Injunctive Social Norms Influence Tax Compliance and Information Processing

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Abstract

Prior research found that social norms, and tax-related parameters such as tax rate, audit probability, and fine rate influence tax decisions. Present thesis explores the interplay between norms and tax-related parameters, and their influence on tax decisions. It is argued here that tax-related parameters should have a weaker effect on tax compliance and should be less relevant for the decision-making process when compliance is perceived as the norm. In an incentivized mouselabWEB experiment, participants were either presented with a strong compliance norm, a weak compliance norm, or no such information before making tax compliance decisions over 18 rounds. Information on tax rate, audit probability, fine rate, and income was hidden under boxes on the screen and varied from round to round. This information could only be obtained by moving the mouse cursor over the respective box, thus allowing to monitor the information acquisition process. Results reveal that presenting an injunctive norm information (regardless of the strength of norm) leads to a higher tax compliance. Additionally, a lower tax rate, a higher audit probability, and a higher fine rate results in higher tax compliance. Furthermore, the effect of tax rate is stronger, whereas the effect of fine rate is weaker when participants are presented with an injunctive norm information. Finally, information on audit probability and fine rate is acquired less often when participants are presented with a strong compliance norm information. Accordingly it can be concluded that a norm based intervention might be an effective and a low-cost strategy to deter evasion.

Keywords: Tax compliance, social norms, information acquisition, deterrence, Mouselab

Injunctive Social Norms Influence Tax Compliance and Information Processing

Traditionally in tax research, prevalence of audits and level of fines have been prioritized and argued to be essential for deterring tax evasion. Recent work, however, emphasized the importance of integrating psycho-social factors, such as social norms, with these economic factors (see Kirchler, Hoelzl, & Wahl, 2008). This paper investigates the interplay between social norms and tax-related parameters (i.e., tax rate, audit probability, and fine rate) and their influences on tax compliance decisions. Additionally, as a novel approach, the effect of social norms on the acquisition of information on deterrence factors (i.e., audit probability and fine rate) are investigated.

The classical approach considers the decision to comply or not comply with the tax rules as a decision made under uncertainty (Alligham & Sandmo, 1972; Sriniasan, 1973). This approach is rooted in the economic model of criminal behavior (Becker, 1968) and perceives tax payers as rational agents who are trying to maximize their financial outcomes based on level of income, tax rate, audit probability, and fine rate. This perspective assumes that taxpayers comply with the tax rules solely because they fear the financial cost of the punishment. As a result, increasing the prevalence of audits and the level of fines are considered to be the main strategies to deter from tax evasion.

However, the deterrent effects of audit probabilities and fine rates are not always consistent (Andreoni, Erard, & Feinstein, 1998; Fischer, Wartick, & Mark, 1992; Kirchler, Muehlbacher, Kastlunger, & Wahl, 2010). Based on low audit probabilities and fine rates implemented in most countries, neo-classical economic models would predict higher income tax evasion, however, tax compliance is substantially higher than it would be expected based on such models (Alm, 1991). Moreover, raising fine rates can be perceived as unfair by the taxpayers which in turn may provoke negative attitudes towards the tax authorities, leading this policy to backfire (Strümpel, 1969). It appears that the classical approach, which mainly focuses on audit probabilities and fine rates, is not

adequate in explaining and predicting tax decisions since tax decisions are rather complex to be explained solely by the economic factors (Kirchler et al., 2007).

As a solution, Kirchler et al. (2008) proposed the integration of the economic factors with the psycho-social factors as the predictors of tax compliance. According to their slippery slope framework of tax compliance, the *power* of authorities and *trust* in authorities are the main determinants of tax compliance. The power of authorities reflects the tax authorities' ability to catch and punish those who disobey the tax rules. Therefore, power of authorities is directly related to the deterrence factors (mainly audit probability and fine rates) that have been highlighted by the classical tax approach. Meanwhile, trust in tax authorities reflects the shared perception that "tax authorities are benevolent and work beneficially for the common good" (Kirchler et al., 2008, p. 212). According to Hofmann, Hoelzl, and Kirchler (2008) trust is mostly influenced by the psycho-social factors such as knowledge about taxes, fairness perceptions, motivation to cooperate, and social norms. Although both high power and high trust are expected to lead to the same outcome behavior (i.e., high compliance); high power is associated with *enforced* compliance, whereas high trust is associated with *voluntary* compliance (Kirchler et al., 2008). At the societal level, these factors are represented in the tax climate which is said to vary from antagonistic to synergistic. Within an antagonistic climate, individuals make tax decisions mainly based on deterrence factors. Whereas, within a synergistic climate, financial factors are expected to be less important and the financial cost-benefit calculation is expected to be replaced with psycho-social considerations. Therefore, the importance of financial deterrence factors in tax decisions are said to vary based on the existing tax climate.

Social Norms

Research on social norms distinguished between two main types of norms: *descriptive* and *injunctive*. Descriptive norms refer to the perceived prevalence of a certain behavior in relevant others (see Cialdini, Kallgren, & Reno, 1991). Descriptive norms influence behavior the most when the situation is novel; since when people are uncertain about what to do, they observe and imitate

what others are doing (Cialdini & Trost, 1998). Injunctive norms refer to people's perceptions of what referent others deem morally acceptable (Cialdini et al., 1991). It is argued that injunctive norms influence behavior because people would like to fit in and maintain their social status (Cialdini & Trost, 1998). Thus, one's motive for following the descriptive norm is to behave optimally and be accurate, whereas one's motive for following the injunctive norm is to protect one's moral reputation. In this thesis, I focus on injunctive norms instead of descriptive norms for two reasons. Firstly, studies found injunctive norms to be more effective than descriptive norms in predicting behaviors, attitudes, and behavioral willingness (e.g., Croy, Gerrans, & Speelman, 2010; Smith & Louis, 2008), including tax compliance intentions (Bobek, Robert, & Sweeney, 2007)[1]. Additionally, injunctive norms are found to be effective across situations, whereas descriptive norms are more situation-specific in their effects (Cialdini, Reno, & Kallgren, 1990; Reno, Cialdini, & Kallgren, 1993). Reno at al., (1993) argue that the knowledge of a certain injunctive norms is likely to have the corresponding effect even when the individual is alone, but the same is not expected for the descriptive norms (at least not to the same degree). Therefore, a norm focused intervention to increase tax compliance should focus on injunctive norms as it is argued to be more effective across situations. Secondly, descriptive norms are most effective in novel situations where individuals are looking for cues for the optimal course of action (Cialdini & Trost, 1998), and paying taxes is generally not a novel experience due to its recurring nature. Regardless of the distinctions between the injunctive and descriptive norms, it should be noted that people tend to draw inferences between them (Eriksson, Strimling, & Coultas, 2015).

Social Norms and Tax Decisions

The importance of social norms has been emphasized several times in the tax literature (see Kirchler, 2007, for a review). Those who cheat on their taxes more, perceive non-compliance to be more common within their friend and work circles (Porcano, 1988) and those who perceive higher

[1] In contrast, Hallsworth, List, Metcalfe, and Vlaev, (2017) found that presenting information about the descriptive norm rather than injunctive norm was more effective (although both was effective) on timely tax compliance. However, in this experiment, prior perceived norms were not measured. Therefore, one cannot conclude that descriptive norms are more influential in predicting behavior compared to injunctive norms.

tax non-compliance report higher propensity to evade taxes in the future (Welch et al., 2005). According to Wenzel (2005a), the relationship between (injunctive) social norms and tax compliance is bidirectional, in other words, a higher compliance predict a stronger perceived injunctive norm of compliance, and in return, this perception leads to a higher compliance. The effects of social norms in tax compliance was also investigated experimentally: Presenting tax payers with a text that informs on the fact that most people tend to underestimate the *descriptive* norm of compliance (i.e., underestimate the number of people that are honest with their taxes) or the *injunctive* norm of compliance (i.e., underestimate the number of people that value tax honesty) increases tax compliance (Coleman, 1996, 2007; Wenzel, 2005b). Also, presenting participants with an information that suggests a weak descriptive norm of compliance decreases tax compliance (Lefebvre, Pestieau, Riedl, & Villeval, 2015).

The relationship between social norms and tax compliance is not straightforward. One of the boundary conditions for the effect of social norms on tax decisions has been highlighted by Wenzel (2004), who found that a stronger compliance norm was positively related to tax compliance, but only when participants identified with the reference group (in this case being Australian). This is in line with the predictions of self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) which argues that social identification with the reference group moderates the influence of social norms on the relevant behavior or attitude. Thus, for a norm within a community to influence the respective behavior or attitude, one should have a sense of belonging to that community.

The Interaction of Social Norms and Tax-Related Parameters

There are only a few studies in which the interaction of social norms and the tax-related parameters of tax rate, audit probability, and fine rate were investigated[2]. Alm, Sanchez, and De Juan (1995) carried out the same experiments in both U.S. and Spain, and found country differences in tax compliance and the effects of audit probability and fine rate on tax compliance. Even though

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[2] The classical approach to tax decisions (Alligham & Sandmo, 1972) considers income as another relevant parameter. However, this thesis does not focus on income since similar previous research did not find an effect of the level of income on compliance (see Kogler, Olsen, & Bogaers, 2020)

they did not measure social norms, they have attributed these differences to the differences in tax norms between these countries. Davis, Hecht, and Perkins (2003) modeled the interaction of social norms and enforcement practices. According to their model, the deterrent effects of enforcement practices are weaker in mostly compliant societies (i.e., societies with strong descriptive norm of tax compliance) compared to mostly non-compliant societies. Górecki and Letki (2020) measured perceived norms and manipulated tax rate and fine rate. They found that the effects of tax rate and fine rate was moderated by the norms, such that a higher fine rate led to a higher compliance, but only for those who perceived weaker subjective norms (i.e., perceived injunctive norm within the family and friend circle). In comparison, they found that a higher tax rate led to a higher compliance but only for those who perceived strong descriptive compliance norm. Similar to the latter finding, Wenzel (2004) also reported stronger effects of tax-related parameters under strong compliance norms: Wenzel investigated the interaction of perceived descriptive norms with perceived sanction probability and perceived sanction severity, using self-report measures. In this study, perceived sanction probability was operationalized as the perceived likelihood of paying the missing amount of tax back with interest, paying a large fine, and being taken to court for evading taxes in case of an evasion. The perceived sanction severity was operationalized as the perception of how much trouble these sanctions would cause to one's self. Wenzel did not find any moderating effects of perceived descriptive norms on the perceived sanction probability. However, he found that the effect of perceived sanction severity on tax evasion was moderated by the perceived descriptive norm of compliance. More specifically, higher perceived sanction severity was associated with lower tax evasion, but only for those who perceived stronger descriptive norm of compliance. To summarize, the studies that tested the interactions between social norms and tax parameters did not focus on injunctive social norms and found contradicting results with regards to the existence and the nature of the interactions.

From the perspective of the slippery slope framework of tax compliance, voluntary compliance would ensue within a society in which most people believe people should pay their

taxes honestly and it is citizens' moral duty to honestly pay taxes (Kirchler et al., 2008) in other words, when the injunctive norm of compliance is strong. Accordingly, it would be expected that tax payers would give lower weights to tax-related parameters (i.e., tax rate, audit probability, and fine rate) in tax decisions. Since they would perceive the tax decision as a moral decision, not a financial decision. Meanwhile, in a society in which most people perceive cheating on taxes as a frivolous crime and morally justifiable, it is more likely that the tax decision would be considered as a "rational", financial decision that is made under uncertainty. In this case, it would be expected that tax-related parameters would be more important as they determine the financial outcomes of the tax decision. Hence, I argue that tax-related parameters should have less influence when the injunctive social norm of compliance is prominent. In contrast, the effects of financial tax parameters should be more influential when the injunctive social norm of compliance is not strong.

Social Norms and the Information Acquisition of Deterrence Factors

Correspondingly, social norms can be assumed to have an effect on the acquisition of information on deterrence factors, namely the audit probability and fine rate[3]. Information on deterrence factors should be more relevant for the decision-making process when the compliance norm is weak since then, the tax decision is more likely to be perceived as a decision made under uncertainty to maximize one's outcome. Whereas, information on deterrence factors should be less relevant for the decision-making process when the injunctive social norm of compliance is strong since the tax decision would be more likely to be perceived as a moral decision in this case.

Importance of Investigating the Information Processes

Most decision-making theories make (explicit or implicit) assumptions about the information processing behind the decisions. Thus, it is quite important to test these assumptions in addition to the outcome predictions of these theories. It is possible that a certain theory correctly predicts the outcome variable, meanwhile, an investigation of the information processing falsifies

[3] Same is not expected for tax rate information since tax rate is a relevant information to acquire for those who are intending to comply with the taxes regardless of the financial costs and benefits of the decision, and for those who are basing their decisions on the financial outcomes. Since, the tax rate determines the tax payable, especially in this experimental set up, it is absolutely necessary to acquire this information to comply.

the underlying mechanisms that are argued to be governing the decision (e.g., Johnson, Schulte-Mecklenbeck, & Willemsen, 2008). An investigation of the process is especially useful when different theories make similar predictions with regards to the outcome variable, but make different assumptions about the cognitive processing behind (Schulte-Mecklenbeck et al., 2017). However, research on tax decisions mostly paid attention to the outcome variables while ignoring the information processing underlying the decision (for an exception see Kogler, Olsen, Müller, & Kirchler, under review). Acknowledging this problem, this thesis investigates the information acquisition process of tax-related factors in the decision-making process, in addition to the compliance decision.

MouselabWEB as a Tool to Explore Information Acquisition Processes

MouselabWEB (Willemsen & Johnson, 2011) provides a way to study information acquisition processes. With mouselabWEB, certain information is hidden behind labeled boxes on the screen and the information can only be acquired when participants move their mouse cursor over the relevant boxes. This means that participants have to intentionally seek the information they would like to see. MouselabWEB records which information is sought for how many times, for how long, and in what sequence; without making noticeable changes in the cognition (Willemsen & Johnson, 2011). This makes it possible to test, for example, whether people who seek information on audit probability and fine rates more frequently (or for longer durations) also make decisions in accordance with the purely rational considerations of financial costs and benefits of compliance (or evasion).

Research Questions

This thesis examines several research questions. Firstly, the effect of injunctive norm information (strong and weak compliance norm information) on the tax compliance decision is investigated. In line with the findings from the literature, it is expected that compared to a control group, presenting information that suggests a strong injunctive norm of compliance will result in a higher level of tax compliance, and this effect will be moderated by the level of social identification

so that it will be stronger when the level of social identification is higher. Additionally, compared to the control group, presenting information that suggests a weak injunctive norm of compliance will result in a lower level of tax compliance, and this effect will be moderated by the level of social identification so that it will be stronger when the level of social identification is higher.

Secondly, the effects of tax-related parameters (tax rate, audit probability, and fine rate) on the tax decisions and whether these effects are moderated by the injunctive norm information is investigated. Correspondingly, it is expected that a lower tax rate, a higher audit probability, and a higher fine rate will lead to higher levels of tax compliance[4]. Additionally, the effects of these parameters on compliance are expected to be influenced by the social norm manipulation. Such that, the effects of tax rate, audit probability, and fine rate will be *weaker* when participants are presented with the information that suggests a strong injunctive social norm of compliance. Whereas the effects of these parameters on compliance will be *stronger* when participants are presented with the information that suggests a weak injunctive social norm of compliance.

Finally, whether the information acquisition of deterrence factors (i.e., audit probability and fine rate) are influenced by the injunctive norm information is investigated. It is expected that compared to the control group, presenting information that suggests a strong injunctive norm of compliance will lead to less frequent/shorter acquisition of the information on deterrence factors. Additionally, this effect will be moderated by the level of social identification so that it will be stronger when the level of social identification is higher. Similarly, presenting information that suggests a weak injunctive norm of compliance will lead to more frequent/longer acquisition of the information on deterrence factors, and once again, this effect will be moderated by the level of social identification so that it will be stronger when the level of social identification is higher.

All hypotheses have been preregistered prior to data collection and can be found at https://osf.io/g9eyk?view_only=.

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[4]Allingham and Sandmo (1972) did not make sure predictions on the effect of tax rate on compliance, arguing that the prediction would differ based on the risk preferences of the tax payer. However, according to Yitzhaki (1974), a lower tax rate would lead to a higher compliance assuming that fine is contingent on the amount of tax evaded (which is the case in the current experiment).

Method

Participants

A total of 452 participants (248 women, 203 men, 1 other) between the ages of 18 and 75 (M= 34.31 , SD = 12.12) participated in the experiment. The number of participants assigned to each injunctive norm condition were: 155 in strong norm, 145 in weak norm, and 152 in control condition. All participants were recruited from the UK via Prolific online survey services. Based on the available resources and power considerations, targeted sample size was N = 450 (see Appendix A for the results of a sensitivity power analysis for each hypothesized effect). Participants received £3.5 for the participation, and they had the opportunity to earn up to an additional £5 based on their decisions in the experiment. On average, participants earned an additional £2.79 (SD = 0.81).

Design and procedure

Relative tax compliance, frequency and the duration of acquisition of information on audit probability and fine rate were the main dependent variables of interest. The experiment was a repeated measures design with 2 between-subject and 3 within-subject factors. The three within-subject factors were the presented information on the tax rate, audit probability, and fine rate in the tax decision task. Over 18 rounds, the presented information on these three factors varied, such that, in each round a unique combination of tax rate (20% or 40%), audit probability (10%, 20%, or 30%), and fine rate (paying back the evaded amount plus 50%, 100%, or 150% of the evaded amount) values were presented. The main between-subject factor of interest was the injunctive compliance norm information (with three levels of: strong norm condition, weak norm condition, and control condition).The injunctive norm information was presented right before the 18 rounds of tax compliance decisions started. The second between-subject factor was the presentation order of the tax-related parameters in the tax decision task. To control for the potential display effects of the

tax-related parameters, the presentation matrix was flipped both horizontally and vertically for half of the participants.

Manipulation of the Injunctive Norm Information

Before the 18 rounds of tax decisions started, participants assigned to the strong norm condition were presented with a text that suggests compliance to be the general injunctive norm, whereas participants in the weak norm information condition were presented with a text that suggests a weaker injunctive norm of compliance (see Appendix B for full material). Meanwhile, no information group was not presented with such texts. To avoid demand effects, the manipulation texts were premised with the an explanation justifying the reason why social norm information was conveyed in the experiment ("*...People may have different ideas about other citizens' tax morals… To make sure that every participant in this study has access to this information before they make their tax decisions, we present you with an overview…"*). As part of the World Values Survey Wave 5 (Inglehart et. al., 2014), an item measuring the justifiability of cheating on taxes, that is part of the morally debatable behaviors scale (Harding & Phillips, 1986), was asked. Using the responses of the UK participants to this item, two different texts were created for the manipulation of the information on injunctive norms. Each of these texts focused on the different parts of the data so that they emphasized either a stronger or weaker injunctive compliance norm. No deception was used in the manipulation since manipulation texts were based on actual findings. To convey the creditability of the information presented, participants were given a very brief description of the World Values Survey first. Subsequently, participants that have been assigned to the strong norm condition were presented with the text below. This text focused on the parts of the data that accentuate the injunctive norm of compliance.

> "*As part of the recent World Values Survey, UK citizens were asked to rate the justifiability of cheating on taxes. When asked about their evaluation of this*

behaviour on a scale from 1 = never justifiable, to 10 = always justifiable, only about 9 out of each 100 citizens (8.5 % to be exact) selected an option above 5. Based on this information, we can see that only a very small portion (less than 9%) of UK citizens think that it can be justifiable to cheat on taxes more often than not."

Whereas, participants assigned to weak norm information condition were presented with the text below. This text mentioned the parts of the data that underlined the lack of injunctive compliance norm.

"*As part of the recent World Values Survey, UK citizens were asked about the justifiability of cheating on taxes. About 56 out of each 100 citizens (56.1 % to be exact) said that it is never justifiable to cheat on taxes. Based on this information, we can see that a large portion (almost half) of UK citizens think it may (at least sometimes) be justifiable to cheat on taxes."*

Finally, as mentioned earlier, participants assigned to the no information condition were not provided with any such texts.

Tax decision task

Following the norm information manipulation, repeated measurements of tax compliance and information acquisition of tax parameters were made across 18 rounds. For this part of the experiment MouselabWEB (Willemsen & Johnson, 2011) was used. In each round, information on tax parameters were hidden behind labelled boxes, and related information would appear once participants move their mouse cursor over the corresponding boxes (see Figure 1), which made it possible to monitor the information acquisition process of the respective parameters.

Figure 1

An example of the presentation of tax parameters in the decision rounds

Note. Participants are able to see the relevant information once they move their mouse cursor over the desired box. In this example information on income is acquired. Presentation matrix was flipped both horizontally and vertically for half of the participants to control for possible display effects.

Each round, participants were endowed with 1000 Experimental Currency Units (ECU). Plus, they had the opportunity to earn an additional 1000 ECU, depending on their performance in the real-effort slider task (Gill & Prowse, 2012)[5]. Thus their income could vary between 1000 ECU and 2000 ECU. Participants were then required to pay taxes on these incomes. Tax rate represented the percentage of their income they were required to pay as tax. Audit probability referred to the chance of an audit taking place in that particular round. Finally, fine rate represented the rate of which participants were required to pay back the evaded amount, in case an audit took place in that round. For each round, participants decided on the amount of tax they want to pay based on these tax parameters and, immediately after their decisions, they received feedback on whether they were audited in each round.

At the end of the tax decision rounds, one round was randomly selected and the respective payment was made (exchange rate for the experimental currency was 400 ECU = £1). The descriptions of the tax-related parameters, the structure of the tax decision task, and the details of the payment were communicated to the participants beforehand.

[5] Slider task requires moving sliders across the screen to the targeted position. In the experiment, 10 sliders were presented for 20 seconds at the beginning of the rounds. For each correctly positioned slider (positioned right at the middle) participants earned an extra 100 ECU.

Post-experimental questionnaire

As part of the post-experimental questionnaire, the following variables were measured in the order that they are presented here. Three multiple-choice questions were included as attention checks (e.g., "What were the tax rates in the study?"). Social identification was measured with two items (e.g., "Being a member of the community of UK citizens is important to me."; Likert scale from 1 = *do not agree at all* to 7 = *agree completel*y). Perceived injunctive norm (e.g., "Do most UK citizens think they should honestly declare cash earnings on their tax return?"; Likert scale from 1 = *No* to 5 = *Yes*) and personal norm (e.g., "Do you think you should honestly declare cash earnings on their tax return?"; Likert scale from 1 = *No* to 5 = *Yes*) were measured with three items each. The items for social identification, perceived injunctive norm, and personal norm were modified form Wenzel (2004). Mean scores for social identification (α = .91), perceived injunctive norm (α = .44), and personal norm (α = .57) was used as the respective measures. Trust in tax authorities was measured with the item "The UK Tax Office is trustworthy.", and the power of tax authorities was measured with the item "The UK Tax Office has extensive means to force citizens to be honest about tax.". Both trust and power items were on a Likert scale from 1 = *Strongly disagree*, to 7 = *Strongly agree*, and both items were modified from (Kogler, Muehlbacher, & Kirchler, 2015). Individual risk attitudes were measured with the item "How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" on a scale from 1 = *Definitely avoiding risks* to 7 = *Fully prepared to take risks* (Dohmen et al., 2011). Dispositional greed was measured with 7 items (e.g., "I always want more."; Likert scale from 1 = *Strongly disagree* to 5 = *Strongly agree*; Seuntjens, Zeelenberg, Van de Ven, & Breugelmans, 2015)[6]. Finally, items for age, gender, prior participation in a tax study, self-report items for the attention to and the understanding of the information presented in the study, an open-ended item for the purpose of the study, and two items acquiring about the types of electronic

[6] The dispositional greed items will be used for a separate project on greed and tax compliance.

devices used in the experiment were included (see Appendix B for measures used in the experiment in detail).

Results

Manipulation Check

To check whether the manipulation of injunctive norm information had the intended effects, perceived injunctive norm measure was regressed to the injunctive norm information manipulation. As expected, on average, perceived injunctive norm scores were significantly higher in the strong compliance norm condition compared to the control condition ($b = .26, t(449) = 4.98, p < .001$) and the weak compliance norm condition ($b = .19 , t(449) = 3.56, p < .001$). In contrast to the assumptions, the perceived injunctive norm scores were higher in weak compliance norm condition compared to control condition, although this difference was not statistically significant ($b = .07$, $t(449) = 4.98, p = .179$). Thus, as intended, presenting the strong compliance norm information led to an increase in the perceived injunctive norm, however, presenting the weak compliance norm information did not decrease the perceived injunctive norm as expected.[7]

Relative Tax Compliance

In this section, the effects of injunctive norm manipulation, tax-related parameters, and their interactions on relative tax compliance are reported. Relative compliance represents the percentage of tax due that has been paid in each round, thus takes values between 0 and 1 including the end points. Table 1 summarizes relative compliance scores across experimental conditions.

[7] As preregistered, I tested whether the influence of norm manipulation on outcome variables decreased over time. Test of the interaction term for round number (continuous) and norm manipulation did not reveal any significant effects for any of the analyses. Additionally, an interaction between the norm manipulations and manipulation check (perceived injunctive norm) was investigated, once again, no significant interaction effects were observed.

Table 1

Relative Tax Compliance Across Experimental Conditions

	Relative Tax Compliance		
	M	*SD*	*N*
Norm (Strong)	.72	.41	2790
Norm (Weak)	.74	.38	2610
Norm (Control)	.66	.41	2736
Tax Rate (20%)	.72	.40	4068
Tax Rate (40%)	.69	.40	4068
Audit Probability (10%)	.59	.43	2712
Audit Probability (20%)	.70	.40	2712
Audit Probability (30%)	.82	.33	2712
Fine Rate (+ 50%)	.64	.42	2712
Fine Rate (+ 100%)	.70	.40	2712
Fine Rate (+ 150%)	.78	.37	2712

Note. Mean and the standard deviation scores of relative tax compliance across experimental conditions. Total number of participants is 452. *N*s represent the number of observations.

The effects of injunctive norm manipulation on relative tax compliance

To test the effect of the injunctive norm manipulation on relative tax compliance, a mixed-effects model with relative compliance as the dependent variable was carried out. Participants were included as the random intercept and injunctive norm information was dummy coded with control group as the reference group and dummies were included as the fixed effects (see Table 2). Results revealed a marginally significant positive effect of strong compliance norm on relative compliance ($B = 0.06, p = .053$) and a significant positive effect of weak compliance norm on relative compliance ($B = 0.08, p = .008$). The two social norm conditions did not differ from each other significantly ($B = -0.02, p = .461$).

Table 2

Effect of injunctive norm information on tax compliance

Variables	Relative Compliance		
	B	*SE*	*p*
(Intercept)	0.66***	0.02	<.001
Norm (Strong Compliance)	0.06†	0.03	.053
Norm (Weak Compliance)	0.08**	0.03	.008

Note. Multilevel model with participants ($N = 452$) as random intercept, with tax compliance as the outcome variable. Total number of observations are $N = 8136$. Tax compliance represents the percentage of tax due that has been paid (tax paid / tax due). Independent variable of injunctive norm information was dummy coded and no information condition was selected as the reference group. $\sigma 2 = 0.10$, $\tau 00 = 0.06$, $ICC = .40$. $^{\dagger} p < 0.10$, $^{*} p<0.05$, $^{**} p<0.01$, $^{***} p<0.001$.

Next, I tested whether there was an interaction effect of injunctive norm manipulations and social identification, results suggested no significant interaction effects for social identification and the experimental manipulations ($B = -0.00, p = .807$, and $B = 0.00, p = .941$ for strong and weak norm manipulations respectively).

Effects of tax-related parameters on relative tax compliance

Table 3 presents mixed-effects models with relative compliance as the dependent variables (same as before, random intercept was included for the participants). First model tested the effects of tax parameters, lowest values of tax parameters were used as the reference categories. In line with the expectations, higher tax rate led to a lower relative compliance ($B = -0.03, p < .001$), higher audit probabilities resulted in a higher relative compliance ($B = 0.11, p < .001$ and $B = 0.23$, $p < .001$, respectively), and higher fine rates led to a higher relative compliance ($B = 0.06, p < .001$ and $B = 0.14, p < .001$, respectively).

Table 3

Effects of tax-related parameters and injunctive norm information on tax compliance

Variables	Relative Compliance					
	Model 1			Model 2		
	B	*SE*	*p*	*B*	*SE*	*p*
(Intercept)	0.54***	0.01	<.001	0.47***	0.02	<.001
Tax Rate (40%)	-0.03***	0.01	<.001	-0.01	0.01	.241
Audit (20%)	0.11***	0.01	<.001	0.13***	0.01	<.001
Audit (30%)	0.23***	0.01	<.001	0.25***	0.01	<.001
Fine (+ %100)	0.06***	0.01	<.001	0.06***	0.01	<.001
Fine (+ %150)	0.14***	0.01	<.001	0.15***	0.01	<.001
Norm (Strong)				0.08*	0.03	.017
Norm (Weak)				0.13***	0.04	<.001
Tax Rate (40%)*Norm (Strong)				-0.03†	0.02	.051
Tax Rate (40%)*Norm (Weak)				-0.03*	0.02	.034
Audit (20%)*Norm (Strong)				-0.01	0.02	.452
Audit (20%)*Norm (Weak)				-0.04†	0.02	.060
Audit (30%)*Norm (Strong)				0.01	0.02	.694
Audit (30%)*Norm (Weak)				-0.06**	0.02	.004
Fine (+ %100)*Norm (Strong)				-0.01	0.02	.695
Fine (+ %100)*Norm (Weak)				0.01	0.02	.616
Fine (+ %150)*Norm (Strong)				-0.01	0.02	.456
Fine (+ %150)*Norm (Weak)				-0.03	0.02	.185

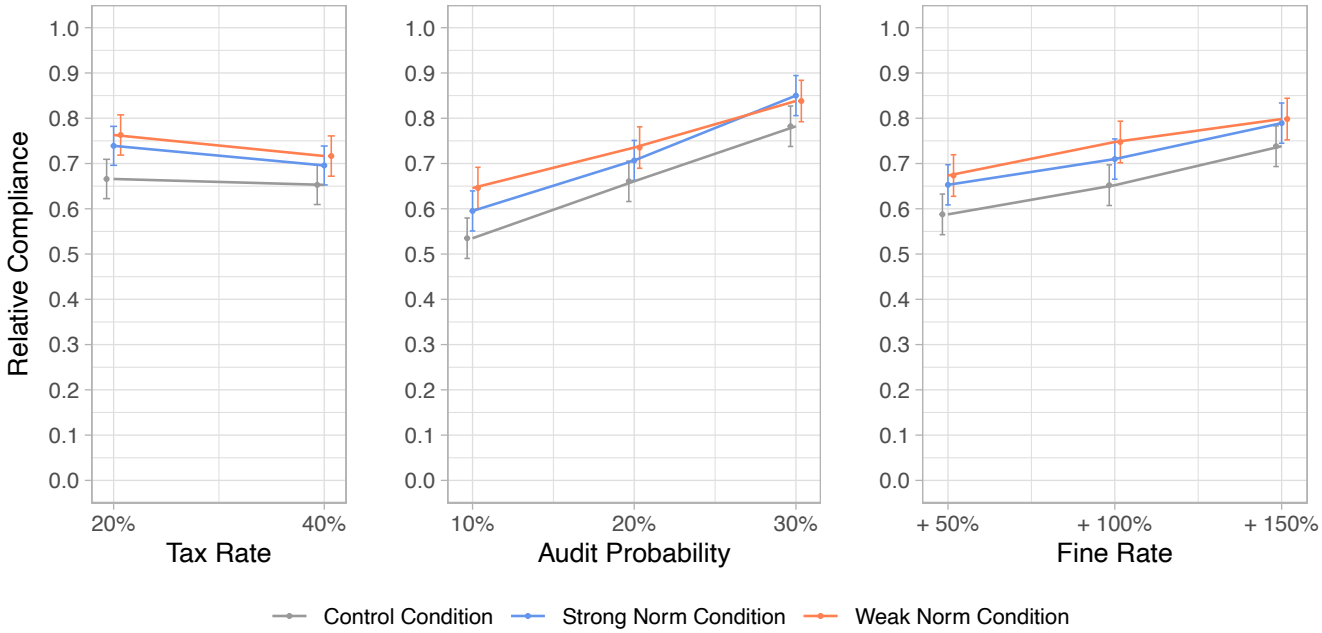
Note. Multilevel models with participants ($N = 452$) as random intercept, with relative tax compliance as the outcome variable. Total number of observations are $N = 8136$. Relative tax compliance represents the percentage of tax due that has been paid (tax paid / tax due). Injunctive norm information, tax rate, audit probability, and fine was dummy coded. For injunctive norm information, no information condition was selected as the reference group. For tax parameters lowest categories (i.e., tax rate: 20%, audit probability: 10%, and fine rate: + 50%) were chosen as the reference groups. Model 1: $\sigma^2 = 0.08$, $\tau_{00} = 0.07$, $ICC = .44$; model 2: $\sigma^2 = 0.08$, $\tau_{00} = 0.06$, $ICC = .44$. $^{\dagger} p < 0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$.

The interaction of tax-related parameters and injunctive norm manipulations

The second model (see Table 3) tested the interaction between the tax-related parameters and norm information manipulations. Results suggested that the effect of tax rate was stronger in norm conditions (B = -0.03, p = .051 and B = -0.03, p = .034, for strong and weak norm conditions respectively) compared to the control condition (see Figure 2). Meanwhile, the the effect of tax rate on relative compliance did not differ between the two experimental conditions (B = 0.00, p = .843). With regards to the effect of audit probability, the pattern of results suggested that compared to the control condition the effect of audit probability was stronger in the strong norm condition (but only for the audit probability of 30%, B = 0.06, p = .001) and in the weak norm condition (B = -0.04, p = .060 and B = -0.06, p = .004, for the audit probability of 20% and 30% respectively) (see Figure 2). Finally, none of the interaction effects of fine rates and norm conditions were significant (see Table 3, Model 2).

Figure 2

Interaction effects of tax-related parameters and injunctive norm information on tax compliance



Note. Mean relative compliance scores for different levels of tax-related parameters across injunctive norm conditions. Error bars represent 95% confidence intervals. For each graph, parameters are extracted from a multilevel model with participants (N = 452) as random intercept and the main effects and the interaction effects of the respective factor as the fixed effects. Total number of observations are N = 8136.

Acquisition of Audit Probability and Fine Rate Information

Acquisition frequencies refer to the number of times respective boxes were opened in each round. Frequency of box openings ranged from 0 to 7 for audit probability information (M= 1.28 , SD = 0.87), and from 0 to 8 for fine rate information (M= 1.37 , SD = 1.07). Acquisition durations refer to the total length of time (in milliseconds) respective boxes stayed open in each round. As preregistered, durations were log transformed to attain a more symmetric distribution. Log transformed duration scores for audit probability information ranged from 0 to 11.34 (M = 5.98, SD = 2.2), and the scores for fine rate information ranged from 0 to 10.73 (M = 5.63, SD = 2.63). For some rounds, process data was lost due to a technical error, lost observations amounts to about 2.8% of the total observations.

The effect of social norm manipulation on the acquisition of audit probability information

To test the effects of norm manipulation on the acquisition of audit probability information, separate models with frequency and the (log transformed) duration of audit probability as the dependent variables were carried out. Once again, random intercepts for the participants were included and dummies for norm information was included as fixed effects. Results suggested that the acquisition frequency of audit probability information were significantly lower in the strong compliance norm condition compared to the control condition (B = -0.12, p = .033). Meanwhile, no significant difference was observed between the weak compliance norm condition and the control condition (B = -0.09, p = .132). Also, the acquisition durations of audit probability information did not differ across conditions (see Table 4).

The interaction effects of social identification and the norm manipulations on acquisition of audit probability information were not significant (see Appendix D Table D1).

Table 4

Effect of injunctive norm on the of acquisition of audit probability information

Variables	Acquisition of Audit Probability					
	Frequency			Duration (log)		
	B	*SE*	*β*	*B*	*SE*	*β*
(Intercept)	1.35***	0.04	0.09	6.00***	0.13	0.01
Norm (Strong)	-0.12*	0.06	-0.14	-0.05	0.19	-0.02
Norm (Weak)	-0.09	0.06	-0.10	-0.05	0.19	-0.02

Note. Multilevel models with participants ($N = 452$) as random intercept, frequency and the (log transformed) duration of acquisition of audit probability as the outcome variables. Total number of observations are $N = 7915$ and $N = 7908$ respectively. Injunctive norm information was dummy coded and control condition was selected as the reference group. First model: $\sigma^2 = 0.54$, $\tau_{00} = 0.22$, $ICC = .29$; second model: $\sigma^2 = 2.24$, $\tau_{00} = 0.253$, $ICC = .53$. $^{\dagger}p < 0.10$, $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$.

The effect of social norm manipulation on the acquisition of fine rate information

To test the effects of norm manipulation on the acquisition of fine rate information, same analyses were carried out, this time for the fine rate information (see Table 4). Similar pattern of results were found for the fine rate information. Accordingly, the acquisition frequency of fine rate information was lower in the strong norm condition compared to the control condition ($B = -0.18$, $p = .015$) but not statistically different from the weak norm condition ($B = -0.11$, $p = .141$). Also, the weak norm condition did not significantly differ from the control condition ($B = -0.07$, $p = .348$). As for the acquisition duration of fine rate, no significant differences were observed across conditions (see Table 5).

Finally, the interaction effects of social identification and norm manipulations on acquisition of fine rate information were not significant (see Appendix D Table D2).

Table 5

Effect of injunctive norm on the of acquisition of fine rate information

Variables	Acquisition of Fine Rate					
	Frequency			Duration (log)		
	B	*SE*	*β*	*B*	*SE*	*β*
(Intercept)	1.47 ***	0.05	0.09	5.78***	0.15	0.06
Norm (Strong)	-0.18*	0.07	-0.17	-0.30	0.22	-0.11
Norm (Weak)	-0.07	0.07	-0.07	-0.12	0.22	-0.04

Note. Multilevel models with participants ($N = 452$) as random intercept, frequency and the (log transformed) duration of acquisition of audit probability as the outcome variables. Total number of observations are $N = 7915$ and $N = 7909$ respectively. Injunctive norm information was dummy coded and control condition was selected as the reference group. First model: $\sigma^2 = 0.79$, $\tau_{00} = 0.37$, $ICC = .32$; second model: $\sigma^2 = 3.54$, $\tau_{00} = 3.42$, $ICC = .49$. $^{\dagger}p < 0.10$, $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$.

Post-experimental questionnaire

To investigate the relationship between the post experimental measures and relative compliance, relative compliance was regressed on the self-report measures of risk attitudes, personal norm, perceived injunctive norm, perceived trust in authorities and perceived power of authorities. Similar to previous analyses random intercept for the participants was included. Results suggested a significant negative effect of risk attitudes ($B = -0.03, p < .001$). In other words, higher self-reported risk preference was associated with lower relative compliance. Additionally, and a significant positive effect of personal norms ($B = 0.06, p < .001$) was observed, suggesting a positive association between personal norms of tax compliance and relative tax compliance. However, no significant effects were observed for perceived injunctive norm ($B = 0.01, p = .747$), trust in authorities ($B = 0.01, p = .436$), or power of authorities ($B = 0.00, p = .868$).

Further investigations revealed that strong and weak norm manipulations did not have any significant effect on self-reported risk attitudes ($b = -.04, t(449) = -0.74, p = .463$ and $b = -.05, t(449) = -0.83, p = .409$, respectively), personal norms ($b = .05, t(449) = 0.84$ and $p = .401, b = .04,$

$t(449) = 0.67, p = .505$), perceived trust in authorities ($b = -.02, t(449) = -0.39, p = .701$ and $b = -.04, t(449) = -0.64, p = .526$), or perceived power of authorities ($b = .02, t(449) = 0.44, p = .660$ and $b = -.02, t(449) = -0.38, p = .703$).

Discussion

The current experiment tested the effect of presenting injunctive norm information on relative tax compliance, the interaction effects of tax-related parameters and injunctive norm information on relative tax compliance, and the effect of presenting injunctive norm information on the acquisition of deterrence factors. In summary, findings suggested that presenting norm information (either suggesting a strong or a weak norm) increased the relative tax compliance. Tax-related parameters showed the hypothesized effects, more specifically, lower tax rate, higher audit probability, and higher fine rate led to higher relative compliance. Presenting norm information (either suggesting a strong or a weak norm) diminished the effect of audit probability, whereas the effect of tax rate was enhanced with the presentation or strong norm information. Meanwhile the effect of fine rate was not influenced by the presentation of injunctive norms. Presentation of information suggesting a stronger injunctive norm decreased the acquisition frequencies of information on the deterrence factors (both audit probability and fine rate), while presenting information suggesting a weaker injunctive norm did not have an impact on the acquisition frequencies. Additionally, the acquisition durations were not influenced by the norm manipulation.

Even though the assumed effects of the strong compliance norm was found, the weak compliance norm did not have the expected opposite effects, but actually had more or less the same effects. The manipulation check indicated that the presentation of a weak norm did not result in a lower perception of the social norms. In fact, on average, participants scored higher on the perceived injunctive norm measure in the weak norm condition compared to the control condition (although not significantly higher). Therefore, the weak injunctive norm manipulation did not have the intended effect, or no effect at all on the perceived norms. Perhaps because participants' initial

perceptions of the social norms were not very different than the manipulation portrayed the norms to be. Since the manipulation was based on a real data, the degree to which these findings could be portrayed differently was constrained. Responses to the measure of tax morals that was asked in the World Values Survey (Inglehart et al., 2014) presented a quite positive picture for the U.K. sample, hence it was difficult to frame these results negatively. A manipulation that is not based on a real data might have been stronger, however, the use of deception was not preferred not only due to ethical concerns but also to make the manipulation more believable. Additionally, any similar intervention made by the tax authorities would also need to use real data, therefore current design is more realistic and applicable.

Although presenting information on "weak" injunctive norms did not significantly alter perceived injunctive norms, it did lead to an increase in relative tax compliance. There might be several explanations for why this happened. One possibility is that, norm manipulations may have acted as a reminder of the ethical aspect of the tax decisions. Therefore, perhaps made participants' tax morals, and/ or perceived injunctive norms more salient. Another possibility is that presenting information on the real-world tax morals of citizens may have created the expectation that their decisions in the experiment should be more in line with how they would make tax decisions outside the experimental context. Therefore, participants may have perceived the decisions less as part of a game but more as a reflection of their real life tax morals. This would be inline with previous findings that suggests using more realistic materials and settings in tax experiments lead to higher compliance (e.g., Cadsby, Maynes, & Trivedi, 2006; Wartick, Madeo, Vines, 1999).

The current experimental structure provides a rather conservative test for the effects of injunctive social norm manipulation for two reasons. Firstly, the injunctive norm manipulation was referring to the real life tax morals whereas participants made decisions within the experimental context. It could be expected that the same norm intervention would be more influential in real life tax decisions. Secondly, the constant changes in the values of within factors (tax-related parameters)

across rounds is likely to made these factors salient, thus suppressing the effect of norm manipulations.

Another unexpected finding was that the effect of tax rate on relative compliance was stronger in norm conditions compared to the control condition. It was hypothesized that the tax-related parameters would be less influential when the injunctive norm of compliance is strong. Findings suggested that, higher tax rates led to a decrease in relative compliance as expected, but contrary to the expectations, this effect was stronger for those in the strong norm condition compared to the control condition. One explanation for this result would be the following: Perhaps participants in the strong norm condition acquired the information on tax rate more since this information was absolutely necessary to acquire in order to comply (as participants were required to state the amount of tax they want to pay). If in the strong norm condition, this information was acquired more often (or for longer), then it is also possible that in the strong norm condition participants were influenced by the content of the information more. However, explorations on the information acquisition of tax rate information suggested the opposite, tax rate information was actually acquired less frequently in strong norm condition compared to the control condition (see Appendix E). This finding is interesting because although tax rate information was sought out less often in strong norm condition compared to the control condition, the effect of (level of) tax rate on relative tax compliance was stronger in the strong norm condition.

Overall, findings support prior findings of the effect of injunctive social norm on tax compliance (e.g., Bobek et al., 2007; Wenzel 2005a, 2005b). However, there was no evidence suggesting that the level of social identification moderated the effect of norm manipulation on tax compliance. It should be noted that since both norm manipulations and the social identification were at the participant level, power was relatively lower for this analysis. As for the interaction of social norms and tax-related parameters, results were not quite in line with the prior findings. Similar to Górecki and Letki (2020)'s findings, I found that the effect of tax rate was stronger in the

strong norm condition compared to the control condition; however, they reported a positive main effect of tax rate on tax compliance, whereas I found a negative main effect. Both Górecki and Letki (2020) and Wenzel (2004) found that social norms moderated the effect of fine rates but in opposite directions (the effect of fine rate under strong norm of compliance was found to be weaker for the former and stronger for the latter). I, however, did not find any interaction effects of fine rate and social norms on compliance, therefore results failed to support either of these findings. Furthermore, I found that the effect of audit probabilities were influenced by social norms, whereas Wenzel (2004) did not observe an interaction between audit probability and social norms. Finally, as a novel finding, I found that social norms influenced the information processing of audit probabilities and fine rates, such that information on these factors were acquired less often in the strong norm condition. An important implication of this findings is that the theories of tax decisions, should also account for the changes in the underlying decision-making process caused by the social factors.

Conclusion

Presenting an information that informs about the injunctive social norms resulted in a higher relative compliance. Also, presenting an information that informed about a stronger injunctive norm influenced the information search process such that the information on deterrence factors were sought out less. Overall, findings suggested that presenting an injunctive social norm information influence both tax compliance and the information processing in tax decisions. Accordingly, it is concluded that communicating a positive prevailing social norm of compliance might be an effective and a low-cost way to tackle tax evasion.

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Appendix A

Results of the Sensitivity Power Analysis of the Hypothesized Effects

R-package "simr" (Green & MacLeod, 2016) was used to make the power calculations for the multilevel model with a random intercept for the participants. Calculations were based on Monte Carlo simulations and 1000 simulations were carried out for each calculation. Pilot data was created from the start. The parameters of residual variances and random intercept variances were specified based on results of two similar experiments (see Kogler et al., 2020; Kogler, et al., under review). Same as the planned analyses, three levels of injunctive norm information (between factor), fine rate (within factor), and audit probability (within factor), also, two levels of tax rate (within factor) were dummy coded in the pilot data.

Minimum detectable effect sizes for the total of 450 participants, with an alpha of 0.05, and for approximately 80 % power are as follows: Fixed effect of 0.10 ($\beta = 0.143$) for injunctive norm information (for either of the dummies) on compliance can be detected with a power of 85%. Interaction effect of 0.050 ($\beta = 0.046$) for injunctive norm information (for either of the dummies) and fine rate/audit probability (for either of the dummies) can be detected with a power of 88%. The Interaction effect of 0.05 ($\beta = 0.055$) for social norm (for either of the dummies) and tax rate can be detected with a power of 91%. The fixed effect of 0.350 ($\beta = 0.09$) for social norm (for either of the dummies) on frequency acquisition of fine rate information can be detected with a power of 86%. The fixed effect of 0.30 ($\beta = 0.088$) for injunctive norm information (for either of the dummies) on frequency acquisition of audit probability information can be detected with a power of 79%. The fixed effect of 0.60 ($\beta = 0.080$) for injunctive norm information (for either of the dummies) on the duration of the acquisition of fine rate information can be detected with a power of 79%. The fixed effect of 0.55 ($\beta = 0.120$) for injunctive norm

Appendix A (Continued)

information (for either of the dummies) on the duration of the acquisition of audit probability information can be detected with a power of 85%.

Appendix B

Manipulation of Strong and Weak Compliance Norms

First text was used in the strong compliance norm condition, second text was used in the weak compliance norm condition.

1)

“ Before you start making decisions about paying taxes in this study, we would like to give you an idea about the tax norms in the UK. People may have different ideas about other citizens’ tax morals. Some might underestimate, whereas some might overestimate the number of citizens who believe people should be honest when reporting their taxes. To make sure that every participant in this study has access to this information before they make their tax decisions, we present you with an overview of how other UK citizens think about tax compliance:

The World Values Survey is one of the most credible worldwide surveys, and it has been carried out since 1981. These surveys are nationally representative and reach out to almost 400,000 participants per year.

As part of the recent World Values Survey, UK citizens were asked to rate the justifiability of cheating on taxes. When asked about their evaluation of this behaviour on a scale from 1 = never justifiable, to 10 = always justifiable, only about 9 out of each 100 citizens (8.5 % to be exact) selected an option above 5. Based on this information, we can see that only a very *small portion* (less than 9%) *of UK citizens think that it can be justifiable to cheat on taxes* more often than not.”

2)

“Before you start making decisions about paying taxes in this study, we would like to give you an idea about the tax norms in the UK. People may have different ideas about other citizens’ tax morals. Some might underestimate, whereas some might overestimate the number of citizens who

Appendix B (Continued)

believe people should be honest when reporting their taxes. To make sure that every participant in this study has access to this information before they make their tax decisions, we present you with an overview of how other UK citizens think about tax compliance:

The World Values Survey is one of the most credible worldwide surveys, and it has been carried out since 1981. These surveys are nationally representative and reach out to almost 400,000 participants per year.

As part of the recent World Values Survey, UK citizens were asked about the justifiability of cheating on taxes. About 56 out of each 100 citizens (56.1 % to be exact) said that it is never justifiable to cheat on taxes. Based on this information, we can see that a *large portion* (almost half) *of UK citizens think it may* (at least sometimes) *be justifiable to cheat on taxes*."

Appendix C

Post-Experimental Questionnaire

Each group of items were presented in new pages, and in the order that they are presented here.

i) Attention and memory check items

1. What were the tax rates in the study?

20% and 40%

20% and 30%

10% and 20%

2. What were the audit probabilities in the tax study?

5%, 15%, and 25%

10%, 20%, and 30%

10%, 30%, and 50%

3. What were the fine levels in the tax study?

Payback + 100%, 150% or 200% of the evaded amount

Payback + 50%, 100% or 150% of the evaded amount

Payback + 50%, 150% or 250% of the evaded amount

ii) Social identification items. These items were modified from Wenzel (2004)

(1 = *do not agree at all*, 7 = *agree completely*)

1.Being a member of the community of UK citizens is important to me.

2. I feel a sense of pride in being a member of the community of UK citizens.

Appendix C (Continued)

iii) Injunctive social tax norms (modified from Wenzel, 2004)

(1 = *No*, 5 = *Yes*)

2. Do most UK citizens think they should honestly declare cash earnings on their tax return?

3. Do most UK citizens think it is acceptable to overstate tax deductions on their tax return? (R)

4. Do most UK citizens think working for cash-in-hand payments without paying tax is a trivial offence? (R)

iv) Personal tax norms (Wenzel, 2004)

(1 = *No*, 5 = *Yes*)

1. Do you think you should honestly declare cash earnings on your tax return?

2. Do you think it is acceptable to overstate tax deductions on your tax return? (R)

3. Do you think working for cash-in-hand payments without paying tax is a trivial offence? (R)

v) Trust and Power towards authorities respectively (modified from Kogler et al., 2015)

(1 = *Strongly disagree*, 7 = *Strongly agree*)

1.The UK Tax Office is trustworthy.

2. The UK Tax Office has extensive means to force citizens to be honest about tax.

vi) Individual risk attitudes (Dohmen et al., 2011)

(1 = *Definitely avoiding risks*, 7 = *Fully prepared to take risks*)

How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?

Appendix C (Continued)

vii) Dispositional greed scale (Seuntjens et al., 2015)

(1 = *Strongly disagree*, 5 = *Strongly agree*)

1. I always want more.
2. Actually, I'm kind of greedy.
3. One can never have too much money.
4. As soon as I have acquired something. I start to think about the next thing I want.
5. It doesn't matter how much I have. I'm never completely satisfied.
6. My life motto is "more is better".
7. I can't imagine having too many things.

viii) Demographic information, an item for past participation in a tax study, attention and understanding check items, an item for the perception of the purpose of the study

1. What is your age in years? [open ended]

2.. What is your gender? (*Woman, Man, Other*)

3. Have you participated in a study on tax compliance before? (*Yes, No*)

4. Did you carefully read all the information that was given? (1= *No, not at all,* 7 = *Yes, completely*)

5. Did you understand all the information? (1= *No, not at all,* 7 = *Yes, completely*)

6. What do you think this study was about exactly? [open ended]

ix) Items for the devices used during the experiment

1. What type of device did you use for this study? (*Mobile Phone, Tablet, Desktop / Laptop Computer*)

Appendix C (Continued)

2. What kind of input device did you use? (*Touchscreen, Trackpad, External Mouse*)

Appendix D

For these analyses, the IV (independent variable) is categorical (i.e., injunctive norm manipulation), whereas the moderator variable (i.e., social identification) is continuous. Baron and Kenny (1986) differentiate between a categorical IV with a continuous moderator versus a continuous IV with a categorical independent variable. Despite differentiating the two, they argue that the statistical analysis used to test the existence of an interaction (i.e., testing whether the interaction term(s) is significant in the regression) would be the same for both of these situations; if it is assumed that the effect of independent variable changes at the same rate with changes in moderator variable (which is often the assumption made).

Table D1

Effects of injunctive norm on the of acquisition of audit probability information

Variables	Acquisition of Audit Probability					
	Frequency			Duration (log)		
	B	*SE*	*p*	*B*	*SE*	*p*
(Intercept)	1.16	0.13	<0.001	5.76	0.43	<0.001
Norm (Strong)	0.20	0.19	.291	0.42	0.62	.495
Norm (Weak)	0.11	0.18	.541	0.33	0.60	.579
Identification	0.04	0.03	.112	0.05	0.08	.551
Norm (Strong)*Identification	-0.07	0.04	.074	-0.10	0.12	.428
Norm (Weak)*Identification	-0.04	0.04	.248	-0.08	0.12	.497

Note. Multilevel models with participants ($N = 452$) as random intercept, frequency and the (log transformed) duration of acquisition of audit probability as the outcome variables. Total number of observations are $N = 7915$ and $N = 7909$ respectively. Injunctive norm information was dummy coded and control condition was selected as the reference group. First model: $\sigma^2 = 0.54$, $\tau_{00} = 0.22$, $ICC = .29$; second model: $\sigma^2 = 2.24$, $\tau_{00} = 2.54$, $ICC = .53$.

Appendix D (Continued)

Table D2

Effects of injunctive norm on the of acquisition of fine rate information

Variables	Acquisition of Fine Rate					
	Frequency			Duration (log)		
	B	*SE*	*p*	*B*	*SE*	*p*
(Intercept)	1.20	0.17	<0.001	5.46	0.50	<0.001
Norm (Strong)	0.18	0.25	.455	-0.03	0.72	.967
Norm (Weak)	0.12	0.24	.604	0.18	0.70	.797
Identification	0.06	0.03	.094	0.07	0.10	.495
Norm (Strong)*Identification	-0.07	0.05	.117	-0.06	0.14	.685
Norm (Weak)*Identification	-0.04	0.05	.382	-0.06	0.14	.649

Note. Multilevel models with participants ($N = 452$) as random intercept, frequency and the (log transformed) duration of acquisition of fine rate as the outcome variables. Total number of observations are $N = 7915$ and $N = 7909$ respectively. Injunctive norm information was dummy coded and control condition was selected as the reference group. First model: $\sigma^2 = 0.79$, $\tau_{00} = 0.37$, $ICC = .32$; second model: $\sigma^2 = 3.54$, $\tau_{00} = 3.42$, $ICC = .49$.

Appendix E

Table E

Effect of injunctive norm on the of acquisition of tax rate information

Variables	Acquisition of Tax Rate					
	Frequency			Duration (log)		
	B	*SE*	*p*	*B*	*SE*	*p*
(Intercept)	2.23	0.06	<.001	7.32	0.05	<.001
Norm (Strong)	-0.16	0.08	.052	-0.06	0.08	.461
Norm (Weak)	-19	0.09	.023	-0.12	0.08	.132

Note. Multilevel models with participants (N = 452) as random intercept, frequency and the (log transformed) duration of acquisition of tax rate as the outcome variables. Total number of observations are N = 7915 and N = 7910 respectively. Injunctive norm information was dummy coded and control condition was selected as the reference group. First model: σ^2 = 1.20, τ_{00} = 0.47, ICC = .28; second model: σ^2 = 0.65, τ_{00} = 0.40, ICC = .38.