizen parent or parents; Yes – U.S. citizen by naturalization; No – not a U.S. citizen.



# TAX COMPLIANCE: INFLUENCE OF PERSONALITY & CULTURE

## Appendix D Continued

Question	Variable	Available Responses
What is your total household income before taxes during the past 12 months?	Income Level	Less than \$25,000; \$25,000 to \$34,999; \$35,000 to \$49,999; \$50,000 to \$74,999; \$75,000 to \$99,999; \$100,000 to \$149,999; \$150,000 to \$199,999; \$200,000 to \$299,999; \$300,000 to \$499,000; \$500,000 or more: I am not sure or prefer not to answer
What is the highest degree or level of education you have completed?	Education	Less than high school; High school graduate (includes equivalency); Some college (no degree); Associate's degree; Bachelor's degree; Master's degree, Doctoral degree
What is your current employment status?	Employment Status  <i>Note: 1=Self Employed 0=Other Statutes</i>	Employed for wages; Self-employed; Out of work and looking for work; Out of work but not currently looking for work; A homemaker; A student; Military; Retired; Unable to work
Which of the following best describes your current occupation?	Not Applicable  Informational In Nature	Not Applicable; Agriculture, forestry, fishing, and hunting; Arts, entertainment, and recreation; Broadcasting; Education; Computer and electronics manufacturing; Construction; Finance or accounting; Government and public administration; Health care and social assistance; Homemaker; Hotel and food services; Information services and data processing; Insurance; Legal services; Military; Mining; Publishing; Real estate, rental, and leasing; Religious; Retail; Scientific or technical services; Software; Telecommunications; Transportation and warehousing; Utilities, Wholesale, Other Industry

## Appendix E

## Survey Design (Mini-IPIP Personality Pool Questions)

A number of statements are presented below. Please indicate the extent to which you agree or disagree with each statement in completion of the following sentence.

I \_\_\_\_\_.

Item #	Factor	Statement
1	E	. . . am the life of the party.
2	A	. . . sympathize with others' feelings.
3	C	. . . get chores done right away.
4	N	. . . have frequent mood swings.
5	O	. . . have a vivid imagination.
6	E	. . . do NOT talk a lot. ( <i>reverse coded</i> )
7	A	. . . am NOT interested in other people's problems. ( <i>reverse coded</i> )
8	C	. . . often forget to put things back in their proper place. ( <i>reverse coded</i> )
9	N	. . . am relaxed most of the time. ( <i>reverse coded</i> )
10	O	. . . am NOT interested in abstract ideas. ( <i>reverse coded</i> )
11	E	. . . talk to a lot of different people at parties.
12	A	. . . feel others' emotions.
13	C	. . . like order.
14	N	. . . get upset easily.
15	O	. . . have difficulty understanding abstract ideas. ( <i>reverse coded</i> )
16	E	. . . keep in the background. ( <i>reverse coded</i> )
17	A	. . . am NOT really interested in others. ( <i>reverse coded</i> )
18	C	. . . make a mess out of things. ( <i>reverse coded</i> )
19	N	. . . seldom feel blue. ( <i>reverse coded</i> )
20	O	. . . do NOT have a good imagination. ( <i>reverse coded</i> )

*Note.* O=Openness to Experience, C=Conscientiousness, E=Extraversion, A=Agreeableness, N=Neuroticism

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## Appendix F

### Supplemental Survey Questions

Question	Variable	Scale
Federal income taxes are fair to people in my particular income situation. *	Fairness	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
Federal income tax laws are fair to most people. *	Fairness	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
I think that the interest of people in my income group are well represented when Congress considers tax law changes. *	Fairness	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
I would really enjoy reducing my tax bill, regardless of whether it was illegal or not. *	Reduce Tax Bill (Desire)	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
In your opinion, what percentage of taxpayers at your income level deliberately pay less taxes than they legally owe?	N/A – Informational in Nature	11 Point Likert Scale (0% to 100%)
In your opinion, what percentage of taxpayers at your income level carelessly, but unknowingly pay less taxes than they legally owe?	N/A – Informational in Nature	11 Point Likert Scale (0% to 100%)
What percentage of taxpayers do you feel “fudge on their income”? *	N/A – Informational in Nature	11 Point Likert Scale (0% to 100%)
If you do NOT want to report income, but the tax law is unclear, how certain (as a percentage) would you want to be that the IRS would allow the EXCLUSION before you would do so?	Risk Propensity	11 Point Likert Scale (0% to 100%)
If you want to claim a deduction, but the tax law is unclear, how certain (as a percentage) would you want to be that the IRS would allow the deduction before you deduct it? *	Risk Propensity	11 Point Likert Scale (0% to 100%)
If you want to claim a tax credit, but the tax law is unclear, how certain (as a percentage) would you want to be that the IRS would allow the credit before you claim it?	Risk Propensity	11 Point Likert Scale (0% to 100%)
I am knowledgeable in what income is supposed to be reported on my tax return.	Tax Law Knowledge	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
I am knowledgeable in what deductions I am allowed to take on my tax return.	Tax Law Knowledge	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
I am knowledgeable in what credits I am allowed to take on my tax return.	Tax Law Knowledge	7 Point Likert Scale (Strongly Disagree – Strongly Agree)
Overall, I consider myself a knowledgeable taxpayer.	Tax Law Knowledge	7 Point Likert Scale (Strongly Disagree – Strongly Agree)

\* Questions adopted from Bobek, Hageman, and Kelliher (2013)

CHAPTER III—ESSAY 2

PROFILING A COMPLIANT TAXPAYER ACROSS NATIONS:  
INVESTIGATING THE MODERATING ROLE OF NATIONAL CULTURE

Abstract

The purpose of this study was to examine the moderating role of national culture on the relationship between individual taxpayer compliance intentions and several antecedents of compliance intentions. Data from the most recent *World Values Survey* (2010-2014) was used to explore the moderating effects of national cultural dimensions between taxpayers' compliance intentions and key profiling variables (age, gender, income source, income level, and education level). Hierarchical linear modeling was used to look at the cross-level relationships between various national cultural dimensions (i.e., power distance, uncertainty avoidance, masculinity, and individualism) and key profiling variables and tax compliance intentions. Results provide support for several of the hypothesized relationships. Specifically, the cultural dimension of masculinity had a moderating effect on both age and gender while individualism moderated gender and uncertainty avoidance moderated income source. Implications of these important findings and limitations are discussed in this essay.

*Keywords:* national culture, Hofstede, tax compliance, tax evasion, profiling.

“Tax evasion is a widespread phenomenon and continues to be a problem for many countries” (Tsakumis, Curatola, & Porcano, 2007, p. 132). Current global estimates show that the damages of tax evasion are as high as 5.1% of the world’s gross domestic product (GDP), equaling over \$3.1 trillion dollars each year (Murphy, 2011). Using the United States as an example, the most recent published estimate is that the difference between what taxpayers (individuals, corporations, estates, etc.) owe and what is being voluntarily reported and paid on a timely basis (referred to as the *tax gap*) is \$406 billion per year (Andreoni, Erard, & Feinstein, 1998; Internal Revenue Service, 2016c). For the United States, this represents a non-compliance rate related to tax evasion that is equal to 0.5% of GDP, based on an average for the decade ending in 2010 (Bühn & Schneider, 2016). At the other end of the non-compliance spectrum, for the same 10-year average, are countries such as Mexico and Turkey that have far greater non-compliance rates equal to 6.8% and 6.7% of GDP, respectively (Bühn & Schneider, 2016). Whether in terms of absolute dollars, or as a percentage of GDP, this data highlights the significant lost revenue that tax non-compliance is causing to various country-level governments.

Regardless of country, income tax is crucial to funding economic infrastructure as well as many social services (Bame-Aldred, Cullen, Martin, & Parboteeah, 2013). Due to the importance of income taxation to each country’s economy, the reasons that cause some people to comply while others not to comply is of great interest to both academics and practitioners. To date, research that has been performed can be categorized into three main theoretical groups: (1) general deterrence, (2) economic deterrence, and (3) fiscal psychology (Cuccia, 1994).

General deterrence theory focuses on the idea that threats of punishment or fines can be effective in deterring an individual from committing an illegal act (in this context, tax non-

compliance; Grasmick & Bryjak, 1980). Economic deterrence theories build on the concept of providing a cost-benefit relationship that considers various economic and legal aspects (Allingham & Sandmo, 1974; Becker, 1974; Hasseldine & Bebbington, 1991). Essentially, economic deterrence theories propose that if the cost of not complying is less than the potential benefit, it is expected that stakeholders would choose not to comply. Fiscal psychology theories are a mix of economic and psychological components that include attitudes, beliefs, and other situational factors to help explain why individuals make the decisions they do related to tax compliance (Hasseldine & Bebbington, 1991). Fiscal psychology includes topics related to social norms, ethical influences, tax morale, culture, and behavioral and situational topics.

Theories of deterrence and economic motivation tend to overpredict the amount of non-compliance and raise question “why there is so little cheating?” (Alm & Torgler, 2011, p. 635). Recent literature has focused on the influence of social norms, ethical standards, tax morale, and culturally-related pieces (Alm & Torgler, 2011; Bobek, Hageman, & Kelliher, 2013; Molero & Pujol, 2012; G. Richardson, 2008). This paper contributed to the extant literature, which had not fully considered how the various pieces work together to foster tax compliance. Specifically, national culture has not been adequately studied concerning its relationship with other tax compliance measures.

Cross-country studies that have looked at culture have done so by using cultural dimensions as antecedents, while missing the opportunity to explore the possible interactive effects of culture on relationships between individual-level variables. As culture “constitutes the distinctive achievements of human groups” (Kroeber & Kluckhohn, 1952, p. 181), individuals are put in a context in which they will develop beliefs and values that make each person distinct from other cultures (Hofstede, 1980; Kroeber & Kluckhohn, 1952). This context helps confirm

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that culture should be viewed not only independently, but also studied as to the moderating effect it has on key antecedent variables. Furthermore, the majority of the existing individual taxpayer literature that has looked at culture in a transnational setting has excluded the ability to analyze the effects of variances in individual-level predictors. Specifically, these studies used aggregated country-level data for approximately 50 countries (Réthi, 2004; G. Richardson, 2006, 2008; Tsakumis et al., 2007). This aggregated analysis forms relatively small sample sizes based solely on the number of countries included and eliminates individual-level predictor variances that have been shown to be useful in explaining taxpayer compliance (Jackson & Milliron, 1986).

Acknowledging the importance of individual-level tax compliance predictors, hierarchical linear modeling (HLM) was used to address these gaps. One unique advantage of the HLM technique is its multi-level analysis nature that allows individual-level (i.e., first level) and country-level (i.e., second level) variables to be analyzed concurrently. In addition, the interaction between country-level cultural dimensions were included in this study's model to provide a better explanation as to not only the influence that national culture has on tax compliance intentions, but also how the strength of this influence changes as national culture interacts with other known tax compliance antecedents. In general terms, this study sought to answer the question: Does national culture moderate the relationship between individual determinants and taxpayer compliance intentions?

This study proceeds by looking at the existing literature related to some of the widely-researched variables related to individual taxpayer compliance. National culture is introduced and the current state of knowledge related to these dimensions will be discussed. The posited relationships as to how culture moderates the predictive capabilities of selected individual

taxpayer compliance antecedents will then be presented. Following this, research methods and findings of the study are provided. Finally, limitations of this study and avenues for future research are discussed.

### **Review of Relevant Literature and Theory Development**

Just about any study examining individual taxpayer compliance will include certain key demographic variables such as age, gender, income source, education level, and income level. Literature reviews over the last 30 years highlight the popularity of these variables (Borrego, Lopes, & Ferreira, 2013; Jackson & Milliron, 1986; M. Richardson & Sawyer, 2001). Many of the papers used in these reviews, in addition to other published works, included these key demographic variables for either control purposes (Torgler, 2003) or to provide information to better explain the predictive capabilities they hold related to taxpayer compliance intentions (Devos, 2008; McGee & Tyler, 2006). In looking to better predict and profile a compliant taxpayer, these variables are of interest. Specifically, they can all be easily measured and observed, thereby providing opportunity to profile a compliant taxpayer in a simpler manner.

Similar to the research on variables of age, gender, income source, education level, and income level, national culture is another stream of research where correlation where taxpayer compliance intentions has been found (G. Richardson, 2007, 2008; Tsakumis et al., 2007). National culture has been shown to be a significant predictor for many dependent variables. Kirkman, Lowe, & Gibson (2006) provided a summary of some of these areas in their review of various business topics; these areas include change management, leadership, negotiation, entrepreneurship, societal outcomes, and motivation. Most studies have looked at national culture through a somewhat narrow lens and included this dimension analysis in main effect form only. To date, tax compliance research has followed the same course by considering only



the main effect influence of national culture on tax compliance (G. Richardson, 2008; Tsakumis et al., 2007). It is noteworthy that culture studies outside the tax compliance realm have found that national culture does have a significant moderating role regarding the interaction effect vis-à-vis many key demographic variables (Hauff, Richter, & Tressin, 2015; Taras, Kirkman, & Steel, 2010). This phenomenon, the moderating effect of national culture on individual demographic variables, had not yet been researched in the tax compliance literature and is the area to which this study contributed.

As noted, past studies of taxpayer compliance that have looked at national culture have considered it only as a main effect. This study is the first to control for the key dimensions of national culture, while looking more deeply at other moderating relationships that may exist. Specifically, key demographic profiling variables that are consistently used in tax compliance research were investigated so that a better understanding of the influence of national culture could be obtained.

This section provides a background on research related to taxpayer compliance intentions. Following this, key demographic antecedents to taxpayer compliance are introduced. Finally, national cultural dimensions are discussed, highlighting anticipated moderating influences, and the hypotheses posited by this study.

### **Tax Compliance Intentions**

Andreoni et al. (1998) wrote, “The problem of tax compliance is as old as taxes themselves” (p. 818). One difficulty with studying the problem of tax compliance is the ability to define and measure it as it relates to something that is typically illegal and intentionally hidden from authorities (Slemrod & Weber, 2012). To provide the foundation on which this study was built, a number of definitions and measurement means used in this research are presented.

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The subject of tax compliance has been, and continues to be, a popular area of academic research (Slemrod, 2016). Unfortunately, one of the concerns in tax compliance research is the difficulty and inconsistency with which tax compliance is measured. Some studies have begun by defining the act of tax compliance, while others have built on secondary data in which tax compliance was measured via substitution of a proxy variable. An example of this inconsistency is tax avoidance, which is an act that is a “legal activity that lowers taxes” (Alm, Bahl, & Murray, 1990, p. 603). Many studies, however, have included aggressive tax avoidance as a form of tax evasion, though it is a legal activity that perhaps should be excluded.

Other studies have failed to address whether tax non-compliance should be viewed through a different lens depending on whether the act of non-compliance was accidental or willful (Borrego et al., 2013). Some studies have sought to define compliance by looking at criteria such as: being registered to pay taxes, filing taxes on time, paying the correct amount of tax, and paying in a timely manner (Organisation for Economic Co-operation and Development, 2010). Still other studies have grouped non-compliance under the larger umbrella of white-collar crime (Turner, 2014). Turner (2014), for example, used the terms tax fraud and tax evasion, but considered the relationship between personality traits and white-collar crime.

These examples highlight some of the difficulties of defining tax compliance (and thus measurement). This study did not provide a measurement of taxpayer non-compliance, but sought to better understand taxpayer compliance intentions. The assumption was that taxpayers with higher compliance intentions would be more likely to comply (and the converse being true as well). This assumption is supported by recent research (Halla, 2012; Kirchler, Niemirowski, & Wearing, 2006; Torgler, 2002). As compliance was used in the present study, it was defined

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as an individual reporting what is legally required, reporting the information in a timely matter, and paying any taxes that are due.

In addition to the difficulties of defining tax compliance, another struggle is accurately measuring the magnitude of non-compliance, especially in international settings. One of the most common ways to achieve this is by looking at what is referred to as the *shadow* or *hidden* economy (Doerrenberg, Duncan, Fuest, & Peichl, 2014; Richardson, 2008). A shadow economy typically refers to activities that are not illegal in themselves, but are done to avoid regulations that are part of a government's tax code, and thereby become tax evasion (Slemrod, 2007). An alternative measurement, the tax gap (as referenced previously) is defined as the difference between what an individual taxpayer owes and what is timely reported and paid on a voluntary basis (Andreoni et al, 1998). Although most of these measures work well in the United States, they are not typically gathered by other nations (Hasseldine & Li, 1999).

One of the earliest and most cited models of tax compliance was done by Allingham and Sandmo (1974). The Allingham and Sandmo model predicts the amount of tax non-compliance that will occur by looking at a taxpayer's actual income, deferred or hidden income, the probability of audit, and the penalty rate (Allingham & Sandmo, 1974). Their model builds on the theory of reasoned action; that is, taxpayers will make rational choices (Ajzen & Fishbein, 1980). Essentially, the higher the tax rate and the higher the income, the more likely a taxpayer would choose not to comply. Alternatively, the greater the risk of sanction or penalty and the higher the likelihood a sanction would be imposed, the more likely a taxpayer will comply. However, this model fails to answer the question "why there is so little cheating?" (Alm & Torgler, 2011, p. 635). With the current risk of audit being low in many countries (for example, the audit percentage in the U.S. for 2015 was under 1% [Internal Revenue Service, 2016a]), the

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Allingham and Sandmo model would predict that more taxpayers would choose to be non-compliant (Alm & Torgler, 2011).

More recent tax compliance literature has looked at motivations that go beyond purely economic models by incorporating variables related to ethics and tax morale (Alm & Torgler, 2011), behavior (Pickhardt & Prinz, 2014), and social influences (Bobek, Hageman, & Kelliher, 2011; Bobek et al., 2013). Each of these avenues of research has made significant contributions that better explain why taxpayers comply.

The area of measuring tax compliance and non-compliance has needed to evolve. More specifically, much research regarding tax compliance has become behavioral, which means that finding taxpayers who will answer honestly is difficult. The fact that much behavioral research is self-reported, raises doubt that any taxpayer would actually admit to cheating (Elffers, Weigel, & Helsing, 1987; Fischer, Wartick, & Mark, 1992; Korndörfer, Krumpal, & Schmukle, 2014). Due to these concerns, topics of tax compliance intentions, social norms, and what is referred to as tax morale have gained acceptance in the literature (Molero & Pujol, 2012).

The idea behind these topics is, essentially, if tax non-compliance can be justified, or certain aspects of the fairness of the tax system can be considered subjective or are surrounded by norms that approve non-compliance, taxpayers will be likely to engage in non-compliance when filing. Some studies measured these variables as a proxy for tax compliance. Other studies have referred to this as the intrinsic motivation to pay taxes, commonly termed tax morale (Alm & Torgler, 2006). This study relied on a similar measure for measuring tax compliance intentions.

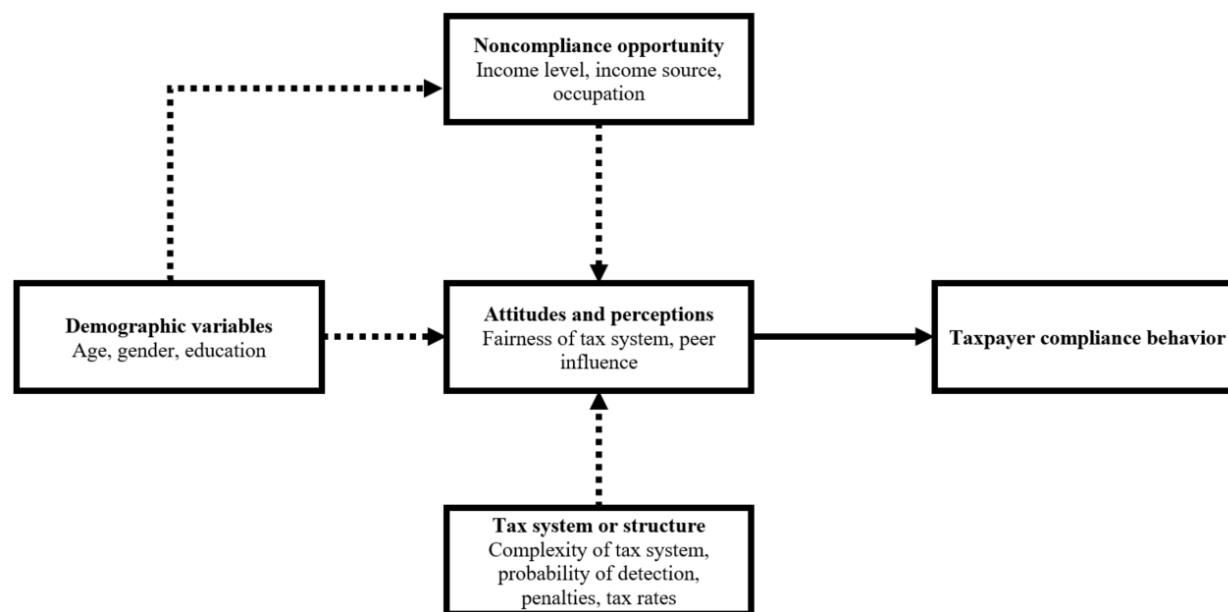
### **Antecedents**

Several reviews have been completed over the last 30 years summarizing studies that have looked at antecedents of taxpayer compliance (Fischer et al., 1992; Jackson & Milliron, 1986; Khlif & Achek, 2015; Richardson & Sawyer, 2001). These reviews have shown a significant variation in both independent variables analyzed, as well as the significance and direction of the various posited relationships. Some variables that these reviews repeatedly highlighted included: age, sex, education attainment, income level, withholding source, occupation, compliant peers, ethics, fairness, tax complexity, contact with authority, risk of sanctions, probability of detection, and relationship with tax rates (Jackson & Milliron, 1986).

This study relied on five commonly researched demographic variables, namely age, gender, income source, education level, and income level. These variables are also the most easily applied for purposes of profiling. In a time when there is “urgent need for countries to decrease the level of tax noncompliance, [*sic*] in order to increase the collection of public revenue” (Borrego et al., 2013, p. 11), a better understanding of the profile of a compliant taxpayer would be useful. As noted, this study was based on relationships that have statistically been shown as having a correlation with taxpayer compliance intentions, while introducing the moderating relationship that national culture might provide. This essay’s main purpose was to fill the gap in the literature concerning the moderating effect that national culture has on taxpayer compliance intentions. This section introduces the most critical demographic antecedents to taxpayer compliance intentions via past research. After this, the interaction between these key demographic antecedents and national culture will be introduced, as well as the posited hypotheses of this study.

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Variables that attempt to predict tax compliance are far reaching. Fischer et al. (1992) presented a tax compliance model that considered some key categorical groupings that precede taxpayer compliance behavior. Figure 1 shows the model.



*Figure 1.* Fischer et al. (1992) tax compliance model

Although dated, Fischer et al.'s (1992) model showed the importance of demographic components, tax system structure, non-compliance opportunities, and attitudes and perceptions as variables related to taxpayer compliance behavior. Borrowing from this model and building on trends supported by recent research, various profiling variables were selected for this study. The five variables included are age, gender, income source, education level, and income level. These variables and their relationship with taxpayer compliance are described in detail in the following sections.

### **Age.**

The majority of studies that consider age show that there is a significant positive relationship between taxpayer compliance and older individuals (Jackson & Milliron, 1986). “Younger taxpayers are more tax noncompliant than older ones” (Borrego et al., 2013, p. 21); because of this, including the influence of this variable in a cross-country context is crucial.

Looking at unethical behavior generally, this relationship also tends to be supported. For example, Peterson, Rhoads, and Vaught (2001) found that ethical beliefs increase with age. These findings mirrored results of previous research that looked specifically at the sales profession. Again, the results of this research supported the conclusion that older individuals tend to act more ethically (Dawson, 1997). Viewing these findings theoretically, the results are not surprising because theories of moral development support age being related to continued moral development (Kohlberg, 1984). As the choice to be tax compliant contains an ethical component, it is consistent that older taxpayers should be more compliant. Age, however, is not a stand-alone demographic identifier in the sense that the influence of national culture must be looked at, regardless of age, because individuals have developed within their own national cultures.

### **Gender.**

Gender is another variable commonly included in tax compliance research. Gender extends beyond tax compliance research because “the plethora of literature suggests that the most researched predictor of ethicality is biological sex” (Suar & Gochhayat, 2016, p. 200). Although mixed findings have been found in certain contexts, “the weight of evidence suggests that women are more ethical than men” (Suar & Gochhayat, 2016, p. 200). As they relate to tax compliance research, the findings are consistent: women are generally more compliant than men.

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This finding is believable because female taxpayers have less propensity for taking risks than males (Richardson & Sawyer, 2001). In addition, research has shown that the risk of being caught is deemed greater by women than it is by men (Hasseldine, 1999). When viewing the area of ethics overall, the same results are routinely found: men are less ethical than women. Based on that finding, and the fact that gender is widely included as a control variable in hierarchical regression models, it was also included in this study.

### **Income source.**

Income source “refers to the type or nature of the income item” (Jackson & Milliron, 1986, p. 134). Research has shown that this variable is incredibly important for taxpayer compliance behavior (Borrego et al., 2013; Jackson & Milliron, 1986; M. Richardson & Sawyer, 2001). Essentially, the idea behind income source is that certain types of income more easily lend themselves to tax evasion (i.e., hiding this income from the government) than others. The literature has consistently shown that earnings that are paid by a third-party are typically more often reported to the government by taxpayers. Alternatively, funds that are paid directly to the taxpayer (for example; self-employed earnings, tipped wages, or cash payments) are more susceptible to non-compliance (Andreoni et al., 1998).

There are several reasons that explain why income source maintains this type of relationship with taxpayer compliance. First, third-party paid income is typically also reported to the government by the payer (Alm, Deskins, & McKee, 2006). If a government is made aware that funds have been paid, a process of matching ensues whereby such third-party information can be compared to a taxpayer’s reported income (Internal Revenue Service, 2016b). Any discrepancy will likely result in a notice to the taxpayer that non-compliance may have occurred. Non-compliance related to third-party payer is therefore easily detected. Second, many



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individuals feel that only information on forms received needs to be reported on a filed tax return. As cash payments in the normal course of business are typically not reported to the government (Morse, Karlinsky, & Bankman, 2009), this loophole needs to be addressed. It is important to realize that simply because cash is not reported, this should not mean that it be excluded when filing taxes. Therefore, part of the reasoning behind income source as a key variable is the ability to hide income in certain forms from the government.

Another reason for using type of income source as a key variable relates to a lack of knowledge causing “honest mistakes” (Strader & Fogliasso, 1989, p. 40). Many taxpayers are not properly educated as to what is required to be reported on a tax return. A final piece related to income source is the likelihood of being caught. Funds reported to the government, as stated previously, are matched to confirm accurate taxpayer reporting. Payments that can evade this process are much more difficult to prove and, in turn, the ability to evade paying taxes on these funds is significantly higher.

### **Education.**

Education is a unique variable related to tax compliance due to the multi-dimensionality of the concept of education. Specifically, in the context of tax compliance, having more general education does not imply that one is versed in proper tax compliance. Furthermore, as Jackson and Milliron (1986) highlighted in their literature review, there are pieces of education related to fiscal knowledge while others relate to awareness of evasion opportunities. Educational components related to fiscal knowledge are based on an understanding of the benefits and services provided from tax revenue. Evasion opportunities refer more to the knowledge that a taxpayer has about the likelihood that certain forms of tax evasion may not be detected.

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Looking at education, it does appear supported by research that tax education has a positive relationship with perceptions of fairness. Thus, the more tax education a person has, the more positive the relationship as to fairness perceptions of taxation (Carnes & Cuccia, 1996). This perception is logical in that individuals who are more educated will have a better understanding of the role of the tax system, and its benefits to society. This relationship is also supported by the results of the first essay of this dissertation. Therefore, the anticipated result was that individuals who had more education were also more likely to engage in tax compliance.

### **Income level.**

The literature has shown conflicting results as to the relationship between income level and taxpayer compliance. Studies appear to be equally divided between positive, negative, or null relationships with taxpayer compliance (Jackson & Milliron, 1986; M. Richardson & Sawyer, 2001). Part of the reason for this result could be related to the statistical methods used; many studies that have examined income level have treated it as linear. Income level is unique because many governments have progressive taxation; that is, those with higher income pay more taxes. Therefore, the dollar benefit of evasion is greater for higher-income taxpayers. Alternatively, lower-income taxpayers generally do not have adequate funds, so tax compliance might prove a burden forcing them into a position of non-compliance. Another possible explanation is that the relationship between income level and tax compliance may be curvilinear in nature where lower-income and higher-income individuals are more likely to engage in non-compliance, with the tax burden being carried primarily by the middle class (Jackson & Milliron, 1986; M. Richardson & Sawyer, 2001).

The key concerning the impact of income level on taxpayer compliance may rest in its interaction with other variables. Middle-class taxpayers typically receive income from third-

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party payers, which means that, as discussed previously, the ability to evade taxes is difficult.

Higher-income taxpayers may have an ability to manipulate the form of income they receive. In addition, higher-income individuals can pay a tax professional who can provide knowledge that might foster tax non-compliance. These items would also lend support to a curvilinear relationship between income level and taxpayer compliance.

As identified previously, age, gender, income source, education level, and income level are all variables of interest that are regularly used as control or predictive variables in tax research. For this study, the demographic variables that have consistently shown to relate to tax compliance (age, gender, and income source) were used. The remaining profiling variables (level of education and income level) were used as control variables.

### **National Culture**

Depending on context, national culture can be defined in numerous ways but generally explains how a set group of people share a common set of values, beliefs, and opinions (Hofstede, 1980). Building on this, research has shown that these commonalities display a relationship with a variety of individual behaviors. For example, negotiation strategies (Tinsley, 2001), coping strategies (Bardi & Guerra, 2011), software piracy (Husted, 2000), and the ability for managers to justify ethically suspect behaviors (Parboteeah, Bronson, & Cullen, 2005) have been shown to have relationships with various cultural values.

In the context of the social sciences, a common explanation of culture refers to a “collective programming of the mind which distinguishes the members of one human group from another” (Hofstede, 1980, p. 21). Using this definition, researchers introduced multiple ways to measure and view culture. Two of the models most frequently used are the Hofstede model (1980) and the Global Leadership and Organizational Behavior Effectiveness model (GLOBE;

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House, Hanges, Javidan, Dorfman, & Gupta, 2004). Both provide measures of national culture, though slight differences exist in the number and definitions of their respective cultural dimensions.

The focus of this study is on tax compliance intentions. As tax laws are specific to each country a better understanding of the influence that national culture has on taxpayers is important to researchers and practitioners. This study used Hofstede's national cultural dimensions. The primary reason for this decision was that the Hofstede dimensions provided the foundation on which many alternative frameworks are based. Even newer cultural dimension models, such as the GLOBE study—when analyzed—can be traced back to much of Hofstede's work (Hofstede, 2006). In addition, even though time has passed, Hofstede's cultural framework is the most cited among the many approaches, and its dimensions continue to be cited and shown support by investigators in a modern context (Taras et al., 2010). More details of the Hofstede study and each of its cultural dimensions follow.

Hofstede performed extensive research beginning in the 1970s with surveys that measured various cultural dimensions. The surveys were completed by over 100,000 IBM employees in more than 50 countries (Hofstede, 1980, 2011). Analyzing the surveys at a country-level provided four unique factors representing national cultural dimensions. These dimensions (power distance, uncertainty avoidance, individualism, and masculinity) have proven useful in multiple research areas, and are still supported in current contexts (Dwyer, Mesak, & Hsu, 2005; Hofstede, 2006, 2011; Kirkman et al., 2006; Tung & Verbeke, 2010). The original four cultural dimensions are summarized in Table 1.

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Table 1

### *Hofstede Cultural Dimensions*

Original dimensions <sup>a</sup>	
<i>Dimension</i>	<i>Measure of</i>
Masculinity	Gender roles are particularly distinct.
Uncertainty avoidance	Extent that the unknown causes uncertainty; relates to the level of stress in a society in the face of an unknown future.
Power distance	Acceptance within culture that people are unequal; related to the different solutions to the basic problem of human inequality.
Individualism	Focus is on individual versus society.
Subsequently added dimensions <sup>b</sup>	
<i>Dimension</i>	<i>Measure of</i>
Long-term versus short-term orientation	Focus of people's efforts towards the future or the present and the past.
Indulgence versus restraint	Gratification versus control of basic human desires related to enjoying life.

<sup>a</sup> Adapted from Hofstede (1980, 2011).

<sup>b</sup> Adapted from Hofstede and Bond (1988); Hofstede et al. (2010).

These four national cultural dimensions are critical to a better understanding of individual taxpayer compliance intentions and have been shown to be significant predictors of tax compliance in past research (Tsakumis et al., 2007). Of note, Table 1 includes two additional cultural dimensions (short-term versus long-term orientation and indulgent versus restraint) that

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were subsequently added to the Hofstede model. As prior tax research has not shown a significant relationship for the later dimensions (Réthi, 2012) and the first four dimensions “remain the most prominent in intercultural research” (Hauff et al., 2015, p. 9), the latter two were excluded from this study.

Past studies that have analyzed culture and individual tax compliance have not investigated the possibility of moderating relationships. As national culture has been shown to have an interaction effect in other disciplines (Hauff et al., 2015), the moderating effect of national culture is worth considering to close a gap in the literature. The model that this study used is shown in Figure 2.

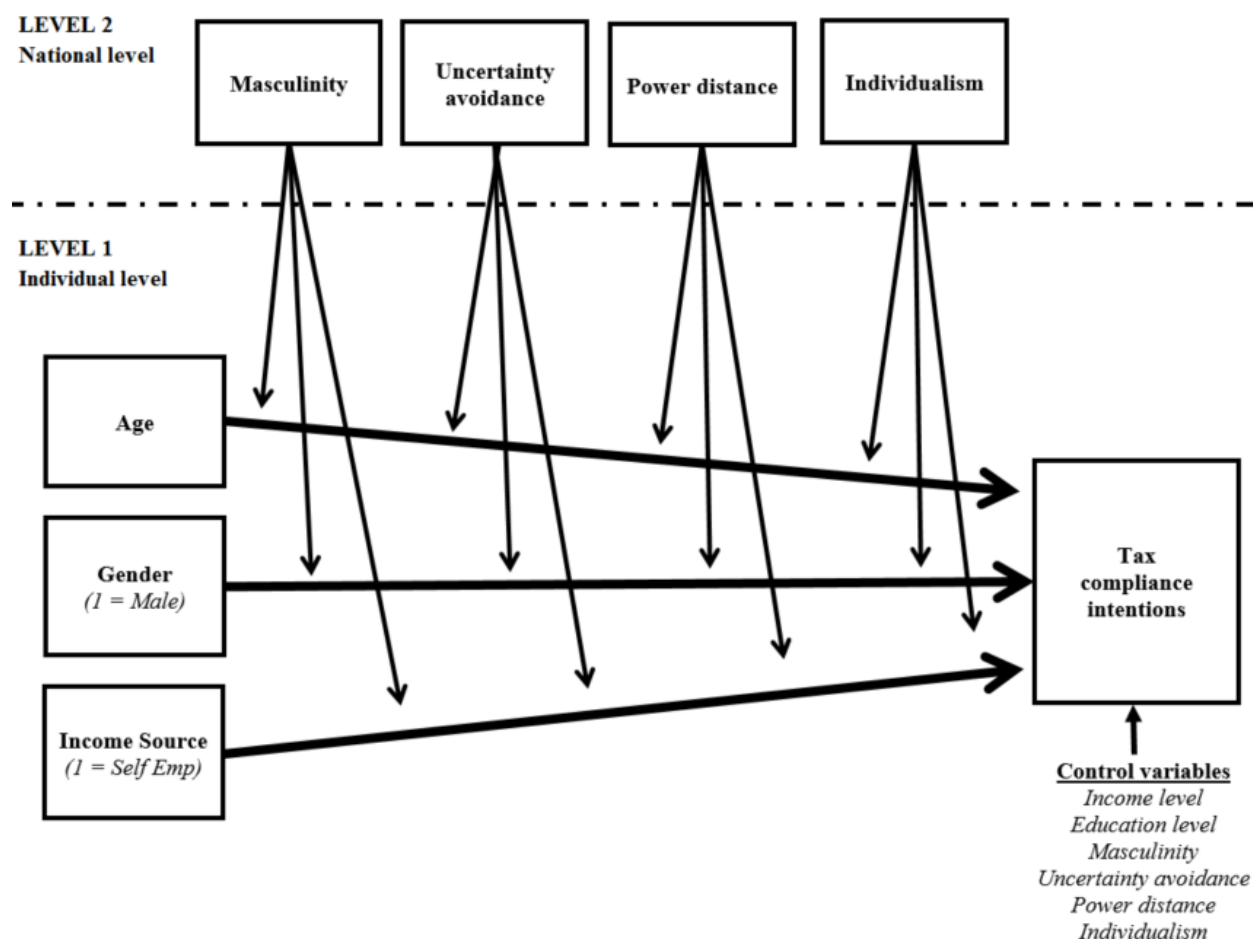


Figure 2. Research model.

Each of the cultural dimensions listed in Table 1 and shown in Figure 2 are discussed in more detail as to how they were identified, what past research has shown about them, and the role they had in this study. Following this, theory related to the anticipated moderating effect for each cultural dimension is presented. Lastly, hypotheses are created.

### **Masculinity.**

Masculinity as a dimension relates to the distinction of gender roles and the extent to which traditional masculine values versus traditional female values are accepted within a society. Higher scores of masculinity are “characterized by competition and achieving material success,” while lower scores relate to “mentoring and attaining a higher quality of life” (Tsakumis et al., 2007, p. 138). Husted (1999) demonstrated that masculinity cultures have a stronger relationship with bribery and corruption, while G. Richardson (2008) and Tsakumis et al. (2007) found a negative relationship (although not significant) between masculinity and tax evasion.

The findings from these studies illustrate that the direction and significance of the masculinity national cultural dimension has not yet been widely shown. A possible explanation for this result is the interaction effects between the various national cultural dimensions and other key influencing variables. In this study, the masculinity dimension was anticipated to promote an environment that reduced tax compliance. As this dimension places an emphasis on competition and material success, it was believed these motivators caused higher-scoring cultures to have more occurrence and acceptance of tax evasion than lower-scoring masculinity cultures. This study used this foundation to explore the moderating relationships that existed within the masculinity national cultural dimension.

Higher scores on the masculinity dimension relate to ideas of competition, material success, and ambition (Hofstede, 2011; Tsakumis et al., 2007). In reality, the pressure to

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compete and obtain material items may foster an atmosphere that accepts non-compliant taxpayer activities. Essentially, the result of material success may justify the means (i.e., tax non-compliance). Although older individuals have been shown to be more ethical, the moderating effect of the masculinity culture must be studied. Thus, this study posited that older individuals living in higher masculinity societies will be more likely to be competitive and focus on material things. Consequently, they are more likely to be non-compliant in their tax filings. This is stated in the following hypothesis:

*H1a:* The positive impact of age on taxpayer compliance is weakened by cultures that display higher scores of masculinity.

Similar to the anticipated relationship with age, it is also predicted that masculinity will have an influence on gender. The majority of evidence from various disciplines has shown that women are more ethical than men (Suar & Gochhayat, 2016) and are the more compliant gender. It is important to realize that individuals are born a certain sex that they traditionally maintain for life. Because of this, the influence that national culture has on gender is of special interest. In higher-scoring masculinity cultures, the influence is on material success, performance, and visible achievement, regardless of gender (Tsakumis et al., 2007). Obtaining outward material success is an influence that everyone, male and female, within such a culture will experience. Therefore, even though females are typically more compliant, females in higher-scoring masculinity cultures will be less compliant than females in lower-scoring masculinity cultures. Along the same line, males in lower-scoring masculinity cultures will be more compliant as the shift of focus is more on “values of relationships, caring, and nurturing” (Tsakumis et al., 2007, p. 138). Benchmarking off the more compliant female gender, the following hypothesis was developed.



*H1b:* The positive impact of the female gender on taxpayer compliance is weakened by cultures that display higher scores of masculinity.

Finally, the same divide and influence that could exist with age and gender may also be a realistic possibility concerning source of income. The key point of interest is the focus on material success aligned with the masculinity national cultural dimension. Self-employed and similar income sources are more likely to be involved in situations of tax non-compliance. In cultures scoring higher on the masculinity dimension, a moderating effect regarding income source may be present. Specifically, non-compliance intentions could be exaggerated to further help provide a competitive edge to gain material success. For more feminine cultures (i.e., those scoring lower on the masculinity scale), the opposite of this is anticipated in that self-employed and similar income sources may experience increased compliance. This is stated in hypothesis form as follows:

*H1c:* The negative impact that the self-employment income source has on taxpayer compliance is enhanced in cultures that display higher scores of masculinity.

### **Uncertainty avoidance.**

The dimension of uncertainty avoidance relates to “the extent to which members of a culture feel threatened by uncertainty or unknown situations” (Hofstede, 1991, p. 113). This cultural dimension is not to be confused with risk avoidance, but rather relates to the comfort level that members have about unstructured situations (Hofstede, 2011). Higher-scoring cultures are more likely to avoid situations of uncertainty, which can lead to increased levels of anxiety (Tsakumis et al., 2007). Cultures scoring higher on this dimension are also more typically associated with more complex tax structures having many laws and regulations that help reduce uncertainty (Hofstede, 1980; G. Richardson, 2008). Alternatively, at an individual level, lower-

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scoring cultures tend to handle situations of uncertainty more effectively. At a national level, it is likely that fewer laws and regulations exist because uncertainty and unknown situations are tolerated (Hofstede, 1980).

Individuals in cultures that score higher in uncertainty avoidance may be more likely to engage in risky situations to avoid the uncertainty. As this relates to tax compliance, past research has shown that more complex taxing systems are associated with higher levels of tax evasion (Collins, Milliron, & Toy, 1992; G. Richardson, 2006). Furthermore, research has supported a negative correlation between the level of individual confidence in their respective government and score on the uncertainty avoidance national cultural dimension (Hofstede, 2001). Lower-scoring cultures are more comfortable in positions of uncertainty, and have more trust in their respective government (Hofstede, 1991). These findings lend support to higher uncertainty avoidance cultures creating an environment in which individuals would be more likely to engage in non-compliant acts. Supporting this claim, Husted (1999) showed a significant, positive relationship between corruption and higher scores of uncertainty avoidance while G. Richardson (2008) and Tsakumis et al. (2007) showed the same positive relationship with dependent variables related to tax compliance.

In regard to age, research has shown older taxpayers are more compliant than younger (Jackson & Milliron, 1986). Research also lends support to higher-scoring uncertainty avoidance societies bearing a greater likelihood for individuals to engage in risky situations (Tsakumis et al., 2007). These risky situations are engaged in with the ultimate hope that the original uncertainty situation will be made a bit safer through engagement in the risky act. Tsakumis et al. gave examples of “starting a fight as a preemptive measure or speeding on the highway to save time” as situations where risky behavior is engaged in to reduce uncertainty (Tsakumis et

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al., 2007, p. 136). As older individuals tend to have stresses such as retirement, health concerns, medical expenses, and the like, it is believable that older individuals are frequently in positions where stressors exist. To reduce these stressors, one possible solution could be the savings generated by engaging in an act of taxpayer non-compliance.

Individuals who age in higher uncertainty avoidance national culture settings may not choose to be as compliant because the influence to avoid uncertainty is strengthened. The converse would be older individuals in low uncertainty avoidance societies being more tolerant of the uncertainty situation and less likely to engage in making a deviant decision when filing a tax return. Therefore, this study posited that in higher-scoring uncertainty avoidance national culture settings, the influence of age on compliance behavior would be weakened. This is given in hypothesis form as follows:

*H2a:* The positive impact of age on taxpayer compliance is weakened by cultures that display higher scores of uncertainty avoidance.

For the same reasons that the moderating effect of age is anticipated, a similar relationship with gender is expected. Females have shown to be more compliant than males. In cultures that are lower-scoring for uncertainty avoidance, it is typical for individuals to operate with “ease, lower stress, self-control, [and] low anxiety” (Hofstede, 2011, p. 10). Related to this, lower-scoring uncertainty avoidance societies are more inclined for citizens to be “competent towards authorities” (Hofstede, 2011, p. 10); competent individuals are more likely to follow the law. Concerning tax filing, competent taxpayers are more liable to follow the tax laws and be compliant taxpayers. In summary, this would mean that females in a lower-scoring uncertainty avoidance national culture would be less likely to engage in a non-compliant tax act than a male. Alternatively, as males are more likely to be non-compliant taxpayers, the relationship between

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gender and tax non-compliance would be stronger in higher-scoring national culture settings, making the male taxpayer in a high uncertainty avoidance culture setting the least compliant combination of culture and gender. This is presented in the following hypothesis:

*H2b:* The relationship between male gender and an increased likelihood to justify taxpayer non-compliance is stronger within cultures that display higher scores of uncertainty avoidance.

The likelihood of income being improperly reported on a tax return is increased when the funds are paid directly to a taxpayer (Andreoni et al., 1998). This would include items related to self-employment, tipped wages, and other cash payments for miscellaneous jobs performed. As the payer may not always report these income types to the government, it is more difficult for government entities to calculate accurately a taxpayer's income. These types of income raise more opportunity for taxpayers to exclude or significantly lessen the amount reported on a tax return, both equaling a non-compliant act.

Related to national culture, higher-scoring uncertainty avoidance societies are associated with taxing structures that are more complex. As noted previously, past research has supported that tax non-compliance is increased in these societies (Collins et al., 1992; G. Richardson, 2006). This combination would mean that individuals with self-employed income in higher-scoring uncertainty avoidance cultures are more likely to demonstrate non-compliant tax filing intentions than those having the same type of income in lower-scoring uncertainty avoidance cultures. This leads to the following hypothesis:

*H2c:* The relationship between income source and an increased likelihood to justify taxpayer non-compliance is enhanced within cultures that display higher scores of uncertainty avoidance.

### **Power distance.**

Power distance refers to the acceptance by a culture that people are unequal. As Hofstede stated, “all societies are unequal, but some are more unequal than others” (Hofstede, 2011, p. 9). Power distance provides a measurement as to how this inequality is viewed (and accepted) by followers and leaders. A society scoring higher in the power distance dimension indicates agreement with societal inequality. Essentially, everyone “has his or her place” (Tsakumis et al., 2007, p. 139).

Cultures scoring lower in power distance view inequality as undesirable and show a tendency for more uniform income distribution within that society (Hofstede, 2011). Related to income distribution, it is more typical to see tax systems in high power distance cultures that protect the wealth of the higher wage earners, which helps maintain the power distance. Husted (1999) demonstrated that cultures with higher power distance are more likely to be aligned with higher corruption. Similarly, past research that has looked at power distance and tax compliance related issues has shown a positive relationship (although not always statistically significant; G. Richardson, 2008; Tsakumis et al., 2007).

Higher power distance cultures also tend to accept high power individuals receiving certain privileges, greater wealth, and even leniency concerning various laws, such as tax laws (Hofstede, 1991, 2001, 2011). Even more alarming, studies have shown that individuals in a high power distance culture may not identify a behavior as unethical compared to those living in a low power distance culture (Cohen, Pant, & Sharp, 1996). It is important to note that the Hofstede dimensions are taken from questions that employees answered regarding their values. These “values are acquired in our early youth” and keep with us throughout life (Hofstede, Neuijen, Ohayv, & Sanders, 1990, p. 312). These values come from numerous sources,

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including nation, occupation, and organization, as well as family, school, and workplace.

However, their common thread is that national cultural dimensions serve as the foundation in which development occurs (Hofstede et al., 1990).

As culture is the foundation on which we develop, the effects that the power distance dimension has on influencing variables needs to be better understood. As has been shown, older taxpayers are typically more compliant than their younger counterparts. In addition, older individuals have had more time to achieve goals and therefore may focus on ethical considerations more than younger individuals. In combination, a higher power distance culture may weaken the effect that age has on ethical tax compliance choices. As higher power distance cultures are associated with higher corruption and leniency towards tax laws, it may be that this cultural dimension will weaken the effect that age has on taxpayer ethicality. Therefore, the most compliant taxpayer is believed to exist among older taxpayers located in lower-scoring power distance cultures where there is a focus on income distribution (Hofstede, 2011). This is stated in hypothesis form as follows:

*H3a:* The positive impact of age on taxpayer compliance is weakened within cultures that display higher scores of power distance.

Compliant behavior is also affected by gender; research has shown males to be generally less compliant. This study posited that cultures scoring high in power distance will create an environment that gives citizens the ability to justify ethically suspect behavior. Past research has demonstrated that women have a lower risk tolerance (Kastlunger, Dressler, Kirchler, Mittone, & Voracek, 2010; Powell & Ansic, 1997) and a higher expectation of getting caught (Hasseldine, 1999). As females have a higher expectation of being caught and a lower risk tolerance, generally, they may be limited in aggressively seeking success. As power distance refers to

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accepting power inequality, this cultural dimension opens a window to approving potentially unethical means to obtain success (Passas, 2000). In a tax compliance setting, this would mean engaging in non-compliance. However, as women are more likely to be compliant and sense hurdles in the path to success, even in cultures of high power distance, women should not be influenced to the same degree as men. Therefore, within a high power distance culture, a male taxpayer will likely display an increased ability to justify taxpayer non-compliance in comparison to the same gender in a low power distance culture. This is stated in hypothesis form as follows:

*H3b:* The relationship between male gender and an increased likelihood to justify taxpayer non-compliance is enhanced within cultures that display higher scores of power distance.

Building on the same logic, power distance may also have a significant interaction with income source. As national cultural dimensions precede any value development, it is anticipated that the cultural influence will moderate the relationship. In regard to income source, individuals with self-employed income that identify with high power distance cultures will display an increased likelihood to engage in tax non-compliance. As self-employed income is more easily hidden from government, the non-compliance rate will be escalated. In combination with a power distance culture, the acceptance of inequality will only strengthen the level of non-compliance associated with income sources that are more easily hidden. This is stated in the following hypothesis:

*H3c:* The relationship between income source and an increased likelihood to justify taxpayer non-compliance is enhanced within cultures that display higher scores of power distance.

### **Individualism.**

The dimension of individualism relates to whether a culture focuses on the individual or society. One end of the spectrum is an individualistic (I) culture, while its opposite would be a collectivistic (we) culture (Hofstede, 2011). Studies related to tax compliance have consistently shown significant negative results as to the relationship between this cultural dimension and tax compliance variables (G. Richardson, 2008; Tsakumis et al., 2007). Cultures that demonstrate greater collectivism are more likely to engage in non-compliance. Furthermore, higher-scoring individualistic cultures are more likely to have thriving economies which coincide with a stricter legal system (Hofstede, 2001). Such systems may impose tougher sanctions related to non-compliance and be defined by a greater likelihood of being caught. These statements all support the relationship that extant research has shown; that is, higher individualism cultures will be more tax compliant.

The Hofstede (2011) dimension of individualism refers to the degree to which individuals are tied to groups. Remembering that cultural dimensions exist before the birth of individuals, we must assume that national culture surrounds individuals from the time of birth and continues through life. Related to the individualism dimension, cultures that score as more collectivistic will have “people from birth onwards” integrated into “extended families or clans which protect them in exchange for loyalty” (Hofstede, 2011, p. 11). The bond created in such a culture between an individual and the clan is so strong that it can actually supersede legal boundaries in exchange for protection of the group. In support of this, studies have shown that more collectivistic cultures are also more likely to evade taxes (Réthi, 2012; Tsakumis et al., 2007).

Research has typically supported that older taxpayers are more likely to comply with tax return filings. As collectivistic cultures are associated with weaker economies and a greater



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focus on one's extended family, it is believed that individuals in this cultural environment may be more likely to engage in deviant acts to protect the well-being of the group. Taken together, this would suggest that older individuals in a collectivistic culture setting would be more likely to engage in non-compliant tax acts than those in an individualistic culture. Alternatively, as higher-scoring individualistic cultures are associated with stricter legal systems and better performing economies, younger individuals will be more tax compliant than those in a collectivistic culture. This moderating influence of the individualistic national cultural dimension related to age is stated in the following hypothesis:

*H4a:* The positive impact of age on taxpayer compliance is strengthened within cultures that display higher scores of individualism.

Research on gender has consistently shown that males tend to be less ethical (and less compliant) than females. Other research has demonstrated that females are less likely to take risks than males (Powell & Ansic, 1997). In combination, it is therefore logical that men in collectivistic cultures will be more likely to engage in tax non-compliance (a risky behavior). Individualistic national cultures are more likely to have citizens who focus on personal success over more standard ethical boundary limitations such as tax laws (Messner & Rosenfeld, 2001). Therefore, it is posited that the cultural dimension of individualism would significantly influence the relationship that gender has on tax compliance behavior. In particular, males would be influenced at a greater rate than females to display acts of taxpayer non-compliance. This is stated in the following hypothesis:

*H4b:* The relationship between male gender and an increased likelihood to justify taxpayer non-compliance is enhanced within cultures that display higher scores of individualism (lower scores of collectivism).

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As previously explained, income source is a variable related to the opportunity to engage in tax non-compliance. Cash exchanges and unreported income can be (and often are) easily excluded from income when filing taxes at the individual level. In cultures that score low in individualism (collectivistic cultures), the importance of ensuring the well-being of the group will be enhanced. Therefore, it is anticipated that national culture will influence the relationship that income source has with taxpayer compliance behavior. Specifically, cultures of individualism (lower-scoring cultures on the collectivism cultural dimension) will magnify the relationship that income source has concerning non-compliance. This is stated in hypothesis form as follows:

*H4c:* The relationship between income source and an increased likelihood to justify taxpayer non-compliance is enhanced within cultures that display higher scores of individualism.

### **Methods**

#### **Sample**

The sample for this study included data from 59,847 individuals and 40 countries. The individual-level responses were derived from the World Values Survey (WVS) which was “conducted in almost 100 countries which contain almost 90 percent of the world’s population” (World Values Survey Association, 2016). The first WVS was completed in 1981 with a new wave of the data being collected and released approximately every five years. The individual-level data used for current analysis was taken from Wave 6 of the WVS, which represents the period from 2010 to 2014. This WVS fieldwork was conducted between 2010 to 2012.

### **Dependent Variable**

The dependent variable for this study, tax compliance intent, was measured by the question contained in the WVS that asked respondents to provide their opinion as to whether cheating on taxes if you have a chance can always be justified, never justified, or something in between. The question was scored on a 1 to 10 Likert scale, with 1 being never justifiable and 10 being always justifiable. Using a single-item measure may have some limitations in that the concept of tax compliance intent may be multi-dimensional. However, the single dimension appears appropriate, given the use of secondary data combined with the fact that the measurement source for this variable has been supported by past research (Alm & Torgler, 2006; Mckerchar, Bloomquist, & Pope, 2013; G. Richardson, 2006). In addition, to provide added support for the single-item measure, Essay 1 of this study presented survey respondents with the same question. The results mirrored the responses given for actual tax compliance scenarios and provided support that this single-item question does measure a taxpayer's compliance intentions.

### **Independent Variables**

The independent variables in this study were demographic and opportunistic variables typically seen in tax compliance research, as well as various national cultural dimensions. This section highlights and explains the demographic antecedents that were used in this study, followed by how national culture was operationalized.

Demographic variables are routinely included in tax compliance studies. Much of the research has shown that consistent relationships exist between antecedents of tax non-compliance (i.e., age, gender, income source; Jackson & Milliron, 1986; M. Richardson & Sawyer, 2001). These same variables are also easily used for profiling purposes, as they are traits that are typically outwardly displayed. This study was among the first to use the

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relationship between these factors and consider how they may be moderated by a national culture.

Control variables for this study included age, gender, source of income, income level, and education level. The first three variables (age, gender, and source of income) were selected based upon the results of previous research. Income level and education level have also been included as control variables, as these two demographic variables are typically used in tax compliance research.

All five demographic variables were taken from the WVS and measured in a way consistent with past research. Age reflects the age of each individual respondent and is continuous. Gender is scored as a dummy variable; female gender has been recorded as a zero and male gender as a one. Source of income was based on respondents' answers to a question about the type of employment they engaged in. Individuals who identified as self-employed were coded as a 1, while all other responses were coded as a 0. Those grouped into the 0 coding included responses from individuals who self-selected as being employees, retired, housewife, student, or unemployed.

A self-reported score on a scale of 1 to 10 represented income level. A score of 1 represented the lowest income group, while a score of 10 was the highest income group, in the context of their country. The second control variable, education level, was based on a score of 1 to 9; 1 represents no formal education and a score of 9 represents graduation from a university.

The second level of analysis was drawn from national cultural dimensions, which were taken from Hofstede's (1980) widely used study. Hofstede's cultural dimensions, currently comprised of six national cultural dimensions (Hofstede, 2011), are summarized in Table 1. In a search for the most parsimonious model, the latter two dimensions (long-term versus short-term

orientation and indulgence versus restraint) have been excluded from this study. Prior tax research (although limited) has not shown significance for these dimensions (Réthi, 2012). As the original four dimensions “remain the most prominent in intercultural research” (Hauff et al., 2015, p. 9), this study focused on the cultural dimensions of power distance, uncertainty avoidance, individualism, and masculinity and sought a better understanding of the influence that those values have in relation to individual taxpayer compliance intentions.

The measures for the cultural dimensions used in this study (power distance, individualism, masculinity, and uncertainty avoidance) were taken from Hofstede’s large empirical study that used over 100,000 surveys performed at IBM between 1967 and 1973 (Hofstede, 1980, 2006). The cultural dimensions typically have scores with a value between 0 and 100. Lower and higher scores represented the extreme ends of each cultural dimension. The cultural dimension scores for the countries used in this study are given in Table 2.

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Table 2

*Hofstede National Cultural Dimension Scores<sup>a</sup>*

#	Country	PD	IND	MASC	UA
12	Algeria <sup>b</sup>	70	46	53	68
36	Australia	36	90	61	51
76	Brazil	69	38	49	76
112	Belarus <sup>c</sup>	42	60	19	65
152	Chile	63	23	28	86
156	China	80	20	66	30
170	Colombia	67	13	64	80
233	Estonia	40	60	30	60
288	Ghana	80	15	40	65
344	Hong Kong	68	25	57	29
356	India	77	48	56	40
368	Iraq	95	30	70	85
392	Japan	54	46	95	92
400	Jordan	70	30	45	65
410	South Korea	60	18	39	85
422	Lebanon	75	40	65	50
434	Libya	80	38	52	68
458	Malaysia	81	30	69	82
484	Mexico	104	26	50	36
504	Morocco	70	46	53	68
528	Netherlands	38	80	14	53
554	New Zealand	22	79	58	49
586	Pakistan	55	14	50	70
604	Peru	64	16	42	87
608	Philippines	94	32	64	44
616	Poland	68	60	64	93
642	Romania	90	30	42	90
643	Russia	93	39	36	95
646	Rwanda <sup>d</sup>	60	35	40	50
702	Singapore	74	20	48	8
705	Slovenia	71	27	19	88
710	South Africa	49	65	83	49
724	Spain	57	51	42	86
752	Sweden	31	71	5	29
764	Thailand	64	20	34	64
780	Trinidad Tobago	47	16	58	55
792	Turkey	66	37	45	85
804	Ukraine	92	25	27	95
840	USA	40	91	62	46
858	Uruguay	61	36	38	100

<sup>a</sup>Culture dimension scores can be located at <https://geert-hofstede.com>. Scores reflected in the table are sourced from Hofstede (1980). <sup>b</sup> Cultural dimension scores for Morocco used as approximation due to geographic proximity. <sup>c</sup> Cultural dimension scores for Lithuania used as approximation due to geographic proximity. <sup>d</sup> Cultural dimension scores for Zambia used as approximation due to geographic proximity.

It is important to note that these cultural dimensions have been used in a variety of research settings and have been proved valid, even though the original measures are dated (Hofstede, 2011; G. Richardson, 2006, 2008; Tsakumis et al., 2007).

### **Analytical Techniques**

HLM was used for data analysis. Studies have shown that this method is appropriate for studies that consider a multi-level analysis of relationships (Bryk & Raudenbush, 1989; Garson, 2012; Huta, 2014; Schaffer & Riordan, 2003; R. Turner, 2015). Past studies that have attempted to address research questions related to these variables have done so by looking at aggregated country-level data (G. Richardson, 2006, 2008; Tsakumis et al., 2007). Unfortunately, aggregated analysis has the potential to remove much of the individual-level predictor variation related to individual compliance intentions. This study removed this limitation by adopting HLM, a statistical technique that is best aligned to retain the individual-level variance while also bringing in the respective national cultural dimensions.

The literature refers to HLM analysis by various names, including: cross-level, mixed-level, mixed effects, random effects, and random coefficient research (Raudenbush & Bryk, 2002). Regardless of the name, the foundation of the technique is the same in that the analysis considers the relationship between various levels of data. For this study, two levels of data were used. Level 1 relates to individuals, while Level 2 relates to national culture. In addition to looking at the influencing effect of these variables, the study also sought to better understand any cross-level interaction that might occur based on individuals existing within cultures (i.e., within countries).

### **Results and Analysis**

A summary of the 40 countries included in this study, the number of responses by country, the average gross national income per capita by country, and the mean score of the respondents' ability to justify tax non-compliance is included in Table 3.



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Table 3

## *Country-level Information*

#	Country <sup>c</sup>	# of level 1 responses	Justify tax cheat <sup>a</sup>	AVG. GNI <sup>b</sup>
12	Algeria	1,095	3.88	4,753.33
36	Australia	1,019	1.86	52,156.67
76	Brazil	1,435	2.57	10,893.33
112	Belarus	1,513	2.79	6,173.33
152	Chile	896	1.71	12,503.33
156	China	1,679	2.25	5,113.33
170	Colombia	1,476	1.65	6,286.67
233	Estonia	1,489	2.26	15,793.33
288	Ghana	1,551	1.65	1,413.33
344	Hong Kong	965	2.07	35,210.00
356	India	5,389	2.30	1,356.67
368	Iraq	1,151	2.89	5,100.00
392	Japan	1,811	1.33	46,610.00
400	Jordan	1,195	1.65	4,006.67
410	South Korea	1,188	1.75	22,860.00
422	Lebanon	1,175	3.19	8,496.67
434	Libya	1,983	1.62	8,455.00
458	Malaysia	1,299	2.62	9,163.33
484	Mexico	1,919	2.17	9,230.00
504	Morocco	955	1.56	2,990.00
528	Netherlands	1,588	1.92	53,383.33
554	New Zealand	719	1.92	32,896.67
586	Pakistan	1,200	1.85	1,163.33
604	Peru	1,143	2.01	4,970.00
608	Philippines	1,195	3.80	2,796.67
616	Poland	903	2.34	12,950.00
642	Romania	1,426	2.01	8,646.67
643	Russia	2,294	2.98	11,443.33
646	Rwanda	1,526	2.08	593.33
702	Singapore	1,920	2.54	48,150.00
705	Slovenia	1,010	1.77	24,150.00
710	South Africa	3,337	4.11	6,976.67
724	Spain	1,048	1.75	31,040.00
752	Sweden	1,118	2.08	56,223.33
764	Thailand	1,114	1.62	5,066.67
780	Trinidad Tobago	959	1.43	15,783.33
792	Turkey	1,567	1.27	10,370.00
804	Ukraine	1,500	2.56	3,203.33
840	USA	2,139	1.82	50,640.00
858	Uruguay	958	1.57	12,100.00

<sup>a</sup> Justify tax cheat reflects the average score by country based on the responses to the question related to “cheating on taxes if you have a chance.” 1 = Never Justifiable; 10 = Always Justifiable. <sup>b</sup> Average GNI reflects the average (2010, 2011, and 2012) of gross national income per capita in U.S. dollars. To assist with statistical analysis this variable was divided by 1,000 prior to analysis. <sup>c</sup> Table 3 provides a summary of the 40 countries included in this analysis making up 59,847 individuals.

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Table 4 shows the correlation and descriptive statistics for the individual-level variables. Specifically, this table looks at the Level 1 variables related to an individual's ability to justify tax cheating, specifically the level of income, the level of education, age, gender, and employment status. As gender and employment status were categorically coded, a Spearman correlation was used as this method is deemed most appropriate and powerful in "the context of nonnormality" (Bishara & Hittner, 2012, p. 402) for nonparametric data.

Table 4

### *Descriptive Statistics and Spearman Cross-level Correlations<sup>a, b</sup>*

Level 1 Variables	Mean	Std. dev.	Tax cheat	Income	Educ.	Age	Gender
Justify tax cheating	2.261	2.148	1.000				
Income level	4.829	2.130	0.058**	1.000			
Education level	5.618	2.434	0.024**	0.255**	1.000		
Age	42.594	16.437	-0.117**	-0.111**	-0.172**	1.000	
Gender (1=Male; 0=Female)	0.489	0.500	0.040**	0.027**	0.038**	-0.023**	1.000
Employment (1=Self Employed; 0=Other)	0.124	0.329	-0.019**	-0.003	-0.119**	0.010*	0.120**

<sup>a</sup>  $n$  = Level 1, 59,847 individuals.

<sup>b</sup> Nonparametric Spearman correlations were used as several variables were categorical in nature (gender, self-employment). Correlations in the table were calculated by analyzing the entire Level 1 sample without weighting for differences in number of responses by country.

\* $p < .05$  (2-tailed). \*\* $p < .01$  (2-tailed).

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Table 5 provides a summary of the Pearson correlations and descriptive statistics of the country-level (Level 2) data. To help illustrate the relationship between levels one and two, the mean of individual-level variables is included in the Level 2 correlation matrix.

Table 5

*Pearson Correlations and Descriptive Statistics<sup>a, b</sup>*

Level 2 Variables	Mean	Std. dev.	Tax cheat	Income	Educ.	Age
Justify tax cheating	2.180	0.681	1.000			
Income	4.858	0.572	-0.025	1.000		
Education	5.644	1.070	0.185	0.146	1.000	
Age	43.031	5.507	-0.148	-0.229	0.573**	1.000
Gender (1=Male; 0=Female)	0.482	0.039	-0.166	-0.003	-0.554**	-0.579**
Employment (1=Self Emp.; 0=Other)	0.126	0.123	-0.161	-0.011	-0.554**	-0.599**
Power distance	65.425	19.007	0.315 *	-0.228	-0.310	-0.420**
Individualism	39.650	21.357	0.230	-0.037	0.373*	0.399*
Masculinity	48.300	18.361	0.169	0.152	-0.095	-0.239
Uncertainty avoidance	65.425	22.475	-0.235	-0.215	-0.065	0.135
Gross national income per capita (div. by 1,000)	16.528	16.995	-0.165	0.111	0.577**	0.714**

Table 5 Continued

Level 2 Variables	Gender	Employ.	PD	IND	MASC	UA
Gender (1=Male; 0=Female)	1.000					
Employment (1=Self Emp.; 0=Other)	0.646**	1.000				
Power distance	0.258	0.281	1.000			
Individualism	-0.249	-0.361*	-0.425**	1.000		
Masculinity	0.355*	0.270	0.173	0.062	1.000	
Uncertainty avoidance	-0.075	0.030	0.154	-0.161	-0.213	1.000
Gross national income per capita (div. by 1,000)	-0.524**	-0.530**	-0.489**	0.386*	-0.088	-0.066

<sup>a</sup> n = Level 2, 40 countries.

<sup>b</sup> Correlations in table calculated using the mean of individual-level variables across each country.

\* $p < .05$  (2-tailed). \*\* $p < .01$  (2-tailed).

As the primary motivation of this study was to better understand the cross-level relationship, HLM was employed to test the posited relationships. HLM provides a “shared variance in hierarchical structured data” (Woltman, Feldstain, MacKay, & Rocchi, 2012, p. 52) and moves beyond basic ordinary least squares regression, which tends to skew the standard errors of the Level 2 variables being studied (Hofmann, Griffin, & Gavin, 2000). Essentially, HLM analysis allows for statistical analysis to be “based on a combination of group-level sample size weighted by the reliabilities of the individual-level dependent variable in each group” (Cullen, Parboteeah, & Hoegl, 2004, p. 417). In an attempt to properly develop the foundation on which this study’s cross-level hypotheses stand, this study relied on best-practice recommendations presented by Aguinis, Gottfredson, and Culpepper (2013). The data presented was calculated using Stata, version 14.

Following the recommendations of Aguinis et al. (2013), a stepped model was used. This allowed a greater understanding of the direct effects and the cross-level effects, as well as an appreciation for how meaningful the model change was as new variables (and relationships)

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were introduced. The first model analyzed was the null model, which solely looked at the differences between countries and the dependent variable (ability to justify tax non-compliance).

Table 6 provides results of the null model.

Table 6

### *Results of Null Model (Step 1)*

Level and Variable	Model
	Null (Step 1)
Level 1 - Individual	
Intercept	2.180 *** (0.106)
Variance components	
Within country (L1) variance	4.100
Intercept (L2) variance	0.450
Additional information	
Intra-class correlation coefficient	0.099
-2 Log Likelihood (FIML)	254,490
Number of estimated parameters	3

*Note.* Values in parenthesis represent standard errors. L1 = Level 1 (Individual-level); L2 = Level 2 (Country-level). L1 sample size = 59,847 individuals, and L2 sample size = 40 countries. FIML = full information maximum likelihood estimation.

\*\*\* $p < .01$  (2-tailed).

This null model (Step 1) was run for the purpose of confirming that HLM is, in fact, a necessary analytical technique. After running this model, review of the intra-class correlation coefficient (ICC) was necessary. The ICC is a measure that helped explain the percentage of total variation in an individual's ability to justify tax non-compliance that is accounted for by country differences. An ICC near zero would suggest that HLM was not a needed analytical technique because the Level 2 variables provided little explanation for the variation that was seen

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in Level 1. In the context of this study, the ICC helped explain the percentage of total variation in an individual's ability to justify tax non-compliance that is accounted for by country differences. As Table 6 shows, the ICC for the null model is .099 which, based on past research (Kahn, 2011; Peugh, 2010), is a level that would support using HLM.

Step 2 of the analysis introduced Level 1 and Level 2 variables of the study. This step sought to understand more fully the factors that explain the variation of tax compliance within countries, as well as variation in the intercept. For the research model analyzed in this study, Step 2 added income level, education level, age, gender, and employment status as Level 1 variables, while bringing in Level 2 variables related to the four Hofstede cultural dimensions (power distance, individualism, masculinity, and uncertainty avoidance). In addition, average gross national income (GNI) per capita was added. For analytical purposes, all independent variables were mean centered. In addition, average GNI was divided by 1,000 to make interpretation of the model simpler. Finally, to aid in interpretation, the dependent variable retained the original Likert score (a 1 to 10 Likert scale, with 1 being never justifiable and 10 being always justifiable) that was used in the WVS.

Step 2 of the model is referred to as a random intercept and fixed slope model. Between countries, the intercept of the dependent variable can vary. However, the slope of all the countries remains the same. Table 7 provides a summary of this step (as well as later Steps 3 and 4). To aid in comparison and understanding, Step 1 (the null model) has been reproduced and included in this table.

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Table 7

## *Results of Multilevel Modeling Analysis*

Level and Variable	Model			
	Null (Step 1)	Random intercept and fixed slope (Step 2)	Random intercept and random slope (Step 3)	Cross-level interaction (Step 4)
Level 1 – Individual				
Intercept	2.180*** (0.106)	2.2791*** (.0877)	2.2712*** (.0880)	2.2738*** (.0880)
Income		.0452*** (.0042)	.0265* (.0116)	.0255* (.0117)
Education		-.035*** (.0041)	-.0294*** (.0083)	-.0281** (.0082)
Age		-.0122*** (.0006)	-.0114*** (.0014)	-.0114*** (.0013)
Gender		.177*** (.0167)	.1755*** (.0167)	.1754*** (.0167)
Self employed		-.0265 (.0268)	-.0413 (.0270)	-.024 (.0289)
Level 2 – Country				
Power distance		.0152* (.0063)	.0117* (.0056)	.0152* (.0061)
Individualism		.0183** (.0055)	.0147** (.0050)	.018** (.0054)
Masculinity		.0033 (.0048)	.0049 (.0043)	.0017 (.0047)
Uncertainty avoidance		-.0088* (.0041)	-.0081* (.0036)	-.0075 (.0040)
GNI per capita / 1,000		-.0166* (.0067)	-.0183*** (.0060)	-.0186** (.0060)
Cross-level interaction				
Age x MASC (H1a)				.0001* (.0001) <sup>a</sup>
Gender x MASC (H1b)				-.0025** (.0009)
Self emp. x MASC (H1c)				-.0035* (.0019) <sup>b</sup>
Age x UA (H2a)				-.00002 (.0001)
Gender x UA (H2b)				-.0009 (.0007)
Self Emp. x UA (H2c)				.0065*** (.0014)
Age x PD (H3a)				-.0001 (.0001)
Gender x PD (H3b)				.0005 (.0012)
Self Emp. x PD (H3c)				.0015 (.0020)
Age x IND (H4a)				-.0001 (.0001)
Gender x IND (H4b)				.0037*** (.0011)
Self Emp. x IND (H4c)				.0023 (.0019)

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Table 7 Continued

Level and Variable	Model			
	Null (Step 1)	Random intercept and fixed slope (Step 2)	Random intercept and random slope (Step 3)	Cross-level interaction (Step 4)
Variance components				
Within country (L1) var.	4.100	4.051	4.004	4.001
Intercept (L2) var.	0.450	0.286	0.292	0.289
Slope var. - income (L2)			0.00452	0.00459
Slope var. - education (L2)			0.00194	0.00188
Slope var. - age (L2)			0.00006	0.00005
I-S Cov. - income (L2)			0.00384	0.00483
I-S Cov. - education (L2)			-0.00506	-0.00572
I-S Cov. - age (L2)			-0.00203	-0.00186
Cov. - income & education (L2)			-0.00209	-0.00210
Cov. - income & age (L2)			0.00006	0.00001
Cov. - education & age (L2)			0.00007	0.00009
Additional information				
Intra-class correlation coefficient	0.099			
-2 Log likelihood (FIML)	254,490	253,752***	253,222***	253,167***
Number of est. parameters	3	13	20	33
Pseudo $R^2$	0.000	0.047	0.047	0.048

*Note.* FIML = full information maximum likelihood estimation. Values in parenthesis represent standard errors. I-S = Intercept-slope variance; Cov. = Covariance; Var. = Variance. L1 = Level 1 (Individual-level); L2 = Level 2 (Country-level). L1 sample size = 59,847 individuals, and L2 sample size = 40 countries.  $R^2$  presented is based on Snijders and Bosker calculation at Level 1. Snijders and Bosker  $R^2$  at L2 is 0.3621. Bryk and Raudenbush  $R^2$  calculations yield L1 of 0.0134 and L2 of 0.3646. Markings for the direct effects are reported based on two-tailed p-values as hypothesized relationships in this study were only made for the cross-level interactions. All reported p-values for the cross-level interactions are done so using one-tail p-values.

<sup>a</sup> = p-value was .054;

<sup>b</sup> = result is statistically significant; however, review of actual effect shows no meaningful relationship and hypothesis is deemed not supported.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Reviewing Table 7 (the output of Step 2), the Level 1 variables of income (coefficient of .0452,  $p < .001$ ) and gender (.177,  $p < .001$ ) both have positive and significant relationships with an individual's ability to justify non-compliance. Education (-.035,  $p < .001$ ) and age (-.0122,  $p < .001$ ) also have significant and negative relationships. Interpreting the influence of the Level 1 variables, males that have higher levels of income are more likely to justify tax non-



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compliance, while older, more educated individuals are more likely to comply. The Level 1 variable of employment status showed that the self-employed might be more compliant; however, this finding was not statistically significant.

The Level 2 variables of power distance (.0152,  $p < .05$ ) and individualism (.0183,  $p < .01$ ) showed positive and significant relationships with non-compliance, while uncertainty avoidance (-.0088,  $p < .05$ ) and the control variable of GNI per capita (-.0166,  $p < .05$ ) showed negative relationships with non-compliance. These results support the direct effects of the model related to income, education, age, and gender, as well as direct cross-level effects of power distance, individualism, and uncertainty avoidance. Combining these findings with the significant improvement in the likelihood ratio test ( $p < .001$ ) over Step 1 supported continuing this stepped model.

Step 3 of the model building process introduced the possibility of random slopes between countries. Income, education, and age variables were included to review the effect that culture might have on these variables across countries. Analysis of the likelihood ratio test displayed continued significant model improvement ( $p < .001$ ) over the lower level (Step 2) model. As the intent of the full research model was to look at the possibility of cross-level moderation, Step 3 provided preliminary support to show that there are differences in slopes between the various countries. The slope variances generated for income (0.00452), education (.00194), and age (.00006) were all significant at the .05 significance level and provided evidence that there are country-level differences not only in intercept (as proven in Step 2), but also in slope concerning the relationship between the Level 1 variables and an individual's ability to justify tax non-compliance.

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Building on Step 3, Step 4 sought to explain why slopes vary across cultures. To perform this analysis, moderation was introduced that looked at cross-level interaction between Level 1 and Level 2 variables. Step 4 of the model generated a pseudo- $R^2$ , as proposed by Snijders and Bosker (1999), of .048 related to Level 1 and .3621 related to Level 2. In addition, review of the likelihood ratio test over Step 3 showed a significant improvement in the model ( $p < .001$ ). Looking at the statistical output presented in Table 7, income (.0255,  $p < .05$ ) and gender (.1754,  $p < .001$ ) displayed positive relationships with an individual's ability to justify tax non-compliance. Education (-.0281,  $p < .01$ ) and age (-.0114,  $p < .001$ ) retained negative relationships showing that more educated and older individuals are more compliant. The Level 2 variables of power distance (.0152,  $p < .05$ ) and individualism (.018,  $p < .01$ ) retained the same positive relationship seen in lower stages of the stepped model. These culture variables illustrated that higher power distance and greater individualism display a greater likelihood to justify taxpayer non-compliance, while cultures that have a higher gross national income per capita will be more compliant (-.0186,  $p < .01$ ).

Hypotheses 1a and 1b proposed negative moderating relationships between the national cultural dimension of masculinity and age and gender, respectively. Hypothesis 1c proposed a positive moderating relationship between the same cultural dimension, masculinity, and income source. Cross-level moderations provided some support for H1a (age) and H1b (gender), with no significant support found for H1c (income source). As Table 7 illustrates, the interaction between masculinity and age showed marginal significance and just missed the one-tailed .05 cut-off ( $p = .054$ ), yielding a coefficient of .0001. To help interpret the results of H1a, Figure 3 provides a graphical representation of the relationship.

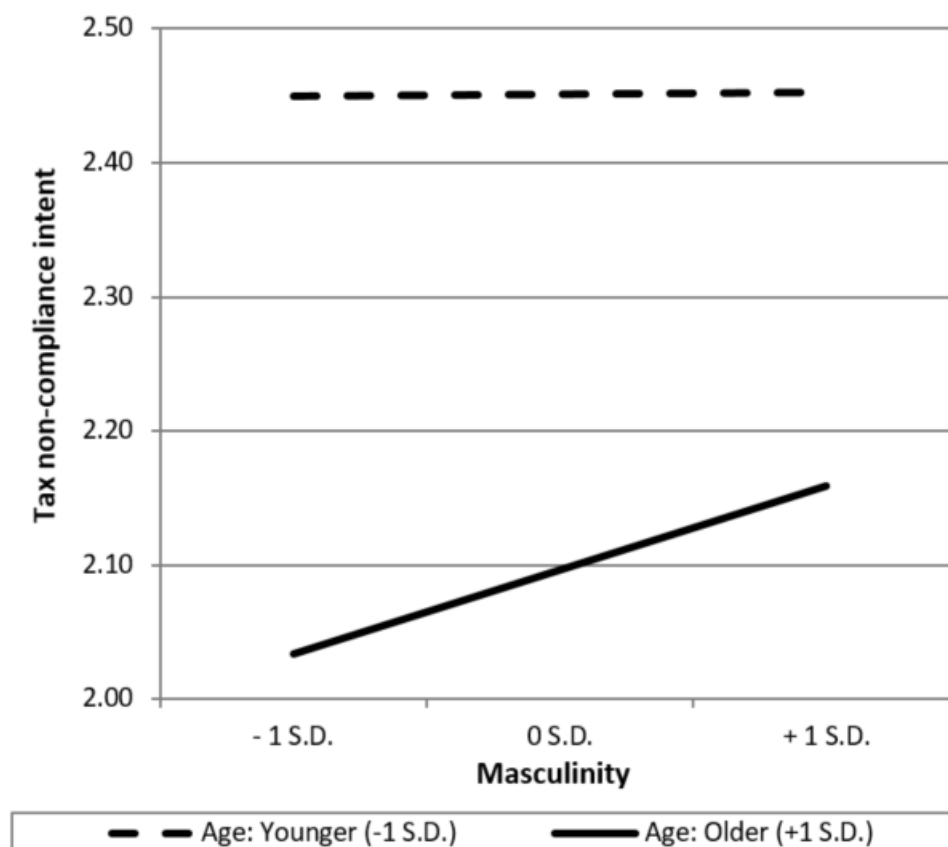


Figure 3. Interaction of masculinity and age on tax non-compliance intent (H1a).

The lines found in Figure 3 indicate older individuals are more compliant. As hypothesized, however, the degree of compliance was weakened in higher-scoring masculinity cultures. Together, the statistical output and graphical summary show justification for the cross-level interaction between age and masculinity, thereby providing marginal support for H1a.

Table 7 displays a negative coefficient of  $-.0025$  ( $p < .01$ ) related to H1b, the interaction between gender and masculinity. Figure 4 provides a graphical representation of the effect that this coefficient has on the relationship between the cultural dimension of masculinity and gender on a taxpayer's ability to justify non-compliance. The lower standard deviation of gender represents women. As can be seen on the right side of this graph, the reduced space between

male and female gender demonstrates that females in high masculinity cultures will be better able to justify tax non-compliance. This supports the posited relationship of H1b.

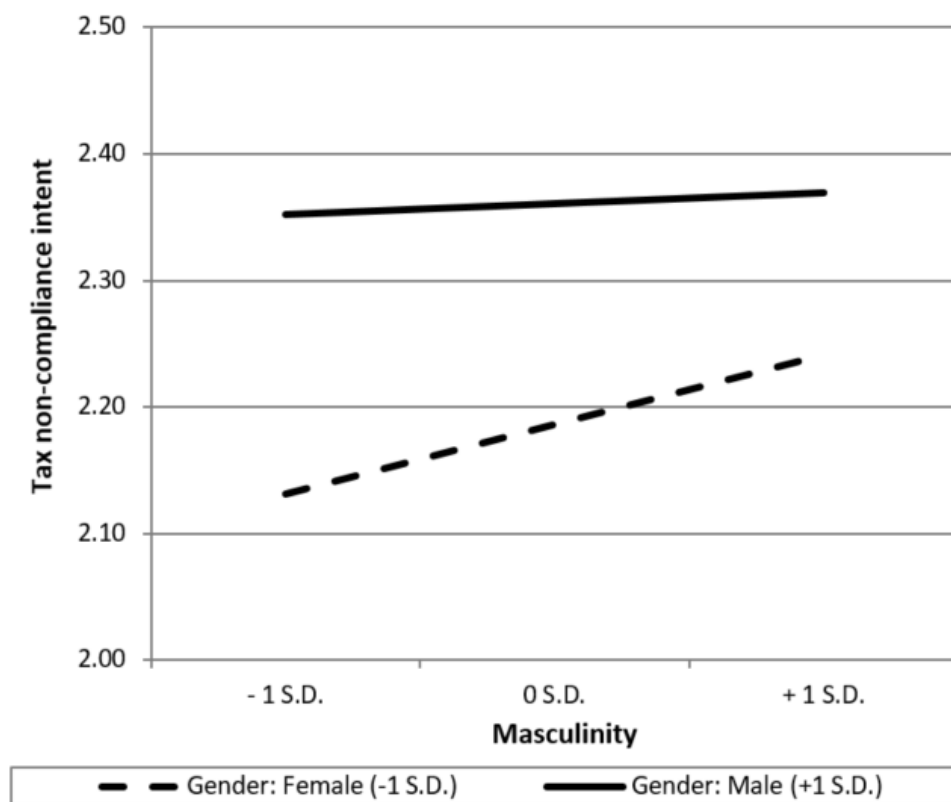


Figure 4. Interaction of masculinity and gender on tax non-compliance intent (H1b).

H1c considered cross-level interaction between employment status and masculinity. The statistical results in Table 7 show a significant statistical finding ( $-.0035, p < .05$ ). However, further review of the relationship revealed that the interaction provided no meaningful (real world) difference in a taxpayer's ability to justify non-compliance. As the direct effect of the interacting variables lacked significance, and actual influence of the interaction was lacking, H1c was deemed not supported.

H2a explored the relationship between uncertainty avoidance and age, while H2b looked at the interaction between uncertainty avoidance and gender. Statistical analysis for both

hypotheses did not support meaningful moderation relationships. Therefore, results do not provide support for either H2a or H2b.

H2c posited a negative moderating relationship between higher-scoring uncertainty avoidance cultures and the source of an individual's income. As to direct effects, neither of these variables (uncertainty avoidance or income source) displayed a significant relationship with a taxpayer's justification of tax non-compliance. However, the interaction between the two does bear a significant and positive result (.0065,  $p < .001$ ), as given in Table 7. To assist with interpretation, the graphed relationship of this interaction is shown in Figure 5.

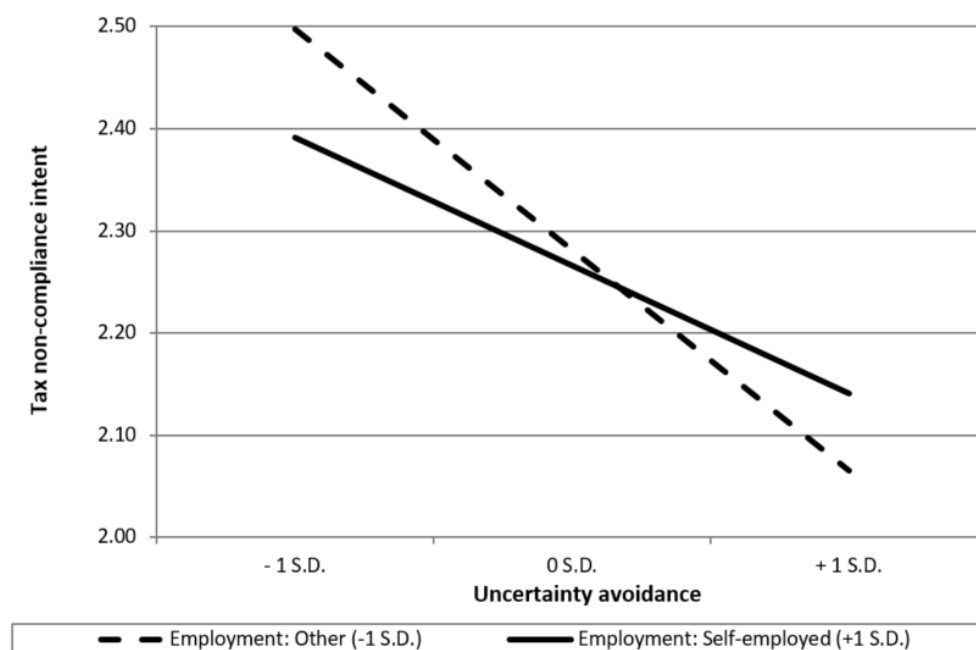


Figure 5. Interaction of uncertainty avoidance and employment type on tax non-compliance intent (H2c)

The lines presented on the graph all represent one standard deviation in each direction of the independent variables. Higher uncertainty avoidance cultures are more likely to be compliant. However, individuals with self-employed status in high uncertainty avoidance cultures will be more likely to engage in non-compliance. Contrary to this, lower uncertainty

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avoidance cultures are more likely to engage in non-compliance, while those self-employed in these cultures will be more compliant. The interaction between these variables provided interesting results that are detailed in the next section. Although the direct effects of these variables are not significant, the hypothesized interaction observed supported the posited relationship of H2c.

As seen in Table 7, the national cultural dimension of power distance displays a significant direct effect on taxpayer non-compliance (.0152,  $p < .05$ ). The moderating relationship that this cultural dimension provided to the variables of this study, however, did not experience the same results. This study examined the moderating influence of national culture. H3a (age) and H3b (gender) were posited to have negative interactions with the power distance national cultural dimension while H3c (income source) hypothesized a positive interaction. Table 7 highlights the statistical output from this study provided no support for these relationships. Therefore, H3a, H3b, and H3c were not supported.

H4a (age), H4b (gender) and H4c (income source) looked at the moderating influence of the national cultural dimension individualism. H4a was not supported because no significant findings emerged. H4b, that looked at the relationship between gender and individualism, did find statistically significant results (coefficient of .0034,  $p < .001$ ). To assist with interpretation the interaction is displayed in graphic form in Figure 6.

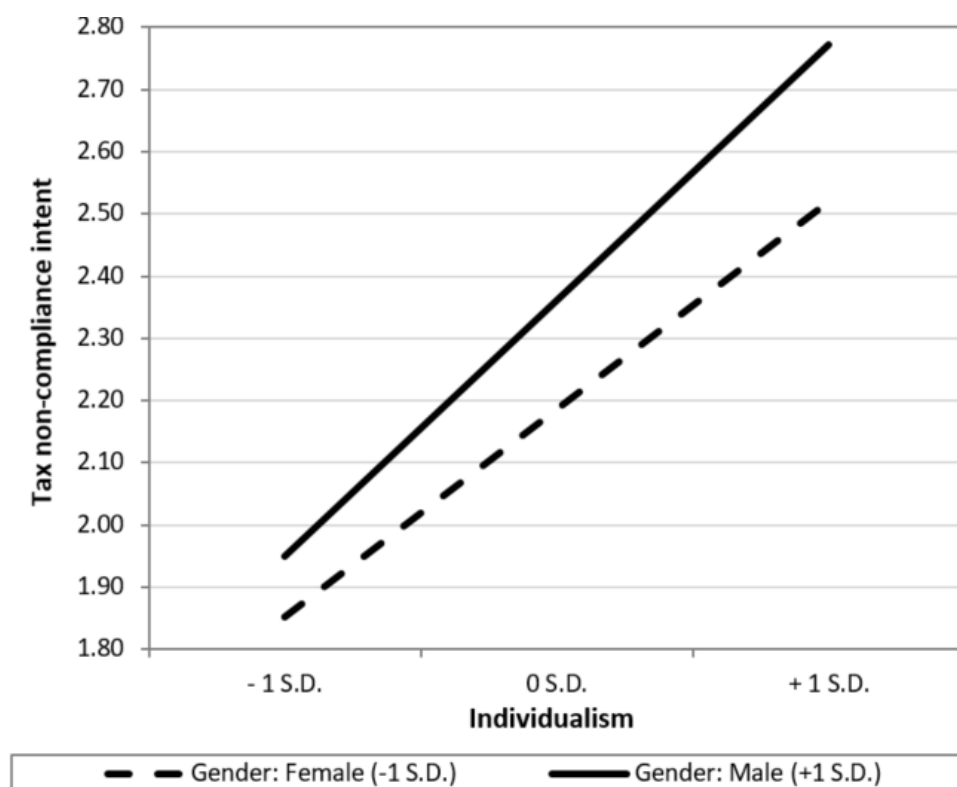


Figure 6. Interaction of individualism and gender on tax non-compliance intent (H4b).

Men are more likely to engage in non-compliance than women. This relationship was enhanced in more individualistic cultures. This supports H4b. H4c posited a relationship between individualism and an individual's income source. As was true of H4a, no significant findings emerged, and H4c was not supported.

The results of all hypothesized relationships are summarized in Table 8.

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Table 8

## Summary of Findings

H	National cultural dimension (L2)	Individual dimension (L1)	L1 direction	Hypothesized relationship	Findings
1a	Masculinity	Age	Older More compliant	negative (-)	<i>H1a</i> <i>marg. sup.</i>
1b		Gender	Female More compliant	negative (-)	<i>H1b</i> <i>supported</i>
1c <sup>a</sup>		Income source	Self-employed Less compliant	positive (+)	not supported
2a	Uncertainty avoidance	Age	Older More compliant	negative (-)	not supported
2b		Gender	Female More compliant	negative (-)	not supported
2c		Income source	Self-employed Less compliant	positive (+)	<i>H2c</i> <i>supported</i>
3a	Power distance	Age	Older More compliant	negative (-)	not supported
3b		Gender	Female More compliant	negative (-)	not supported
3c		Income source	Self-employed Less compliant	positive (+)	not supported
4a	Individualism	Age	Older More compliant	positive (+)	not supported
4b		Gender	Female More compliant	positive (+)	<i>H4b</i> <i>supported</i>
4c		Income source	Self-employed Less compliant	positive(+)	not supported

<sup>a</sup> Statistical analysis showed that H1c was statistically significant; however, interpretation of the finding revealed no meaningful realistic effect on the dependent variable of interest. Therefore, H1c was deemed not supported.



Table 8 highlights the hypotheses related to the cross-level interactions between masculinity and age (H1a), masculinity and gender (H1b), income source and uncertainty avoidance (H2c), and gender and individualism (H4b), and all show some level of statistical significance. However, cross-level interactions between masculinity and income source (H1c), uncertainty avoidance and age (H2a), uncertainty avoidance and gender (H2b), power distance and age (H3a), power distance and gender (H3b), power distance and employment status (H3c), individualism and age (H4a), and individualism and income source (H4c) were not supported.

### **Discussion, Limitations, and Conclusions**

This study contributed to the literature by examining the moderating relationship that national culture has between individual taxpayer determinants and taxpayer compliance intentions. The original Hofstede cultural dimensions (masculinity, uncertainty avoidance, power distance, and individualism) were examined across key profiling variables (age, gender, and income source). Analysis using hierarchical linear modeling showed support for four of the 12 hypothesized relationships and answered the research question of this study: national culture does moderate the relationship between individual determinants and taxpayer compliance intentions. Specifically, supported findings were that the cultural dimension of masculinity had a moderating effect on both age and gender, while individualism moderated gender and uncertainty avoidance moderated income source in regard to tax compliance.

Masculinity was the Hofstede cultural dimension that displayed the most interaction with variables. As results demonstrated, the relationship between both age and gender with tax compliance intentions experienced a negative moderating effect by the masculinity culture trait. Although older individuals are more compliant in general, higher-scoring masculinity cultures (e.g., Japan or South Africa) showed older people had a greater ability to justify non-compliance

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than those in lower-scoring masculinity cultures (e.g., Netherlands or Sweden). The same moderating effect was also observed vis-à-vis gender. The female gender is more compliant; however, the level of compliance is less in countries having a higher-scoring masculinity cultural dimension. Higher-scoring masculinity cultures typically reflect a culture that fosters traits of competitiveness and ambition and strives for material success (Hofstede, 2011). These characteristics, regardless of age or gender, create an increase in non-compliant behavior. The findings prove useful in seeking to profile a compliant taxpayer, and may also prove fruitful when thinking about outsourcing accounting work. For outsourcing purposes, cultures that score lower on the masculinity dimension may provide employees who are more compliant. Specifically looking only at this dimension, an older female located in a lower-scoring masculinity culture should prove to be the most tax compliant.

Perhaps the most exciting moderation effect found in this study was the influence that uncertainty avoidance had between self-employed individuals and tax non-compliance. Self-employed individuals in lower-scoring uncertainty avoidance cultures (e.g., Singapore, Sweden, and Hong Kong) are more likely to be compliant. Alternatively, self-employed individuals in high-scoring uncertainty avoidance cultures (e.g., Uruguay or Japan) are less likely to be compliant than an individual employed for wages in the same country. Acknowledging that lower-scoring uncertainty avoidance cultures are generally less compliant, this cultural dimension provided a significant moderation of the influence of the self-employed demographic trait.

Referencing the first essay of this dissertation, results showed that self-employed individuals were more compliant taxpayers. Reviewing the uncertainty avoidance cultural scores used in this second essay highlight that the U.S. (the sample source from the first essay) fell in

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the middle range of the spectrum. Within this range, as supported by essay two, self-employed taxpayers appear to demonstrate more compliant intentions. Higher-scoring uncertainty avoidance cultures are associated with more complex taxing structures and higher levels of tax evasion, while lower-scoring ones typically have citizens with greater trust in their government (Collins et al., 1992; Hofstede, 1991). This dimension provided support for these statements and added a moderating influence to the self-employed characteristic.

Discussing the fourth supported hypothesis, higher-scoring individualistic cultures are generally less compliant. Building on this, the level of non-compliance by males is moderated in these cultures and taken to an even greater level of deviance. Lower-scoring individualistic cultures (those that would be considered more collectivistic, such as Peru, Trinidad and Tobago), showed minor difference between genders as to levels of compliance. Thus, in lower-scoring individualistic cultures gender is not going to be a useful profiling trait; in contrast, in cultures that are higher scoring (e.g., the U.S. and Australia), the male gender is going to be significantly less compliant because the culture trait moderates the relationship.

Of the 12 posited relationships, four were supported. None of the relationships related to the cultural dimension of power distance showed statistical significance. This is in line with the findings of Hauff et al. (2015), who explored the moderating effect of power distance on the relationship between job security and job satisfaction. Acknowledging that power distance did not show any interaction effect, it is nonetheless important to highlight that the power distance cultural dimension produced a significant direct effect on taxpayer compliance intentions.

A possible explanation for the lack of a moderating effect could be the relationship between income inequality and the power distance cultural dimension. Higher-scoring power distance cultures are more accepting of income inequality (Hofstede, Hofstede, & Minkov,

2010). Furthermore, individuals within high power distance cultures are more likely to justify tax non-compliance compared to similar individuals in lower power distance cultures. As supported by this study, this relationship appeared to hold true regardless of gender, age, or employment status. Therefore, though the power distance cultural dimension does not interact with age, gender, or employment status, this national cultural dimension does still have significant main effects on tax compliance intentions. Essentially, the cultural dimension of power distance has such a strong main effect relationship with taxpayer compliance intentions that its combination with other variables provided no meaningful interaction.

Like power distance, the national cultural dimension of individualism also displayed a significant main effect relationship with taxpayer compliance intentions. Research has supported power distance bearing a strong correlation with individualism (Hofstede et al., 2010). This relationship continued in this study with power distance and individualism being the only two cultural dimensions that maintained direct significance in the fully developed model. The findings also supported a significant interaction between individualism and gender, but hypotheses related to age and employment status were unsupported. As with power distance, it may be possible that the individualism dimension remains so prominent in its main effect influence that there is no possibility for moderation with age and employment status to develop.

Although some support was found for national culture moderating the relationships between individual determinants and taxpayer compliance intentions, this study is not without limitations. The first is that it considered only national culture through the lens of the Hofstede framework. Some researchers feel that the “work is too old and can’t be effectively implemented in the era of rapidly changing environment, convergence, and globalization” (Shaiq, Khalid, Akram, & Ali, 2011, p. 103). It is acknowledged that the data source for much of the Hofstede

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framework is dated; however, the findings and dimensions related to the majority of Hofstede's work continue to be supported, even in recent times (Dwyer et al., 2005; Kirkman et al., 2006; Tung & Verbeke, 2010).

A second limitation of this study related to the gap between intent and action, or what is often referred to as the value-action gap. Research suggested that taxpayers that have an attitude or intent toward non-compliance are likely to act on that desire (Halla, 2012). Webley, Cole, & Eidjar (2001) performed a study that investigated tax evaders and potential evaders and found similar attitudes between the groups, supporting a value-action relationship. As this study relied on secondary data, tax compliance was measured based on a single-item question as to a respondent's ability to justify tax non-compliance. No reason existed to doubt the measure, but the available data provided only a measure of intent and not actual non-compliance. Adding to this, just because taxpayers can justify non-compliance does not mean they will act on said justification, as many governments have put safeguards in place to limit opportunities for non-compliance.

A third limitation of this study related to using the WVS. The WVS survey provided access to a tremendous amount of data, but was gathered primarily by a face-to-face interview process (World Values Survey Association, 2016). The size of the effort to gather the WVS data and the number of countries included made it apparent that slight variations between countries may exist. To help prevent this, the WVS organization had systems in place to maintain the validity of the data.

Another limitation associated with using the WVS data is related to the dependent variable of this study: the respondent's answer to if "cheating on taxes if you have a chance" can always be justified, never justified, or something in between. This single-item measure raises

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concerns, but as it originates from secondary data, few alternatives exist to minimize this limitation. To help provide support for the adequacy of this single-item measure, the first essay of this study included this question in combination with other questions related to tax non-compliance or compliance. The responses from the first essay across all tax compliance questions, including the single-item measure that is also included in the WVS study, were consistent. All answers reflected similar sentiment of the respondents and their ability to justify tax non-compliance intentions. This finding helped minimize concern for this limitation, as support is shown that this single-item measure is appropriate and aligned with other compliance questions.

A final limitation of this study related to the intentionally narrow scope of variables included. This study sought to identify relationships with demographic variables that could be used for profiling purposes, including age, gender, income source, income level, and education level. In the future, this study could benefit from being run with additional control variables, additional predictor variables, as well as additional variables with which culture may interact. This aim for future research is discussed in more detail as follows. As the focus of this study was to look at key demographic variables that could be used for profiling purposes, this limitation is noted and is something that should be considered for future research.

Concerning future research, several avenues exist. First, alternative frameworks such as the Global Leadership and Organizational Behavior Effectiveness (GLOBE) national cultural dimensions should be explored (House et al., 2004). Although conceptually similar to Hofstede's approach, the GLOBE studies incorporated some unique cultural dimensions. Future studies should investigate whether the findings in the current study can be replicated. Specifically, does culture continue to exhibit a moderating influence in alternative frameworks.

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In addition, although not a direct aim of this study, future research needs to continue to analyze the main effect influence that culture has on various tax compliance measures. Post hoc analysis of the main effect influence of the cultural dimensions related to individualism and uncertainty avoidance shows support for additional research in this area.

Second, additional variables can be added to this model. This essay showed that certain dimensions of national culture moderate the relationship between predictor variables and tax compliance. Additional variables, such as the influence of social norms, taxpayer morale, or the effect of enforcement initiatives, could be added. These items have shown promise in other research (Alm & Torgler, 2011; Bobek et al., 2013; Molero & Pujol, 2012) and, in combination with the contributions from this study, may provide a more complete view of the factors that lead to tax compliance, as well as dimensions that may cause moderation.

Third, future cross-level tax compliance research needs to continue to apply statistical methods that are appropriate. HLM is one such avenue that allows for the effects of variables at all levels within the research model to be represented. Finally, this study looked only at a dependent variable that captured the compliance intentions of individual taxpayers. A variety of taxes exists around the world, all of which provide meaningful revenue to their respective governments. A possible avenue for future research would be modifying this study to better understand moderating relationships that might exist with corporate, payroll, or sales taxes. In addition to exploring how culture may moderate predictor variables related to other tax types, future research could replicate this study in a survey or experimental model, while adding additional questions related to individual tax compliance intentions. Though this study has a number of limitations, it is the first one I am aware of to explore the moderating influence of national culture on individual taxpayer compliance intentions. The findings of this essay provide

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a foundation highlighting the importance and significance of various interacting relationships using several national cultural dimensions.

In conclusion, the goal of this study was to identify moderating relationships between individual determinants and taxpayer compliance intentions. The results of the hierarchical linear model employed showed that the cultural dimension of masculinity has a moderating effect on both age and gender, individualism moderates gender, and uncertainty avoidance moderates income source. These findings provided support for the research question that was asked and showed the importance of national culture both directly, as previous research has documented, and in indirect form via moderation. Support for the influence of culture on key demographic variables was found. Noting that the current estimates of global tax evasion are at an alarming 5.1% of the world's GDP (Murphy, 2011), any variable that can contribute to a better understanding of what might be driving non-compliance is useful to both academics and practitioners. This study made such a contribution, showing support for the moderating relationship that culture provides, as part of the quest to comprehend more fully the antecedents of tax non-compliance.



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