The role of emotions in tax compliance behavior: A mixed-methods approach

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ABSTRACT

Two studies, using both qualitative and quantitative methods, showed that tax decisions elicit different emotions, which have an impact on compliance. Study 1 used focus groups with self-employed ($N = 7$) and employed ($N = 9$) taxpayers as well as tax auditors ($N = 8$) to identify the emotions that are relevant in the taxation context and to single out typical situations in which these emotions are elicited. Study 2 ($N = 523$) quantified the prevalence and effects of specific emotions that are experienced during the process of paying taxes. We manipulated positive and negative experiences during the process of paying taxes using different scenarios in an experimental survey among a representative sample of self-employed and employed Austrian taxpayers. The results of both studies revealed that specific emotions that are relevant in the process of paying taxes can be clustered, on the one hand, in positive emotions in general and, on the other hand, in specific, negative feelings of self-blame, anger, and fear. Both self-employed and employed participants reported higher compliance intentions after having positive experiences with the tax authorities as compared to negative ones (Study 2). Importantly, these effects were mediated by anger-related, self-blame-related, and positive emotions. Hence, we conclude that emotional experiences play an important role in tax compliance decisions and that, therefore, it is crucial to take the taxpayers' subjective perceptions into consideration when designing policies to promote compliance.

1. Introduction

The standard economic model of income tax evasion assumes that rational taxpayers carefully consider audit probabilities, fines, and tax rates and that they evade tax if it maximizes their expected utility (Allingham & Sandmo, 1972). In general, audit probabilities, as well as fines, are low, making this model to predict that most taxpayers engage in evasion. However, this is not what happens; many people comply with tax laws (Alm, McClelland, & Schulze, 1992; Graetz & Wilde, 1985). This means that other factors than outcome maximization must play a role in explaining tax behavior. A variety of socio-psychological factors have been identified as determinants of compliance decisions, such as social norms, tax morale, attitudes, and fairness perceptions (for a summary, see Kirchler, 2007). Most of these factors have also been tested empirically. Although emotions have also been proposed as an explanation of actual tax behavior (e.g., Alm & Torgler, 2012), their potential as a determinant of tax behavior has not yet been

empirically tested extensively. In this paper, our aim was to identify which specific emotions are elicited in a variety of tax-related situations and whether these emotions are associated with tax compliance intentions.

1.1. Affect and decision making

While emotions have, for a long time, been regarded as an irrational phenomenon that hinders reasoning (Elster, 1998), scholars are now considering affect rationality to explain situations in which experiencing an emotion helps decision-makers navigate in a complex world by differentiating the good from bad, thereby enabling fast and efficient reasoning. Moreover, emotions guide individuals' attention efficiently to the most important aspects of a situation. They serve as a motivational driver and as a common currency for ethical decisions, fostering moral engagement (Peters, Västfjäll, Gärling, & Slovic, 2006; Pfister & Böhm, 2008). Therefore, studying affective experiences can broaden our understanding of presumed rational decisions, for instance, in a financial context or decisions under risk. The case of tax behavior is a particularly suitable applied instance of such decisions as the topic of taxes is closely intertwined with fairness issues and moral considerations, which are likely influenced by emotional experiences.

1.2. Existing studies on emotions and tax compliance

A series of studies in different contexts of authorities' actions (policing, work, and taxation) have confirmed a positive link between fairness perceptions and compliance decisions. Furthermore, there is a first indication that this relationship is mediated by emotions in the sense that perceived procedural injustice leads to anger, which is related to noncompliance (Barkworth & Murphy, 2015; Murphy & Tyler, 2008; Murphy, 2008). Taxpayers consider the fairness of outcomes and procedures as well as the adequacy of audits and fines when making compliance decisions (Wenzel, 2003). They tend to evade more taxes when they perceive exchange inequities (Alm et al., 1992) and are more prone to accept tax evasion when they consider that the tax authorities treat them unfairly (Smith, 1992). However, in most studies on the effect of perceived unfairness on tax compliance, whether such effects are mediated by (negative) emotions has not been tested.

Regarding the few experiments on tax compliance and emotions in the literature, apparently inconclusive results were reported. While one study suggested emotional arousal during a tax game to be positively related to tax evasion (Coricelli, Joffily, Montmarquette, & Villeval, 2010), in another study, a negative relationship was found between psychic stress (measured as heart rate variability) and tax evasion (Dulleck et al., 2016). In a further study among self-employed taxpayers, it has been reported that tax authorities' deterrence efforts (i.e., exertion of power in the form of audits and fines) were associated with negative feelings and higher readiness to evade taxes. Trustworthiness, on the other hand, seemed to reduce negative feelings and to enhance intentions to comply with tax obligations (Olsen et al., 2018).

Scholars seem to agree that emotions should be related to tax compliance and evasion. However, the empirical evidence on the what and how of this relationship is inconclusive. One explanation for this state of affairs could be that previous studies focused either on investigating the influence of single emotions, such as anger and happiness, as two representatives of negative and positive emotions (Drouvelis & Grosskopf, 2016; Murphy & Tyler, 2008), or on a single dimension of affect, such as valence (Olsen et al., 2018) or arousal (Coricelli et al., 2010; Dulleck et al., 2016). As affective phenomena are multilayered, they should not be reduced to only one of many components.

Studying specific emotions and how they impact choices has higher predictive power in general than just measuring the valence or arousal of emotions (e.g., Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008). For instance, in the domain of customer satisfaction, anger is a better predictor of retaliatory behavior than a global measure of dissatisfaction (Bougie, Pieters, & Zeelenberg, 2003). Hence, it is crucial to investigate specific emotions, rather than applying a purely dimensional approach.

In research on judgment and decision making, there are two types of specific emotions that are relevant: incidental emotions and integral emotions (Lerner, Li, Valdesolo, & Kassam, 2015). Incidental emotions are not related to the decision situation itself, but they are elicited by the surrounding circumstances, such as sunny weather (Rick & Loewenstein, 2008). They have been shown to influence decisions, by altering information processing strategies (Forgas, 1995; Saunders, 1993). In contrast, integral emotions are elicited by the decision situation itself and are, therefore, causally connected (Zeelenberg et al., 2008). Integral emotions can be deliberately addressed and manipulated by the actors involved in the decision situation, whereas incidental emotions oftentimes cannot be controlled. Therefore, the practical implications of findings on integral emotions, which are addressed in this paper, are much larger.

1.3. The potential of emotion research in explaining tax compliance

We believe that a better understanding of the integral emotions prevalent in different tax-related situations is important for several reasons. First, although identifying emotions that are experienced in the tax context is interesting in itself as it may provide an indication of how the process of paying taxes is experienced, knowing which emotional reactions predict tax compliance and especially evasion is of utmost importance for tax authorities. Such insights provide new opportunities for designing services and procedures in efficient tax collection, especially in case of low tax morale and compliance.

Second, extending our knowledge of the emotional processes involved in tax behavior could reconcile seemingly inconclusive results from previous studies. For instance, both the standard model of tax evasion (Allingham & Sandmo, 1972) and the slippery-slope framework (SSF), which integrates economic deterrence assumptions and socio-psychological factors (Kirchler, Hoelzl, & Wahl, 2008), assume that increasing audits and fines should translate into higher (enforced) tax compliance. Indeed, a positive effect of

audits and fines on compliance has often been confirmed (Alm, Sanchez, & De Juan, 1995; Kogler, Muehlbacher, & Kirchler, 2015, Muehlbacher & Kirchler, 2016). However, it has been suggested in some recent studies that deterrence measures may sometimes backfire, reducing taxpayers' level of compliance (Beer, Kasper, Kirchler, & Erard, 2015; Mendoza, Wielhouwer, & Kirchler, 2015). We believe that emotional reactions to audits and fines may explain these divergent reactions. For instance, increased levels of fear might result in higher enforced compliance, whereas anger could crowd out voluntary compliance and lead to lower compliance.

1.4. Research aims

The aim of this article is to investigate (1) which emotions are experienced by taxpayers, (2) which specific situations elicit these emotions, and (3) how experiencing these emotions influences tax compliance decisions. In the absence of previous research identifying the range of specific emotions relevant in the context of taxes, we used an explorative, bottom-up research strategy (Richins, 1997). Study 1 is a qualitative focus group study that aims to identify the procedural steps involved in filing taxes from self-employed and employed taxpayers' view as well as which specific emotions could be present in these identified situations. Study 2 describes a quantitative survey among a representative sample of self-employed and employed Austrian taxpayers, aimed at quantifying the relevance of specific emotions in selected tax-related situations. Here we also test the mediating role of specific emotions between the framing of tax-related situations (negative versus positive valence) on the one hand and tax compliance intentions on the other. Taken together, both studies provide a detailed picture of the role of emotions in tax compliance.

2. Study 1: Qualitative focus group study

The aim of this study was to assess taxpayers' subjective perspectives of the procedures involved in paying taxes, including the associated emotional experiences. We conducted focus groups with self-employed and employed taxpayers to obtain the taxpayers' self-insight perspective as well as with tax auditors for an external perspective. This method is well suited for gaining this information, as open discussion on this matter enabled communication regarding the emotions experienced during the procedures necessary to comply with tax obligations. The study served to answer the following two research questions (RQs):

RQ 1: What are the typical tax-related procedures and situations for taxpayers?
RQ 2: Which specific emotions are elicited during these typical procedures and situations?

2.1. Method

The focus groups were conducted at the University of Vienna. Self-employed and employed taxpayers as well as tax auditors participated in separate focus groups to ensure the homogeneity of the experiences and discussion topics (Krueger, 1998a, 1998b). The discussion rounds were conducted in 2016 and lasted between 90 and 120 min.

Self-employed and employed taxpayers go through different procedures to fulfill their tax obligations and were thus invited separately. While self-employed taxpayers have to report their taxes directly, employed taxpayers are subject to third-party reporting and can submit a tax declaration to claim deductions (Kirchler, 2007; Olsen, Kogler, Stark, & Kirchler, 2017). We additionally invited tax auditors to provide an outside perspective of taxpayers' emotional reactions especially during the auditing process.

2.1.1. Participants

A convenience sample of taxpayers was invited through the authors' network to participate in discussions regarding their experiences with the Austrian tax authorities for a research project. No incentives were offered. In total, we conducted seven focus groups with two to four participants per group (total $N = 24$); two groups were conducted with self-employed taxpayers (2 female, 5 male), three with employed taxpayers (4 female, 5 male), and two with tax auditors (3 female, 5 male).

2.1.2. Procedure

Upon arrival, the participants were welcomed and offered snacks and coffee, and they got to know each other through small talk in a friendly and informal atmosphere that enabled open communication. The discussion rounds took place at a round table in a small laboratory room with comfortable lighting. Participants were assured that their contributions to the discussion would remain anonymous, and all participants agreed that all sessions be audio-recorded. All seven focus groups were moderated by the first author of this paper.

The moderation followed a question route (Krueger, 1998a) that covered the following steps. To open up for the topic of taxation, the participants were first asked to freely associate about paying taxes. To guide a more structured discussion, they were asked to silently reflect about and mentally go through the whole process of paying taxes. They were then asked to illustrate this process graphically on a large sheet of paper. Instructions in the group of tax auditors were slightly different, as they were asked to go through the process of a tax audit and to reflect on the taxpayers' reactions.

The resulting illustrations served as a visual aid for the actual discussions. Each participant was asked to present his/her illustration to the group. They then indicated which of the illustrated steps were of positive, negative, or neutral valence by marking these with a colored sticker (green, red, or yellow, respectively). Tax auditors were asked to think of the audited taxpayers' perspective. Subsequently, the entire group went through the process depicted in all illustrations and discussed which specific emotions were experienced during the events that were marked as positive and negative. This procedure was followed by a free discussion regarding

the related topics relevant for the participants, such as fairness of the system or the service quality of the tax authorities that arose from the discussion about emotional events. The focus groups were concluded with a closing statement of the most important points by each participant.

The focus group discussions provided detailed information about which procedures and situations are most relevant to taxpayers. Additionally, the step-by-step procedure revealed which specific emotions arise during tax-related procedures and situations.

2.2. Results

2.2.1. Data analysis

All audio recordings were transcribed and then coded using the software MAXQDA (VERBI Software, Berlin, Germany, 1989–2018). We followed an inductive coding procedure in multiple steps.[1] First, reoccurring themes were highlighted and statements describing different tax-related procedures and situations were coded with according labels. The drawn graphical illustrations were also taken into consideration during coding. Second, all statements with evaluative content were coded with the labels positive, negative, or neutral. Third, the evaluative passages were further refined by coding all statements that expressed specific emotional experiences. All data, materials, participants' illustrations, and supplementary tables are available on the Open Science Framework (OSF) (https://osf.io/6bjeh/).

2.2.2. Process of paying taxes

Self-employed and employed taxpayers described different procedures that are necessary to meet their tax obligations. For self-employed taxpayers, the tax advisor played an important role, whereas employed taxpayers frequently mentioned the automaticity of their tax payments through third-party reporting. More generally, the procedures and situations were characterized by high workload of filing preparations, contacting the tax authorities in case of questions, and reflections on tax audits. A full list of procedural codes is listed in Table S.1 of the Supplementary Materials. While the procedures associated with paying taxes differed between the groups of self-employed and employed taxpayers, reports within these two groups were fairly similar. Furthermore, 45 statements were concerned with tax audits.

2.2.3. Set of relevant emotions

In terms of valence, participants mentioned more negative specific emotions than positive ones. The most frequently mentioned emotional aspects and feelings by self-employed participants were stress and anger, followed by uncertainty and feeling blamed, fearful, and nervous. Employed participants mentioned fear most frequently, followed by anger, uncertainty, indignation, anxiety, guilt, and shock. Tax auditors stated to have observed mostly nervousness, anger, frustration, fear, and despair during tax audits. In terms of positive emotions, self-employed participants mentioned relief, feeling secure, and happiness most frequently, whereas employed participants mentioned surprise most frequently. The emotion terms mentioned during the focus groups are listed in Tables S.2 to S.4 of the Supplementary Materials.

2.2.4. Further analysis

To derive materials for the survey used in Study 2, codes labeling tax-related procedures and situations were cross-tabulated with evaluative codes, resulting in an overview of those procedures and situations that elicit the most emotions. Cooperation with a tax advisor is mostly associated with positive experiences by self-employed participants. Emotions such as thankfulness and relief were mentioned in this context. Statements concerned with workload and accounting as well as tax audits were mostly evaluated negatively.

Employed participants evaluated the automatic tax payment as positive and mentioned only some negative experiences that were mostly concerned with the workload associated with tax deductions. An interesting observation during the discussions was the prevailing negative evaluation of the unknown. Participants who had no personal experience with the tax authorities expressed more negative opinions than those who did have personal experience.

2.3. Discussion

The results of the present focus group study provide an understanding of what self-employed and employed taxpayers subjectively perceive as the process of paying taxes. Both groups must go through a number of procedures to meet tax obligations, from accounting and information acquisition to actually filling out tax declaration forms and preparing documents for a tax audit.

Furthermore, the results provide an initial indication that paying taxes is a topic susceptible to emotional experiences. The analysis led to a set of diverse specific emotions that seem relevant in this context. Participants differentiated more extensively between negative emotions than between positive ones. This could mean that the context of taxation generally evokes more negative than positive associations, while the literature also suggests that negative emotions are generally experienced and expressed more diversely compared to positive emotions (Schrauf & Sanchez, 2004).

The focus group method proved to be well suited to learn more about what taxpayers subjectively perceive as the process of

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[1] The coding of all text passages was performed by the first author of this paper and double-checked by an independent researcher familiar with the taxation context.

paying taxes, which interactions with the tax authorities are associated with this process, and how they feel during these interactions. With this method, we followed a bottom-up approach that provides the basis for empirically derived research materials to further investigate the role of emotions in tax compliance decisions, without relying solely on our subjective presumptions.

Notwithstanding, the qualitative approach comes with its limitations. Because of the small sample size and the exploratory nature of this study, the results cannot be generalized to the population of taxpayers as a whole, nor can we draw any conclusions about the relevance of emotional experiences with regard to actual compliance decisions. The analysis of the focus group discussions is based on an inductive coding procedure that required many individual decisions throughout the process. The results are, therefore, not clear cut, but open to discussion and interpretation. Nonetheless, the results provide valuable first insights into the role of emotions in taxation, demonstrating the presence of a variety of negative as well as positive emotional experiences throughout the process of paying taxes. Furthermore, insights into the taxpayers' subjective perceptions of procedures needed to oblige with tax regulations gained from Study 1 provide a valuable resource for a more systematic, quantitative investigation in Study 2.

3. Study 2: Representative survey study

The goal of Study 2 was to extend the findings of Study 1 to a representative sample of Austrian taxpayers in a quantitative survey study to obtain more generalizable results. Study 2 allowed us to gain first insights into the role of emotional experiences in compliance decisions. For this purpose, an experimental online survey was designed on the basis of the results of Study 1, which described different tax-related procedures and situations with either a positive or a negative outcome. We then measured emotional experiences and tax compliance intentions (see Method for details). The aim was to answer the following preregistered research questions (see https://osf.io/6bjeh/ for the preregistration):

RQ 1: Which specific emotions are relevant in the context of taxation?
RQ 2: How do emotional responses correspond to tax-related procedures and situations?
RQ 3: Is the relationship between tax-related positive versus negative experiences and tax compliance intentions mediated by emotional responses?
RQ 4: Does the description of positive versus negative experiences with the tax authorities spill over to general personal attitudes toward taxes?

The first two research questions are of an explorative nature to understand the prevalence of emotions in the context of taxation more systematically. As for the remaining two research questions, we expect that whether taxpayers experience positive or negative encounters with the tax authorities influences their subsequent compliance intentions (H1) and that this relationship is mediated by the taxpayers' emotional responses (H2). More specifically, we hypothesize to find larger effects for emotions with stronger inherent action tendencies, such as anger and regret, than for emotions with weaker action tendencies, such as sadness and shame (H3) (Frijda, Kuipers, & ter Schure, 1989). Furthermore, we expect a spillover effect of negative experiences with the tax authorities on personal attitudes toward taxes (H4). The hypotheses and analysis plan were preregistered (https://osf.io/6bjeh).

The survey materials were derived from Study 1 and further refined after a pretest with self-employed and employed Austrian taxpayers. The main survey was presented to a sample of Austrian taxpayers, representative in terms of sex and age of the Austrian working population. The results of Study 1 revealed that personal experiences with the tax authorities differ for self-employed and employed taxpayers. While employed taxpayers have fairly little direct contact with the tax authorities and mostly receive tax reimbursements, self-employed taxpayers rely much more on the service structure of tax offices and are more often confronted with additional tax payments. By administering the survey to both self-employed and employed taxpayers in a between-subject design, we took such procedural differences into account, and we are able to consider potential differences in emotional experiences between these two groups.

3.1. Pretest

The focus group results guided the creation of a number of short scenarios describing the identified procedures and situations involved in paying taxes. The scenarios were adapted for both self-employed and employed taxpayers since their tax obligation procedures differ substantially. In order to elicit emotional reactions, we focused throughout the process of paying taxes on those procedures and situations that were most frequently evaluated as either positive or negative by focus group participants. The scenarios were presented to 46 Austrian taxpayers (paper-and-pencil and online versions). Participants were asked whether they have experience with the described situation and whether it resembles a realistic scenario for Austrian taxpayers. Furthermore, we asked whether the situation represents a positive or negative experience (one-item Kunin scale) and what specific emotions they experience in such a situation.

We were able to identify further specific emotions based on the pretest results. The resulting list of all specific emotions (Study 1 and pretest) was then categorized into broader emotion categories by two independent raters. The final set of emotions that was used in the survey of Study 2 comprised the following 19 emotions: ashamed, angry, annoyed, blamed, dissatisfied, fearful, guilty, happy, helpless, hopeful, insecure, nervous, regretful, relieved, sad, satisfied, secure, stressed, and surprised. We added the emotion "regret" to the list of emotions generated from Study 1 and the pretest, given its high relevance in the related literature (Zeelenberg & Pieters, 2007). Experimental evidence suggests that the desire to avoid future regret is a strong motivational drive behind financial decisions (Van de Ven & Zeelenberg, 2011).

Table 1
Description of the sample in study 2.

	Self-employed			Employed		Total
		Age			Age	
	N	*M(SD)*	*N*		*M(SD)*	*N*
Male	144	46.99 (12.41)	133		36.67 (11.12)	277
Female	104	46.39 (9.51)	142		35.16 (11.43)	246
Total	248	46.74 (11.27)	275		35.89 (11.28)	523

3.2. Method

3.2.1. Participants

Data collection was outsourced to a market research company. The sample (*N* = 523) was representative of the Austrian working population in terms of sex and age and was recruited via e-mail invitations. The completion of the experimental online survey took approximately 15 min, and the participants received €1.50 as a compensation. See Table 1 for the sample characteristics with respect to sex and age (for more detailed sample characteristics, see Table S.5 and S.6 of the Supplementary Materials).

3.2.2. Materials and procedure

Seven different scenarios were formulated on the basis of Study 1 and the pretest results. The scenarios describe the different procedures that taxpayers have to go through to meet their tax obligations, from (1) preparatory accounting tasks, (2) filing taxes, (3) contacting the tax authorities with a question, (4) receiving feedback from the tax authorities about a balance, (5) receiving an audit announcement, (6) experiencing an audit, and (7) actually evading taxes by claiming false deductions. Hence, some of the scenarios describe direct interactions with the authorities, whereas others focus more on the procedures of paying taxes. English translations of all scenarios are presented in Table S.7 of the Supplementary Materials.

We manipulated the valence of each scenario framed either as a positive experience or as a negative experience between subjects. For instance, Scenario 3 describes contacting the authorities with a question. In the positive condition, the taxpayer receives helpful information on the phone. In the negative condition, on the other hand, the tax officer does not provide a binding answer and refers the taxpayer to the website where he/she does not find the relevant information. Using a between-subject manipulation of the valence of a situation has the advantage that participants are more likely to differentiate between specific positive and negative emotions instead of focusing exclusively on the positivity or negativity of a given situation. Altogether, the study comprises a mixed design with seven separate scenarios (within-subject) framed with a positive or a negative valence (between-subject) for both self-employed and employed taxpayers (between-subject).

The scenarios were presented in two blocks. The first block consisted of four scenarios. After reading each scenario, the participants completed a manipulation check for the valence framing and indicated to what extent they experienced a list of specific emotions (see the next paragraphs for scales). The second block comprised three scenarios. We again measured a manipulation check and the list of specific emotions, followed by an additional measurement of tax compliance intentions. The order of scenarios was randomized within each block. Scenarios included in Block 1 were (1) preparatory accounting tasks, (2) filing taxes, (4) receiving feedback from the tax authorities about a balance, and (5) receiving an audit announcement, whereas scenarios in Block 2 were (3) contacting the tax authorities with a question, (6) experiencing an audit, and (7) actually evading taxes by claiming false deductions. The original survey along with the data can be accessed via https://osf.io/6bjeh/.

3.2.2.1. Manipulation check. Participants rated how they felt in each of the depicted situations in terms of valence using a seven-point rating scale (1 = *bad*, 7 = *good*). This item served as a manipulation check, testing whether scenarios in the positive condition successfully elicited positive feelings while the scenarios in the negative condition elicited negative feelings.

3.2.2.2. Measurement of emotions. For each of the seven scenarios, participants rated how intensively they would experience each of the 19 specific emotions (i.e., angry, annoyed, blamed, dissatisfied, fearful, guilty, happy, helpless, hopeful, insecure, nervous, regretful, relieved, sad, satisfied, secure, ashamed, stressed, and surprised) in such a situation. They did so via a seven-point rating scale (e.g., "In this situation, I feel relieved"; 1 = *not at all*, 7 = *strongly*).

3.2.2.3. Tax compliance intentions. After reading each of the three scenarios in the second block and replying to the manipulation check and specific emotion items, the participants re-read the scenario and imagined that this situation was the last tax-related experience they had made before it was time to file this year's tax declaration. We combined four items to assess the tax compliance intentions. Participants indicated how likely it was that they make each of the following decisions on a seven-point rating scale (1 = *very unlikely [0%]*, 7 = *very likely [100%]*): honest intentions (i.e., "I will hand in my next tax declaration completely honestly"), avoidance intentions (i.e., "Before I file my next tax declaration, I will closely read the tax law, in order to search for cost-savings options"; reversed), evasion intentions (i.e., "I will conceal additional income, that I've had this year, in my tax declaration"; reversed), and procrastination intentions (i.e., "I will put my tax declaration aside for now and deal with it some other time";

reversed). The first three items were adapted from the tax compliance inventory (TAX-I; Kirchler & Wahl, 2010). Only the procrastination item was added as a new concept as procrastination was frequently mentioned in the focus group discussions.

3.2.2.4. General tax compliance attitudes. After the last scenario, we asked the participants about their real-life experiences with paying taxes in terms of general attitudes toward taxes with ten items of the motivational postures questionnaire (Braithwaite, Murphy, & Reinhart, 2007; e.g., "I accept responsibility for paying my fair share of paying tax"), as well as general compliance intentions with four items (e.g., "Generally, I pay attention in my professional life to report my taxes completely honestly"). The original motivational postures questionnaire comprises five subscales that assess the social distance between taxpayers and the tax authorities by differentiating between commitment, capitulation, resistance, disengagement, and game-playing. Each of these motivational postures is assessed with five to eight items. For the purposes of this study, we shortened the questionnaire to two items per subscale in order to keep the survey at a reasonable length. General compliance intentions were assessed by asking the participants to think about their real-life experiences with paying taxes and to state their agreement to the four items used before to measure compliance intentions (honest, avoidance, evasion, and procrastination intentions).

3.3. Results

Prior to the main analyses, we checked whether the manipulation of describing positive versus negative tax-related experiences was successful in terms of eliciting positive versus negative feelings. The main results are presented in the order of the four research questions. First, we investigated which emotions are prevalent across the scenarios. Second, we explored which specific emotions are most relevant between the seven scenarios. Third, we analyzed whether experienced emotions mediate the relationship between the valence manipulation (positive versus negative scenarios) and self-reported compliance intentions. This was performed for each of the three scenarios where compliance intentions were measured. Finally, we investigated whether positive versus negative tax-related experiences spill over to general attitudes toward taxes.

3.3.1. Manipulation check of positive and negative valence

The repeated measures data structure was addressed by conducting a linear mixed-effects regression analysis with the manipulation check scores as a dependent variable, the valence, occupation, and their interaction as fixed effects, and random intercepts for individuals and scenarios (Table 2, Model 1). The results show that the valence of the condition had a significant positive fixed effect on the manipulation check item ($B = 3.52$, $p < .001$), indicating that the participants experienced more positive feelings in the positive condition than in the negative condition. The occupation group (self-employed versus employed) did not influence the manipulation check score ($B = -0.01$, $p = .90$), and there was no interaction between valence and occupation ($B = -0.13$, $p = .43$).

To test whether the effect of valence on the manipulation check score was consistent across the seven scenarios, we included a random slope of valence in Model 2, which was significant ($\sigma^2 = 0.84$, $\chi^2(2) = 460.4$, $p < .001$), indicating that the effect varied between the seven scenarios. However, the effect was positive in all seven scenarios and only varied in magnitude, ranging between $B = 2.10$ for the audit announcement scenario (Scenario 5) and $B = 4.49$ for the audit scenario (Scenario 6). Effect parameters by scenario are displayed in Fig. S.1 of the Supplementary Materials. In conclusion, the manipulation of positive versus negative experiences with the tax authorities was successful in all seven scenarios and did not differ between occupation groups.

Table 2
Mixed-effects regression with manipulation check score as dependent variable in Study 2.

	Manipulation Check				
	Model 1			Model 2	
Fixed effects	*B*	*SE*		*B*	*SE*
Intercept	2.37[***]	0.17		2.37[***]	0.20
Valence	3.52[***]	0.12		3.52[***]	0.37
Occupation	−0.01	0.11		−0.02	0.11
Valence × Occupation	−0.13	0.16		−0.13	0.16
Random effects	σ^2			σ^2	
Intercept (Individual)	0.60			0.64	
Intercept (Scenario)	0.14			0.23	
Valence				0.84[***]	
Residual	1.68			1.43	
Model fit					
AIC		12828.6			12372.2

Note. $N = 523$ with 7 repeated measures (3616 observations in total due to 45 missing values). Valence was coded with 0 = *negative* and 1 = *positive*. Occupation was coded with 0 = *self-employed* and 1 = *employed*. ***$p < .001$.

3.3.2. Emotion indices (RQ 1)

The emotion questionnaire comprised the experienced intensity of 19 different specific emotions (see Table S.8 of the Supplementary Materials for mean and standard deviation of each emotion by scenario). In order to condense the information, multidimensional scaling (MDS) analysis was conducted (along with theoretical considerations) to group the single emotions into emotion indices.[2] MDS is based on the Euclidian distances between data points and geometrically represents dissimilarities between data (Kruskal, 1964). For our data, this resulted in a two-dimensional plot (Fig. 1). We entered the mean ratings of each single emotion across all seven scenarios into the MDS analysis. The goodness of fit for the MDS analysis is expressed by the stress value, with 0% stress indicating a perfect fit of the configuration to the data. The configuration illustrated in Fig. 1 had a stress value of 0.4%, indicating a very good fit.

The pattern of the MDS configuration clearly distinguishes between a positive and a negative emotion cluster. The positive emotion cluster comprises the following emotions: happy, hopeful, satisfied, relieved, and secure. The negative emotion cluster is more diverse and can be separated into further clusters when considering the content of the emotion labels. In the lower area of the negative cluster, we can identify emotions related to self-blame: regretful, ashamed, sad, and guilty. The remaining negative emotions can be separated into a group of anger-related emotions, namely, dissatisfied, angry, annoyed, and stressed, and a group of fear-related emotions, namely, insecure, nervous, fearful, and helpless. In conclusion, we ended up with four emotion clusters: (1) positive emotions, (2) self-blame emotions, (3) anger-related emotions, and (4) fear-related emotions. The subsequent analyses were all conducted with these formative indices instead of single emotions.

The emotions surprised and blamed were excluded from further analyses. Surprise is positioned in between the positive and negative clusters, which is in line with the literature stating that surprise can be interpreted positively as well as negatively (Noordewier & Breugelmans, 2013). The emotion blamed could not be clearly assigned to one of the clusters without disrupting their homogeneity in meaning.

3.3.3. Scenario-specific emotion patterns (RQ 2)

In order to identify which emotions were elicited in these tax situations, we first investigated to what extent the four emotion indices were experienced as a function of the valence manipulation and occupation group. For this purpose, we conducted linear mixed-effects regression analyses for each of the four emotion indices scores as dependent variable, valence, occupation, and their interaction as fixed effects, random intercepts for individuals and scenarios, and a random slope for valence by scenario (see Table 3).

For all four emotion indices, we found significant fixed effects of valence of the condition. While higher levels of positive emotions were reported in the positive condition, self-blame, anger-related, and fear-related emotions were lower in the positive as compared to the negative condition. Additionally, we found a significant effect of occupation for self-blame emotions. Employed participants reported higher levels of self-blame emotions compared to self-employed participants. We did not find any significant interaction effects.

So far, we have focused on whether the four emotion indices were influenced by positive versus negative tax-related experiences. The regressions also included a random slope for the valence effect that tested whether this effect varied between the seven scenarios for each of the four emotion indices. For all four emotion indices, we found a significant random slope of valence, indicating that effects differed across the seven scenarios (Fig. 2). This means that, in some scenarios, the difference in one emotion (e.g., fear) as a function of depicting a positive versus a negative tax-related experience was larger than in others.[3]

Fig. 2 depicts the emotion indices for each of the seven scenarios, further split by the valence condition (positive versus negative scenarios). Positive emotions played a smaller role in the audit announcement (Scenario 5) and the tax evasion scenario (Scenario 7) as compared to the other five scenarios. The valence manipulation had a smaller influence on the ratings of positive emotions for these two scenarios as compared to the remaining five. This also means that absolute levels of positive emotions were lower in these two scenarios compared to the others.

Self-blame emotions were especially pronounced in the evasion scenario (Scenario 7). These emotions was not considerably relevant in the remaining scenarios.

With regard to anger-related emotions, we observed elevated levels in all scenarios of the negative condition. In all three audit-related scenarios (Scenarios 5, 6, and 7), anger was especially high compared to the other scenarios. Interestingly, in the audit announcement scenario (Scenario 5), the levels of anger-related emotions were also clearly pronounced in the positive condition.

Fear-related emotions were again expressed at higher levels in the audit-related scenarios (Scenarios 5, 6, and 7). Similarly, in the audit announcement scenario (Scenario 5) and the evasion scenario (Scenario 7), fear was also elevated in the positive condition, leading to a mitigated effect of valence on the emotion intensity.

Taken together, the results show that while the effects of valence of tax-related experiences on the emotion indices were directionally constant, there were clearly scenario-specific emotional reactions. Audit-related experiences elicited anger-related and fear-related emotions, however not only if the described experience was negative but also in case of relatively positive experiences.

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[2] The decision to conduct an MDS analysis was made after data collection. As stated in the preregistration of this study, we planned to decide which specific emotions are relevant in the context of taxation based on a graphical display of the mean distribution of all 19 emotions across the scenarios. In light of the results, the most suitable method to condense the information was to combine single emotions to indices based on shared variance using MDS.

[3] Further exploration revealed that there also was a significant random effect for occupation with regard to self-blame emotions ($\sigma^2 = 0.04$, χ^2 (3) = 21.40, p < .001), which arises in the evasion scenario where employed participants report higher levels of self-blame emotions compared to self-employed participants.
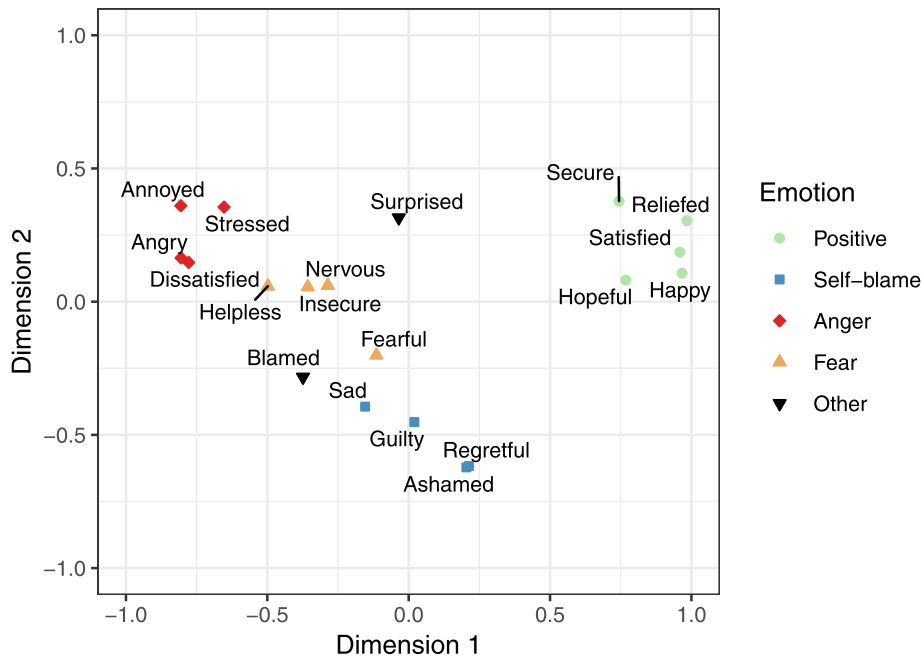
Fig. 1. MDS solution for single emotion items across all seven scenarios.

Table 3
Mixed-effects regression with emotion indices as dependent variable in Study 2.

	Positive Index		Self-blame Index		Anger Index		Fear Index	
	B	SE	B	SE	B	SE	B	SE
Intercept	1.79***	0.11	2.48***	0.23	5.50***	0.19	4.06***	0.19
Valence	2.42***	0.35	− 0.85***	0.14	− 3.04***	0.40	− 1.82***	0.20
Occupation	0.14	0.12	0.30**	0.11	− 0.09	0.13	0.08	0.14
Valence × Occupation	0.09	0.17	− 0.05	0.16	0.08	0.18	0.17	0.20
Random effects	σ^2		σ^2		σ^2		σ^2	
Intercept (Individual)	0.75		0.72		0.90		1.19	
Intercept (Scenario)	0.04		0.33		0.20		0.19	
Valence	0.77***		0.04*		1.00***		0.12***	
Residual	0.93		0.81		1.10		1.14	

Note. $N = 523$ with 7 repeated measures (3661 observations per regression model). Valence was coded with $0 = negative$ and $1 = positive$. Occupation was coded with $0 = self\text{-}employed$ and $1 = employed$. *$p < .05$; **$p < .01$; ***$p < .001$.

3.3.4. Compliance intentions (RQ 3)

After three of the scenarios (Scenarios 3, 6, and 7), participants were asked to indicate their compliance intentions in response to the presented situation. The compliance scale consisted of four different items, assessing different facets of compliance behavior (honesty, avoidance, evasion, and procrastination; see Table S.9 of the Supplementary Materials). Aggregation of these four items to one compliance intentions scale per scenario led to low unsatisfactory reliabilities (Scenario 3: Cronbach's $\alpha = 0.28$; Scenario 6: $\alpha = 0.30$; Scenario 7: $\alpha = 0.23$). Internal consistency of the scale could be maximized by excluding item two,[4] which was therefore excluded. The resulting scale led to acceptable reliabilities of $\alpha = 0.67$, $\alpha = 0.69$, and $\alpha = 0.60$ for the three scenarios, respectively.

Regression analyses indicated that the valence of the scenario was positively related to compliance intentions in the contact with the authorities scenario (Scenario 3) and audit scenario (Scenario 6) (Table 4). Participants indicated higher compliance intentions in the positive than in the negative scenario. We did not observe this effect in the evasion scenario (Scenario 7). As to the occupation group, employed participants were more compliant in the audit scenario (Scenario 6). We did not observe any interaction effects.

After having confirmed that the positive versus negative description of tax-related scenarios leads to differences in the compliance

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[4] This item also deviates from the other three items in terms of content, since it is not clear whether it refers to legal or illegal behavior. While some participants might interpret this item as to reflect tax laws intensively in order to pay taxes correctly, other participants might think of finding loopholes and aggressive avoidance strategies.
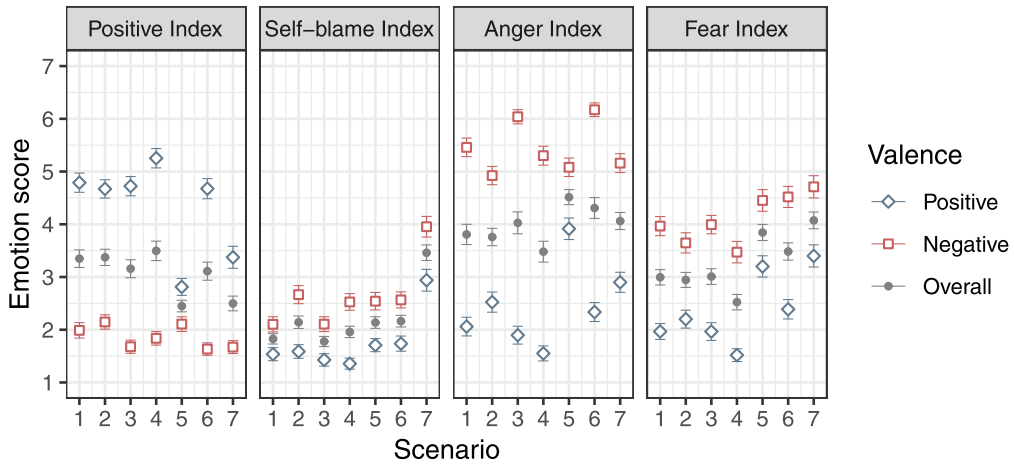
Fig. 2. Emotion indices for all seven scenarios.

Table 4
Summary of total effect models in Study 2.

Variable (scenario)		Compliance Intention (Y, Scenario 3)			Compliance Intention (Y, Scenario 6)			Compliance Intention (Y, Scenario 7)	
		B	*SE*		*B*	*SE*		*B*	*SE*
Intercept	i_{Y3}	5.10***	0.12	i_{Y6}	5.02***	0.12	i_{Y7}	5.45***	0.11
Valence (X)	$c_{x,3}$	0.72***	0.17	$c_{x,6}$	0.87***	0.17	$c_{x,7}$	0.18	0.16
Occupation (C1)	$c_{1,3}$	0.22	0.16	$c_{1,6}$	0.45*	0.16	$c_{1,7}$	0.18	0.15
Valence × Occupation (C2)	$c_{2,3}$	−0.19	0.23	$c_{2,6}$	−0.42	0.23	$c_{2,7}$	−0.18	0.22
		$R^2 = 0.06$			$R^2 = 0.07$			$R^2 = 0.004$	
		$F(3, 519) = 10.26$			$F(3, 519) = 12.80$			$F(3, 519) = 0.68$	

Note. $N = 523$. The valence of the condition was coded with 0 = *negative* and 1 = *positive*. The occupation group was coded with 0 = *self-employed* and 1 = *employed*. **$p < .01$; ***$p < .001$.
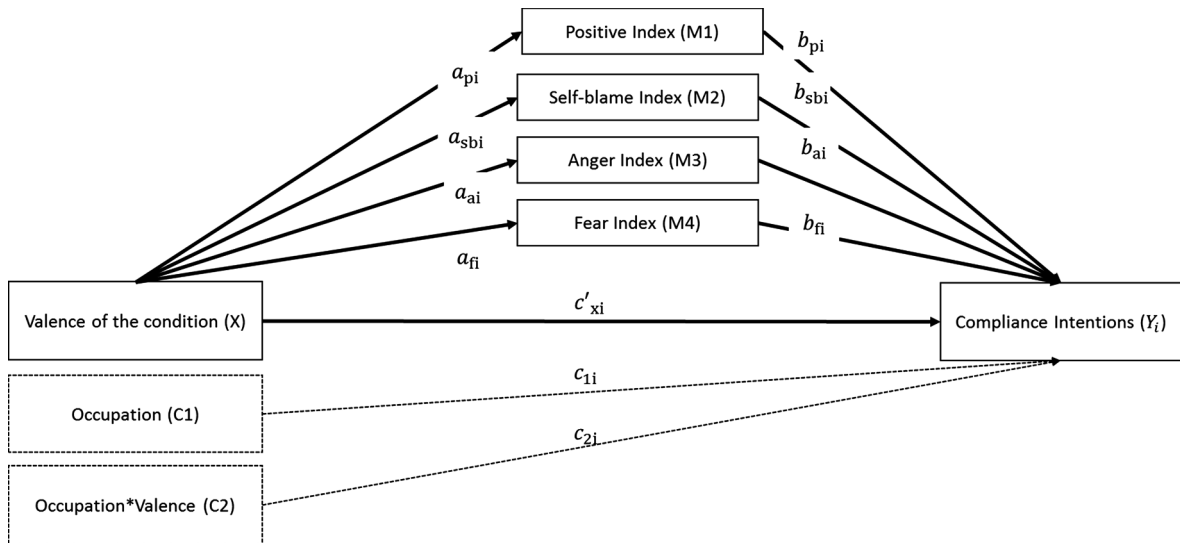

Fig. 3. Mediation model. The index i corresponds to the scenario number (3, 6, or 7).

intentions in two out of three scenarios (H1), we further investigated whether specific emotions function as drivers of this total effect. For this purpose, we tested whether the positive relationship between the valence of the scenario and compliance intentions was mediated by taxpayers' emotional responses to these scenarios. We tested the mediation model per scenario (Hayes, 2013) (see Fig. 3). The notations in the mediation-related tables correspond to the labels in Fig. 3.

Table 5

Summary of multiple regression analysis with valence, occupation group, and their interaction on the four emotion indices for each of the three scenarios (3, 6 and 7) in Study 2.

Variable (scenario)		Positive Index (M1)			Self-blame Index (M2)			Anger Index (M3)			Fear Index (M4)	
		B	SE		B	SE		B	SE		B	SE
Intercept (3)	i_{p3}	1.54***	0.11	i_{sb3}	2.03***	0.10	i_{a3}	6.14***	0.11	i_{f3}	4.01***	0.13
Valence (3)	a_{p3}	2.89***	0.16	a_{sb3}	−0.66***	0.14	a_{a3}	−4.21***	0.16	a_{f3}	−2.14***	0.18
Occupation (3)		0.26	0.15		0.15	0.13		−0.19	0.15		−0.04	0.17
Valence × Occupation (3)		0.31	0.22		−0.02	0.19		0.11	0.22		0.22	0.25
		$R^2 = 0.60$			$R^2 = 0.10$			$R^2 = 0.73$			$R^2 = 0.34$	
		$F(3, 519) = 261.53$			$F(3, 519) = 18.30$			$F(3, 519) = 478.77$			$F(3, 519) = 90.02$	
Intercept (6)	i_{p6}	1.53***	0.11	i_{sb6}	2.41***	0.11	i_{a6}	6.28***	0.11	i_{f6}	4.56***	0.14
Valence (6)	a_{p6}	2.89***	0.16	a_{sb6}	−0.87***	0.15	a_{a6}	−3.90***	0.16	a_{f6}	−2.27***	0.20
Occupation (6)		0.19	0.16		0.29	0.15		−0.21	0.16		−0.08	0.19
Valence × Occupation (6)		0.31	0.22		0.09	0.21		0.11	0.22		0.26	0.28
		$R^2 = 0.59$			$R^2 = 0.12$			$R^2 = 0.70$			$R^2 = 0.31$	
		$F(3, 519) = 251.25$			$F(3, 519) = 23.92$			$F(3, 519) = 396.22$			$F(3, 519) = 78.96$	
Intercept (7)	i_{p7}	1.57***	0.12	i_{sb7}	3.70***	0.14	i_{a7}	5.19***	0.13	i_{f7}	4.57***	0.15
Valence (7)	a_{p7}	2.06***	0.17	a_{sb7}	−1.25***	0.20	a_{a7}	−2.52***	0.19	a_{f7}	−1.67***	0.22
Occupation (7)		0.18	0.17		0.48*	0.20		−0.06	0.18		0.26	0.21
Valence × Occupation (7)		−0.70**	0.24		0.48	0.28		0.51	0.26		0.71*	0.30
		$R^2 = 0.29$			$R^2 = 0.13$			$R^2 = 0.37$			$R^2 = 0.16$	
		$F(3,519) = 70.11$			$F(3, 519) = 26.92$			$F(3, 519) = 100.00$			$F(3, 519) = 33.53$	

Note. $N = 523$. The valence of the condition was coded with $0 = $ *negative* and $1 = $ *positive*. The occupation group was coded with $0 = $ *self-employed* and $1 = $ *employed*. *$p < .05$; **$p < .01$; ***$p < .001$.

Mediation analysis tests to what extent the effect of an independent variable X on a dependent variable Y is explained by a mediator M. In our case, the independent variable was the valence of scenario, the dependent variable was the compliance intention score, and the four emotion indices functioned as proposed mediators. The variables occupation and the interaction between valence and occupation were held constant in the models as control variables.

First, we estimated the effects of valence and the two control variables on the four emotion indices by scenario (effect X on M; Table 5). Second, the total effects for each mediation model were estimated (effect X on Y; Table 4). Third, we estimated the effects of the independent variables and all four mediators on the compliance intentions score (effects of X and M on Y; Table 6). Finally, we estimated the indirect effects of the four mediators, which quantify to what extent the effect of valence on compliance can be explained by each of the four emotion indices, using bias-corrected bootstrap confidence intervals with 10,000 bootstrap samples. Indirect effects were regarded as significant if the 95% confidence interval does not include zero (Table 7).

The results of the first regression analyses showed that the valence of the condition significantly influenced the reported emotions

Table 6

Summary of multiple regression analysis with valence, occupation group, their interaction, and the four mediators as independent variables on compliance intentions for each of the three scenarios (3, 6 and 7) in Study 2.

Variable (scenario)		Compliance Intention (Y, Scenario 3)			Compliance Intention (Y, Scenario 6)			Compliance Intention (Y, Scenario 7)	
		B	SE		B	SE		B	SE
Intercept	i_{Y3}	6.49***	0.38	i_{Y6}	6.48***	0.40	i_{Y7}	6.22***	0.24
Valence (X)	c'_{i3}	0.14	0.26	c'_{i6}	0.40	0.25	c'_{i7}	0.50**	0.18
Occupation (C1)	$c'_{1,3}$	0.23	0.16	$c'_{1,6}$	0.47**	0.16	$c'_{1,7}$	0.15	0.14
Valence × Occupation (C2)	$c'_{2,3}$	−0.16	0.23	$c'_{2,6}$	−0.37	0.23	$c'_{2,7}$	−0.36	0.20
Positive Index (M1)	b_{p3}	−0.06	0.05	b_{p6}	−0.09	0.05	b_{p7}	−0.28***	0.04
Self-blame Index (M2)	b_{sb3}	−0.20**	0.06	b_{sb6}	−0.14*	0.06	b_{sb7}	0.16***	0.04
Anger Index (M3)	b_{a3}	−0.15*	0.06	b_{a6}	−0.18**	0.06	b_{a7}	−0.18***	0.04
Fear Index (M4)	b_{f3}	0.01	0.06	b_{f6}	0.03	0.05	b_{f7}	−0.004	0.05
		$R^2 = 0.10$			$R^2 = 0.11$			$R^2 = 0.14$	
		$F(7, 515) = 8.62$			$F(7, 515) = 8.67$			$F(7, 515) = 12.08$	

Note. The valence of the condition was coded with $0 = $ *negative* and $1 = $ *positive*. Occupation group was coded with $0 = $ *self-employed* and $1 = $ *employed*. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 7
Summary of indirect effects for each of the three scenarios (3, 6 and 7) in Study 2.

Dependent Variable (Scenario)	Mediator	Notation	Indirect effect	95% Confidence Interval	
				Lower limit	Upper limit
Compliance Intention (3)	Positive Index (M1)	$a_{p3}b_{p3}$	−0.17	−0.49	0.14
	Self-blame Index (M2)	$a_{sb3}b_{sb3}$	0.13*	0.05	0.23
	Anger Index (M3)	$a_{a3}b_{a3}$	0.64*	0.09	1.19
	Fear Index (M4)	$a_{f3}b_{f3}$	−0.03	−0.29	0.24
Compliance Intention (6)	Positive Index (M1)	$a_{p6}b_{p6}$	−0.27	−0.57	0.02
	Self-blame Index (M2)	$a_{sb6}b_{sb6}$	0.12*	0.02	0.24
	Anger Index (M3)	$a_{a6}b_{a6}$	0.69*	0.18	1.18
	Fear Index (M4)	$a_{f6}b_{f6}$	−0.07	−0.34	0.20
Compliance Intention (7)	Positive Index (M1)	$a_{p7}b_{p7}$	−0.57*	−0.79	−0.38
	Self-blame Index (M2)	$a_{sb7}b_{sb7}$	−0.20*	−0.36	−0.08
	Anger Index (M3)	$a_{a7}b_{a7}$	0.44*	0.22	0.70
	Fear Index (M4)	$a_{f7}b_{f7}$	0.01	−0.18	0.18

Note. Indirect effects are regarded as significant if the 95% confidence interval does not include zero. The respective effects are indicated with an asterisk.

in all three scenarios (Table 4). Positive valence of the scenario was related to higher ratings of positive emotions, lower ratings of self-blame emotions, lower ratings of anger-related emotions, and lower ratings of fear-related emotions.

As already established, valence had a positive effect on compliance intentions in the contact with the tax authorities scenario (Scenario 3) and the audit scenario (Scenario 6), but not in the evasion scenario (Scenario 7). These effects disappeared when entering the four mediators into the model (Table 6). For scenario three and six we observed no direct effect of valence on compliance intentions, whereas the effect was positive for scenario seven.

In a final step, we tested whether the positive association between valence and compliance intentions was mediated by emotional experiences. Table 7 summarizes the indirect effects for all three scenarios. In the contact with the authorities scenario (Scenario 3), the relationship between the valence of the scenario and compliance intentions was mediated by self-blame and anger-related emotions. We observed that the negative scenario was associated with higher values in both emotion indices and that higher values in self-blame and anger-related emotions were associated with lower compliance intentions.

We observed the same pattern in the audit scenario (Scenario 6). Effect estimates were also comparable in size.

In the evasion scenario (Scenario 7), we observed a different pattern of relationships with a negative effect of valence on compliance intentions. This can be explained by the content of the depicted scenario. In the positive condition, taxes could be evaded successfully without detection. Therefore, in this scenario, it makes sense that positive emotional responses were related to lower compliance intentions. In contrast to the other two scenarios, self-blame-related emotions were associated with higher compliance intentions. As in scenarios three and six, in scenario seven anger-related emotions were related to lower compliance intentions.

In conclusion, we found that, as expected, the relationship between the valence of experience and compliance intentions was mediated by specific emotions (H2). Moreover, anger always works in the same direction for all of the three scenarios. We observed that positive emotions were related to lower compliance intentions in the evasion scenario (Scenario 7) and that the relationship between anger-related emotions and compliance intentions was negative in scenario three and six. In the domain of negative emotions, for scenario three and six we observed the largest effects for anger-related emotions. This finding is in line with our hypothesis (H3) that anger-related emotions have the highest inherent action tendencies, as the share of single specific emotions with strong action tendencies in this emotion index is highest compared to the other indices,[5] and therefore show the highest associations with behavioral intentions.

With regard to the influence of the control variables, we observed that the occupation group had a significant effect on the compliance intentions in the audit scenario (Scenario 6) (Table 4). In addition, employed participants reported higher compliance intentions compared to self-employed participants in this scenario. In the remaining two scenarios, occupation showed no effect, nor did we observe any interaction effects between valence and occupation group.

3.3.5. Effect of valence of scenarios on general compliance attitudes (RQ 4)

In the last section of the survey, participants were asked to think about their real-life experiences with paying taxes and to answer a number of items related to their general attitude toward taxes (see Table S.10 of the Supplementary Materials). We tested whether positive and negative experiences with the tax authorities (valence manipulation) have a spillover effect on more general compliance

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[5] We consider the emotions anger, stress, and annoyance in the anger index and guilt and shame in the self-blame index as emotions with strong inherent action tendencies.

Table 8
Mixed-effects regression with general compliance intentions and attitudes towards taxes as dependent variable in Study 2.

	Compliance Intentions and Attitudes	
	B	SE
Intercept	4.12***	0.33
Valence	−0.14	0.20
Occupation	−0.05	0.10
Valence × Occupation	0.20	0.11
Random effects	σ^2	
Intercept	0.64	
Valence	0.19***	
Occupation	0.02	
Residual	2.53	

Note. N = 523 with 6 repeated measures (3138 observations in total). Valence was coded with 0 = *negative* and 1 = *positive*. Occupation was coded with 0 = *self-employed* and 1 = *employed*. *p < .05; **p < .01; ***p < .001.
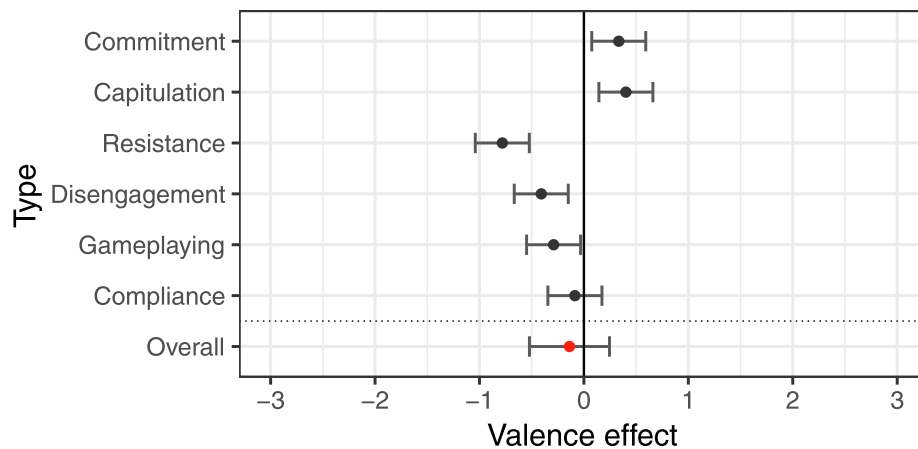
Fig. 4. Effects of valence for each of the six dependent variables.

intentions and attitudes toward taxes that are independent of the specific situation at hand. The dependent variable comprised the scores of the five dimensions of the motivational postures scale, as well as one dimension of generalized compliance intentions.

Mixed-effects regression results[6] showed that there was no overall fixed effect of valence on the six scores comprised in the dependent variable (Table 8). However, the random slope of valence indicated that the effect of valence differed between the six dependent variables (σ^2 = 0.19, χ^2 (3) = 44.13, p < .001). Fig. 4 depicts the effects of valence separately for each of the six variables and shows that there was a positive effect of valence on commitment and capitulation, while effects for resistance, disengagement, and game-playing were negative. Generalized compliance intentions were not influenced by the valence manipulation. Hence, the absence of a significant overall effect was explained by different directions of the valence effect on the motivational posture scales.

Based on the random slope interpretation, we can confirm that there was a spillover effect of fictitious tax-related experiences on motivational postures (H4). If individuals previously imagined having positive experiences, they reported being more committed toward taxes and felt more captured by the authorities, while they stated being less resistant, disengaged, and in favor of playing games with the authorities.

3.4. Discussion

We found that positive emotions as well as anger-related, fear-related, and self-blame emotions are observable throughout the process of paying taxes. The presented scenarios show distinct emotion patterns, with anger-related emotions playing the most

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[6] In the preregistration, we indicated running multivariate analysis of variance (MANOVA). However, for a better understanding and consistency with the remaining analyses in this paper, we ran a mixed-effects regression analysis, which is a better suited method regarding the data structure. The results were consistent with those of MANOVA.

dominant role. Audit-related scenarios (Scenarios 5, 6, and 7) are more susceptible to elicit fear-related emotions for both the positive and the negative conditions. This finding is in line with the observations of the focus groups of Study 1, where participants reported feeling anxious when confronted with an audit situation even if they reported their taxes correctly. Interestingly, we found that anger-related emotions are present also in the positive condition when it comes to audit-related situations (Scenarios 5, 6, and 7). They are less pronounced for the positive version of the scenarios related to administrative tasks (Scenarios 1, 2, 3, and 4).

With regard to compliance intentions, we found higher compliance intentions in the positive as compared to the negative condition (H1). As expected, this relationship is mediated by emotional experiences (H2), namely, through anger-related and self-blame emotions as well as positive emotions (for Scenario 7). The effect of valence on compliance intentions becomes insignificant when we enter the emotion indices as mediators into the models for scenario three and six, indicating the high explanatory power of the mediators for these two scenarios. Further confirming our hypothesis, in the domain of negative emotions, we found the largest indirect effects for anger-related emotions (H3), followed by self-blame emotions and fear-related emotions. Finally, we found spillover effects of the experimental valence manipulation to general attitudes toward taxes (H4). After reading negatively framed scenarios, the participants indicated lower motivations to comply with the tax law.

These findings highlight that it is important for tax authorities not to rely exclusively on enforcement strategies but to provide services in order to create an environment where taxpayers feel respected and can develop positive feelings toward the institution. Therefore, our findings are in line with the main assumptions of the SSF (Kirchler et al., 2008), which postulates a positive relationship between a prevailing service climate and voluntary compliance. Our results indicate that positive encounters with the authorities reduce fear, anger, and self-directed negative emotions.

The emotion patterns by scenario show that tax audits mainly cause negative emotions, also for honest taxpayers who should not have to expect any negative consequences from an audit. While this might not be a very surprising finding, it offers an explanation for the backfiring effects of audits on tax compliance (Beer et al., 2015; Mendoza et al., 2015). Negative emotional experiences, especially anger-related emotions, are related to lower compliance intentions. Considering these effects, tax authorities should carefully administer well-targeted enforcement measures in order to avoid such negative effects.

The results of Study 2 suggest that anger-related emotions are of greater importance in the context of meeting tax obligations than fear-related emotions. While fear-related emotions such as nervousness, stress, anxiety, and fear were frequently discussed during the focus groups, Study 2 shows no relation between fear-related emotions and compliance intentions. This might be due to a strong effect of anger that might repeal the effects of other emotions. Another possible explanation could be rooted in people's strategies to cope with emotional experiences. As Braithwaite et al. (2007) pointed out, situations that elicit the feeling of being threatened are often resolved by displays of anger toward the source of the threat, in this case the tax authorities. Therefore, the effects of both emotional responses might be intertwined in this study. With regard to anger, we found consistent effects across all scenarios. The negative association between anger-related emotions and compliance intentions is consistent with the literature in other applied settings (Bougie et al., 2003; Murphy & Tyler, 2008).

Furthermore, we found that experiencing self-blame-related emotions significantly predicts tax compliance intentions in all respective scenarios. In the scenario where intended tax evasion was either detected or not (Scenario 7), a higher level of indicated self-blame was related to higher future compliance intentions. Accordingly, experiencing self-blame as a consequence of deliberate incorrect behavior seems to result in a positive change of behavior, that is, a positive learning effect. In contrast, in the scenarios where the tax office was contacted for further necessary information (Scenario 3) or when a tax audit was conducted (Scenario 6), self-blame-related emotions were associated with lower future compliance intentions. This suggests that negative experiences with the tax administration in situations where the taxpayer lacks knowledge or even has made unintentional mistakes can elicit self-blame; and in these situations, self-blame actually has the potential to influence future behavior negatively, for instance, due to reactance. We interpret these findings as a strong argument for the importance of service quality and good governance as a means of shaping tax compliance behavior.

Spillover effects of the experimental manipulation of positive and negative experiences with the tax authorities on general attitudes toward taxes associated with real-life experiences of participants suggest that tax-related experiences are quickly reflected in taxpayers' personal attitudes. Authorities should, therefore, try to create a positive climate in the communication with taxpayers and try to avoid situations that cause negative emotions.

Paying taxes is generally perceived as a dry and purely cognitive task that requires rational reasoning. Nevertheless, we found that emotions play an important role in tax compliance decision making. Being guided by emotions is not necessarily irrational, as they can function as a heuristic, enabling fast and efficient decision making (Slovic, Finucane, Peters, & MacGregor, 2007; Zeelenberg et al., 2008). In the context of tax compliance, we assume that how one feels about the decision carries information about the moral implication of the decision (e.g., guilt and shame), the procedural fairness of the situation (e.g., anger), and personal outcomes (e.g., positive emotions). Therefore, recognizing the emotional content of taxation decisions is an important step for better understanding tax compliance decisions.

Although we cannot test for causality of effects in the mediation analysis, we have strong reasons to believe that the emotional responses are true mediators in the tested models. First, such a relationship has been suggested and successfully tested in the literature before (Barkworth & Murphy, 2015). Second, the survey was designed in a way that participants indicated emotional responses to the manipulation of valence before they were asked to indicate their compliance intentions. Therefore, it is unlikely that emotion ratings were given in response to compliance considerations or as a means of justification.

One limitation lies in the structure of the survey. Participants rated the same 19 emotions seven times, which could lead to fatigue effects. We tried to minimize this bias by presenting the scenarios in a randomized order. Testing the scenarios in a between-subject design was economically not feasible.

While most experimental studies investigating taxpayers' behavior employ student samples because of their easy accessibility (e.g., Hartl, Hofmann, Gangl, Hartner-Tiefenthaler, & Kirchler, 2015; Kaplanoglou & Rapanos, 2015), this paper used real-taxpayer samples only, in order to increase external validity. Another strength of this paper is the bottom-up approach to create empirically based research materials that represent realistic experiences of Austrian taxpayers. Regarding the ongoing reproducibility debate in psychological research (e.g., O'Boyle, Banks, & Gonzalez-Mule, 2014; Open Science Collaboration, 2015), we aim for transparency by having preregistered the hypothesis of Study 2 prior to data collection and by making all survey materials along with the corresponding data publicly available via the OSF.

4. Conclusion

We provided first insights regarding the relevance of specific emotional experiences in the context of taxation. The results of the two studies, assessed with both qualitative and quantitative methods, highlight the importance of considering emotional aspects of compliance behavior.

In Study 1, we gained detailed insights into how taxpayers perceive the process of paying taxes and what specific emotions are elicited in this context. The focus groups provided valuable resources to create standardized research materials in the form of scenarios representing the actual experiences of taxpayers as well as a comprehensive set of emotions relevant in this context for Study 2.

With Study 2, we were able to build on these results and extend our insights by investigating the association between emotional experiences and compliance intentions. The results highlight the importance of considering emotional experiences of taxpayers by indicating first that emotions can function as drivers for noncompliance and second that this relationship seems to also affect general attitudes toward taxes. This finding emphasizes the influence of tax authorities' image on attitudes toward taxes and motivations to comply. Consistent with this notion, it became apparent during the focus groups that, particularly, employed participants who never had any contact with the tax authorities expressed the highest levels of concern and anxiety toward them.

Future research should further investigate the causality of the relationship between emotional experiences and compliance behavior. Laboratory experiments could shed light on the differential effects of anger-related, fear-related, and self-blame-related emotions on actual compliance decisions and how motivations to comply can be improved by developing a respectful and friendly service-oriented environment for taxation procedures.

Here, we made a first contribution to the systematic analysis of the role of emotions in tax compliance behavior. The results of both studies not only emphasized the presence of emotional experiences in the taxation process but also provided first insights regarding their impact on compliance decisions. Following the service paradigm, policymakers designing taxation procedures can profit from these findings by considering subjective perceptions and emotional experiences of taxpayers in order to enable positive emotional experiences for taxpayers and to avoid anger-provoking situations, fostering voluntary compliance. This can be done by ensuring more personal contact between tax authorities and taxpayers, as we see that those who have never had an encounter with the tax authorities hold the most negative representations in the focus groups. Moreover, educating tax office employees to be friendly and professional and coaching tax auditors to treat taxpayers respectfully have been confirmed as promising measures.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.joep.2019.102194.

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