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ORIGINAL PAPER

The Effect of Interactional Fairness and Detection on Taxpayers' Compliance Intentions

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Abstract Although the role of fairness in tax compliance has been of increasing interest among the academic and professional tax communities, very little is known about the role of interactional fairness. Interactional fairness refers to the quality of the treatment provided to individuals from authority figures, such as tax authority representatives. We conduct an experiment using US taxpayers to examine the role of interactional fairness on tax compliance intentions, and how detection influences this relation. Taxpayers' detection salience reflects their perceptions that they will be audited by the tax authority. Using insights from conditional cooperation theory, we predict and find that detection moderates the relation between interactional fairness and tax compliance intentions, such that the effect of interactional fairness on tax compliance intentions diminishes with higher detection. We discuss the implications of our results for tax policy.

Keywords Tax compliance · Interactional fairness · Detection

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Introduction

The worldwide cost of taxpayer non-compliance is staggering. Globally, tax evasion was estimated to exceed US$3.1 trillion in 2011 (Murphy 2011). Given the substantial sum of tax revenue that fails to be remitted to tax authorities, there is considerable interest and practical reward for tax authorities worldwide to develop a better understanding of how to improve taxpayers' compliance (OECD 2010). Recently, the Organization for Economic Cooperation and Development, an international economic organization of 34 countries with a focus on the role and importance of tax policies, has called for a better understanding of how a combination of voluntary compliance and detection strategies influences tax compliance (OECD 2010). Our research informs this issue by providing new evidence on the joint effects of interactional fairness and detection on tax compliance intentions.

The traditional paradigm for understanding tax evasion is an economics-of-crime approach (Allingham and Sandmo 1972), which models the decision to pay taxes as a trade-off between paying one's taxes versus not paying one's taxes. The decision to comply is risk-free, whereas the decision to evade is risky, since if the evasion is detected, the taxpayer will have to pay the taxes plus penalties. The empirical literature on the effects of detection on compliance yields mixed results, with a number of studies findings that the effects of detection probability on compliance are weak (for a review, see Alm et al. 2012, Andreoni et al. 1998, Gemmell and Ratto 2012, Kirchler et al. 2010). As Gemmell and Ratto (2012, p. 37) state, "These various studies challenge the simple view that a tax audit, or increased audit threat, necessarily raises a taxpayer's compliance." This traditional research paradigm is recognized as incomplete by psychologists and economists

(Alm et al. 2012). Furthermore, Alm et al. (2009) suggest that these mixed results may have arisen because detection may have an indirect or moderating influence on tax compliance in the presence of other variables (Alm et al. 2009).

Subsequent research paradigms recognize that taxpayers incorporate non-economic considerations into their decision-making, such as fairness and trust in taxation authorities (e.g., Gobena and Van Dijke 2016; Hofmann et al. 2008; Kirchler et al. 2008; Maciejovsky et al. 2012; Verboon and Van Dijke 2012). However, subsequent research paradigms fail to acknowledge a service paradigm (Alm et al. 2012), i.e., how the actions of tax authorities impact compliance, which is surprising, since tax authorities are increasingly adopting a "new" approach to tax compliance that emphasizes the role of fair interactions with taxpayers (Braithwaite 2003). This notion of a service paradigm is akin to interactional fairness, which refers to the quality of the treatment provided to individuals from authority figures (Bies and Moag 1986; Colquitt et al. 2001). While not every taxpayer will have contact with a tax officer in any given year, when interactions with tax officers occur, the fairness of this encounter represents interactional fairness.

Previous research exploring the effect of interactional fairness on taxpayers' compliance, or if its impact on compliance is conditional, is scant (Wenzel 2006). Although tax fairness researchers have begun investigating how fairness-based approaches can be used to encourage voluntary taxpayer compliance (Molero and Pujol 2012), tax research has focused on how fair tax procedures and paying a fair share of taxes can strengthen taxpayers' compliance (Wenzel 2002). The former is referred to as procedural fairness and the latter is referred to as distributive fairness (Ferguson et al. 2014).

Conditional cooperation theory (Frey and Torgler 2007) was introduced to extend the standard economic theory of tax evasion by recognizing that taxpayers also have intrinsic impetuses that influence the compliance decision, such as fairness. Conditional cooperation theory (Frey and Torgler 2007) is a pro-social theory that posits that taxpayers will, by default, be compliant, unless they are given a reason to be non-compliant. We rely on conditional cooperation theory (Frey and Torgler 2007) to investigate how interactional fairness and detection jointly influence the tax compliance decision. We expect that interactional fairness will have a relatively strong effect on taxpayers' compliance intentions, especially when detection is lower, since lower detection and positive interactional fairness reinforces the implicit psychological trust between taxpayers and tax authorities, which promotes taxpayers' compliance. However, we contend that negative interactional fairness does offer a rationale to be substantially less compliant, as taxpayers will be dissatisfied with the service they receive from a tax officer. Furthermore, when facing higher levels of detection, taxpayers are provided with another rationale not to comply, as they may perceive that the tax authority does not trust them (Frey and Torgler 2007). Thus, we expect that the effect of interactional fairness on compliance will be stronger when detection is lower rather than higher.

To test this prediction, we conduct an experiment in which US taxpayers responded to a hypothetical tax scenario. The scenario describes a cash-based taxpayer (e.g., the taxpayer's income comes from cash sources) in the process of filing his tax return, who phones the IRS to find out how to treat a specific issue. The taxpayer's interaction with the tax officer was manipulated between participants such that it portrayed either positive (higher) or negative (lower) interactional fairness. The second between-participants manipulation involved detection. Under the higher detection condition, participants were aware that the IRS was specifically targeting taxpayers with cash-based income. Under the lower detection condition, participants were unaware of the IRS's enforcement actions. Given the scenario, participants provided tax compliance intentions.

Results from our experimental study support our hypothesis. Specifically, we find that detection moderates the effect of interactional fairness on tax compliance intentions. In this regard, interactional fairness and detection jointly impact tax compliance intentions in the expected pattern. For the lower detection condition, tax compliance intentions are significantly stronger under higher interactional fairness compared to lower interactional fairness. In addition, for the higher detection condition, the impact of interactional fairness on tax compliance intentions is diminished such that the effect of interactional fairness was insignificant. Overall, our results indicate that interactional fairness influences tax compliance but that detection represents a boundary condition. This finding suggests that detection provides such a strong incentive to comply that not much room is left for a positive effect of interactional fairness. Our results should be informative to policy makers by showing that the benefits of higher interactional fairness as an approach to strengthening tax compliance intentions are diminished when detection is higher

We believe our research offers several important contributions. First, while researchers have examined the role of interactional fairness in other settings (Clarke et al. 2013; Primeaux et al. 2003), our understanding of interactional fairness on tax compliance is limited (Feld and Frey 2007; Wenzel 2006), which inhibits our ability to inform tax authorities and other policy makers. Given the importance of the economic and ethical aspects of tax compliance decision-making, it is important to separately examine interactional fairness in a tax

compliance setting. Thus, our study contributes by providing new evidence on the role of interactional fairness on tax compliance, which we believe can be informative to tax authorities and policy makers. Specifically, the results of our study suggest that policy makers should not evaluate fairness-based strategies in isolation. Instead, our results suggest that if other strategies are currently being used, policy makers should assess the extent to which such other strategies might inhibit the effectiveness of fairness-based strategies.

Second, we contribute to tax compliance research by focusing on the role of tax officers in responding to taxpayer queries. The role of tax officers on tax compliance has received limited attention in previous tax research, with studies examining the broad notion of customer-friendly or service-oriented tax administrations (Gangl et al. 2013) and the effect of tax auditor supervision (Gangl et al. 2014). The lack of empirical research concerning direct encounters between taxpayers and tax officers is somewhat surprising because tax officers play a critical role in implementing the tax system. Thus, our research contributes by providing additional evidence on the potential benefits that accrue from tax officers exhibiting interactional fairness.

Third, our study contributes to and extends tax research on conditional cooperation (Frey and Torgler 2007). This work suggests that taxpayers are prone to cooperate by paying their taxes but this tendency is conditional, in part, on the behavior and actions of tax authorities. Other than survey-based research from Frey and Torgler (2007) and a field experiment involving tax auditors (Gangl et al. 2014), however, there is little evidence on how the actions and behaviors exhibited by tax authorities and their agents influence tax compliance intentions.

Fourth, our research contributes to and clarifies research on the deterrence effects of audits on compliance. Specifically, we find that that detection likelihood represents a boundary condition on the influence of interactional fairness on compliance, and indirectly influences tax compliance.

The remainder of the paper is organized as follows. In the next section, we develop our hypothesis. Section three describes our experiment, and section four reports our results. We conclude with a discussion of the implications of our findings.

Development of Hypothesis

Interactional Fairness

Tax researchers have shown a keen interest in understanding the role of fairness in tax compliance judgments, intentions, and decisions (Bordignon 1993; Murphy 2005, 2009; Verboon and van Dijke 2011). In general, research examining the role of fairness has generally found that "taxpayers are less likely to be compliant with a tax system they consider unjust, unfair, and thus illegitimate" (Wenzel 2002, p. 629). However, tax researchers have tended to focus on the impact of procedural and distributive fairness on taxpayers' compliance. For example, tax researchers have found evidence for the association of procedural fairness (Hartner et al. 2008; Murphy 2005; Van Dijke and Verboon 2010; Wenzel 2002) and distributive fairness on compliance (Kim et al. 2005; Moser et al. 1995; Wenzel 2002; Verboon and van Dijke 2007). While important, procedural and distributive fairness represent only two of three fairness dimensions.

Interactional fairness, a third dimension of fairness, was initially introduced to the organizational justice literature by Bies and Moag (1986), and refers to the quality of treatment provided to individuals from authority figures (Colquitt et al. 2001). There are two aspects to interactional fairness: (1) interpersonal fairness, i.e., the degree of interpersonal treatment, which comprises politeness, dignity, and respect; and (2) informational fairness, i.e., the adequacy of information provided to individuals. Initially, researchers examined the role of interactional fairness within organizational settings, in part, because employees typically interact with a particular, known supervisor. Within an organizational setting where employees interact with a known authority figure, researchers (e.g., Bies and Moag 1986; Cropanzano et al. 2002; Masterson et al. 2000) predicted and found that when employees perceive their interactions with their supervisor to be unfair, employees react negatively toward the "authority" who treated them unfairly, but generally do not react negatively toward the organization. Relatedly, interactional fairness has been found to trigger different emotional reactions (Zapata-Phelan et al. 2009). For example, in a survey of bank customers, Chebat and Slusarczyk (2005) report that during service encounters fair interactions were associated with positive emotions such as joy, and that unfair interactions were associated with negative emotions such as anxiety.

In general, when individuals interact with an authority figure outside of an employment relationship, they are interacting with an unknown individual, who is someone with whom they have no expectation of having an ongoing or continuing relationship. For example, individuals may call an organizational representative to resolve a service concern or complaint (Blodgett et al. 1997; Collie et al. 2002). In this context, the organizational representative embodies an authority figure, in the sense that the representative generally has some decision rights and authority to respond to the service concern or complaint. Because the individual does not have an ongoing relationship with the

organizational representative, it is difficult, if not impossible, to direct one's actions toward the organizational representative. Consequently, in response to a service encounter with an organizational representative resulting in either positive or negative interactional fairness, individuals are expected to direct their behavior toward the organization. Blodgett and Tax (1993) examined customers' behaviors in response to a service encounter. As expected, they found interactional fairness perceptions were positively and significantly associated with customers' repurchase intentions.

Regarding the tax system, interactional fairness relates to the quality of the interaction between taxpayers and tax officers, i.e., the extent to which taxpayers receive fair interpersonal treatment and adequate information during their interactions with tax officers. Previously, only Wenzel (2006) has explored the role of interactional fairness in tax compliance. Specifically, Wenzel (2006) conducted a field study with the cooperation of the Australian tax authority. Taxpayers who had an obligation to file a tax return were sent one of three letters reminding them to pay, if owed, an income tax installment. One letter, referred to as the interpersonal letter, incorporated respectful language. A second letter, referred to as an informational letter, included an explanation of why tax installments were required. Each of these letters contained one aspect of interactional fairness, but not both. The third letter was the standard letter in use by the Australian tax authority and represented a control condition. Wenzel (2006) found that relative to the control condition, the compliance rate was significantly higher among taxpayers receiving either the interpersonal letter or the informational letter.

The Combined Impact of Interactional Fairness and Detection

Our research on interactional fairness investigates a different setting than the studies identified above. Specifically, we consider a setting involving a taxpayer who contacts an IRS representative (a tax officer), to find out how to treat a specific issue. We selected a setting involving a taxpayer contacting the IRS by making a phone call, largely because it represents the most common and widespread method of taxpayer interaction with the IRS. Each year, the IRS receives more than 100 million phone calls, compared to 10 million letters and 5 million visits from taxpayers (National Taxpayer Advocate 2014). Consequently, and as discussed further below, our experimental manipulation of interactional fairness derives from the tax officer's behavior during a phone call with a taxpayer. Anecdotal evidence suggests that on occasion tax officers engage in poor customer service, including instances of poor interactional fairness. For example, in 2011, former IRS Commissioner Shulman apologized to three taxpayers for their mistreatment by IRS agents, one of whom yelled at the taxpayer and hung up the phone (Margasak 2011). During this service encounter with the tax officer, the taxpayer, in response to the tax officer's behavior, will form an impression about the IRS agent's interactional fairness.

Consistent with Wenzel (2006), we expect that interactional fairness will be positively associated with tax compliance intentions. Our expectations are based, in part, on how interactional fairness likely influences taxpayers' implicit psychological contract with the tax agency. Interactional fairness is a key construct under conditional cooperation theory (Frey and Feld 2002; Frey and Torgler 2007). In introducing the theory (Frey and Feld 2002; Frey and Torgler 2007), the authors recognize that prior empirical tax compliance research generally finds that relative to economic theories (Allingham and Sandmo 1972), taxpayers are substantially more compliant. Many but not all studies show that detection has a positive effect on tax compliance (see Alm et al. 2012, Andreoni et al. 1998, Gemmell and Ratto 2012, Kirchler et al. 2010). Nonetheless, results from Alm et al. (1992) and Torgler (2002) each show that individuals report a significantly higher level of income than predicted by standard economic models. As Alm and Torgler (2011, p. 635) state, "The puzzle of tax compliance is to explain why people pay taxes."

In contrast to purely economic approaches that focus solely on deterrence, tax compliance researchers continue to demonstrate the importance of non-economic considerations, such as fairness and trust in taxation authorities, for taxpayers' compliance (e.g., Gobena and Van Dijke 2016; Hofmann et al. 2008; Kirchler et al. 2008; Maciejovsky et al. 2012; Verboon and Van Dijke 2012). In a similar vein, conditional cooperation theory suggests that taxpayers form a psychological contract with the tax authority, and that this contract presumes a relationship of trust, such that the tax agency and its representatives conduct themselves in an honest, informative, and respectful manner. Importantly, the theory holds that when the tax agency and its representatives have acted in a manner consistent with the psychological contract, taxpayers, as part of a relationship of trust, will tend to pay the taxes they owe. Conditional cooperation theory fits within a broader view of self-perception that holds that "most individuals see themselves as being relatively competent, moral, and consistent" (Zyglidopoulos et al. 2009, p. 67). This view directly contrasts with traditional economic theory, which assumes that individuals maximize their self-interest (Jensen and Meckling 1976).

Conditional cooperation theory suggests that we expect taxpayers to be more compliant, when a tax officer engages in prototypical positive (fair) interactions (e.g., respectful

and informative). If a tax officer engages in behaviors prototypical of negative (unfair) interactions (e.g., disrespectful and uninformative), he or she is deviating from the implicit psychological contract. It follows that negative interactions with tax officers give taxpayers a reason (or rationalization) to deviate from the psychological contract without suffering feelings of ethical anxiety, and as a result, compliance will decrease.

We contend, however, that the extent to which interactions with the tax authority influence taxpayers' cooperation also depends upon taxpayers' salience of detection. Empirical work done by Kogler et al. (2016) shows that taxpayers' compliance after interactions with tax agents was higher in the absence of feedback about audits and fines, which suggests that interactions with tax agents are moderated by detection salience. Empirical work from Gangl et al. (2013) shows that a favorable tax authority "service orientation" improves compliance intentions, when controlling for detection, which also suggests that interactions with tax agents are moderated by detection salience. From a conditional cooperation perspective, we contend that higher levels of detection undermine the ability of taxpayers and the tax agency to form a relationship of trust, even in the presence of a positive interaction with the tax agency. Higher levels of detection mitigate any trust that may result from positive interactions with the tax agency, and may only reinforce negative interactions with the tax agency. As a result, the effect of taxpayers' positive interactions with the tax authority is muted under conditions with higher levels of detection.

In contrast, under a setting with lower detection, we expect that the influence of a tax officer's behavior on tax compliance intentions will be relatively larger than under higher detection. Consistent with conditional cooperation theory, lower detection promotes a relationship of trust between taxpayers and the tax agency. Starting with a presumed relationship of trust between the taxpayer and the tax authority, the behavior of a tax officer will be informative in reinforcing or breaching the presumption of trust of the tax authority by the taxpayer. Accordingly, in the condition of lower levels of detection, positive interactions with tax agency and its representatives will increase taxpayers' tendency to pay the taxes they owe, and negative interaction will decrease taxpayers' tendency to pay taxes they owe. It follows that under a setting with lower detection, we expect the influence of tax compliance interactions will be greater as compared to a setting with higher detection.

This discussion leads to the following hypothesis.

Hypothesis Detection will moderate the relation between interactional fairness and tax compliance intentions. Specifically, the effect of interactional fairness on tax compliance intentions will be stronger under lower detection compared to higher detection.

Method

Below we discuss the design, participants, experimental procedures, and task, independent variables, and dependent variable for the experiment.

Design

The experiment utilizes a 2×2 between-participants design. The design fully crosses interactional fairness (higher or lower) and detection salience (higher or lower).

Participants

Participants were taxpayers from the USA, recruited from a consumer research firm that has a database of over 4 million US citizens. To be representative of a typical taxpayer population, we requested that our participants be randomly selected according to gender and age. Age was restricted to participants between the ages of 18 to 80, evenly distributed across age groups. The firm does not tally the number of invites and terminated the data collection once our quota of 204 participants had been reached.[1] Consistent with prior research, demographic measures were included in our instrument for age, gender, work experience, education, income, and previous interaction with a tax authority (e.g., Bobek et al. 2007; Carnes and Englebrecht 1995; Jackson and Milliron 1986; Murphy 2004; Verboon and van Dijke 2007). Descriptive statistics for demographic measures are provided in Table 1. As shown in Table 1, 49% of our sample is male and 51% is female, with an average work experience of 17 years.[2]

[1] Using dummy responses, the firm initially tested all web links to ensure they were working properly. We verified that the dummy data were accurately populated into the software. The firm then launched the data collection. The firm provided us with an update at the end of each day of the number of complete responses they had collected. The firm also recalibrated the sample at the end of each day so that our gender and age parameters were as accurate as possible.

[2] We checked our sample against U.S. census data (U.S. Census Bureau, Current Population Survey, 2014 Annual Social and Economic Supplement) that segmented the U.S. population according to income and education level. Our income segments matched those used in this population survey. Our sample was similarly weighted to that of the US population with two exceptions: (1) The income category below $50,000 was underweight (by about 8%) relative to the census data, and (2) our income category above $75,000 was weighted 6% more than the census data. Given that the population of the income category below $50,000 is the one least likely to pay tax, we believe that our sample is relatively representative of the broader population of US taxpayers.

Table 1 Demographic profile statistics

Sample size	$n = 204$
Gender	
Male	$n = 99$ (48.5%)
Female	$n = 105$ (51.5%)
Age	Mean = 41.1 years
	SD = 14.9 years
Work experience	Mean = 17.4 years
	SD = 14.3 years
Problem with IRS?	Yes = 20 (9.8%)
	No = 184 (90.2%)
Income	
Less than $25,000	$n = 50$ (24.4%)
Between $25,000 and $50,000	$n = 46$ (22.4%)
Between $50,001 and $75,000	$n = 35$ (17.1%)
Between $75,001 and $100,000	$n = 30$ (14.7%)
Greater than $100,000	$n = 31$ (15.1%)
Prefer not to answer	$n = 12$ (6.3%)
Highest level of education completed	
High school	$n = 70$ (34.3%)
Community college	$n = 12$ (5.9%)
Undergraduate degree	$n = 57$ (27.9%)
Graduate degree	$n = 54$ (26.5%)
Other	$n = 11$ (5.4%)
Tax preparer	
Taxpayer	$n = 98$ (48.1%)
Taxpayer's spouse/partner	$n = 16$ (7.8%)
Paid preparer	$n = 67$ (32.8%)
Other	$n = 23$ (11.3%)

Experimental Procedures and Task

Potential participants received an e-mail invitation from the consumer research firm to participate in a questionnaire about income taxes. Individuals willing to participate in the experiment clicked on a web link and were automatically and randomly directed to one of the four experimental conditions. Respondents had a unique user ID and password provided by the firm, which ensured that they could not respond to a survey more than once. Participants were incentivized using a point system specific to the consumer research firm.

In the experimental scenario, participants read about the recent filing experience of a taxpayer, named Jason, who is a barber. Participants learned that last year Jason opened his own barber shop by renting a small store in his home town and buying an antique barber chair. Jason's customers paid him in cash. The scenario also indicated that Jason, who was preparing his own tax return, did not know how to treat the cost of the barber chair for tax purposes and called the IRS to ask about the tax rules for the barber chair. As discussed below, the scenario also contained the two independent variables. In response to the scenario, participants completed several questions about Jason's tax compliance intentions, manipulation checks, and demographic information. "Appendix" contains the experimental scenarios, as well as the follow-up questions.

Independent Variables

Interactional Fairness

Interactional fairness was operationalized by altering Jason's experience with the IRS tax officer during his phone call to ask about the tax rules for deducting a barber chair.[3] Since interactional fairness involves two dimensions (interpersonal treatment and adequacy of explanations), and to ensure we distinguish between higher and lower interactional fairness in our manipulation, we simultaneously manipulated both dimensions of interactional fairness. Under the higher interactional fairness condition, the scenario read, in part, "The IRS spokesperson was very polite and respectful, answered his question simply and thoroughly, and asked whether there was anything else she could help him with." In contrast, under the lower interactional fairness condition, the scenario read, in part, "The IRS spokesperson was very rude and disrespectful, and said it was not their responsibility to answer his question, and immediately disconnected his call."

Detection

We manipulated respondents' detection salience across two levels: higher and lower. Accordingly, detection salience was operationalized by including (higher) or excluding (lower) information about the possibility of a tax audit for taxpayers like Jason, who operate a cash business. This operationalization is consistent with Alm et al. (2009), who suggest that taxpayers are either unaware of the tax authority's enforcement efforts, or alternatively have heightened detection salience when they been sensitized to the tax authority's detection efforts. Under the lower detection manipulation, we refrained from sensitizing our respondents to the tax authority's enforcement efforts. Under the higher detection manipulation, we sensitized taxpayers to tax authority's efforts by including the following two sentences in our scenario: "Jason had several barber friends who were audited last year by the IRS. They

[3] As discussed earlier, we chose a phone call because it is a common and widespread method of contacting the IRS. For example, in the period from January 1 through March 5, 2016, the IRS received 46.1 million telephone calls (https://www.treasury.gov/tigta/auditreports/2016reports/201640034fr.pdf, p. 16).

told him the IRS was devoting more time and effort to auditing cash-based businesses." We expected these two sentences to sensitize our respondents to increase expectations about the likelihood of an audit and detection for Jason. In this regard, the manipulation specifically references "barber friends" as the "friends" who had been recently audited because of this group's relevance and credibility. The reference to "cash-based businesses" was included to explain why barbers were among those that had been targeted by the IRS. Under the lower level of detection, the above two sentences were excluded from the scenario to attempt to avoid sensitizing our respondents to the tax authority's enforcement efforts.

Dependent Variable

The dependent measure is the taxpayer's tax compliance intentions (Compliance Intentions).[4] We measured compliance intentions as the average score of the following four statements: (1) Jason will not declare all the cash to the IRS; (2) Jason would be tempted to not report all of his cash receipts on his tax return; (3) Jason is unlikely to report all his cash earnings to the IRS; and (4) Under the circumstances, Jason might not report all of his cash earnings on his tax return. Participants responded to each statement using a 7-point Likert-type scale, with endpoints of "strongly agree" (=1) and "strongly disagree" (=7). The Cronbach Alpha of this measure is 0.85. We reverse-coded this variable; therefore, higher scores indicate higher compliance intentions and lower scores indicate lower compliance intentions.

Results

Manipulation Checks

To provide evidence on the effectiveness of our two manipulations, we report the results of two manipulation checks. To check for the effectiveness of the interactional fairness manipulation, the research instrument included the following statement: *Jason was treated well when he phoned the IRS*. Participants responded to this statement using a 7-point Likert-type scale, with endpoints of "strongly agree" (=1) and "strongly disagree" (=7). Under the higher condition, the mean response was 3.67 (SD = 2.38), and under the lower condition, the mean response was 5.12 (SD = 2.29). The pattern of the two means are in the expected direction, and the difference between the two means is significant, $F(1203) = 19.61$, $p < 0.01$). To check for the effectiveness of the detection manipulation, the research instrument included the following statement: *Jason expects to be audited by the IRS*. Again, participants responded to this statement using a 7-point Likert scale, with endpoints of "strongly agree" (=1) and "strongly disagree" (=7). Under the higher condition, the mean response was 3.95 (SD = 1.65), and under the lower condition, the mean response was 4.49 (SD = 1.60). The pattern of the two means is in the expected direction and the difference between the two means is significant, $F(1203) = 5.48$, $p = 0.02$. These results indicate that both of our manipulations were effective.

Descriptive Statistics

We present our correlation matrix in Table 2 and discuss preliminary results from our ANCOVA and analysis of cell means presented in Table 3. Table 2 presents a correlation matrix for the independent variables, dependent variable, and two key demographic variables (taxpayer income and tax preparer). As shown, the correlation between interactional fairness and compliance intentions is positive and significant, $r(202) = 0.14$, $p = 0.05$, suggesting that compliance intentions were stronger under the higher level of interactional fairness. Also as shown, the correlation between detection and compliance intentions is not significant. Table 2 includes two demographic variables, taxpayer income and tax preparer, that are each significantly associated with the dependent variable. Income and compliance intentions were strongly and negative correlated, $r_s(202) = -0.14$, $p = 0.05$, indicating that higher taxpayer income is associated with less compliance. Preparer and compliance intentions were also strongly and negatively correlated, $r_s(202) = -0.14$, $p = 0.04$, indicating that going from self-preparation to having another person prepare your tax return is associated with less compliance. These correlations between these two demographic variables and compliance intentions are consistent with previous research (Bobek et al. 2007; Blanthorne and Kaplan 2008; Jackson and Milliron 1986). As a result, we included both of these demographic variables in our statistical analysis as control variables. None of the other demographic variables are associated with the dependent variable.[5]

[4] Consistent with the tax compliance literature (Blanthorne and Kaplan 2008; Bobek and Hatfield 2003; Carnes and Englebrecht 1995; Sanders et al. 2008; Verboon and van Dijke 2007), we use compliance intentions as a proxy for taxpayers' compliance.

[5] We also tested whether any demographic variables were associated with either independent variable or the interaction between the two independent variables. With the exception of age, the demographic variables were not associated with the independent variables. Age was significantly higher in the lower condition of detection expectations ($M = 43.6$, SD = 14.6) compared to the higher condition of detection

Table 2 Correlation matrix

	Interactional fairness (IV)[a]	Detection (IV)[a]	Compliance Intentions (DV)[b]	Income[c]	Preparer[d]
Interactional fairness (IV)	–	0.04	0.14	0.06	−0.08
		0.59	0.05*	0.37	0.23
Detection (IV)	0.04	–	−0.06	−0.02	0.11
	0.59		0.41	0.83	0.14
Compliance intentions	0.14	−0.06	–	−0.14	−0.14
	0.05*	0.41		0.05*	0.04*
Income	0.06	−0.02	−0.14	–	−0.06
	0.37	0.83	0.05		0.39
Preparer	−0.08	0.11	−0.14	−0.06	–
	0.23	0.14	0.04*	0.39	

In the above table, the correlation coefficient appears first, followed by the italicized significance level (* indicates significant at 0.05 level, two-tailed). A Spearman's rank-order correlation was run to determine the correlations for pairs containing at least one ordinal variable with more than two categories (Income and Preparer). Otherwise, the coefficients above are Pearson's correlations

[a] The independent variables, interactional fairness and detection, are coded 1 for higher and 0 for lower

[b] Compliance intentions was measured by the average of each participant's scores to the following four statements. Participants responded to each statement using a 7-point Likert-type scale, with endpoints of "strongly agree" (=1) and "strongly disagree" (=7). The Cronbach alpha of this measure is 0.85. This variable was reverse-coded so that higher numbers represent higher compliance intentions

(a) Jason will not declare all the cash to the IRS

(b) Jason would be tempted to not report all of his cash receipts on his tax return

(c) Jason is unlikely to report all his cash earnings to the IRS

(d) Under the circumstances, Jason might not report all of his cash earnings on his tax return

[c] Income has six categories: (1) less than $25,000, (2), between $25,000 and $50,000, (3) between $50,001 and $75,000, (4) between $75,001 and $100,000, (5) greater than $100,000, and (6) prefer not to answer

[d] Preparer has four categories: (1) self, (2) my spouse/partner, (3) paid preparer, and (4) other

Table 3 presents the results of a preliminary ANCOVA and cell means. For the ANCOVA, the independent variables included interactional fairness at two levels (higher and lower), detection (higher and lower), the interaction between interactional fairness and detection, and the two covariates (taxpayers' income and tax preparer).

Table 3 Panel A shows a significant main effect for interactional fairness, $F(1203) = 4.60$, $p = 0.03$). Consistent with our hypothesis, there is a marginally significant interaction between interactional fairness and detection s, $F(3203) = 2.73$, $p = 0.10$. Table 3 Panel B examines the cell means for the four experimental conditions. The four cell means are consistent with the pattern predicted under the hypothesis. Specifically, the difference in means between the two levels of interactional fairness is larger under the lower detection expectations condition (e.g., 4.63 vs. 3.74) than under the higher detection expectations condition (e.g., 4.04 vs. 3.92). Our findings are graphically presented in Fig. 1.

Hypothesis Test

Our hypothesis predicts that detection will moderate the relation between interactional fairness and tax compliance intentions, such that the effect of interactional fairness will be stronger when detection is lower. We use contrast coding as the most appropriate test of a specific pattern of results based on theoretical predications, as we have predicted in our hypothesis (Buckless and Ravenscroft 1990; Rosenthal and Rosnow 1985).[6]

Based on conditional cooperation theory (Frey and Torgler 2007), we predict that tax compliance will be highest for Cell 1 in Table 3 Panel B (higher interactional fairness and lower detection), since neither higher interpersonal fairness nor lower detection will violate the implicit psychological contract with the tax authority. However, in the other three conditions, taxpayers' inclination to cooperate is likely to be impaired, as the tax agency will have violated the implicit psychological contract with the taxpayer. Accordingly, we expect tax

Footnote 5 continued
expectations ($M = 39.04$, SD = 15.0), $F(1203) = 4.80$, $p = .03$). We do not include age in the model because it was not associated with the dependent variable, compliance intentions.

[6] Contrast coding represents a more powerful test than ANCOVA and is appropriate when there is a specific interaction based on theoretical predictions (Buckless and Ravenscroft 1990; Cohen et al. 2015; Rosenthal and Rosnow 1985).

Table 3 The impact of interactional fairness and detection on compliance intentions

	SS	*Df*	MS	*F*	*p*	Partial η^2 [90% CI]
Panel A: ANCOVA of interactional fairness and detection on compliance[a]						
Interactional fairness	12.38	1	12.38	4.60	0.03	0.022 [0.001; 0.066]
Detection	1.38	1	1.38	0.51	0.48	<0.01 [< 0.001; 0.026]
Interactional fairness × detection	7.35	1	7.35	2.73	0.10	0.013 [< 0.001; 0.051]
Preparer	10.39	1	10.39	3.87	0.05	0.019 [< 0.001; 0.060]
Income	13.30	1	13.30	4.95	0.03	0.024 [0.001; 0.068]
Error	532.41	198	2.69			

	Detection		
	Lower	Higher	Total
Panel B: Descriptive statistics for compliance intentions			
Mean (standard deviation)			
Interactional fairness			
Higher	4.63 (1.61)	4.04 (1.66)	4.30 (1.66)
	$n = 46$	$n = 58$	$n = 104$
	Cell 1	*Cell 2*	
Lower	3.74 (1.74)	3.92 (1.66)	3.83 (1.69)
	$n = 48$	$n = 52$	$n = 100$
	Cell 3	*Cell 4*	
Total	4.18 (1.73)	3.98 (1.65)	4.07 (1.68)
	$n = 94$	$n = 110$	$n = 204$

[a] Compliance intentions are described in Table 2. Partial eta squared, as a measurement of effect size, is recommended by Richardson (2011), and 90% confidence intervals are recommended by Steiger (2004) and Wuensch (2016)

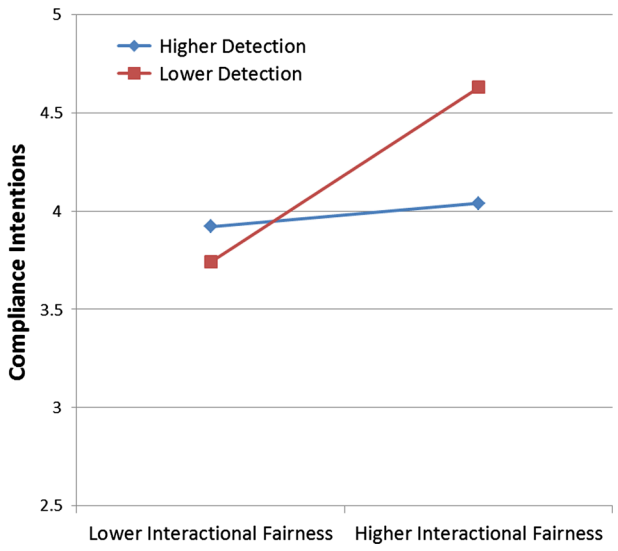

Fig. 1 Interactive effect of interactional fairness and detection on compliance intentions. Experimental results. The figure above illustrates the interaction predicted in Hypothesis 1. Specifically, we expect that the effect of interactional fairness on tax compliance intentions will be stronger under lower detection compared to higher detection

compliance intentions to be the highest under the specific combination of higher interactional fairness and lower detection expectations (e.g., Cell 1 in Table 3 Panel B), and tax compliance intentions to be lower in the other three conditions. Thus, we assign a weight of +3 to Cell 1, and a weight of −1 to Cell 2, Cell 3, and Cell 4.

Table 4 presents the results of the contrast coding. As shown, the planned contrast is highly significant, $F(1203) = 6.86$, $p = 0.01$, which indicates that the overall pattern of the four cell means is consistent with the theoretical predictions of the hypothesis, which predicts that detection will moderate the relation between interactional fairness and tax compliance intentions.

Lastly, we examine the simple main effects for interactional fairness under each level of detection. When detection is lower, we find a significant difference [$t(203) = 2.58$, $p < 0.01$)] between mean tax compliance intentions for the higher ($M = 4.63$) and the lower interactional fairness ($M = 3.74$) conditions. In contrast, when detection is higher, the difference between the means under the higher ($M = 4.04$) and the lower ($M = 3.92$) conditions of interactional fairness do not differ significantly

Table 4 Planned contrast results

Sources of variation	SS	*Df*	MS	*F* value	*p* value (two-tailed)
Planned contrast results using tax compliance intentions as the dependent variable and +3, −1, −1, −1 weightings, for cells 1, 2, 3, and 4, respectively					
Model contrast	19.04	1	19.04	6.86	0.01
Adjusted $R^2 = .022$					

[$t(203) = 0.38$, $p = 0.70$]. Thus, the effect of interactional fairness on tax compliance intentions was stronger under the lower level compared to the higher level of detection, which provides additional support for our hypothesis.

Discussion

Tax researchers have initiated research into the role of fairness in tax compliance (Alm and Torgler 2011; Hartner et al. 2008; Molero and Pujol 2012), in part, due to an increasing reliance on fairness strategies by tax authorities. Prior tax fairness research has provided few insights into how interactional fairness affects taxpayers' behavior (Wenzel 2006), and has yet to consider how interactional fairness combines with other factors that might influence taxpayers' compliance. To address this shortcoming, we extend Wenzel (2006) and advance the tax compliance literature by considering how taxpayers' interactional fairness influences taxpayers' compliance intentions, in the presence of detection. Our interest in jointly examining the effects of interactional fairness and detection on tax compliance intentions is largely based on the work of the OECD (2010), which observes that the effects of tax variables on tax compliance are often context-dependent. Implicitly, their concern is that without adequately understanding the context-dependencies, policy makers may not be sufficiently informed to design and implement effective strategies to improve tax compliance.

We conduct an experiment using taxpayers to provide insight into the combined influence of interactional fairness and detection on compliance intentions. Consistent with prior research (Wenzel 2006), our results show that interactional fairness is positively associated with tax compliance, such that interactional fairness has a stronger effect on compliance when detection is lower as compared to when detection is higher. When detection salience is higher, interactional fairness does not significantly impact compliance, which suggests that higher detection salience creates such a strong incentive to comply that not much room is left for a positive effect of interactional fairness. However, compliance is positively associated with interactional fairness when detection is lower. Thus, our findings suggest that the influence of interactional fairness on compliance behavior depends, in part, on detection, an important contextual variable.

We also find that tax compliance intentions are highest when interactional fairness is higher and detection salience is lower. This finding complements existing research on tax procedural fairness. Studies that have examined procedural fairness in the tax context tend to find a positive association between procedural fairness and tax compliance (Hartner et al. 2008, 2010; Kirchler et al. 2006; Murphy 2005; Verboon and Van Dijke 2007, 2011; Wenzel 2002; Worsham 1996), but also report the influence of moderator variables including trust in authorities (Van Dijke and Verboon 2010) and sanction severity (Verboon and Van Dijke 2011). Collectively, these studies suggest that research into fairness and compliance should consider the influence of moderating variables, as doing so may provide a more refined understanding regarding how different dimensions of fairness impact tax compliance.

As with all research, there are several limitations to our study. First, the results from this research are specifically tested using American taxpayers. While we believe that the implications of our study should be of interest to an international audience, the findings of the study are applicable only to US taxpayers (c.f., Bobek et al. 2007). To address the issue of generalizability, we encourage further research using taxpayers from other countries. Second, because tax compliance is a sensitive issue, it is possible that participants' responses may have been biased by the nature of our study. However, to minimize this tendency, instructions to the study indicated that participants were assured of anonymity. In addition, we have no reason to suspect that any potential bias due to the sensitive nature of tax compliance will interact with our treatments. Third, participants in our study provided compliance intentions rather than actual compliance behavior. While it is important to distinguish intentions from behavior, there is strong empirical support (Sheeran 2002) for several models in psychology, including the theory of reasoned action (Randall 1989), the protection motivation theory (Rogers 1983), and the theory of planned behavior (Carpenter and Reimers 2005), that hold that an individual's intention is the strongest predictor of an individual's behavior. Again, we encourage further research to examine tax compliance behavior, as well as tax compliance intentions.

Traditional economic theory assumes that taxpayers' compliance is primarily a function of their probability of getting caught if they don't comply. However, based upon an assumption of self-interest, economic theory fails to explain why taxpayers' comply with tax authorities given the lower rates of detection (Alm et al. 2012). In an effort to provide insight into this observation, we adopt conditional cooperation theory which presumes that individuals are inherently ethical and cooperative (Zyglidopoulos et al. 2009) and, consequently, evade if there is a reason. Based on conditional cooperation theory, we gain insight into why taxpayers fail to evade under the condition of lower detection rates than predicted by classical economic theory. Thus, we advance our understanding of tax compliance beyond that established by the classical economic approach of deterrence, and suggest the importance of fairness considerations in combination with deterrence as means to gaining insight into taxpayers' behavior.

Importantly, our findings suggest that tax authorities should not adopt a strategy emphasizing interactional fairness or detection in isolation. Many studies show that detection expectation has a positive effect on tax compliance, although some show that detection as has no effect or even a contradictory effect (see Alm et al. 2012, Andreoni et al. 1998, Gemmell and Ratto 2012, Kirchler et al. 2010). By considering both interactional fairness and detection, our research findings suggest that tax authorities should consider taxpayers' detection in conjunction with interactional fairness, as a combination of both factors determines whether or not taxpayers cooperate with tax authorities. For example, our results suggest that plans to introduce strategies to improve interactional fairness, while continuing detection-based strategies, may offer limited benefits in terms of tax compliance. Tax authorities may still wish to improve the interactional fairness of their tax officers for reasons other than improving tax compliance. We also recognize that not all taxpayers will voluntarily comply with tax authorities, irrespective of tax fairness, and that deterrence strategies have a role to play to improve tax compliance. In this regard, our results suggest that audits and other forms of detection might best be used in situations where fairness strategies have failed, and not as a primary or default position conveying the presumption that taxpayers have purposefully evaded taxes.

Our research is important as budgets for tax authorities continue to be cut, which could undermine tax authorities' ability to interact with taxpayers. For instance, former IRS Commissioner Doug Shulman stated in a letter to the Ways and Means Committee of the US Congress that further cuts to the IRS budget would lead to a "noticeable degradation of both service and enforcement" leading to a "serious detrimental impact on voluntary compliance for years to come" (Shulman 2011).

Thus, our study provides evidence to support concerns over the importance of the service quality of tax officers, particularly with respect to their level of interactional fairness. Furthermore, since tax systems tend to increase in complexity over time (Walsh 2012), it is more likely than ever that taxpayers will need information from tax officers about how to treat tax issues.

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Appendix: Experimental Instrument

Part 1: Basic Tax Scenario, Common to all Experimental Materials

Below is a story about a barber named Jason and his experiences with the IRS. Imagine that you are Jason. Please read it carefully, as you will be asked some follow-up questions.

Jason is a barber, and while he used to work in construction, he decided to open his own barber shop last year. He rented a small store on the main street of his home town and bought an antique barber chair on eBay for $2200. He did not accept credit cards or checks, so his customers paid him in cash only. He kept records of customers' appointments and haircuts by writing on a calendar with a pencil.

Jason was preparing his own tax return shortly before the April 15th deadline. He understood that the total amount of cash received from customers was part of his business income. But, he had a question about how to treat the barber chair for tax purposes. He wasn't sure whether he should deduct the entire cost, or only a portion.

Specific Scenario Information

Higher interactional fairness, Higher Detection

Jason had several barber friends who were audited last year by the IRS. They told him the IRS was devoting more time and effort to auditing cash-based businesses.

Jason decided to call the IRS to ask about the tax rules for deducting the barber chair. The IRS spokesperson was very polite and respectful, answered his question simply and thoroughly, and asked whether there was anything else she could help him with.

Higher Interactional Fairness, Lower Detection

Jason decided to call the IRS to ask about the tax rules for deducting the barber chair. The IRS spokesperson was very polite and respectful, answered his question simply and

thoroughly, and asked whether there was anything else she could help him with.

Lower Interactional Fairness, Higher Detection

Jason had several barber friends who were audited last year by the IRS. They told him the IRS was devoting more time and effort to auditing cash-based businesses.

Jason decided to call the IRS to ask about the tax rules for deducting the barber chair. The IRS spokesperson was very rude and disrespectful, said that it was not their responsibility to answer his question, and immediately disconnected his call.

Lower Interactional Fairness, Lower Detection

Jason decided to call the IRS to ask about the tax rules for deducting the barber chair. The IRS spokesperson was very rude and disrespectful, said that it was not their responsibility to answer his question, and immediately disconnected his call.

Part 2: Questions

Dependent Variable

Please read the following statements and indicate your level of agreement by clicking on the appropriate response, where 1 = strongly agree, and 7 = strongly disagree.

1. Jason will not declare all the cash to the IRS.
2. Jason would be tempted to not report all of his cash receipts on his tax return.
3. Jason is unlikely to report all his cash earnings to the IRS.
4. Under the circumstances, Jason might not report all of his cash earnings on his tax return.

Manipulation checks

Interactional Fairness

1. Jason was treated well when he phoned the IRS (1 = strongly agree; 7 = strongly disagree).

Detection

1. Jason expects to be audited by the IRS (1 = strongly agree; 7 = strongly disagree).

Demographic Questions

Please answer the following demographic questions.

1. Your gender: male female
2. Have you ever had a problem with the IRS? yes no
3. Your present age in years: _____
4. The number of years of your full-time work experience: _____.
5. Who usually prepares your tax return?

   I do
   My spouse/partner
   Paid preparer
   Other

6. Please indicate your highest level of education completed:

   High School
   Community College diploma
   Undergraduate degree
   Graduate degree
   Other

7. How would you categorize your political beliefs?

   Very conservative
   Moderately conservative
   Slightly conservative
   Middle of political spectrum
   Slightly liberal
   Moderately liberal
   Very liberal

8. Please indicate your approximate annual income:

   Less than $25,000
   Between $25,000 and $50,000
   Between $50,001 and $75,000
   Between $75,001 and $100,000
   ≥$100,000
   Prefer not to answer

Thank you for your participation in this study.

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