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Tax Compliance Inventory: TAX-I Voluntary tax compliance, enforced tax compliance, tax avoidance, and tax evasion

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Abstract

Surveys on tax compliance and non-compliance often rely on ad hoc formulated items which lack standardization and empirical validation. We present an inventory to assess tax compliance and distinguish between different forms of compliance and non-compliance: voluntary versus enforced compliance, tax avoidance, and tax evasion. First, items to measure voluntary and enforced compliance, avoidance, and evasion were drawn up (collected from past research and newly developed), and tested empirically with the aim of producing four validated scales with a clear factorial structure. Second, findings from the first analyses were replicated and extended to validation on the basis of motivational postures. A standardized inventory is provided which can be used in surveys in order to collect data which are comparable across research focusing on self-reports. The inventory can be used in either of two ways: either in its entirety, or by applying the single scales independently, allowing an economical and fast assessment of different facets of tax compliance.

Keywords

Taxation; Voluntary Compliance; Enforced compliance, Tax avoidance, Evasion, Inventory

1. Introduction

Following publication of the tax evasion model by Allingham and Sandmo (1972) and Srinivasan (1973), based on Becker's (1968) theory of crime, there was significant movement in the research on tax evasion. Research has continued to grow to the present day. Andreoni, Erard, and Feinstein (1998) observed that it was particularly the effects of audit probabilities and fines that were studied in the context of rational choice theory. Despite Schmolders' (1959) early emphasis on the relevance of citizens' opinions about the government in general, and fiscal policy in particular, sociological and social psychological studies addressing tax compliance are still rare. Moreover, the approach taken in social psychology has tended not so much towards forming a clearly expressed theory, as, for instance, the economic model, but has rather focused on unsystematically addressing specific and often isolated questions (Kirchler, 2007). Hence, future research on taxes should follow a clear conceptualisation of tax behaviour and commensurate measurement.

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In the following we present conceptual clarifications and definitions of different forms of tax behaviour, derived from research on tax compliance and non-compliance. Further, an inventory for the assessment of compliance and non-compliance according to our definitions is presented. First, items on voluntary and enforced compliance, tax avoidance and evasion are collected from previous research and newly formulated, and their factor structure is analysed. Second, the inventory is cross validated, and the validity of the scales is additionally assessed by means of reference to motivational postures (Braithwaite, 2003).

1.1 Research methods

There are several methodological problems to be solved in order to integrate research findings into a coherent theoretical framework able to describe tax behaviour and to inform policy. Kirchler (2007) and Torgler (2002) discuss the arsenal of methods, sampling techniques, operationalisation of variables as well as the inconsistent use of self-reports and observed tax behaviour, and come to the conclusion that different research methods often lead to contradictory results. Similar conclusions were drawn in a recent workshop on measuring the indirect effects of services and enforcement on taxpayer compliance, conducted by the US Internal Revenue Service (IRS, 2008).

Methods vary from aggregate econometric modelling to micro econometric modelling, field experiments and quasi naturalistic experiments, to laboratory experiments, agent based modelling and network analyses, to surveys. Aggregate econometric modelling uses panel data on observations of tax reporting and filing behaviour, aiming at providing reliable estimates of the effects of tax policy for the entire population (e.g., Dubin, 2007; Dubin, Graetz, & Wilde, 1990; Plumley, 1996). One challenge of aggregate econometric modelling, which may account for controversial results, concerns confounding influences. Micro-econometric approaches predominantly examine the impact of audit probability, fines in cases of evasion, tax rate, and income and develop highly stylised mathematical models, which, however, fail to incorporate many facets of taxpayers' realities. Field experiments are valuable methods of providing reliable estimates for compliance determinants. Here the challenge is to find comparable treatment and control groups in the population and to control for treatment and confounding variables. In contrast, laboratory experiments (e.g., Alm, Jackson, & McKee, 1992; Friedland, Maital, & Rutenber, 1978; Kastlunger, Kirchler, Mittone, & Pitters, 2009) are conducted in a highly controlled environment and are most appropriate for validating theoretical assumptions. They suffer, however, from external validity and generalisability. The difficulty of obtaining "hard" empirical data on tax compliance has led researchers to generate their own data via surveys (Baldry, 1987).

Studies in economic psychology in particular rely on survey data in which taxpayers are asked to report their tax behaviour. This way of collecting data is usually convenient; however, generalisability of findings is problematic (e.g., Wilson & Sheffrin, 2005). Generalisability suffers from memory lapse and social desirability biases, and reliability and (construct) validity in particular are to be questioned. If answers in surveys can be trusted as accurately reflecting tax compliance, honesty and perfect recall are required. Hessing, Elffers, and Weigel (1988) examined whether self-reports can be used as substitutes for direct observations of tax evasion behaviour, and found serious limitations. The concordance between participants' self-reports of tax evasion and officially found evasion behaviour was negligible. Although participants knew that their self-reports could be compared with the results of their audited tax records, the correlations between self-reports and observed behaviour were weak. Hessing et al. (1988) found that different explanatory variables were either linked with self-reports or with observed evasion behaviour: Attitudes toward tax evasion and subjective norms were found to correlate with self-reported compliance but not with observed compliance. Personality dispositions, in contrast (e.g. tolerance of illegal behaviour; competitiveness) correlated with observed data but not with self-reports. While

the studies conducted by Hessing et al. (1988) do give grounds for serious concern, Hite (1988) found positive relationships between data obtained from self-reports and compliance observed by tax authorities. The weak relation between observed and self-reported behaviour may be due to a series of methodological shortcomings: Besides the existence of differences in authorities' and taxpayers' interpretations of tax law and legal and illegal acts, authorities may not always detect subtle tax evasion, whereas taxpayers are aware of it and report their behaviour in surveys. Moreover, sometimes taxpayers may unintentionally make mistakes which are interpreted as evasion by authorities.

In addition to concerns regarding research methods in general and observed versus self-reported behaviour in particular, there is a lack of clear definitions of tax compliance, avoidance, and evasion. A particular problem is the absence of a validated inventory assessing compliance. Surveys often make use of one or more items developed in an ad-hoc manner, asking respondents to indicate their willingness to comply, their filing habits or their readiness to evade taxes. The source of the serious limitations of self-reports and the difficulties experienced when trying to compare data from different research lie in insufficient reflection of different facets of tax behaviour and often vague definitions of tax compliance and evasion. Moreover, the lack of a validated tax compliance scale usable across various research programmes makes it difficult if not impossible to compare findings across different studies.

1.2 Voluntary and enforced tax compliance, avoidance, and evasion

From the perspective of tax law, there is a lack of a sharp definition of compliance and non-compliance. Also, research is far from providing well established clear concepts which allow unequivocal operationalisation and measurement. Tax compliance represents the most inclusive and neutral term for taxpayers' willingness to pay taxes. However, compliance can be voluntary or enforced by authorities. Non-compliance refers to failures to meet tax obligations, whether or not those failures are intentional. The results of non-compliance may be legal tax avoidance or the violation of tax law.

Tax compliance can be seen as a continuum (James & Alley, 2002), ranging from commitment to society's and government's objectives on the one hand, to law enforcement on the other. On the compliance side, McBarnet (2001) differentiates between (a) committed compliance, referring to taxpayers' willingness to pay taxes without complaining, (b) capitulative compliance, describing taxpayers who give in and pay taxes, and (c) creative compliance, which covers activities addressed to reducing taxes within the brackets of the law. Translating McBarnet's (2001) characterisations of compliance to James and Alley's (2002) continuum concept, one extreme would reflect committed compliance or voluntary compliance, and the other extreme would describe capitulative compliance or compliance due to efficient audits and fines. Similarly, Kirchler (2007; Kirchler, Hoelzl, & Wahl, 2008) developed the concept of a framework – the “slippery slope framework” – which differentiates between taxpayers who voluntarily comply with the law, versus taxpayers who comply as a result of enforcement activities. Voluntary and enforced compliance as well as tax avoidance and evasion are described as resulting from the interaction between taxpayers' trust in authorities and authorities' power to monitor taxpayers. When trust in the authorities is high, taxpayers will pay their taxes voluntarily. In contrast, when trust in the authorities is low, taxpayers are assumed to be motivated to withhold their contributions. When trust is low, but authorities' power to effectively audit and sanction wrong behaviour is strong, taxpayers' compliance is enforced; however, it is assumed that taxpayers are motivated to reduce their taxes within the legal range of the law and engage in tax avoidance, but are deterred from illegal reductions. If trust in the authorities and also in the power of the authorities is low, taxpayers are expected to break the law and evade taxes.

Regarding non-compliance, tax avoidance is legal. Taxes are reduced by legal means through taking advantage of loopholes in the law. Tax evasion, on the other hand, is illegal, as taxpayers break the law deliberately through understating income (e.g. failing to report assets) and/or through exaggerating deductions (e.g. falsely reporting personal expenses as business expenses, Webley, 2004). Elffers, Weigel, and Hessing (1987) characterise “tax evasion behaviour” or “tax cheating” similarly as an intentional act of non-compliance that leads to payment of less tax than is actually owed. Memory lapses, unintentional calculation errors or errors due to inadequate knowledge of the tax law are excluded from the concept of tax evasion. Sandmo (2003) likewise regards tax evasion as intentionally breaking the law.

Gassner (1983) states the matter in this way: that taxpayers are not deterred from “creatively” describing their income in order to pay minimum taxes. Tax avoidance refers to taxpayers’ freedom to present their income in such a form that they pay the minimum in tax by respecting the “letter of the law”. Taxpayers’ freedom of income presentation ends and tax evasion begins where “the letter of law” is not respected. Although legality distinguishes between tax avoidance and tax evasion, in practice this distinction is rather ambiguous. The reasons for the unclear distinction lie in the over-complexity and equivocality of tax law, lack of expertise on the part of taxpayers, and sometimes practices by tax administrators to effectively ignore a particular transaction or activity even where the law is unequivocal (Slemrod, Blumenthal, & Christian, 2001).

1.3 Motives for compliance or non-compliance

The definitions of voluntary compliance, enforced compliance, avoidance, and evasion imply different motives underlying tax behaviour. Voluntarily compliant taxpayers are motivated to cooperate, and tax cheating is out of the question. In contrast, taxpayers whose compliance is enforced are compliant as long as they fear being monitored and consider fines more costly than cooperation. If the opportunities to avoid or to evade taxes are perceived as high, and audit probability as well as fines as low, cheating pays.

Braithwaite (2003) distinguishes five motivational postures which originate from the “social distance” (Borgardus, 1928) between taxpayers and authorities, and lead to different tax paying behaviour (Table 1). The motivational postures that result where social distance is close and the stance towards the authorities is positive are summarized as deference motives, termed commitment and capitulation. Committed taxpayers regard contributions to the public welfare as a moral law, and see the tax law and tax collection as fair. Capitulated taxpayers are willing to cooperate because they accept the authorities as a legitimate power set up to pursue the collective’s goals. Although tax authorities may have the formal power and legal legitimacy to constrain taxpayers to fulfil their duties, it is necessary for taxpayers to ascribe expert authority to them, perceive them as engaging in accepted behaviour, and psychologically legitimise them to exert power.

The motivational postures that result where social distance is great and the stance towards the authorities is negative are summarized as defiance motives, termed resistance, disengagement, and game playing. Resistant taxpayers are suspicious when authorities engage in citizen-friendly activities and assume that they lack willingness to cooperate. Resistant taxpayers doubt the authority of tax officials and perceive them as dominating and controlling rather than being supportive. Disengaged taxpayers keep the greatest distance from the authorities and do not care about doing the right thing. Disengagement is an extreme motivational posture which leads taxpayers to oppose the authorities and the law. Game playing taxpayers compete with the tax law and seek to exploit possibilities to increase their own profit. Game playing refers to “cops and robbers” games, with taxpayers detecting possibilities to increase their own income and with authorities trying to increase

the public revenue. Table 1 represents definitions of the five postures accompanied by statements representing them.

1.4 Relations between voluntary compliance, enforced compliance, tax avoidance, tax evasion, and motivational postures

Although both voluntary compliance and enforced compliance result in the payment of one's tax share, correlation between voluntary and enforced compliance is not expected. Voluntary and enforced tax compliance represent two different facets of tax behaviour with different underlying motives. Voluntary compliance should not be correlated with enforced compliance, and it should be negatively related to tax avoidance and tax evasion. Since enforced compliance originates from the authorities' power to constrain citizens to cooperate, it fosters extensive decisions about whether to pay taxes honestly or to evade them at the risk of being audited and fined, should evasion be detected. We expect enforced compliance to be positively linked to searching for loopholes in the tax law, and therefore to see a positive correlation to tax avoidance. A positive correlation with evasion is less likely, due to perceived constraints.

The relationship between tax avoidance and evasion is less clear: While both forms of non-compliance are directed towards reducing tax payments, legality and illegality are the crucial differences. Taxpayers avoiding taxes might consider the possibilities of evasion; however, they are deterred from actual cheating on account of audits and fines.

Braithwaite (2003) found that motivational postures subsumed under deference were negatively related to avoidance and tax evasion, whereas postures linked to defiance were positively related. Accordingly, we expect voluntary tax compliance to be positively linked to deference, that is, commitment and capitulation, and negatively linked to defiance, that is, resistance, disengagement and game-playing. Enforced tax compliance, tax avoidance, and tax evasion will be negatively linked to deference and positively linked to defiance. Taxpayers whose compliance is enforced have little perception of the authorities as a legal power and are therefore unlikely to hold postures of commitment or capitulation; instead they feel resistance. Taxpayers who engage in legal or illegal tax reductions lack insight into the necessity of the tax system and may perceive tax collection as unfair. Therefore, we expect to find tax avoidance and evasion to be negatively correlated with deference and positively with defiance. While tax avoidance is expected to be positively related to game playing, due to the interest in seeking legal ways to reduce taxes, tax evasion should be highly correlated with resistance and disengagement.

We present below a study in which a representative sample of Austrian self-employed taxpayers completed a survey consisting of items on voluntary compliance, enforced compliance, tax avoidance and evasion as well as motivational postures. The sample was randomly split into two subsamples (Jöreskog & Sörbom, 1993). In the first part of the analysis, the focus is on item quality and item structure. These were assessed in order to obtain scales to assess different facets of compliance and non-compliance. In the second part of the analysis, findings from the first part were cross-validated and findings extended with the aim of testing the relationship between compliance and non-compliance and motivational postures. In other words, the first step was to develop a reliable inventory consisting of four scales; in the second the validity was checked on the basis of correlations with motivational postures. The construction of scales and analyses followed test construction suggestions by Bühner (2006).

2. Method

2.1 Participants and procedure

In early 2009, an internationally operating market research institute was engaged to collect data via an online questionnaire in Austria. The web link to the online questionnaire was sent out to a representative pool of self-employed taxpayers with an invitation to complete the survey and the incentive of credits for participation. The total sample consisted of 98 females and 212 males, aging between 20 and 70 years ($M=43.13$, $SD=10.58$, $Md=43.00$). A high percentage (32.20%) of participants held a university degree; 35.40% held a secondary education qualification, 24.20% a primary education qualification, and 8.10% indicated other education; 63.50% reported a yearly income lower than or equal to Euro 30,000, and 36.50% reported that they earned more than Euro 30,000.

2.2 Material

First, past research (Holler, Hoelzl, Kirchler, Leder, & Mannetti, 2008; Rechberger, Hartner, & Kirchler, 2009; Roberts, 1994; Strümpel, 1966; Tyler, 2003) was scanned for items measuring avoidance and evasion. Additionally, new items were formulated on voluntary compliance and enforced compliance. While items on avoidance and evasion were formulated on a rather concrete level of non-compliant behaviour in order to achieve clarity in the explanation of non-compliant behaviour, items on voluntary and enforced compliance were formulated in a more abstract way in order to assess orientation towards different facets of compliance. The formulated items were discussed within a group of economic psychologists. The resulting final set used in the survey comprised 35 items, with answering formats ranging from complete disagreement (1) to complete agreement (9), or very unlikely (1) to very likely (9). Furthermore, Braithwaite's (2003) scales to measure motivational postures and two items directly addressing tax cheating were included in the survey. The items on different facets of compliance and non-compliance were presented block-wise to ease the understanding of the concepts. According to Mummendey and Grau (2008), blocks of items minimise confounding effects between different concepts. Further, this presentation facilitates the development of scales for independent use.

Voluntary tax compliance (VTC)—Ten items were formulated to assess voluntary compliance, especially by referring to taxpayers' perceived obligation to cooperate with the nation state. In addition, we alluded to items measuring organisational commitment (Tyler, 2003) and reformulated them accordingly. All items are presented in the Appendix, in German and English (e.g., "When I pay my taxes as required by the regulations, I do so because I like to contribute to everyone's good.").

Enforced tax compliance (ETC)—Eight items were formulated to investigate enforced tax compliance (e.g., "When I pay my taxes as required by the regulations, I do so because I know that I will be audited.").

Tax avoidance (TA)—To measure legal tax reductions, 8 items were formulated. Each item used a fictitious case scenario to state a concrete legal tax reduction. Participants were asked how likely they would be to engage in the behaviour concerned (e.g., "You could deduct against tax the training costs you incurred for your employees as an allowable deduction for education and training. How likely is it that you would use the allowable deduction for education and training?").

Tax evasion (TE)—Scanning of past research on evasion yielded 4 items measuring illegal tax reductions; 5 items were newly formulated. Each item used a fictitious case scenario to state a concrete way of evading taxes. Participants were asked how likely they

would be to engage in the behaviour (e.g., “You could intentionally declare restaurant bills for meals you had with your friends as business meals. How likely would you be to declare those restaurant bills as business meals?”).

Motivational postures were measured using Braithwaite’s (2003) scales on commitment, capitulation, resistance, disengagement, and game playing. Items were translated into German (Rechberger, et al., 2009).

Direct questions on tax cheating—Two items directly asked about cheating activities in the past. The items were used to estimate the criterion validity of the inventory. Questions were: “Have you ever thought about evading taxes or about cheating on your income tax return?” and “Have you ever evaded taxes or cheated on your income tax return?”

3. Results

The sample of 310 participants was randomly divided into two subsamples of $N = 155$ each. No significant differences were found between the samples with regard to sex, age, education and yearly income, indicating that randomisation was successful.

3.1 Part I: Construction of the inventory with the first subsample

First, descriptive statistics were computed for each item and normal distribution was checked. Second, items on voluntary compliance, enforced compliance, avoidance, and evasion were factor analysed to examine the factor structure. Third, for each concept, the five items with the highest factor loadings were selected and a confirmatory factor analysis was run to check the factor structure of the inventory. Fourth, construct validity of the four scales was assessed.

Item selection—Table 2 shows means, standard deviations, medians, and skewness of all items included in the survey, as well as the inter-item correlations and reliability of each scale. Items which were skewed (skewness < -1.00 or skewness > 1.00) and items with floor and ceiling effects (medians ≤ 2.00 or medians ≥ 8.00) were excluded from further analyses. Items VTC10, ETC1, ETC8, TA7, and TE8 were disqualified for further analyses.

Four exploratory factor analyses with varimax rotation were conducted with the remaining items on voluntary compliance, enforced compliance, tax avoidance and evasion. Factor analysis of the remaining 9 items addressing voluntary compliance, yield eigenvalues = 4.57, 1.07, 0.94, 0.88, 0.53, 0.35, 0.27, 0.23, and 0.16. When constraining for one factor, 50.79% of variance were explained and except for the items VTC2 and VTC9 all items with a loading above .40. Therefore VTC2 and VTC9 were excluded. Recalculation of the one factor solution revealed 62.32% of variance explained. All remaining 7 items showed loadings above .40. In order to obtain a short and reliable scale, five of the highest loading items were pooled to create the voluntary compliance scale (items: VTC3, VTC5, VTC6, VTC7, and VTC8).

Factor analysis of the remaining 6 items addressing enforced compliance yielded eigenvalues = 3.13, 0.92, 0.79, 0.59, 0.40, and 0.18; the first factor explained 52.09% of variance. All items showed loading above .40. Again, five items with the highest loadings were selected to measure enforced compliance (items: ETC2, ETC4, ETC5, ETC6, and ETC7).

Factor analysis of 7 items addressing tax avoidance yielded eigenvalues = 2.54, 1.10, 0.91, 0.75, 0.66, 0.60, and 0.44; the first factor explained 51.98% of variance. All items reached

loadings above .40. The highest loading five items were selected to create the tax avoidance scale (items: TA1, TA2, TA3, TA5, and TA6).

Factor analysis of 8 items addressing tax evasion revealed eigenvalues = 4.50, 1.00, 0.75, 0.47, 0.38, 0.34, 0.31, and 0.25. The one factor solution explained 56.22% of variance and all items showed loadings above .40. The scale measuring tax evasion consists of items: TE3, TE4, TE5, TE7, and TE9.

Answers to the five selected items of each scale were averaged to produce indices of voluntary compliance, enforced compliance, avoidance, and evasion. Table 3 shows means, standard deviations, medians, and Cronbach alpha of the four scales, as well as inter-scale correlations. All items are presented in the Appendix, with selected items marked by an asterisk.

Finally, the 5 items of each scale were analysed by a confirmatory factor analysis allowing for correlations between the error terms of items which address the same concept. The model provided a good fit to the data ($\chi^2(160)=221.97$, $p<.01$, $RmSEA=.05$, $CFI=.95$; cut-off values indicating a good model fit are a non-significant chi-square-test with $\chi^2/df < 2.00$; $RmSEA < .06$ and $CFI > .90$). Figure 1 depicts the structure of the inventory as well as regression coefficients and correlations between factors.

Construct validity of the inventory was assessed by analysing the correlations between the scales. If voluntary tax compliance represents a different concept than enforced compliance, then the scales should not be correlated. Moreover, voluntary compliance should be negatively related to tax avoidance and evasion, whereas enforced compliance should be positively related. Tax avoidance and tax evasion should be either marginally positively related or not correlated. As shown in Table 3, these expectations are largely met by the data: voluntary tax compliance and enforced tax compliance are not correlated ($r=-.03$, $p=.72$). However, voluntary tax compliance is positively related to tax avoidance ($r=.16$, $p<.05$). Nevertheless, the correlation is small with the explained variance = 2.56%. Voluntary compliance is negatively related to tax evasion ($r=-.26$, $p<.01$). Enforced tax compliance is positively related to tax avoidance ($r=.18$, $p<.05$), but not to evasion ($r=.12$, $p=.14$). No relation was found between tax avoidance and tax evasion ($r=.11$; $p=.17$).

In sum, an inventory to measure self-reported tax compliance and non-compliance by differentiating between voluntary compliance, enforced compliance, tax avoidance, and tax evasion was derived. The four standardised scales – each containing 5 items – show high reliability and good construct validity. In part two, the inventory is assessed and confirmed. Additionally, validity of scales is assessed on the basis of motivational postures (Braithwaite, 2003).

3.1 Part II: Replication of the inventory and validity assessment with the second subsample

Model test—The confirmatory factor analysis on the 20 items of the 4 scales replicated the factor structure found in part I. Model fit is satisfactory and does not suggest any need for refinements ($\chi^2(160)=232.16$, $p<.01$, $RmSEA=.05$, $CFI=.95$). There is a negligible weakness in the tax avoidance scale, with item TA5 showing only a weak relation with the overall scale index ($\beta=.13$, $p=.20$). Regression coefficients and correlations between factors are shown in Figure 1.

Validity of the inventory—As in part I, the correlations between the scales were used as indicators of construct validity. Table 3 shows the indices and Cronbach alphas of the four scales as well as inter-scale correlations. Voluntary tax compliance and enforced tax

compliance are negatively related ($r = -.16$, $p < .05$); however, the explained variance of 2.56% is certainly small. Voluntary compliance is independent of tax avoidance ($r = -.06$, $p = .43$). As expected, voluntary tax compliance and tax evasion are negatively related ($r = -.34$, $p < .01$). No relation was found between enforced tax compliance and tax avoidance ($r = .15$, $p = .07$), between enforced tax compliance and tax evasion ($r = .15$, $p = .06$), and between tax avoidance and tax evasion ($r = .14$, $p = .08$). The pattern of results suggests satisfactory construct validity.

Additional estimates of the scales' construct validity were obtained by correlating scale indices with motivational postures. Voluntary tax compliance is expected to be positively linked to deference postures and negatively related to defiance postures. For enforced tax compliance, tax avoidance, and tax evasion the opposite patterns are expected. First, indices of motivational postures were calculated as well as Cronbach alphas. Second, correlations between tax compliance and non-compliance scales and motivational postures were computed (Table 3). Results confirm that voluntary tax compliance is positively correlated with commitment ($r = .77$, $p < .01$) and capitulation ($r = .32$, $p < .01$) and negatively with resistance ($r = -.34$, $p < .01$), disengagement ($r = -.28$, $p < .01$), and game playing ($r = -.19$, $p < .01$). Enforced tax compliance shows a positive relation with resistance ($r = .36$, $p < .01$). Tax avoidance is positively linked with game playing ($r = .27$, $p < .01$). As expected, tax evasion is negatively linked to commitment ($r = -.34$, $p < .01$) and positively to resistance ($r = .26$, $p < .01$), disengagement ($r = .37$, $p < .01$), and game playing ($r = .16$, $p < .05$). Correlations with motivational postures confirm satisfactory construct validity.

In order to examine the criterion validity of the inventory we calculated the relations between the scales and the direct questions on tax cheating. We would expect to find that voluntary compliance is negatively related to self-reported cheating, whereas enforced tax compliance and avoidance are positively related to the thought of cheating but not to reports of actual cheating. Furthermore, evasion should be positively correlated with both questions on tax cheating. Table 3 shows the average answers to the direct questions on tax cheating, inter-item correlations, and correlations between the four scales. Non-parametric correlations indicate that voluntary tax compliance is negatively linked to both direct questions on tax cheating ($r = -.46$, $p < .01$ and $r = -.31$, $p < .01$). No relation was found between enforced tax compliance and the direct questions on cheating ($r = .05$, $p = .58$ and $r = -.02$, $p = .83$). A positive link between tax avoidance and the question about the thought of cheating was found ($r = .16$, $p < .01$), however, no link was found between tax avoidance and the blunt question on tax cheating ($r = -.02$, $p = .85$). Tax evasion was positively related to both direct cheating questions ($r = .51$, $p < .01$ and $r = .39$, $p < .01$). The results confirm satisfactory criterion validity.

In sum, results in part II confirm the findings in part I and yield support for construct and criterion validity of the inventory. However, a word of caution is necessary. If the inventory is applied in different countries, it is necessary not only to translate items into the respective language, but also to adapt the content of items to the local tax law. While items on voluntary compliance and enforced compliance are not problematic, and items on evasion refer to concrete examples of tax reduction which are illegal in most countries, more problems may be found with items on tax avoidance. The concrete actions addressed by the items about avoiding taxes may reflect legal loopholes in one country but not in another country. Therefore, tax avoidance items may need to be adapted to the country-specific tax laws.

5. Discussion

Our aim was to develop a standardised inventory to measure different facets of tax compliance and non-compliance. A study was conducted on a sample drawn from a representative pool of self-employed taxpayers. Overall, 20 items were found sufficient to measure voluntary compliance, enforced compliance, tax avoidance, and tax evasion. The four scales form the tax compliance inventory which was confirmed in both parts of the study to be a reliable and valid instrument. Its advantage is not only that it provides a standardised inventory for research on tax behaviour, but also that each scale provides researchers with a tool to measure single facets of compliance and non-compliance and each can be applied independently. Furthermore, since each standardised scale consists of only 5 items, the inventory's application is economically convenient and time-saving.

Major problems of self-reported data result from imperfect recall of prior behaviour. The use of fictitious actions in the present items keeps any problems of recalling past behaviour to a minimum. Since all participants receive the same information, the answers are comparable (Suhling, Löbmann & Greve, 2005). The use of fictitious case scenarios could also overcome the problem of socially desirable answers, because this question format asks less directly about behaviour that may be deviant (Suhling et al., 2005). Because participants do not have to reveal their own (deviant) behaviour, the answers are likely to produce more accurate and reliable reports about non-compliance.

If we are to broaden the understanding of tax behaviour, findings of different studies need to be comparable. However, previous studies on self-reports focus on different definitions and operationalisations of tax behaviour and apply items that address different facets of compliance and non-compliance. Thus, comparison of findings is difficult if not impossible. Previous research comparing tax behaviour across countries also often relies on a very small number of survey items (e.g., Alm & Torgler, 2006; Torgler, 2003, 2005; Wenzel, 2004a, 2004b, 2007). Validity and reliability are rarely questioned (e.g., Wilson & Shefrin, 2005).

In contrast to previous research which often used ad-hoc items on compliance and non-compliance, the inventory follows clear definitions derived from the literature on tax behaviour. Consequently, the scales on voluntary and enforced compliance proposed in this paper are addressing different forms of compliance. Voluntary compliance originates from spontaneous willingness to cooperate, emanating from taxpayers' moral obligation to contribute to the public welfare. Enforced compliance states that tax payments according to the law arise from taxpayers' concern of being audited and fined (James & Alley, 2002; Kirchler, 2007; Kirchler et al., 2008; McBarnet, 2001). Tax avoidance is defined as minimising tax liabilities within the legal range of the law (Gassner, 1983; Sandmo, 2003), whereas evasion refers to intentionally breaking the law (Elffers, et al., 1987; Sandmo, 2003; Webley, 2004). It is important in tax behaviour research to differentiate between these facets of compliance and non-compliance in order to deepen understanding of tax behaviour and obtain comparable results.

In the present paper we not only provide scales to measure different facets of compliance but also examine the relations between them. The finding that voluntary compliance and enforced compliance are not correlated, suggests that the two concepts do indeed address different aspects of tax behaviour which have not been taken into account in previous research. Disregard of differences between voluntary and enforced compliance may explain why research has yielded contradictory results, and may also explain why some studies find a strong effect of audits and fines on compliance, whereas others find either no relationship or the opposite effect to that expected. We assume that voluntary compliance leads taxpayers not to engage in extensive decision making over whether it pays to evade or not,

but rather to cooperate spontaneously, independently of audit probability and fines. In a climate of cooperation between taxpayers and authorities, audits and fines might communicate distrust by authorities and lead to the opposite effects to those theoretically expected. On the other hand, if taxpayers need enforcement if they are to comply, then audits and fines are likely to exert deterrent effects (Kirchler, 2007). Voluntary compliance originates from taxpayers' trust in authorities, whereas enforced compliance is fostered through the power of authorities to effectively carry out audits and impose fines (Forest, 2000; Kirchler, 2007).

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Appendix

Items on voluntary tax compliance, enforced tax compliance, tax avoidance, and tax evasion in the original German version and the translated English version

ID	German	English
	Freiwillige Steuerehrlichkeit	Voluntary tax compliance
	Wenn ich meine Steuern vorschriftsmäßig zahle, dann tue ich das, ...	When I pay my taxes as required by the regulations, I do so ...
VTC1	... weil ich freiwillig meine Steuern bezahle.	... because I pay my taxes voluntarily.
VTC2	... ohne lange darüber nachzudenken, wie ich sie reduzieren könnte.	... without spending a long time thinking how I could reduce them.
* VTC3	... weil es für mich selbstverständlich ist.	... because to me it's obvious that this is what you do.
VTC4	... auch dann, wenn es keine Steuerprüfungen gäbe.	... even if tax audits did not exist.
* VTC5	... um den Staat und andere BürgerInnen zu unterstützen.	... to support the state and other citizens.
* VTC6	... weil ich gerne zum Wohl Aller beitrage.	... because I like to contribute to everyone's good.
* VTC7	... weil es für mich ganz natürlich ist.	... because for me it's the natural thing to do.
* VTC8	... weil ich es als meine Pflicht als BürgerIn ansehe.	... because I regard it as my duty as citizen.
VTC9	... obwohl ich weiß, dass Andere das nicht tun.	... even though I know that others do not do that.
VTC10	... weil ich überzeugt bin, das Richtige zu tun.	... because I am sure I am doing the right thing.
	Erzwungene Steuerehrlichkeit	Enforced tax compliance
	Wenn ich meine Steuern vorschriftsmäßig zahle, dann tue ich das, ...	When I pay my taxes as required by the regulations, I do so ...
ETC1	... weil ich mich gezwungen fühle, meine Steuern zu zahlen.	... because I feel forced to pay my taxes.
* ETC2	... weil viele Steuerprüfungen stattfinden.	... because a great many tax audits are carried out.
ETC3	... obwohl ich am liebsten gar keine Steuern zahlen würde.	... although I would really prefer not to pay any taxes.
* ETC4	... weil die Steuerbehörde häufig kontrolliert.	... because the tax office often carries out audits.

ID	German	English
* ETC5	... weil ich weiß, dass ich kontrolliert werde.	... because I know that I will be audited.
* ETC6	... weil Hinterziehung sehr streng bestraft wird.	... because the punishments for tax evasion are very severe.
* ETC7	... weil ich nicht genau weiß, wie ich Steuern unauffällig hinterziehen kann.	... because I do not know exactly how to evade taxes without attracting attention.
ETC8	... nach langem Hin- und Herüberlegen, wie ich legal Steuern sparen könnte.	... after putting a lot of thought into how I could legally save taxes.
Steuervermeidung		Tax avoidance
* TA1	Sie könnten sich selbst genau mit dem Steuergesetz auseinandersetzen, um nach Einsparungsmöglichkeiten zu suchen. Wie wahrscheinlich würden Sie sich genau mit dem Steuergesetz auseinandersetzen?	You could take a detailed look at the tax regulations yourself to search for potential savings. How likely would you be to take this detailed look at the tax regulations?
* TA2	Sie könnten in Ihrer Privatwohnung noch Lärmschutzfenster einbauen lassen und die entstandenen Kosten als Wohnraumsanierung in Ihrer Steuererklärung geltend machen. Damit würde sich Ihre Steuerlast reduzieren. Wie wahrscheinlich würden Sie die Wohnraumsanierung vornehmen?	You could install soundproof windows in your private dwelling and claim the resulting cost as housing space reconstruction on your income tax return. This would have the effect of reducing your tax burden. How likely would you be to carry out the housing space reconstruction?
* TA3	Sie könnten einen Kurs besuchen, der Sie über derzeitige steuerliche Absetzmöglichkeiten informiert. Wie wahrscheinlich würden Sie einen solchen Kurs besuchen?	You could attend a course which informs you about the current possibilities for making claims against tax. How likely would you be to attend such a course?
TA4	Sie könnten im nächsten Jahr weniger arbeiten, damit Sie in eine geringere Einkommensklasse fallen und dadurch weniger Steuern zahlen müssen. Wie wahrscheinlich ist es, dass Sie im nächsten Jahr weniger arbeiten?	You could work less next year, so as to fall into a lower income group and consequently pay less in tax. How likely is it that you would work less next year?
* TA5	Sie könnten geringwertige Wirtschaftsgüter (z.B.: PC, Scanner, und andere Anschaffungen unter €400,--), die Sie jedoch zur Zeit nicht benötigen, für Ihr Unternehmen anschaffen, um Ihre Bemessungsgrundlage zu verringern. Wie wahrscheinlich würden Sie solche Güter anschaffen?	You could buy low-value assets (e.g., PC, scanner, and other purchased equipment with a value below €400,--) which you do not currently need for your company, so as to decrease the figure on which your tax calculation is based. How likely would you be to purchase such assets?
* TA6	Sie könnten Bildungsausgaben, die Sie für Ihre MitarbeiterInnen hatten, als Bildungsfreibetrag von Ihrer Steuer absetzen. Wie wahrscheinlich ist es, dass Sie den Bildungsfreibetrag nutzen?	You could deduct against tax the training costs you incurred for your employees as an allowable deduction for education and training. How likely is it that you would use the allowable deduction for education and training?
TA7	Sie könnten Ihre Steuererklärung mit einem Steuerberater bzw. einer Steuerberaterin besprechen. Er bzw. sie könnte Ihnen noch ein paar Tipps geben, wie Sie mehr Steuern sparen könnten. Wie wahrscheinlich ist es, dass Sie mit einem bzw. einer Steuerberaterin sprechen?	You could discuss your income tax return with a tax accountant. He or she could give you some hints as to how you could save more in tax. How likely is it that you would talk to a tax accountant?
TA8	Sie könnten eine Lebensversicherung abschließen und diese als Sonderausgabe, die Ihre Bemessungsgrundlage verringert, von der Steuer absetzen. Wie wahrscheinlich ist es, dass Sie eine Lebensversicherung	You could contract a life insurance policy and deduct it as a special expense against your taxable income. How likely is it that you would contract the life

ID	German	English
	abschließen?	insurance?
	Steuerhinterziehung	Tax evasion
TE1	Sie könnten Ihr Auto als Geschäftswagen deklarieren, obwohl Sie es nur zu 30 % für geschäftliche Zwecke nutzen und die Nutzung eines Geschäftswagens mindestens 50 % geschäftlich sein muss. Wie wahrscheinlich würden Sie Ihr Auto als Geschäftswagen deklarieren?	You could declare your car as a company car, although your use of it is only 30% for business purposes, and at least 50 % business use is required for it to be assessed as a company car. How likely is it that you would declare your car as company car?
TE2	Sie könnten in Ihrem Fahrtenbuch auch private Fahrten als geschäftliche Fahrten angeben. Wie wahrscheinlich würden Sie private Fahrten als geschäftliche Fahrten angeben?	You could enter private journeys as company journeys in your driver's logbook. How likely is it that you would enter private journeys as company ones?
* TE3	Eine Kundin hat bar bezahlt und keine Rechnung verlangt. Sie könnten diese Einnahme in Ihrer Steuererklärung absichtlich weglassen. Wie wahrscheinlich würden Sie diese Einnahme weglassen?	A customer paid in cash and did not require an invoice. You could intentionally omit this income on your income tax return. How likely is it that you would omit this income?
* TE4	Sie haben einen Teil Ihrer Ware privat eingekauft. Sie könnten diese Ware später an StammkundInnen weiterverkaufen und den dabei erzielten Gewinn in Ihrer Steuererklärung verschweigen. Wie wahrscheinlich würden Sie den erzielten Gewinn in Ihrer Steuererklärung verschweigen?	You bought some of your goods privately. You could resell those goods later to established customers and omit the profit from this sale on your income tax return. How likely would you be to omit the profit from this sale on your income tax return?
* TE5	Sie könnten Rechnungen von Abendessen mit Ihren FreundInnen absichtlich als Geschäftsessen deklarieren. Wie wahrscheinlich würden Sie diese Rechnungen als Geschäftsessen deklarieren?	You could intentionally declare restaurant bills for meals you had with your friends as business meals. How likely would you be to declare those restaurant bills as business meals?
TE6	Sie waren geschäftlich im Ausland. Der Flug wurde von Ihren GeschäftspartnerInnen bezahlt, jedoch haben Sie die Flugtickets noch. Sie könnten diese Flugtickets in Ihrer Steuererklärung geltend machen. Wie wahrscheinlich würden Sie die Flugtickets geltend machen?	You have been abroad on business. The flight was paid for by your business partners; however, you still have the plane tickets. You could claim those plane tickets on your income tax return. How likely would you be to claim the plane tickets?
* TE7	Sie waren im Ausland, um Verwandte zu treffen und eine kurze Unterredung mit einer Ihrer LieferantInnen zu führen. Trotzdem könnten Sie die Hotelkosten und das Essen, auf das Sie Ihre Verwandten eingeladen haben, als Geschäftsreise bzw. -essen deklarieren. Wie wahrscheinlich würden Sie diese Ausgaben als Geschäftsreise bzw. essen deklarieren?	You have been abroad to meet relatives and to have a short meeting with one of your suppliers. Regardless of this you could declare your expenses for the hotel and for the meals you invited your relatives to, as business travel and a business meal. How likely would you be to declare your expenses as business travel or a business meal?
TE8	Um Ihre Steuerlast zu verringern, könnten Sie eine befreundete Studentin bitten, Ihnen eine Honorarnote auszustellen, obwohl Sie keine Dienstleistungen in Anspruch genommen bzw. bezahlt haben. Wie wahrscheinlich würden Sie die Studentin bitten, Ihnen eine Honorarnote auszustellen?	To decrease your tax burden, you could ask a friend who is a student to issue an invoice for services, although you did not in fact request or pay for any such services. How likely would you ask the student to issue an invoice?
* TE9	Vor kurzem haben Sie im Unternehmen einer Bekannten an einem Projekt mitgearbeitet. Nun könnten Sie diesen steuerpflichtigen Zusatzverdienst in Ihrer Steuererklärung verschweigen. Wie wahrscheinlich ist es, dass Sie diesen Zusatzverdienst verschweigen?	Recently you took part in a project in an acquaintance's company. Now you could conceal this taxable additional income on your income tax return. How likely is it that you would conceal this additional income?

* items included in the scales to assess voluntary tax compliance, enforced tax compliance, tax avoidance, and tax evasion

References

- Allingham MG, Sandmo A. Income tax evasion: A theoretical analysis. *Journal of Public Economics*. 1972; 1(3-4):323–338.
- Alm J, Jackson BR, McKee M. Estimating the determinants of taxpayer compliance with experimental data. *National Tax Journal*. 1992; 45(1):107–114.
- Alm J, Torgler B. Culture differences and tax morale in the United States and in Europe. *Journal of Economic Psychology*. 2006; 27(2):224–246.
- Andreoni J, Erard B, Feinstein J. Tax compliance. *Journal of Economic Literature*. 1998; 36(2):818.
- Baldry JC. Income tax evasion and the taxpayer compliance: Time for a new agenda. *Public Finance*. 1987; 42(3):357–383.
- Becker G. Crime and punishment: An economic approach. *Journal of Political Economy*. 1968; 76(2): 169–217.
- Bogardus, ES. Immigration and race attitudes. D. C. Heath and Company; Boston, MA: 1928.
- Braithwaite, V. Dancing with tax authorities: Motivational postures and non-compliant actions. In: Braithwaite, V., editor. *Taxing Democracy: Understanding Tax Avoidance and Evasion*. Ashgate; Aldershot: 2003. p. 15–39.
- Bühner, M. Einführung in die Test- und Fragebogenkonstruktion. 2nd edition. [Introduction into the construction of tests and questionnaires]. Pearson; München: 2006.
- Dubin JA. Criminal investigation enforcement activities and taxpayer noncompliance. *Public Finance Review*. 2007; 35(4):500–529.
- Dubin JA, Graetz MJ, Wilde LL. The effect of audit rates on the federal individual income tax, 1977–1986. *National Tax Journal*. 1990; 43(4):395–409.
- Elffers H, Weigel RH, Hessing DJ. The consequences of different strategies for measuring tax evasion behavior. *Journal of Economic Psychology*. 1987; 8(3):311–337.
- Forest, A. Active and passive deterrence of income tax evasion. University of California; Davis: 2000.
- Friedland N, Maital S, Rutenberg A. A simulation study of income tax evasion. *Journal of Public Economics*. 1978; 10(1):107–116.
- Gassner, W. *Steuervermeidung, Steuerumgehung, Steuerhinterziehung* [Tax avoision, tax avoidance, tax evasion]. Vienna University of Economics and Business Administration; 1983. Unpublished manuscript
- Hessing DJ, Elffers H, Weigel RH. Exploring the limits of self-reports and reasoned action: An investigation of the psychology of tax evasion behavior. *Journal of Personality and Social Psychology*. 1988; 54(3):405–413.
- Hite PA. An examination of the impact of subject selection on hypothetical and self-reported taxpayer noncompliance. *Journal of Economic Psychology*. 1988; 9(4):445–466.
- Holler M, Hoelzl E, Kirchler E, Leder S, Mannetti L. Framing of information on the use of public finances, regulatory fit of recipients and tax compliance. *Journal of Economic Psychology*. 2008; 29(4):597–611. [PubMed: 20495689]
- IRS. Final Report. Nov 10. 2008 Measuring the indirect effects of services and enforcement on taxpayer compliance. Contract TIRNO-08-K-00292
- James S, Alley C. Tax compliance, self-assessment and tax administration. *Journal of Finance and Management in Public Services*. 2002; 2(2):27–42.
- Jöreskog, KG.; Sörbom, D. Lisrel 8: Structural equation modelling with SIMPLIS command language. Scientific Software International; Chicago: 1993.
- Kastlunger B, Kirchler E, Mittone L, Pitters J. Sequences of audits, tax compliance, and taxpaying strategies. *Journal of Economic Psychology*. in press.
- Kirchler, E. *The economic psychology of tax behaviour*. Cambridge University Press; Cambridge: 2007.
- Kirchler E, Hoelzl E, Wahl I. Enforced versus voluntary tax compliance: The “slippery slope” framework. *Journal of Economic Psychology*. 2008; 29(2):210–225.

- McBarnet, D. When compliance is not the solution but the problem: From changes in law to changes in attitude. Australian National University, Center for Tax System Integrity; Canberra: 2001.
- Mummendey, HD.; Grau, I. Die Fragebogen-Methode [The questionnaire method]. Hogrefe; Göttingen: 2008.
- Plumley, AH. Internal Revenue Service. Washington, DC: 1996. The determinants of individual income tax compliance: Estimating the impact of tax policy, enforcement and IRS responsiveness. *Publication 1916*(Rev. 11-96)
- Rechberger, S.; Hartner, M.; Kirchler, E. SIT-Tax: (Duale) soziale Identität, Gerechtigkeit, Normen und Steuern: Fragebogen, Datenerhebung und Stichprobe [SIT-TAX: Dual social identity, justice, norms, and taxes: Questionnaire, data collection, and sample]. Universität Wien; 2009. Working Paper 2 http://www.univie.ac.at/sittax/pdf/Working_Paper2.pdf
- Roberts ML. An experimental approach to changing taxpayers' attitudes towards fairness and compliance via television. *The Journal of the American Taxation Association*. 1994; 16(1):67.
- Sandmo, A. Three decades of tax evasion: A perspective on the literature; Paper presented at the Skatteforum (The Research Forum on Taxation); Rosendal, Norway. 2003;
- Schmölders G. Fiscal psychology: A new branch of public finance. *National Tax Journal*. 1959; 12(December):340–345.
- Slemrod J, Blumenthal M, Christian C. Taxpayer response to an increased probability of audit: Evidence from a controlled experiment in Minnesota. *Journal of Public Economics*. 2001; 79(3): 455–483.
- Srinivasan TN. Tax evasion: A model. *Journal of Public Economics*. 1973; 2(4):339–346.
- Strümpel, B. Steuermoral und Steuerwiderstand der deutschen Selbständigen: Ein Beitrag zur Lehre von den Steuerwirkungen [Tax morale and tax resistance of German self-employed: A contribution to the research on effects of taxes]. Westdeutscher Verlag; Köln: 1966.
- Suhling S, Löbmann R, Greve W. Zur Messung von Strafeinstellungen. *Zeitschrift für Sozialpsychologie*. 2005; 36(4):203–213.
- Torgler B. Speaking to theorists and searching for facts: Tax morale and tax compliance in experiments. *Journal of Economic Surveys*. 2002; 16(5):657–683.
- Torgler B. Tax morale and institutions. 2003 Available on SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=663686 [6.02.2007]
- Torgler B. Tax morale and direct democracy. *European Journal of Political Economy*. 2005; 21(2): 525–531.
- Tyler TR. Trust within organisations. *Personnel Review*. 2003; 32(5):556–673.
- Webley, P. Tax compliance by businesses. In: Sjögren, H.; Skogh, G., editors. *New perspectives on economic crime*. Edward Elgar; Cheltenham: 2004. p. 95–126.
- Wenzel M. An analysis of norm processes in tax compliance. *Journal of Economic Psychology*. 2004a; 25(2):213–228.
- Wenzel M. The social side of sanctions: Personal and social norms as moderators of deterrence. *Law and Human Behavior*. 2004b; 28(5):547. [PubMed: 15638209]
- Wenzel M. The multiplicity of taxpayer identities and their implications for tax ethics. *Law and Policy*. 2007; 29(1):31–50.
- Wilson JLF, Sheffrin S. Understanding surveys of taxpayer honesty. *Finanzarchiv*. 2005; 61(2):256–274.

Figure 1.

Factor structure found in part I replicated with data of part II.

Note: the first numbers indicate results of part I and following numbers show results of part II; VTC = Voluntary Tax Compliance; ETC = Enforced Tax Compliance; TA = Tax Avoidance; TE = Tax Evasion. *** $p < .001$, * $p < .05$;

Table 1

Motivational postures and statements representing them in English (Braithwaite, 2003, p. 20) and German (Rechberger, et al., 2009)

Motivational posture	Description	Statements representing motivational postures	German translations of motivational postures
Commitment	Commitment combines a positive orientation towards tax authorities and deference. The tax system is perceived as desirable, tax law and tax collection are perceived as fair. Committed taxpayers feel a moral obligation to pay their share and to act in the interest of the collective.	<ul style="list-style-type: none"> • Paying tax is the right thing to do. • Paying tax is a responsibility that should be willingly accepted by all Australians. • I feel a moral obligation to pay my tax. • Paying my tax ultimately advantages everyone. • I think of tax paying as helping the government do worthwhile things. • Overall, I pay my tax with good will. • I resent paying tax. (reversed) • I accept responsibility for paying my fair share of tax. 	<ul style="list-style-type: none"> • Es gehört sich, seine Steuern zu bezahlen. • Steuern zu bezahlen ist eine Verantwortung, die von allen BürgerInnen gerne akzeptiert werden sollte. • Ich fühle mich moralisch verpflichtet, meine Steuern zu bezahlen. • Wenn ich meine Steuern bezahle, nützt das letztendlich Allen. • Steuern zahlen hilft der Regierung sinnvolle Dinge zu tun. • Alles in allem zahle ich gerne meine Steuern. • Ich ärgere mich, meine Steuern zahlen zu müssen. (reversed) • Ich sehe es als meine Verantwortung, meinen Steueranteil zu bezahlen.
Capitulation	Capitulation reflects a positive orientation in terms of acceptance of the tax authorities which hold legitimate power to pursue the collective's goals. As long as citizens act according to the law, authorities are perceived to act in a supportive way.	<ul style="list-style-type: none"> • If you cooperate with the Tax Office, they are likely to be cooperative with you. • Even if the Tax Office finds that I am doing something wrong, they will respect me in the long run as long as I admit my mistakes. • The Tax Office is encouraging to those who have difficulty meeting their obligations through no fault of their own. • The tax system may not be perfect, but it works well enough for most of us. • No matter how cooperative or uncooperative the Tax Office is, the best policy is to always be cooperative with them. 	<ul style="list-style-type: none"> • Wenn ich mit der Steuerbehörde kooperiere, wird sie auch bereit sein, mir zu helfen. • Auch wenn die Steuerbehörde herausfindet, dass ich etwas falsch gemacht habe, wird sie mich respektieren, solange ich meinen Fehler eingestehe. • Die Steuerbehörde hilft jenen, die ohne Absicht ihre Steuererklärung falsch abgeben. • Das Steuersystem mag nicht perfekt sein, aber für die Meisten erfüllt es seinen Zweck gut genug. • Die beste Strategie ist immer mit der Steuerbehörde zu kooperieren, egal ob diese kooperativ ist oder nicht.
Resistance	Resistance reflects a negative orientation and defiance. The authority of tax officers may be doubted and their acts may be perceived as controlling and dominating rather than as supportive.	<ul style="list-style-type: none"> • If you don't cooperate with the Tax Office, they will get tough with you. • The Tax Office is more interested in catching you for doing the wrong thing, than helping you do the right thing. • It's important not to let the Tax Office push you around. • It's impossible to satisfy the Tax Office completely. 	<ul style="list-style-type: none"> • Wenn ich nicht mit der Steuerbehörde kooperiere, wird sie härter mit mir umgehen. • Steuerbehörde ist eher daran interessiert, mich zu ertappen, wenn ich etwas falsch gemacht habe, als mich dabei zu unterstützen, alles richtig zu machen. • Es ist wichtig, sich nicht von der Steuerbehörde herumschubsen zu lassen. • Es ist unmöglich, die Steuerbehörde vollkommen zufrieden zu stellen.

Motivational posture	Description	Statements representing motivational postures	German translations of motivational postures
		<ul style="list-style-type: none"> Once the Tax Office has you branded as a non-compliant taxpayer, they will never change their mind. As a society, we need more people willing to take a stand against the Tax Office. 	<ul style="list-style-type: none"> Wenn mich die Steuerbehörde einmal als SteuerständerIn eingestuft hat, wird sie ihre Meinung nicht mehr ändern. Als Gesellschaft brauchen wir mehr Menschen die sich gegen die Steuerbehörde zur Wehr setzen.
Disengagement	Disengagement also reflects a negative orientation and correlates with resistance. Individuals and groups keep socially distant and blocked from view and have moved beyond seeing any point in challenging tax authorities.	<ul style="list-style-type: none"> If I find out that I am not doing what the Tax Office wants, I'm not going to lose any sleep over it. I personally don't think that there is much the Tax Office can do to me to make me pay tax if I don't want to. I don't care if I am not doing the right thing by the Tax Office. If the Tax Office gets tough with me, I will become uncooperative with them. I don't really know what the Tax Office expects of me and I'm not about to ask. 	<ul style="list-style-type: none"> Wenn ich bemerke, dass ich nicht exakt das tue, was die Steuerbehörde von mir erwartet, bereitet mir das keine schlaflosen Nächte. Ich persönlich glaube nicht, dass die Steuerbehörde viel dagegen tun kann, wenn ich meine Steuern nicht bezahlen möchte. Mir ist es egal, wenn ich nicht das mache, was die Steuerbehörde von mir verlangt. Wenn die Steuerbehörde härter mit mir umgeht, werde ich weniger kooperieren. Ich weiß nicht wirklich, was die Steuerbehörde von mir erwartet und ich werde auch nicht nachfragen.
Game playing	Game playing expresses a view of law as something that can be moulded to suit one's purposes rather than as a set of regulations that should be respected as guideline of one's actions. In the field of tax behaviour, game playing refers to "cops-and-robbers" games with taxpayers detecting loopholes for their advantages and perceiving tax officers as cops which engage in catching cunning taxpayers.	<ul style="list-style-type: none"> I enjoy spending time working out how changes in the tax system will affect me. I enjoy talking to friends about loopholes in the tax system. I like the game of finding the grey area of tax law. I enjoy the challenge of minimising the tax I have to pay. The Tax Office respects taxpayers who can give them a run for the money. 	<ul style="list-style-type: none"> Ich überlege gerne welche Auswirkungen Veränderungen der Steuergesetzgebung auf mich haben könnten. Ich spreche gerne mit FreundInnen über die Lücken und Schlupflöcher im Steuersystem. Es macht mir Spaß, die Lücken und Grauzonen des Steuerrechts herauszufinden. Ich finde Vergnügen daran, einen Weg zu finden, wie ich meine Steuerzahlungen minimieren kann. Die Steuerbehörde respektiert SteuerzahlerInnen, die sich nicht so leicht unterkriegen lassen.

Table 2

Descriptives, Cronbach's alpha, and inter-item-correlations of the items on voluntary tax compliance, enforced tax compliance, tax avoidance, and tax evasion (part I)

Item	M	SD	Md	Skewness	Inter-item correlations										Alpha
Voluntary tax compliance					VTC1	VTC2	VTC3	VTC4	VTC5	VTC6	VTC7	VTC8	VTC9	VTC10	
					1.00										
					.24	1.00									
*					.50	.34	1.00								
					.51	.08	.61	1.00							
*					.42	.21	.44	.45	1.00						
*					.44	.24	.41	.39	.82	1.00					
*					.45	.19	.71	.67	.61	.52	1.00				
*					.52	.20	.60	.57	.70	.66	.72	1.00			
					.05	.05	.21	.27	.23	.21	.36	.32	1.00		
					.43	.11	.58	.70	.54	.47	.72	.71	.37	1.00	.89
Enforced tax compliance					ETC1	ETC2	ETC3	ETC4	ETC5	ETC6	ETC7	ETC8			
					1.00										
					.38	1.00									
*					.30	.24	1.00								
					.29	.81	.35	1.00							
*					.22	.60	.27	.65	1.00						
*					.26	.51	.25	.50	.54	1.00					
*					.14	.24	.22	.29	.32	.21	1.00				
					.10	.07	.17	.08	.02	.05	.29	1.00			.78
Tax avoidance					TA1	TA2	TA3	TA4	TA5	TA6	TA7	TA8			
*					1.00										
*					.31	1.00									
*					.39	.34	1.00								
					.09	.31	.16	1.00							
*					.30	.28	.20	.29	1.00						

Item	M	SD	Md	Skewness	Inter-item correlations										Alpha
Voluntary tax compliance															
* TA6	6.44	2.72	7.00	-0.83	.10	.36	.37	.24	.26	1.00					
TA7	7.70	2.30	9.00	-1.85	.04	.12	.01	-.02	.02	.17	1.00				
TA8	5.47	3.17	6.00	-0.31	.02	.23	.25	.21	.23	.31	.29	1.00			.69
Tax evasion															
TE1	4.98	3.11	5.00	-0.02	1.00										
TE2	4.43	3.04	5.00	0.28	.68	1.00									
* TE3	4.14	3.09	3.00	0.44	.32	.48	1.00								
* TE4	3.85	2.94	3.00	0.64	.39	.45	.70	1.00							
* TE5	4.45	3.01	5.00	0.22	.56	.58	.51	.58	1.00						
TE6	4.15	3.02	4.00	0.35	.37	.41	.45	.47	.52	1.00					
* TE7	5.01	3.12	5.00	-0.08	.39	.45	.47	.49	.59	.65	1.00				
TE8	3.21	2.80	2.00	0.97	.40	.49	.55	.53	.51	.52	.50	1.00			
* TE9	4.01	2.97	3.00	0.43	.32	.43	.59	.63	.46	.52	.49	.58	1.00		.90

* items included in the scales voluntary tax compliance, enforced tax compliance, tax avoidance, and tax evasion; Correlations equal to or above .16 are significant on a level of $p < .05$

Table 3

Descriptives, Cronbach's alphas, inter-scale-correlations of voluntary tax compliance, enforced tax compliance, tax avoidance, tax evasion, motivational postures, and direct questions on evasion behaviour (part I and II)

Part I									
Scale	M	SD	MD	Alpha	VTC	ETC	TA	TE	
Voluntary tax compliance (VTC)	5.39	2.22	5.80	.89	1.00				
Enforced tax compliance (ETC)	5.29	2.03	5.40	.81	-.03	1.00			
Tax avoidance (TA)	5.75	1.94	6.00	.68	.16	*	1.00		
Tax evasion (TE)	4.29	2.42	4.20	.86	-.26	**	.11	1.00	
Part II									
	M	SD	MD	Alpha	VTC	ETC	TA	TE	DQC1 DQC2
Voluntary tax compliance (VTC)	5.71	2.10	6.00	.88	1.00				
Enforced tax compliance (ETC)	5.10	2.10	5.40	.83	-.16	*			
Tax avoidance (TA)	5.66	1.74	6.00	.55	-.06	.15	1.00		
Tax evasion (TE)	4.07	2.30	4.00	.84	-.34	***	.14	1.00	
Commitment	5.80	1.75	6.00	.88	.77	***	.01	-.34	***
Capitulation	5.53	1.72	5.60	.78	.32	***	-.07	-.14	
Resistance	5.56	1.80	5.50	.81	-.34	***	.24	**	**
Disengagement	4.51	1.29	4.60	.49	-.28	**	-.05	.37	***
Game playing	5.30	1.65	5.20	.69	-.19	*	.27	**	*
Have you ever thought about evading taxes or about cheating on your income tax return? (DQC1, Spearman's Rho)	3.99	2.71	4.00		-.46	***	.16	*	*** 1.00
Have you ever evaded taxes or cheated on your income tax return? (DQC2, Spearman's Rho)	2.68	2.29	2.00		-.31	***	-.02	.39	*** .69 *** 1.00

p < .001

**
p < .01

*
p < .05