

How Government Spending Impacts Tax Compliance

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ABSTRACT

This study examines how government spending affects tax compliance. Results of our study indicate that strong (weak) support for the government's use of tax dollars results in increased (decreased) tax compliance. In addition, audit probability only influences compliance decisions when there is support for government programs; without taxpayer support, compliance is lower regardless of the audit probability. This highlights the importance of gaining taxpayer support for government programs, and that attempts to align the goals of taxpayers with those of the government may increase voluntary compliance among taxpayers. We also examine the influence of ethics and self-interest on taxpayers' compliance decisions. We find that for individuals who are motivated more by self-interest, a high audit rate, as well as support for a program may be necessary to improve compliance behavior.

I. INTRODUCTION

While the federal budget has been publicly available to taxpayers for years, it is virtually impossible for taxpayers to determine how their individual tax dollars are spent. Given taxpayer interest and concern over how the government spends their tax dollars, in 2011 the White House launched a website that produces a “Federal Tax Receipt,” which shows taxpayers how their individual tax dollars are allocated to the various government spending categories. Debates about the proper use of taxpayer revenues are ongoing with some groups even taking formal measures to withhold a percentage of their taxes that corresponds to the amount allocated to programs with which they disagree.¹

Government expenditures for programs such as healthcare, military and social welfare are just a few examples of the controversial topics in current policy debates. Anecdotal evidence suggests that tax compliance often suffers during periods in which government expenditures are controversial (Alm, Jackson, and McKee 1993). Further, the IRS estimates that “people who challenge the system” cost the nation an estimated \$278 billion in unpaid taxes (Barron 2002),

¹ International tax resister groups, such as Conscience and Peace Tax International (CPTI), the National War Tax Resistance Coordinating Committee (NWTRCC) in the U.S., Conscience Canada, as well as religious groups, choose not to fund what they perceive to be violent government activities, such as war or the death penalty. Members of these organizations refuse to pay all or a portion of their taxes because they oppose a government institution and/or its policies.

and with the increasing ease of obtaining information about the budget, some governments have even begun to consider formally recognizing taxpayer objections to certain programs.²

The most recent published Internal Revenue Service (IRS) estimates based on 2006 data, place the net tax gap at \$385 billion per year, which is \$95 billion higher than its prior estimates based on 2001 data. The net tax gap is defined as the amount of true tax liability that is not reported and/or paid on time (i.e., nonfiling, underreporting, and non-payment) and is not paid subsequently, either voluntarily or as the result of enforcement activities. Thus, the net tax gap represents the amount of tax liability that is never paid (IRS 2012). The growth in the tax gap over the five year reporting period was concentrated in the underreporting of income category, which remains the biggest contributing factor to the net tax gap.

Most tax compliance research has focused on understanding the determinants of taxpayer noncompliance and ways to mitigate such behavior. In particular, studies have focused on the economics of the decision to evade, such that the greater the opportunity to evade (i.e., lower audit probability and non-reportable cash sources of income), the lower the level of compliance (Allingham and Sandmo 1972). However, traditional economic models focusing on opportunity and penalties provide only a partial understanding of noncompliance decisions. Other non-economic factors have a strong impact on taxpayer decisions, such as social norms, ethical beliefs, and equity (e.g., Jackson and Milliron 1986; Alm, McClelland, and Schulze 1992; Cialdini and Trost 1998; Alm, McClelland, and Schulze 1999; Wenzel 2005; Bobek, Hageman,

² Campaigns in the Canadian House of Commons, the U.S. House of Representatives, and the Parliament of the Commonwealth of Australia, for bills objecting to the use of taxes for military purposes have been garnering support. The Conscientious Objection Act, Canadian Bill C-363, and the Religious Freedom Peace Tax Fund bill, H.R. 2377, would amend existing law to permit taxpayers conscientiously opposed to participating in war to have their tax payments spent on any governmental program that does not fulfill a military purpose (see <http://consciencecanada.ca> and <http://www.peacetaxfund.org>).

and Kelliher 2013). In fact, it has been argued that the level of noncompliance should be higher given the historically high economic incentives (i.e., low probability of audit), and as such, researchers should focus on social and psychological reasons as to why taxpayers choose to comply despite the economic incentive to evade (Slemrod 1992).

Researchers often have referred to these non-economic motivations for tax compliance under the umbrella of “tax morale,”³ which includes nonmonetary motivations for tax compliance that do not follow the Allingham and Sandmo (1972) economic model. Luttmer and Singhal (2014) identify several channels through which tax morale operates, including *reciprocity* (other than direct tax-benefit linkages), which depends on the taxpayer’s relationship with the government (public goods) or fairness perceptions⁴ They call for future research to leverage tax morale to improve compliance, in particular field and experimental studies, which can directly manipulate the tax morale channels.

In an effort to further understand tax compliance behavior and find ways to mitigate noncompliance, we examine the impact of goal congruence in the context of how tax dollars are allocated to pay for government programs. Alm, McClelland, and Schulze (1992) argue that theoretical and experimental work ignores much evidence that tax compliance depends in part upon the use of tax revenue. Thus, we focus on how tax dollars are spent and the incongruence created when the government’s allocation does not coincide with the taxpayer’s personal views about government policies.

³ See Torgler (2007) and Luttmer and Singhal (2014) for a detailed discussion of “tax morale”.

⁴ Other channels include intrinsic motivation to pay taxes (i.e., pride, honesty, altruism); peer effects and social influences; cultural factors; and information imperfections and deviations from expected utility (i.e., misperceptions of audit probability, loss aversion, overweighting small probabilities).

We posit that taxpayers who experience low goal congruence (i.e., do not support how tax dollars are spent) will report lower taxable income than those who experience high goal congruence (i.e., support how tax dollars are spent). Furthermore, we examine the potential moderating effects of goal congruence on tax audit probability. We also examine the impact of an individual dispositional measure of ethics, because, as suggested by Al-Khatib, Rawwas, and Vitell (2004), the individual is the correct unit of analysis when investigating an ethical issue since it is the individual's "personal" code of ethics that ultimately influences his/her behavior. In addition, Alm and Torgler (2011) argue that to fully understand an individual's compliance decision, some form of ethical dimension must be considered. Further, Bobek, Hageman, and Kelliher (2013) find that personal norms (individual standards for one's own behavior) are one of only two types of social norms to directly influence tax compliance behavior.⁵

Our findings offer several contributions. We provide the first experimental evidence of the joint impact of goal congruence and the probability of an IRS audit on taxpayers' compliance decisions. While prior research has examined probability effects (e.g. Allingham and Sandmo 1972; Witte and Woodbury 1985; Dubin and Wilde 1988; Fischer, Wartick, and Mark 1992; Carnes and Englebrecht 1995; Martinez-Vazquez and Rider 2005), no prior studies, to our knowledge, have examined audit probability in conjunction with a tax policy-specific individual difference variable such as goal congruence. Our results suggest that the audit probability/tax compliance relation is moderated by the extent of taxpayers' goal congruence with government spending of tax revenues. Specifically, we find that audit probability does (does not) influence compliance decisions when taxpayers support (do not support) government programs. This result

⁵ Subjective norms (the expectations of close others) also directly influence tax compliance decisions. However, injunctive and descriptive norms (general societal expectations and other individuals' actual behavior, respectively) have only an indirect influence.

highlights the importance of policymakers' attempts to gain taxpayer support for government programs.

Our study is also the first to develop a tax policy-specific dispositional measure (goal congruence) and provide evidence of its impact on taxpayers' compliance decisions. In this way, we extend prior experimental tax research on individual differences related to tax compliance by linking tax policy-specific individual differences to taxpayers' reporting decisions. Further, the results on our dispositional ethics control variable, Machiavellianism, may also be of interest to policymakers. Our results suggest that it may take more than just increasing the audit probability to improve compliance for less ethical individuals. Given that these individuals tend to be more motivated by self-interest, they may need more convincing about how they personally benefit from government spending of their tax dollars.

The remainder of this paper is organized as follows. The next section provides the theory and hypotheses. The third section describes the research method. Results are presented and discussed in the fourth section. Implications and conclusions are provided in the final section of the paper.

II. THEORETICAL BACKGROUND AND HYPOTHESES

Taxpayer Compliance

Many tax systems, such as those found in the U.S., Australia, and Canada are voluntary compliance systems, whereby taxpayers self-report their taxable income. Some income and deduction information is known to the government via specific tax agency reporting forms such as Form 1099 or Form W-2. However, other information is private, and is only known to the government if the taxpayer voluntarily reports it on his or her tax return (e.g., tips and other cash income). This results in an information gap between the taxpayer and the government.

The traditional focus of noncompliance in the tax evasion literature⁶ has been to examine the economic and deterrence variables related to the decision to comply rather than the social or psychological aspects. Economists view compliance as a rational economic decision made under uncertainty, whereby the decision to evade is a gamble with a payoff of lower taxes paid, with the probability of audit and detection resulting in higher taxes paid with penalties and interest (Allingham and Sandmo 1972; Becker 1968).

A key economic determinant of noncompliance cited in previous tax evasion literature reviews (e.g., Jackson and Milliron 1986; Cuccia 1994) is the probability of detection, or the likelihood that the tax-collecting agency will discover a taxpayer's noncompliance, which can help minimize the information gap between the taxpayer and the government. The probability of detection can be enhanced by increasing the probability of a tax return audit. Previous studies have suggested that taxpayers decrease evasion (i.e., increase compliance) behavior as the probability of an audit increases; that is, increased audit probability has a significant deterrent effect on tax evasion (e.g., Allingham and Sandmo 1972; Witte and Woodbury 1985; Dubin and Wilde 1988, Fischer, Wartick, and Mark 1992; Carnes and Englebrecht 1995; Martinez-Vazquez and Rider 2005; Richardson 2006).

Goal Congruence

While the earlier models used in tax compliance studies focused on the economic rationale for tax evasion using expected utility theory, many studies provide evidence of higher levels of income reporting than expected utility theory would predict (Alm 1998). Researchers have noted that compliance cannot be entirely explained by the level of enforcement since, even

⁶ See Cowell (1990), Andreoni, Erard, and Feinstein (1998), Alm (1999), and Slemrod and Yitzhaki (2002) for detailed discussion and review of the standard evasion model.

with very low probabilities of detection, many individuals still choose to comply thereby rendering their compliance decisions as economically irrational (Graetz and Wilde 1985).

Torgler (2002, p. 658) notes that:

“The question of tax morale has more to do with why people do not cheat rather than why they do. Most people pay their taxes. Tax compliance is the finally observed action. Complying or not is not only a function of opportunity, tax rates, and probability of detection, but also a function of an individual’s willingness to comply or evade.”

Luttmer and Singhal (2014) also call for future research to focus on tax morale and motivations to comply. They categorize tax morale within five general areas: intrinsic motivation, reciprocity, peer effects and social influences, cultural factors, and information imperfections and deviations from utility maximization.

As a result, researchers have examined the effects of individual attitudes, biases, social norms, and external influences as potential explanations of tax noncompliance (e.g., Gordon 1989; Alm, McLelland, and Schulze 1992; Erard and Feinstein 1994; Maroney and Rupert 2001; Bobek and Hatfield 2003; Bobek, Hageman, and Kelliher 2013). Similarly, in an effort to further understand taxpayer behavior and find ways to mitigate tax evasion, we examine the impact of goal congruence in the context of *how* taxpayer dollars are spent by the government and the disconnect created when the government’s allocation does not coincide with the taxpayer’s preferences or personal interests. Our concept of goal congruence would be included within Luttmer and Singhal’s *reciprocity* channel. In particular, they note that “Compliance may also be affected by the types of government services that are funded by tax revenues and how these are viewed by the taxpayer” (Luttmer and Singhal 2014, p. 157). They also suggest that a taxpayer’s willingness to comply may depend on the use of tax revenues raised.

While taxpayers receive government benefits from taxes paid, their personal interests may put them at odds with how their tax dollars are ultimately spent by the government. Specifically, taxpayers may not directly benefit from all of the programs to which tax revenues are allocated, and they likely have varying beliefs about the effectiveness and value of each particular program. As a response to such concerns, the White House recently launched a “Federal Tax Receipt” website, which allows taxpayers to input their individual tax information and then produces a receipt personalizing how the government allocates their revenue. Thus, it has become increasingly easier for taxpayers to be informed about how their individual tax revenues are spent. Further, social media outlets (i.e. Facebook, Twitter) have drawn attention to controversial programs that receive government funding. In their study on compliance and public goods, Alm, Jackson, and McKee (1993) find that the level of popular support for a public good impacts the level of compliance. Their results suggest that if individuals believe in and are strongly in favor of a specific government program, and they are aware that other taxpayers share their support for the program, then individuals are more likely to comply.

Accordingly, we propose that in certain instances goals may not be aligned between the government and the taxpayer, providing taxpayers with a potentially justifiable (based on taxpayers’ personal views) incentive to cheat on their taxpaying responsibilities. Recent examples of misaligned goals are illustrated with growing groups who are intensely opposed to how tax dollars are spent by the government (e.g., tax resisters and conscientious objectors). The U.S. National War Tax Resistance Coordinating Committee estimates that about 10,000 people “resist” paying taxes in protest against military spending (USA Today 2006). Tax resisters often pay a portion of their taxes, but “deduct” an amount related to the spending with which they do not agree. Accordingly in a tax setting, goal congruence may not be an “all-or-nothing” variable,

but rather taxpayers may have varying levels of opposition with the tax system. Thus, we hypothesize that taxpayers with low goal congruence (those who oppose or disagree with how tax dollars are spent) will be less likely to comply than taxpayers with high goal congruence (i.e., those whose goals are more closely aligned with the government):

H1: Taxpayers who experience low goal congruence will be less likely to comply than taxpayers who experience high goal congruence.

The Moderating Role of Goal Congruence on Audit Probability

As noted earlier, compliance cannot be entirely explained by the level of enforcement since, even with very low probabilities of detection, many individuals still choose to comply. In his review of the economics of tax compliance, Cuccia (1994) discusses the effects of noneconomic factors of compliance, such as attitudes and other contextual features. He notes that they often may moderate the predictions of economic models. We, therefore, consider goal congruence and its potential moderating effect on a key economic variable shown to play a significant role in individuals' tax evasion judgments: the probability of an IRS audit.

We expect low goal congruence to dampen the previously observed deterrent effect of increased tax audit probability on tax evasion (e.g., Allingham and Sandmo 1972; Witte and Woodbury 1985; Dubin and Wilde 1988; Fischer, Wartick, and Mark 1992; Carnes and Englebrecht 1995; Martinez-Vazquez and Rider 2005). Given our expectation that (relative to taxpayers facing high goal congruence) taxpayers experiencing low goal congruence will already be more inclined to evade taxes, we expect that taxpayers experiencing low goal congruence will be less affected by the previously observed effect of increased audit probability.

Taxpayers with low goal congruence are expected to act in accordance with their own beliefs irrespective of the audit probability, and an increase in the audit rate will have less of an impact for this group. That is, the noneconomic (psychological) effect of low goal congruence

will moderate the ability of audit probability to minimize tax evasion for those that oppose or disagree with how the government spends tax revenues. Accordingly, we hypothesize an interactive effect between goal congruence and audit probability:

H2: Increases in audit probability will have less impact on compliance decisions when goal congruence is low than when it is high.

Ethics and Self-Interest

In light of the “puzzle of tax compliance” to determine *why* people pay taxes, rather than *rationally* evade, we must also consider an individual’s self-interest. Alm (1991), suggests that certain taxpayers will truthfully report their tax liability (even when they have the motivation or opportunity to cheat), because they believe that tax evasion is wrong. In addition, Alm and Torgler (2011) argue that individuals do not always behave as selfish, rational, and self-interested, but rather motivated by other “ethical” factors, such as morality, altruism, and fairness. Given that ethics differ across individuals, Alm and Torgler suggest that compliance studies should incorporate this dimension in the decision-making process.

Christie and Geis (1970) develop a test for assessing an individual’s level of Machiavellianism, a personality construct, which measures the tendency of an individual to detach from ethical considerations and perform actions that profit the self (Schepers 2003; Hartmann and Maas 2010).⁷ Machiavellianism is also characterized by a focus on unmitigated achievement and a general belief that “the ends justify the means” (Cristie and Geis 1970; Wakefield 2008). High Machiavellian individuals (compared to low Machiavellian individuals)

⁷ Niccolo Machiavelli was a 16th century diplomat and writer. The term “Machiavellianism” was inspired by his writings in *The Prince* which have been interpreted as a philosophy that one may resort to any means to preserve authority. Christie and Geis (1970) developed the original Machiavellianism scale based on these writings.

display a stronger tendency to reject ethical norms in order to accomplish a goal (Christie and Geis 1970; Wakefield 2008). Specifically, when faced with an ethical dilemma, high Machiavellian individuals are more calculating and rely less on ethical principles or social standards than low Machiavellian individuals in making their decisions (Christie and Geis 1970; Corzine and Hozier 2005; Hartmann and Maas 2010). Conversely, low Machiavellian individuals are more likely to react to problems more emotionally than high Machiavellian individuals and are more concerned about social duty and the potential violation of professional and ethical standards associated with a decision (e.g., Kleinman, Palmon, and Lee 2003; Schepers 2003; Hartmann and Maas 2010).⁸

Given that the tax compliance decision is an individual choice, we include the Machiavellian construct in our study to control for the varying degree of self-interest across individuals. Since high Machiavellian individuals often exhibit a strong focus on winning at any cost and tend to be deceitful and insensitive to moral and societal norms (e.g., Jones and Paulhus 2009; Hartmann and Maas 2010), it is reasonable to expect that Machiavellianism will directly influence how taxpayers approach their compliance decisions (e.g., Wrightsman 1991). That is, high Machiavellian taxpayers will be less concerned about social duty and ethical standards associated with their tax compliance decision and more focused on their own interests (i.e., minimizing their tax liability) than low Machiavellian taxpayers, who will be more concerned

⁸ Studies employing the Machiavellianism construct show that it often plays a significant role in influencing work-related outcomes such as job strain (e.g., Heisler and Gemmill 1977) and job satisfaction (e.g., Corzine, Buntzman, and Busch 1999). Machiavellianism has been studied in many settings, including marketing (Hunt and Chonko 1984), banking (Corzine, Buntzman, and Busch 1999), and the legal profession (Valentine and Fleischman 2003), among others. In management accounting decision settings, higher (lower) Machiavellianism is associated with more (less) aggressively negotiated transfer prices (Ghosh 2000) and more (less) creation of budgetary slack (Hartmann and Maas 2010).

about social duty (i.e., paying their fair share) and avoiding behavior that conflicts with professional and/or ethical standards. Supporting this notion, Ghosh and Crain (1995, 1996) find that high (low) Machiavellianism scores of undergraduate students placed in the role-playing context of a taxpayer are associated with more (less) intentional tax noncompliance.

The Moderating Role of Goal Congruence on Machiavellianism

As mentioned previously, high Machiavellian taxpayers will be more focused on their own interests than low Machiavellian taxpayers. In situations where a taxpayer has higher goal congruence with the tax system, high Machiavellian taxpayers have competing self-interests. That is, they directly benefit from tax minimization, but they also indirectly benefit from the use of tax revenues toward a program they support. As such, we posit that goal congruence will moderate the effects of Machiavellianism such that high goal congruence will taper the effects of high Machiavellianism (unethical behavior / evasion).

Low Machiavellian taxpayers should be more concerned about their social duty as taxpayers and be more reluctant to engage in noncompliant or unethical behavior (Christie and Geis 1970; Sakalaki et al. 2007). This is consistent with Alm (1991), who suggests that certain taxpayers will truthfully report their tax liability (even when they have the motivation or opportunity to cheat), because they believe that tax evasion is wrong. Thus, low Machiavellian taxpayers will make decisions that are more conditioned by their emotions and internalized ethical principles, and goal congruence should have less impact on their compliance decisions.

Conversely, high Machiavellian taxpayers' decisions to engage in intentional noncompliance will be more directly motivated by self-interest. That is, high Machiavellian taxpayers should behave in a manner more consistent with their self-interest, particularly when

there is a low probability of audit (Ghosh and Crain 1996).⁹ High Machiavellian taxpayers with low goal congruence are less likely to comply than those with high goal congruence since they benefit both from minimizing taxes as well as paying less of their tax dollars toward a program they do not support. High Machiavellian taxpayers with high goal congruence have competing incentives to minimize taxes but also to pay taxes toward a program they support.

In summary, we posit that goal congruence will have less impact on low Machiavellian taxpayers, who are motivated by ethics than high Machiavellian taxpayers, who are motivated by self-interest. Therefore, we propose the following hypothesis:

H3: The compliance differences between high and low Machiavellian taxpayers will be greater when goal congruence is low than when it is high.

III. METHODOLOGY

Participants

Participants included 303 national taxpayers. Experimental materials (described below and included in the Appendix) were distributed electronically via Qualtrics survey software.¹⁰ Qualtrics, a third-party online survey administration company, solicits participation from a nationwide panel of adults over the age of 21.¹¹ Participants were compensated by Qualtrics with

⁹ Unlike Ghosh and Crain (1996), who asked undergraduate students with “in-class” tax compliance experience to indicate their *perceived* probability of an audit, we manipulate the probability of an IRS audit. This is consistent with the real world IRS practice of publicizing the audit rates of different taxpayer groups, income levels, etc. (e.g., Schepanski and Kelsey 1990; Beck, Davis, and Jung 1991; White, Harrell, and Harrison 1993). However, it is important to note that Ghosh and Crain (1996) find that high Machiavellian undergraduate students were more likely to underreport taxes when they perceived a lower audit probability.

¹⁰ This study has been granted approval by the Institutional Review Boards at the authors’ universities.

¹¹ Brandon et al. (2014) lists Qualtrics as one of the most frequently used and well-suited commercial participant recruitment services for behavioral accounting research. They list eight recent (2012-2013) publications that have reported usable responses via a Qualtrics panel.

“survey cash,” credits that are converted into monetary compensation after participating in the research study.

Table 1 provides demographics for the participants. The average age of the participants was 44.26 years old (range 21-87). Participants had a mean of 20.65 years of full-time work experience. Fifty-two percent were male. Participants represented a variety of income levels with 20.4 percent earning income under \$30,000, 54.7 percent earning income between \$30,001 and \$75,000, and 24.8 percent earning income over \$75,000. Seventy-four participants (24.4 percent) indicated that they either were currently or previously self-employed, and 39 participants (12.9 percent) indicated their tax return had been audited in the past. There were no significant differences between groups on any of the demographic questions.

Insert Table 1 Here

Research design

We employed a 2 x 2 x 2 research design with one manipulated independent variable (audit probability; high and low) and two measured (elicited) independent variables (goal congruence and Machiavellianism), which were split at the median to form a high and low category for each variable. Participants read a scenario about a hypothetical taxpayer who earned cash from self-employment and were told to assume either a low or high probability of audit. They were asked to put themselves in the position of the hypothetical taxpayer and to think about their views concerning tax dollars being used to fund national defense programs.¹² Participants then recorded the amount of income that they would report on their tax return. Finally,

¹² Participants also made a second decision, which focused on their views about tax dollars being used to fund healthcare programs. The order of the two federal programs was varied between subjects, and a distractor task (answering demographic questions) was placed between the scenarios. No significant order effects were found. Results for the healthcare program are qualitatively similar to the defense variable and are not reported.

participants answered a series of questions related to their agreement with national defense programs (goal congruence), completed the Machiavellianism questionnaire and provided demographic information.

Independent variables

Goal congruence can be represented by the degree to which a taxpayer agrees with the government's allocation of tax revenue to particular programs. Participants were informed that approximately 20 percent of the total federal budget is used to fund national defense programs, and they were reminded that when a taxpayer pays more tax, more of their tax dollars go to defense programs. In this experiment, goal congruence is measured by summing participants' agreement (on seven-point Likert scales) with the following three statements (1) the way the government spends tax dollars on defense programs is effective, (2) defense programs are important, and (3) I support a percentage of my tax dollars going to support the current defense program.

Our measure of ethics, Machiavellianism, is measured via the 20-item Mach IV scale (Christie 1970) that has been used in numerous psychology studies, and more recently in accounting research (i.e., Ghosh and Crain 1996; Pope 2005). The Mach IV scale measures one's propensities toward Machiavellian-type behavior. The Mach IV score ranges from 40 to 160 points. The higher the Mach IV score, the more likely the participant agrees with the writings of Machiavelli, which implies that the participant aims to do whatever is necessary to advance their own goals without regard for ethics (Nelson and Gilbertson 1991 cf; Lowe and Reckers 2012). Individuals high on the Machiavellianism measure are more likely to employ aggressive, manipulative, exploiting, and devious tactics to achieve personal objectives (Rayburn and

Rayburn 1996; Tang and Chen 2010 cf; Lowe and Reckers 2012). These individuals are driven primarily by self-interest and not by social responsibility (Lowe and Reckers 2012).

Audit probability is manipulated as either low (1%) or high (55%). These audit rates have been successfully used in prior research (e.g., Schepanski and Kelsey 1990; Beck, Davis, and Jung 1991; White, Harrell, and Harrison 1993). The higher rates are representative of certain subgroups of taxpayers who are selected more frequently for audit, such as those who are independent contractors, self-employed or tip-earners. Participants are told that since the self-employment income was paid to the hypothetical taxpayer in cash, the IRS will not be aware of it unless the tax return is audited and the income is discovered. They are also told that if the income is discovered, there may be interest and penalties on the unpaid tax, which may include fines and/or imprisonment.

A multitude of other factors have been examined for their influence on tax compliance, including ethical views about evading taxes (sometimes referred to as moral obligation), perceptions of fairness of the tax system, and a desire for tax return accuracy (e.g., Scott and Grasmick 1981; Kaplan and Reckers 1985; Hite 1988; White, Harrell, and Harrison 1990; Porcano and Price 1992; Hite and Roberts 1992; Reckers, Sanders, and Roark 1994; Roberts 1994; Wartick 1994; Maroney, Rupert, and Wartick 2002; Bobek and Hatfield 2003). Thus, additional questions regarding the influence of these commonly examined factors were also included in our analyses and the major findings are unchanged.

Dependent variables

Participants were asked how much of the \$45,000 income earned by the hypothetical taxpayer they would report if they were in a similar situation to the hypothetical taxpayer.

Participants recorded their responses on a sliding scale from \$0 to \$45,000, where the scale was

marked in \$5,000 increments. Using a hypothetical scenario and having the participant put him/herself in the position of the taxpayer allows us to control for the taxpayer's characteristics yet isolate the participant's perceptions related to goal congruence and Machiavellianism.

IV. RESULTS AND DISCUSSION

Experimental results

The hypotheses are tested using a 2 x 2 x 2 between-groups analysis of variance (ANOVA), with independent variables goal congruence (low support or high support for a program), Machiavellianism (low or high), and audit probability (low or high).¹³ Recall that goal congruence is represented by the sum of three questions related to defense programs and can range from three to 21. Participants had a mean score of 13.88, and were split at the median of 15 into low (mean 10.4) and high (mean 17.3) support for the program ($\alpha = 0.83$). Recall that Machiavellianism scores can range from 40 to 160 with higher scores indicative of greater self-

¹³ Consistent with prior research in accounting (e.g., Boylan and Sprinkle 2001; Beaudoin, Cianci, and Tsakumis 2015) and psychology (e.g., Ruwaard, Lange, Broeksteeg, Renteria-Agirre, Schrieken, Dolan, and Emmelkamp 2012; Hutton, Kelly, Lowens, Taylor, and Tai 2013), we performed our analyses using the ranks of the reported dollar amount observations as the dependent variable rather than the reported dollar amounts because the reported dollar amounts are not normally distributed (which violates one of the assumptions upon which ANOVA is based). Specifically, the Shapiro-Wilk test for normality indicated that the reported dollar amounts for all conditions are not normally distributed (all $p < 0.0001$). Accordingly, an ANOVA conducted using a rank transformation of the reported dollar amounts is likely to be more efficient (powerful) and theoretically more appropriate than an ANOVA conducted using the actual reported dollar amounts (Conover and Iman 1982; Boylan and Sprinkle 2001). Analyses conducted using the actual reported dollar amounts yield results that are qualitatively similar to those reported in the paper.

interest. Participants scored a mean of 90.51 on the scale, and were split at the median of 91 into low Mach (mean 78.54) and high Mach (mean 102.62) categories ($\alpha = 0.78$).¹⁴

The mean likelihood judgments and the results of the corresponding ANOVA are presented in Table 2.¹⁵ Table 2 indicates a significant main effect for goal congruence (F -statistic=5.83, $p = 0.008$, one-tailed), and a significant main effect for Machiavellianism ($F=36.19$, $p < 0.001$).¹⁶ Table 2 also indicates one marginally significant and one significant two-way interaction: Goal congruence x audit rate ($F=2.28$, $p=0.065$ one-tailed) and Machiavellianism x audit rate ($F=6.88$, $p=0.009$, one-tailed).¹⁷ The means for these results and the implications for each hypothesis are discussed below.

Insert Table 2 Here

The means for the significant effects are presented in Table 3. Panel A indicates that participants reported less income when they felt low support for a tax program (mean=\$34,080.32, s.d.=1058.64) than when they felt high support (mean=\$38,183.44, s.d.=1063.73). Specifically, taxpayers who agree with the government's use of their tax dollars report more income than those who do not. This significant main effect supports H1. H2 predicts that

¹⁴ The Cronbach alpha values (for both goal congruence and Machiavellianism) exceed the standard for satisfactory scale reliability (i.e., 0.70; see Kline 1999; Nunnally and Bernstein 1994). In comparison, the mean (median) Mach score in the Ghosh and Crane (1996) study on tax compliance was 86.76 (86).

¹⁵ Some participants did not provide responses to every question. All participants who responded are included in all analyses. All participants passed both the goal congruence and audit probability manipulation checks.

¹⁶ An alternative ANOVA with goal congruence and Machiavellianism scores as continuous (covariate) measures also shows significant main effects for both variables at $p < 0.001$. Specifically, compliance increases as support for a program increases and as Machiavellianism decreases.

¹⁷ There were 74 participants who answered "yes" to the question whether they had ever been self-employed. This variable was significantly correlated with the dependent variable at $p=0.09$. Results were statistically similar when this variable was included in the ANOVA as a covariate.

the effect of goal congruence will be moderated by the audit rate. Results indicate that when the taxpayer supports a program, a higher audit rate increases income reporting (low audit rate mean \$37,034.34 vs. high audit rate mean \$39,332.51). However, when the taxpayer has low support for a program, a higher audit rate does not improve compliance. In fact, it has the opposite effect (low audit rate mean \$35,146.04 vs. high audit rate mean \$33,014.59).¹⁸ Importantly, this indicates that policy efforts aimed at increasing the audit rate may not be beneficial if the taxpayer does not find value in a program.

Insert Table 3 Here

The means for Machiavellianism provided in Table 3 provide validation for our general ethics construct. That is, taxpayers who score lower on the MACH IV scale (exhibit lower self-interest, i.e., more ethical behavior) report more income than taxpayers who score high on the MACH IV scale (means \$39,932.58 and \$32,331.18, respectively). This result provides evidence that the findings by Ghosh and Crain (1996) for student participants generalizes to other taxpayers. While not hypothesized, this effect is moderated by the audit probability as shown by the significant interaction in Table 2. Specifically, differences for low and high MACH taxpayers are less pronounced when the audit rate is high (low Mach mean \$37,705.57 vs. high Mach mean \$34,641.53) than when it is low (low Mach mean \$42,159.58 vs. high Mach mean \$30,305.57). In summary, taxpayers are most likely to report income when it is not directly observable by the tax-collecting agency, such as with cash or other undocumented transactions, when (1) taxpayers support a program (goal congruence is high) and (2) taxpayers are more concerned with social incentives and ethical considerations. Further, the audit rate moderates both of these effects.

¹⁸ Consistent with this finding, research has found that deterrence-based compliance measures sometimes can be counterproductive (Murphy 2005).

The interaction effects of Machiavellianism and goal congruence as predicted by H3 are not significant. However, the ANOVA results in Table 2 indicate a significant three-way interaction between goal congruence, Machiavellianism and audit rate ($F=4.12$, $p=0.043$, two-tailed). As indicated in Figure 1, the interaction predicted by H3 is significant when the audit rate is high. High Machs tend to take advantage of situations that benefit themselves. When taxpayers support a program, there are competing benefits of minimizing taxes and supporting a program through tax payments. As the audit rate increases, high Machs may be more willing to trade the riskier direct benefit of minimizing taxes with the less direct benefit of support toward a program. On the other hand, low Machs are driven by social incentives and ethical considerations. Thus, support of a program influences their reporting behavior similarly for both low and high audit rates. Means for this three-way interaction are reported in Table 3, Panel C.

Insert Figure 1 Here

Additional analysis

In an effort to better understand factors that influence taxpayer reporting decisions, two additional analyses were performed. Participants were asked to rate the relative importance of six factors that have been shown to be important to tax compliance behavior (e.g. see Bobek and Hatfield 2003 for commonly mentioned factors by taxpayers). These factors include fairness of the tax system (Fairness), trust in the government (Trust), a desire to reduce taxes (Reduce), a desire for accuracy (Accuracy), a desire to avoid the IRS (Avoid IRS), and a desire to support favored programs (Support). After the compliance decision, participants rated each factor on a scale from 1 (very little relative influence) to 10 (very strong relative influence) for how much their compliance decision was influenced by that factor. Further, since moral obligation has been shown to be a factor in compliance decisions (e.g. Kaplan and Reckers 1985; Roth et al. 1989;

Hanno and Violette 1996; Reckers et al. 1994; Bobek and Hatfield 2003), participants were also asked to respond on a scale from 1 to 7 (for consistency with other studies) whether they believe tax evasion is morally wrong in any amount.

For analysis, participants were dichotomized into two groups based on whether or not they fully complied with the reporting decision. Of the 303 participants, 172 (131) reported the full (less than) \$45,000 of taxable income. As reported in Table 4, the two groups differed significantly on the relative influences of each of the six factors, the moral obligation question and the three support questions (maximum $p=0.004$). Compliers rated Accuracy and Avoid IRS significantly higher than non-compliers. In fact, these factors were rated more importantly than other factors by compliers (mean of 9.45 and 8.79, respectively while other factors ranged from 5.48 to 6.05). Alternatively, non-compliers rated Fairness, Trust, Reduce and Support significantly higher than compliers. Similar to the compliers, the non-compliers rated Avoid IRS as high in relative influence (mean 7.89), but unlike compliers, Reduce and Support were rated similarly high in relative influence (means 7.76 and 6.83, respectively). Non-compliers showed less agreement than compliers with the question regarding whether tax evasion was morally wrong (means 4.76 vs. 6.36, respectively). Finally, compliers were more likely than non-compliers to support defense programs (mean 14.67 and mean 12.86, respectively). These results not only confirm the importance of many of these factors from prior research, but also further emphasize the importance that support for a program has on compliance decisions. That is, the non-compliers' greater desire to assure tax dollars go to supported programs combined with their lower support for defense programs helps explain their behavior.

Insert Table 4 Here

The second analysis is used to better understand the characteristics of Machiavellian individuals in relation to tax compliance decisions. For this analysis, the same factor ratings were compared for the low Mach and high Mach participants (see Table 5). High Machs relative to low Machs had the same pattern for all factors as non-compliers did to compliers. While Machiavellianism was not a perfect predictor of compliance behavior, non-compliers were more likely to be high Machs (90 out of 131; 69 percent), and compliers were more likely to be low Machs (108 out of 172; 63 percent). Specifically, compliers had a mean Mach score of 96.08 (s.d. 13.39) while non-compliers had a mean Mach score of 86.27 (s.d. 14.26).

Insert Table 5 Here

V. IMPLICATIONS AND CONCLUSIONS

In the current political environment where tax programs and spending can be extremely polarizing, it is important to examine how perceptions about how the government uses tax dollars can influence compliance behavior. This study provides a better understanding of the interacting relationships between three individual and environmental factors associated with taxpayer compliance behavior: goal congruence, Machiavellianism and audit probability. Much of the prior research has focused on the causes and influences of tax evasion, as well as deterrents to this behavior; however, none has focused on the noneconomic (psychological) influence of goal congruence, particularly as an alternative to encouraging compliant behavior by means of aligning taxpayers' goals with those of the government. We experimentally examine the separate and interacting influences of goal congruence, Machiavellianism and audit probability in an effort to provide additional explanations as to what motivates taxpayers to comply.

Our results provide support for the hypothesis that goal congruence influences taxpayer compliance decisions. Interestingly, we also find that the audit probability only influences taxpayer compliance decisions when there is support for the government's use of tax dollars. When taxpayers do not support government programs, their compliance is lower regardless of the audit probability. This highlights the importance of gaining taxpayer support for government programs and that attempts to align the goals of taxpayers and the government may be fruitful. Thus, programs such as The Conscientious Objection Act and the Peace Tax Fund Bill, may increase voluntary compliance among taxpayers. Furthermore, taxpayers may not perceive any direct benefit from the government's use of tax revenues, or may be strongly opposed to the government's allocation and use of tax revenues. These issues may be dealt with by providing taxpayers with a better understanding of why they are being taxed and how they benefit from government spending of tax revenues. The "Federal Tax Receipt" website launched by the White House may be a good start, but it provides only limited information about each spending category and is more descriptive (what the category is) than educational (why/how the spending for it is beneficial). Further, these results are in line with prior research's link of perceptions of fairness or equity and taxpayer evasion (e.g., Lundstedt 1976; Spicer and Becker 1980; Hite and Roberts 1992), and are consistent with Alm, McLelland, and Schulze (1992), who conclude that there are limits on how much government can affect compliance by increasing the individual payoff to tax payments, and their results suggest that, "...government can increase compliance by providing goods that their citizens prefer more, by providing these goods in a more efficient manner, or by more effectively emphasizing that taxes are necessary for receipt of government services." Consistent with this logic, we find the non-compliers rated fairness and trust in the government as more important factors in their compliance decisions than non-compliers. While

we did not gather information concerning *how* fair these individuals perceived the tax laws and *how much* trust they actually had in the government, the findings suggest that for some individuals these factors have a large impact on compliance decisions. We also find that for certain individuals who are motivated more by self-interest (high Machs), a high audit rate as well as support for a program may be necessary to improve compliance behavior.

While non-compliance behavior due to individual characteristics, such as Machiavellianism and moral obligation perceptions, are not as easy to address through policy changes, findings related to the interaction of these factors with audit probability provide additional insights for policy makers. Specifically, it may take more than an increased audit rate to improve compliance for certain individuals. High Mach individuals, who are more motivated by self-interest, will take more convincing about how they will benefit from tax spending.

This study is subject to certain limitations common to experimental research. Although we designed the experimental materials to represent a realistic taxpayer situation, participants were required to provide reporting decisions based on a hypothetical tax scenario.¹⁹ A second limitation is the focus of income reporting, rather than expense reporting. Future research should advance our understanding of tax evasion by including not only items of income, but also deduction items.

This study provides many avenues for future research. Perceptions of fairness were discussed above and its link to the reduction in evasion. Future research should examine more specifically whether increasing goal congruence increases taxpayers' perceptions of fairness.

¹⁹ While the “external validity” of experimental results (i.e., does behavior in the laboratory parallel behavior occurring naturally in the world) is an often cited limitation, recent work on the external validity of tax compliance experiments indicates that the behavior of participants in the lab are comparable to decisions of individual taxpayers in the field (Alm, Bloomquist, and McKee 2015).

Furthermore, since the tax-collecting agency is restricted to the audit probability it can apply, increasing goal congruence may provide the tax-collecting agency with unexplored avenues for improving compliance. Promoting incentives that provide a direct benefit to taxpayers only when they have paid their taxes may be worthwhile. For example, research has shown taxpayers over-report income to qualify for the earned income tax credit (Schmidt and Werner, 2005). To be eligible for the refundable credit, taxpayers must have earned income reported. Researching other potential incentives, which require compliance, may serve to better align taxpayer goals with those of the government.

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Table 1
Participant Demographics

Age (mean)	44.26
Range	21 - 87
	<u>n (%)</u>
Gender	
Female	146 (48.2)
Male	157 (51.8)
Education	
Less than High School	2 (0.6%)
High School	132 (43.6%)
Bachelor	123 (40.6%)
Master or above	46 (15.2%)
Income level	
< \$30,000	62 (20.4%)
\$30,001-\$50,000	82 (27.1%)
\$50,001-\$75,000	84 (27.7%)
>\$75,000	75 (24.8%)
Employment Status	
Self-employed	30 (9.9%)
Employee	215 (71.0%)
Not currently employed	8 (2.6%)
Retired	50 (16.5%)
Ever been self-employed	
Yes	74 (24.4%)
No	229 (75.6%)
Preparer of last tax return	
Self	164 (54.2%)
Friend/Relative	29 (9.6%)
CPA	46 (15.2%)
Tax Prep service	51 (16.9%)
Did not file	12 (4.0%)
Other	1 (0.1%)
Tax return ever audited	
Yes	39 (12.9%)
No	264 (87.1%)

Table 2
Effect of Goal Congruence, Machiavellianism, and Audit Rate on Taxpayer Reporting

ANOVA results

Source	df	Mean Square	F	p-value ^d
Model	7	46305.77	8.64	0.00
Intercept	1	6494807.77	1211.66	0.00
Audit probability (Audit) ^a	1	1404.14	0.26	0.61
Goal Congruence (Goal) ^b [H1]	1	31226.57	5.83	0.01
Machiavellianism (Mach) ^c	1	194010.06	36.19	0.00
Goal x Audit [H2]	1	12229.72	2.28	0.07
Mach x Audit	1	36589.52	6.88	0.01
Goal x Mach [H3]	1	3542.82	0.66	0.21
Goal x Mach x Audit	1	22089.71	4.12	0.04
Error	288	5360.26		
Total	296			

Note: Dependent variable is the amount of income reported by the taxpayer from zero to \$45,000. The ANOVA was conducted using the rank of the reported dollar amounts as the dependent variable rather than the actual reported dollar amounts because the actual reported dollar amounts are not normally distributed.

^aAudit was manipulated to be low (1%) or high (55%).

^bGoal was the sum of three 7-point questions representing the taxpayer's agreement with spending for the tax program. Participants were split at the median into low and high goal congruence categories.

^cMach represents the participant's score on the 20-item MACH IV scale where higher scores indicate more self-interested (less ethical) behavior. Participants were split at the median into low and high Mach categories.

^dOne-tailed p-values are reported where expectations are unidirectional.

Table 3
Mean Income Reported by Condition

<u>Panel A: Main Effects</u>	<u>Mean (S.D.)</u>	
Goal Congruence:		
Low Support (n=148)	34,080.32 (1058.64)	
High Support (n=148)	38,183.44 (1063.73)	
Machiavellianism:		
Low Mach (n=149)	39,932.58 (1055.59)	
High Mach (n=147)	32,331.18 (1066.76)	
<u>Panel B: Interaction Effects</u>		
Goal x Audit:	<u>Low Audit probability</u>	<u>High Audit probability</u>
Low Support	35,146.04 (1504.99) n=75	33,014.59 (1489.26) n=73
High Support	37,034.34 (1538.80) n=73	39,332.51 (1469.09) n=75
Mach x Audit:	<u>Low Audit probability</u>	<u>High Audit probability</u>
Low Mach	42,159.58 (1504.99) n=75	37,705.57 (1480.56) n=74
High Mach	30,020.83 (1538.80) n=73	34,641.53 (1477.85) n=74
Goal x Mach:	<u>Low Support</u>	<u>High Support</u>
Low Mach	38593.65 (1604.40) n=63	41271.501 (1372.21) n=86
High Mach	29566.99 (1381.59) n=85	35095.375 (1625.78) n=62
Goal x Mach x Audit:		
<u>Low Support</u>	<u>Low Audit probability</u>	<u>High Audit probability</u>
Low Mach	40,688.83 (2357.29) n=29	36,498.47 (2177.06) n=34
High Mach	29,603.26 (1871.68) n=46	29,530.72 (2032.72) n=39
<u>High Support</u>		
Low Mach	43,630.33 (1871.68) n=46	38,912.68 (2007.15) n=40
High Mach	30,438.41 (2443.03) n=27	39,752.34 (2145.74) n=35

Table 4
Relative importance, Moral obligation, and Support ratings
by Compliance status

Relative Importance^b	Compliers^a	Non-compliers	F	p-value (two-tailed)
	(n=172) Mean (S.D.)	(n=131) Mean (S.D.)		
Fairness of the tax system	4.96 (3.23)	6.47 (2.86)	17.35	0.00
Trust in the government	4.81 (3.09)	6.36 (3.02)	18.97	0.00
A desire to reduce taxes	6.05 (3.58)	7.76 (2.65)	21.14	0.00
A desire for accuracy	9.45 (2.24)	7.30 (2.72)	57.28	0.00
A desire to avoid the IRS	8.79 (2.74)	7.89 (2.66)	8.34	0.00
A desire to assure tax dollars go to supported programs	5.48 (3.52)	6.83 (3.02)	12.34	0.00
Moral obligation^c				
Tax Evasion is morally wrong	6.36 (1.08)	4.76 (1.83)	90.65	0.00
Support for Program^d				
Overall Support (sum)	14.67 (4.18)	12.86 (4.18)	13.99	0.00
(1) Effective Question	3.80	3.38	4.54	0.03
(2) Important Question	5.62	5.02	12.41	0.00
(3) Support Question	5.25	4.45	16.25	0.00

^a Participants were separated into compliers (those who reported all \$45,000 of income) and non-compliers (those who reported less than the \$45,000 of income)

^b For the six factors listed, participants recorded on a scale from 1 (very little influence relative to other factors) to 10 (very strong influence relative to other factors) how much their tax reporting decision was influenced by that factor.

^c On a seven-point scale from strongly disagree to strongly agree, participants rated their agreement with the statement "Tax evasion is morally wrong in any amount."

^d Participants rated their agreement with the following three statements on a scale from 1 (strongly disagree) to 7 (strongly agree): 1) the way the government spends tax dollars on defense programs is effective, (2) defense programs are important, and (3) I support a percentage of my tax dollars going to support the current defense program. The questions were summed to provide the overall support score for defense.

Table 5
Relative importance, Moral obligation, and Support ratings
by Machiavellianism score

Relative Importance^b	Low Mach ^a n=149 Mean (S.D.)	High Mach n=147 Mean (S.D)	F	p-value (two-tailed)
Fairness of the tax system	4.63 (3.23)	6.57 (2.89)	29.70	0.00
Trust in the government	4.78 (3.19)	6.17 (2.96)	15.12	0.00
A desire to reduce taxes	6.04 (3.61)	7.51 (2.82)	15.23	0.00
A desire for accuracy	9.47 (2.25)	7.49 (2.75)	46.16	0.00
A desire to avoid the IRS	8.77 (2.77)	7.98 (2.70)	6.12	0.01
A desire to assure tax dollars go to supported programs	5.60 (3.56)	6.55 (3.17)	5.83	0.02
Moral obligation^c				
Tax Evasion is morally wrong	6.22 (1.25)	5.08 (2.89)	39.44	0.00
Support for Program^d				
Overall Support (sum)	14.60 (4.18)	13.13 (4.29)	8.90	0.00
(1) Effective Question	3.80	3.45	3.16	0.07
(2) Important Question	5.61	5.09	9.34	0.00
(3) Support Question	5.19	4.59	8.74	0.00

^a Participants were separated into High Machs (those who scored above the median of 91 on the Machiavellian scale) and Low Machs (those who scored below the median on the Machiavellian scale)

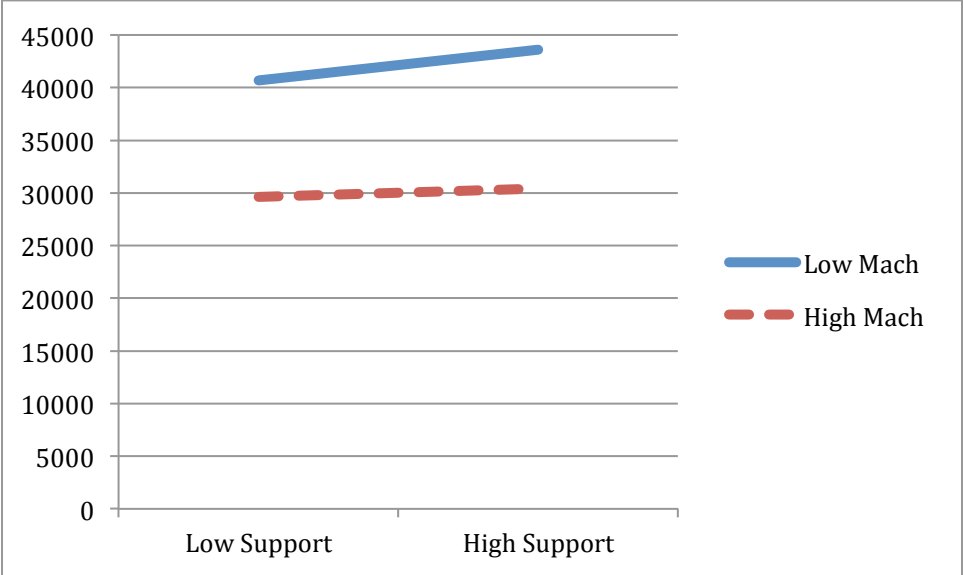
^b For the six factors listed, participants recorded on a scale from 1 (very little influence relative to other factors) to 10 (very strong influence relative to other factors) how much their tax reporting decision was influenced by that factor.

^c On a seven-point scale from strongly disagree to strongly agree, participants rated their agreement with the statement “Tax evasion is morally wrong in any amount.”

^d Participants rated their agreement with the following three statements on a scale from 1 (strongly disagree) to 7 (strongly agree): 1) the way the government spends tax dollars on defense programs is effective, (2) defense programs are important, and (3) I support a percentage of my tax dollars going to support the current defense program. The questions were summed to provide the overall support score for defense.

Figure 1
Graph of Interaction of Goal Congruence x Machiavellianism x Audit Probability on Mean Income Reported

Low Audit Probability



High Audit Probability

