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Mag. Janina Enachescu, BSc

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Prof. Dr. Erich Kirchler

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English summary

Tax compliance behavior has been intensively investigated both from an economic and psychological standpoint. A large body of literature gives insights into socio-economic factors influencing compliance decisions. However, despite the rising interest in emotions in the research community at large, findings on the impact of emotions on tax compliance is scarce. This dissertation extends the existing literature by a comprehensive set of studies that provides insight into the role of emotions in tax compliance behavior from different perspectives, using a variety of research methods. This cumulative dissertation comprises four research articles:

- 1) Study 1 is a review on studies testing the assumptions of the Slippery Slope Framework, which describes the impact of trustworthiness and power of tax authorities on compliance. While the framework is widely accepted and its assumptions mainly confirmed, this review points to unanswered questions as the dynamic interaction between the two dimensions is not yet completely understood. A better understanding of emotions in taxation shall help to shed light on these open questions.
- 2) As a first step towards understanding the impact of emotions on tax compliance, the general impact of positive versus negative affect was investigated in an experimental survey study conducted with self-employed taxpayers from Turkey. Results show for instance that enforcement measures, such as audits and fines, elicit negative affect which triggers enforced compliance intentions as well as intentions to evade taxes.
- 3) Using a mixed-methods approach, Study 3 investigated which specific emotions are relevant in the context of paying taxes and in which situations they are elicited. First insights into the relationship between specific emotions and compliance intentions are also provided by this study. Anger and self-blame showed to be negatively related to compliance intentions and should thus be avoided in taxation procedures.
- 4) Finally, after having established the relevance of integral emotions for tax compliance, the impact of incidental emotions on tax compliance behavior was investigated in an experimental study. Despite a successful manipulation of emotions in the lab, no influence of incidental emotions anger, fear and happiness on compliance behavior could be shown in the lab.

Overall, this dissertation provides ample evidence for the importance of integral emotion for tax compliance decisions and underlines the importance to take emotional experiences of taxpayers into account when designing tax policies.

List of manuscripts included in this dissertation

Study 1

Enachescu, J., & Kirchler, E. (2019). The Slippery Slope Framework of Tax Behaviour: Reviewed and Revised. In S. Goslinga, L. van der Hel-van Dijk, P. Mascini, & A. van Steenbergen (Eds.), *Tax and Trust. Institutions, Interactions and Instruments* (pp. 87–120). The Hague: Eleven International.

Study 2

Olsen, J., Kasper, M., Enachescu, J., Benk, S., Budak, T., & Kirchler, E. (2018). Emotions and tax compliance among small business owners: An experimental survey. *International Review of Law & Economics*, 56, 42–52. <https://doi.org/10.1016/j.irl.2018.05.004>

Study 3

Enachescu, J., Olsen, J., Kogler, C., Zeelenberg, M., Breugelmans, S. M., & Kirchler, E. (2019). The role of emotions in tax compliance behavior: A mixed-methods approach. *Journal of Economic Psychology*, 74, 102194. <https://doi.org/10.1016/j.joep.2019.102194>

Study 4

Enachescu, J., Puklavec, Z., Olsen, J., & Kirchler, E. (submitted). Tax compliance is not fundamentally influenced by incidental emotions: An experiment. *Economics of Governance*.

Dissemination of included manuscripts at conferences

Study 3

Enachescu, J., Kirchler, E., & Kogler, C. (2016). *The role of emotions in tax compliance behavior: A qualitative approach*. Pre-study presented at the IAREP/SABE Joint conference 2016, Wageningen, the Netherlands.

Enachescu, J., Kogler, C., Zeelenberg, M., Olsen, J., & Kirchler, E. (2018). *The role of emotions in tax compliance behavior. A mixed-methods approach*. Paper presented at the 29th International Congress of Applied Psychology (ICAP), Montreal, Canada. ^{*)}

Study 4

Enachescu, J., Olsen, J., & Kirchler, E. (2017). The influence of positive and negative mood on compliance behavior: Experimental evidence. Pre-study presented at the IAREP conference, Tel Aviv, Israel, September 3 – 6 2017.

^{*)} Paper was presented by a co-author.

List of manuscripts not included in this dissertation

Enachescu, J., Zieser, M., Hofmann, E., & Kirchler, E. (2019). Horizontal Monitoring in Austria: subjective representations by tax officials and company employees. *Business Research*, 12, 75–94. <https://doi.org/10.1007/s40685-018-0067-1>

Enachescu, J., Puklavec, Z., Bauer, C., Olsen, J., & Kirchler, E. (forthcoming). Incidental emotions, integral emotions, and decisions to pay taxes. In M. M. Erdoğan, L. Batrancea, & S. Çevik (Eds.), *Behavioral Public Finance: Individuals, Society and the State*. London: Routledge.

Privitera, A., Enachescu, J., & Kirchler, E. (submitted). Emotions in different tax related situations shape compliance intentions: Replicating Austrian findings in Italy. *Economics of Governance*.

Content

1. Introduction.....	1
2. Related literature	2
1.1. Tax compliance behavior.....	2
1.2. Emotions and decision making.....	3
1.3. Taxes and emotions	4
3. Own research.....	6
3.1. Research methods	7
3.2. Open Science	8
3.3. Study 1: The Slippery Slope Framework reviewed and revised	8
3.4. Study 2: Emotions and taxes among small business owners in Turkey	10
3.5. Study 3: The role of emotions in tax compliance behavior: A mixed-methods approach.....	12
3.6. Study 4: Incidental emotions and tax compliance behavior	14
4. Discussion.....	17
5. Outlook.....	19
Acknowledgement.....	21
References.....	22
German summary	29
Reprints of studies	31

1. Introduction

Almost every citizen is affected by tax policies, and the topic seldom leaves people cold. When asked about taxes, most working individuals, especially self-employed, demonstrate strong opinions, and discussions frequently become emotional, as intended for instance by election campaigns. Yet, little is known about emotions relevant in this context and how different types of emotions influence compliance behavior. In this dissertation, I approached the topic of emotions and tax compliance behavior from different perspectives, employing multiple methods. The cumulative evidence from the studies included in this dissertation provides clear empirical support for the claim that a wide range of emotions is present during taxation processes and compliance decisions in particular.

The tradition of tax compliance research started in the field of economics. Allingham and Sandmo (1972) and Srinivasan (1973) formulated the first models of tax compliance behavior in the 1970s. Compliance decisions were conceived as outcomes of rational decision processes with the aim to maximize one's own utility. The decision was described as depending solely on monetary parameters such as audit probabilities, fines, tax rates, and income. However, even Allingham and Sandmo stated that their standard economic model of tax evasion only covers part of the story, not addressing nonpecuniary factors. In fact, the idea that taxpayers' behavior are more complex is easily derived as compliance rates do not reflect those predicted by these models. This observation stimulated psychological research on the role of social norms, attitudes toward taxes, and tax morale for instance, taking into account the moral component of tax compliance decisions. Noting that tax compliance decisions are not only a decision under risk but also entail ethical consequences on a societal level is important. Taxes are levied in order to redistribute wealth for a more egalitarian society and fund public goods. Hence, tax evasion can be seen as an act of free riding. Traditionally, tax authorities relied on enforcement measures to prevent tax evasion and free riding. However, taxpayers also comply for other reasons such as social norms, regret aversion, social responsibility, or to avoid public shaming.

While it is widely acknowledged that stylized models, which are based on rationality axioms, fail to properly describe individuals' behaviors, the influence of emotions on economically relevant decisions received attention only in recent years (e.g., Rick & Loewenstein, 2008) and mostly from the field of psychology (e.g., Lerner, Li, Valdesolo, & Kassam, 2015; Weber & Johnson, 2009). The influence of positive versus negative affect received great attention in the realm of risky choice (Forgas, 1995; Johnson & Tversky, 1983; Slovic, Finucane, Peters, & MacGregor, 2004). Findings from this stream of research can partly be used to inform us about

the role of emotions in tax compliance behavior. However, the situation is more complex. My research shows that emotional experiences during taxpaying are manifold and that it is worthwhile to investigate specific emotions rather than focusing solely on positive and negative affect.

In the following sections, I first present related literature from tax compliance research and emotion research. Second, I give some insights into the methodological considerations that guided this dissertation project. Third, I present each of the four publications that are included in this dissertation, and fourth, I discuss the results of all four publications jointly. Reprints of all publications can be found at the end of the dissertation.

2. Related literature

2.1. *Tax compliance behavior*

While the tradition of tax compliance behavior started in the field of economic research (Allingham & Sandmo, 1972; Srinivasan, 1973), research from sociology and psychology contributed to a deeper understanding of compliance and evasion behavior (for an overview see Kirchler, 2007). Findings from both streams of research were united in the Slippery Slope Framework (Kirchler, Hoelzl, & Wahl, 2008). According to this framework, determinants of tax compliance behavior can be classified either into rational economic factors, such as audit probabilities, fine, and tax rates that constitute the perceived power of the tax authorities, or into psychological factors such as fairness, social norms, and attitudes toward taxes that constitute how trustworthy the tax authorities are perceived. The manifestation of these two dimensions—power and trust—determine individual taxpayers’ compliance behavior. When taxpayers trust the tax authorities, a service climate prevails, and they comply voluntarily. Conversely, manifestations of enforcement capacities without trust-building measures foster enforced compliance behavior, creating an antagonistic interaction climate, characterized by a cops-and-robbers mentality. Focusing purely on enforcement is a costly strategy; therefore, building trust and fostering voluntary compliance is of high interest for policy makers.

Trust and power reinforce one another. However, empirical evidence shows that the dynamics are complex. A decline in trust and power triggers a downwards spiral of compliance levels, which was name giving for the “slippery slope” (Kirchler, 2007). When trust is high, enforcement measures are perceived as legitimate and as an effective strategy to protect from free riders. However, when trust is low, enforcement measures can be perceived as illegitimate, undermining compliance. For instance, observations from U.S. taxpayers show that the effect of audits on future compliance is not always positive. A study conducted by the U.S. Taxpayer Ad-

vocacy Service with real U.S. taxpayer data showed that compliance levels decline following an audit if said audit did not result in an extra payment (Beer, Kasper, Kirchler, & Erard, 2015). This backfiring effect of audits was also shown in a study conducted with data from 50 different countries (Mendoza, Wielhouwer, & Kirchler, 2017).

While the main assumptions of the Slippery Slope Framework, namely the main effects of trust and power on voluntary and enforced compliance, were confirmed in many empirical studies across the world (Batrancea et al., 2019; Kogler et al., 2013), open questions with regard to their dynamic interaction and the underlying psychological processes still remain. I address this issue in Study 1.

2.2. *Emotions and decision making*

At the latest since Herbert Simon coined the term “bounded rationality” in the 1950s, humans are seen as neither always seeking to maximize their utility nor as always making rational choices as proposed by the homo economicus model. Nevertheless, for a long time, the majority of models about financial decision making included only economic parameters and were limited to more or less complex cost-benefit analyzes (Elster, 1998). In recent years, the importance of emotions for decision making received an increased amount of attention (Lerner et al., 2015).

As emotions were already investigated in other areas of psychological research for a long time (clinical psychology: e.g., Sheppes, Suri, & Gross, 2015, developmental psychology: e.g., Nunner-winkler & Sodian, 2017, basic psychological research: e.g., Ekman, 2004), many different definitions of emotions exist. In this dissertation, I define emotions as being acute, object-related, experiences that are relatively momentarily in duration. Emotions can influence decision making via different paths. The emotion-imbued choice model (Lerner et al., 2015) illustrates that emotions related (integral) as well as unrelated (incidental) to a given decision situation influence decisions and behavior. Incidental emotions can arise from all kinds of surrounding circumstances, such as sunny weather or a dispute with the partner. They are thought to influence decisions because they may alter how incoming information is processed (Forgas, 1995) or appraised (Han, Lerner, & Keltner, 2007). Integral emotions are either elicited by the decision situation itself, directly experienced at the time of the decision, or anticipated with regard to possible decision outcomes (Lerner et al., 2015).

For instance, customers who become angry due to bad services do not simply cease to frequent the business they experienced bad experiences in, but they are more likely to think about revenge at them (Bougie, Pieters, & Zeelenberg, 2003). Another example for the influence of

integral emotions on behavioral outcomes was demonstrated by a study manipulating regret and disappointment in a stock market trading context. The presence or absence of regret determined whether or not participants showed trading behavior in line with the disposition effect (Summers & Duxbury, 2012).

Carryover effects of incidental emotions are exploited for marketing purposes on a large scale. Emotionally laden advertisements or background music in stores are omnipresent. Even in more serious situations such as stock market trading, carryover effects of incidental emotions, elicited by background music or sunny weather, can influence trading decisions (Au, Chan, Wang, & Vertinsky, 2003; Hirshleifer, 1987). Carryover effects were also demonstrated in standardized laboratory settings, influencing the presence of the endowment effect (Lerner, Small, & Loewenstein, 2004) or influencing pro-social behavior (Cavanaugh, Bettman, & Luce, 2015), generosity, and reciprocity (Kirchsteiger, Rigotti, & Rustichini, 2006).

By taking on a dimensional approach and reducing emotions to one or two (sometimes three) dimensions, most studies on emotion in economic contexts reduce the emotion complexity. The reduction to arousal and reduction to valence are the most common approaches (Mauss & Robinson, 2009). However, reducing emotional experiences to one or two dimensions is an oversimplification of the phenomenon. When interested in behavioral consequences of emotions, digging deeper and assessing the presence of specific emotions is important as emotions of the same valence can differ quite dramatically regarding the behaviors they motivate. For example, anger and fear are two emotions of comparable negative valence and arousal levels that trigger opposite behavioral responses, fight versus flight (Lerner & Keltner, 2000).

In line with the feeling-is-for-doing perspective on emotions (Zeelenberg & Pieters, 2006), I am interested in the motivational aspect of emotions, which determines behavioral consequences.

2.3. *Taxes and emotions*

Research on the impact of emotions on tax compliance behavior is sparse. As emotions can influence decisions via different paths, differentiating between studies that investigate incidental emotions from studies that look into the effects of emotions integral to tax compliance decision making is important.

Several studies demonstrated that incidental emotions can impact pro-social behavior in classical cooperation games. In an experimental study using a public goods setting, anger and happiness were induced by the means of a short video clip in a between-subject setting. Results

suggest that angry participants contribute less to a public good and punish their noncompliant peers harsher than participants who were induced with positive affect (Drouvelis & Grosskopf, 2016). In contrast to this finding, another study using a gift exchange game, shows that participants induced with a negative affect by the means of presenting a sad video clip exhibit more pro-social behavior in form of reciprocity compared to those who watched a funny video clip (Kirchsteiger et al., 2006).

In the specific case of tax behavior, Fochmann and colleagues used a similar setting, to investigate the impact of incidental affect on tax compliance decisions (Fochmann, Hechtner, Kirchler, & Mohr, 2019). By presenting emotionally laden pictures to participants in an experimental tax game setting, they induced positive and negative affect. Fochmann and colleagues found that positive affect is related to higher levels of tax evasion. In a follow-up study, the authors found that taxpayers express less favorable attitudes toward taxes on weekend days as compared to weekdays, and the researchers argue that this effect is due to being in a better mood on weekends. The authors argue that positive mood makes individuals more optimistic and makes them more susceptible to an illusion of control, therefore more likely to take risks.

In line with this argumentation, an experimental study in the domain of general risky decisions showed that participants who were induced with positive affect exhibited less accurate and more risky trading decisions in a foreign exchange trade setting (Au et al., 2003). Conversely, the mood maintenance hypothesis (Isen & Geva, 1987) suggests that individuals in a positive affective state make more conservative risks evaluations and are more risk averse, in order to protect their positive mood. According to this theory, risk-seeking behavior is more likely in a negative affective state, motivated by the drive to change one's situation to the better. An experimental study using gambling tasks and mood induction supports this view (Nygren, Isen, Taylor, & Dulin, 1996). Hence, the impact of incidental emotions on pro-social behavior, risky decisions at large, and tax decisions in particular is not yet resolved.

Integral emotions mediate the relationship between fairness perceptions and compliance decisions in different contexts, such as the work-place, policing, and taxation (Barkworth & Murphy, 2015; Murphy & Tyler, 2008). Perceptions of procedural injustice evoke anger, which is related to noncompliance. This observation is particularly important for the taxation contexts as taxpayers consider the fairness of outcomes and procedures when making compliance decisions (Wenzel, 2003). Perceived unfairness and exchange inequities are related to higher levels of tax evasion (Alm, McClelland, & Schulze, 1992; Smith, 1992).

Another stream of research on emotions integral to taxation focuses on moral emotions, such as guilt and shame, that are related to the detection of tax evasion (Blaufus, Bob, Otto, & Wolf, 2017; Bosco & Mittone, 1997; Erard & Feinstein, 1994). These studies consider the emotions associated with the detection of evasion as moral costs that deter tax evasion.

The impact of such moral sentiments was investigated by two studies assessing emotional arousal with different techniques, and the results seem inconclusive. An experimental study by Dulleck and colleagues (Dulleck et al., 2016) measured psychic stress due to activation of moral sentiments in the prospect of evading taxes, thus breaking social norms, by assessing heart rate variability. Results suggest higher levels of psychic stress are associated with higher compliance levels. The authors argue that higher psychic stress is a sign of anticipated guilt for evading taxes and therefore individuals who experienced these moral sentiments more intensively were more compliant. Another study, measuring emotional arousal, by assessing skin conductance response in this case, finds a negative relationship between arousal and tax compliance (Coricelli, Joffily, Montmarquette, & Villeval, 2010). The authors argue that increased arousal levels prior to the compliance decision are due to anticipated shame for evading taxes. The effects of shame on tax compliance was further investigated in a subsequent study that revealed the effectiveness of public shaming for fostering compliance and its limitations (Coricelli, Rusconi, & Villeval, 2014). In order to foster long-term compliance, individuals that were publicly shamed for their evasion behavior must be reintegrated in the society and forgiven for their behavior. Otherwise, the effects of shaming might be reserved in the long term.

The existing literature on the issue of emotions and tax compliance behavior presented above, demonstrates that effects of integral emotions on tax compliance are to be expected as suggested by studies investigating procedural justice and compliance (Barkworth & Murphy, 2015; Murphy & Tyler, 2008), and studies focusing on the moral emotions guilt and shame (e.g., Bosco & Mittone, 1997). Moreover, there are some indications that incidental emotions have an impact. However, so far research has either taken on a dimensional approach, focusing on one emotional dimension such as valence (Fochmann et al., 2019) or arousal (Coricelli et al., 2010; Dulleck et al., 2016), or focused on single specific emotions such a shame for instance. A systematic and comprehensive analysis of emotions in the taxation context is missing.

3. Own research

The aim of this cumulative dissertation was to investigate the role of emotions on tax compliance behavior, comprehensively from different angles. For this purpose, I conducted four

studies that assessed different research questions and combined various research methods. Study 1 is a review study, which provides an overview of the studies testing the assumptions of the Slippery Slope Framework, which combines findings on economic and psychological determinants of tax compliance behavior. While results gathered in this review mainly support the main assumptions for the Slippery Slope Framework, they also point to open research questions that are addressed in the subsequent studies. In Study 2, the role of positive and negative affect integral to taxation is investigated within the Slippery Slope Framework, using an experimental survey design. Findings support the notion that power must be executed with caution, as coercion not only promotes compliance but can also elicit negative affect and foster intentions to evade taxes. In Study 3, specific emotions integral to taxpaying procedures are investigated systematically using a mixed-methods approach. By combining a qualitative focus group study with a quantitative experimental survey study, the variety of specific emotions relevant for this particular context, corresponding scenarios, and their consequences with regard to compliance decisions are investigated. After demonstrating the importance of integral emotions with Study 2 and 3, Study 4 focused on incidental emotions and tax compliance behavior. For Study 4, behavioral data were assessed in a lab experiment, manipulating emotions in a mixed design by presenting affectively laden video clips.

3.1. *Research methods*

Tax compliance behavior is a challenging topic for research, because it lies in the nature of the subject that evasion behavior happens covert and is therefore difficult to quantify. However, various methods are applied to investigate the determinants of tax compliance behavior using various proxies for tax compliance behavior. These methods include surveys that assess attitudes toward taxes and experiments assessing compliance behavior in a computer laboratory setting (Elffers, Robben, & Hessing, 1992; Muehlbacher & Kirchler, 2016). Additionally, qualitative methods can be used to learn more about taxpayers' cognitions, emotions, and behaviors (e.g., Oats & Onu, 2016).

Measuring emotion also poses methodological challenges, because they are latent concepts that can influence behavior even if they are not fully conscious. One way to assess emotions is by simply asking how intensively participants experience a certain feeling, either in a questionnaire using a Likert scale to receive quantitative feedback or in a qualitative manner in an interview (Mauss & Robinson, 2009; Weidman, Steckler, & Tracy, 2017). This method requires that individuals are aware of their emotions and can articulate them correctly. Moreover, by asking

about current emotions, their salience is elevated, and demand effects might be created. Another option is to focus on the presence of emotional arousal in general, rather than assessing specific emotions. This can be done by measuring skin conductance response (Dawson, Schell, Filion, & Berntson, 2007).

In this dissertation, I combined multiple research methods to approach the research question from different angles and investigate the topic thoroughly.

3.2. *Open Science*

In the light of the replication crisis in psychology (and science in general), I commit myself to the Open Science movement. In recent years, confidence in scientific results by the public declined, as many prominent studies in the field of psychology cannot be replicated (Hagger et al., 2016; Klein et al., 2018; Open Science Collaboration, 2015). This was attributed to questionable research practices such as selective reporting of results, selective analysis of data (p-hacking, Wicherts et al., 2016), or hypothesizing after data have been collected (HARKING, Kerr, 1998). In order to overcome this crisis and promote confidence in scientific results, the scientific reform movement set research transparency as its core element (Munafò et al., 2017), and this is possible by making research materials and data publicly available (Miguel et al., 2014). Moreover, research questions, hypotheses, and planned analyses can be preregistered before collecting data, in order to predetermine and openly share the initially planned research strategy (Nosek, Ebersole, DeHaven, & Mellor, 2018).

Study materials, data, and preregistration of research questions hypothesis and planned analysis for Study 3 can be found here: <https://osf.io/6bjeh/>. Study materials, data and code for Study 4 can be found here: <https://osf.io/qych5/>.

3.3. *Study 1: The Slippery Slope Framework reviewed and revised*

Enachescu, J., & Kirchler, E. (2019). The Slippery Slope Framework of tax behaviour: Reviewed and revised. In S. Goslinga, L. van der Hel-van Dijk, P. Mascini, & A. van Steenbergen (Eds.), *Tax and Trust. Institutions, Interactions and Instruments* (pp. 87–120). The Hague: Eleven International.

The Slippery Slope Framework joins two major streams of tax compliance research together (Kirchler et al., 2008). The framework has become an influential model for both tax compliance researchers and policy makers (e.g., Lisi, 2012; Siglé, Goslinga, Speklé, van der Hel, &

Veldhuizen, 2018). Study 1 is a review of studies empirically testing the assumptions of the Slippery Slope Framework. This contribution served to map the status of the field of tax compliance research and to point out important research gaps.

The Slippery Slope Framework postulates that tax compliance behavior of individual taxpayers is determined both by enforcement and trust-building measures by the tax authorities, which reinforce each other. Enforcement measures such as frequent audits and harsh fines define the power dimension of the framework. Service provision, reduction in complexity of the tax code, and fair taxation procedures are examples for the trust dimension of the framework. The manifestation of these two dimensions determines the prevailing interaction climate between the tax authorities and taxpayers, which can be either antagonistic or synergistic. Many studies, conducted across a wide range of countries and using different research methods such as surveys and lab experiments, confirmed the main assumptions of the SSF. Both dimensions are positively related to compliance intentions, and behavior or favorable attitudes toward taxes and compliance is highest when both power and trust are high.

To better understand the dynamic relationship between the two dimensions power and trust, an extension of the original Slippery Slope Framework was formulated (Gangl, Hofmann, & Kirchler, 2015). Trust was further refined into reason-based trust and implicit trust. Power was differentiated into forms of legitimate and coercive power. The authors of this extension to the original framework argue that coercive power and implicit trust influence each other negatively, because coercive power is experienced negatively and erodes implicit trust. Conversely, legitimate power and reason-based trust are argued to enhance each other. The review of empirical evidence about the extended version of the Slippery Slope Framework revealed that the distinction between the concepts of legitimate power and trust is difficult because both concepts rely in the same determinants: neutrality, transparency, trustworthiness, and outcome favorability (Murphy, 2004; Tyler, 1997). Moreover, the authors predicted that coercive power becomes obsolete in an environment of high trust and high legitimate power, which is not supported by empirical evidence (Gangl et al., 2015). Results suggest that some form of coercive power is necessary to protect honest taxpayers from free riders and to maintain trust.

While the review mainly revealed support for the main assumptions of the SSF, it also pointed to unanswered questions. Several studies found mixed results for the effects of enforcement measures. When administered too often, audits were shown to lose effectiveness or even undermine compliance behavior (Mendoza et al., 2017). Beer and colleagues find a similar effect for U.S. taxpayers that became less compliant in the years following an audit when they were

audited and not required to pay extra taxes (Beer et al., 2015). Results from a meta-analysis across 18 countries suggested that trust has a moderating role for the effectiveness of enforcement measures (Balliet & Van Lange, 2013). Enforcement is more effective in a high-trust environment than in low-trust societies. These results suggest that enforcement must be wielded with caution; however, underlying processes that would explain why taxpayers respond the way they do remain concealed.

The distinction between different forms of trust in the extended version of the SSF was a first attempt to better understand and describe the psychological processes that underlie compliance behavior. Implicit trust for instance is defined to be based on affective responses and is based on unconscious former experiences (Castelfranchi & Falcone, 2010). The double-edged nature of coercive power is further addressed in this dissertation, to investigate how taxpayers perceive enforcement measures and why they respond the way they do. Nevertheless, honest taxpayers that are audited might, for instance, feel distrusted and respond with disappointment and anger. With the remaining three studies in this dissertation, I investigate which emotions are present in this context and how they relate to tax compliance behavior.

3.4. Study 2: Emotions and taxes among small business owners in Turkey

Olsen, J., Kasper, M., Enachescu, J., Benk, S., Budak, T., & Kirchler, E. (2018). Emotions and tax compliance among small business owners: An experimental survey. *International Review of Law & Economics*, 56, 42–52. <https://doi.org/10.1016/j.irle.2018.05.004>

The aim of Study 2 was to get first insights into the relationship between taxpayers' perceptions of the tax authorities, their emotional responses, and subsequent compliance intentions. For this purpose, we administered a scenario-based experimental questionnaire to a sample of self-employed taxpayers in Turkey (N = 411). The experimental design comprised a two by two between-subjects design that manipulated the two dimensions trust and power of the Slippery Slope Framework. Hence, participants received one out of four versions of a scenario describing the imaginary country Varosia with tax authorities that exhibit either high (low) enforcement capacities and are (are not) trustworthy. To get a first impression on how perceptions of tax authorities influence taxpayers' emotions, this study focused on positive versus negative affect, assessing emotions with the Positive Negative Affect Schedule (PANAS, Watson, Clark, &

Tellegen, 1988). We hypothesized that the reported positive or negative affect mediates the relationship between power and trust on tax compliance.

Results of this study confirmed the main assumptions of the Slippery Slope Framework. Trust in the tax authorities as well as enforcement measures showed positive effects on intentions to comply. Furthermore, the positive effects of trust and power were amplified by a combination of high trust and high power. Regarding the effects of trust and power on taxpayers' affective responses, this study found that high levels of trust had a positive effect on positive emotions. Power on the other hand increased the presence of negative emotions but also positive emotions. This might seem counterintuitive at first, but this idea supports the notion of a double-edged nature of enforcement. While enforcement measures are perceived negatively by some taxpayers that want to evade taxes or might feel distrusted, they might actually be perceived positively by those who want to comply and feel protected from free riders. Further, this study provided support for the moderating role of trust for the effectiveness of power, as suggested by Balliet and colleagues (Balliet & Van Lange, 2013). The positive effect of power on negative emotions was reversed when trust was high. Power was related to enforced compliance intentions on the one hand and to elevated intentions to evade taxes on the other hand, suggesting a negative effect of power on tax morale. This relationship was mediated by negative emotions.

While we focused on the effects of positive and negative effects in this study, the data allowed for some exploration of the effects of specific emotions. Perceptions of trustworthiness increased reported levels of interest, inspiration, and reduced feelings of jitter, upset, and shame, while high levels of power increased levels of inspiration, activation, fear, upset, and scare. Most importantly, we observed high levels of upset, distress, jitter, scare, and nervousness when tax authorities were described as being powerful but not trustworthy. Previous research on emotions and decisions showed that emotions, especially, related to anger can cause retaliation behavior; hence, taking these effects into account when providing taxation services is important to promote compliance.

Effects of trust and power showed considerable variation for specific emotions of the same valence, indicating that a different approach to investigate the role of emotions in taxation needs to be taken. As I argued in the introduction, taking on a dimensional perspective on emotions, reducing them to the valence dimension does not do the phenomenon justice. While this study offered valuable first insights into the effects of general integral affect in tax compliance, further research on the effects of specific emotions is needed. I address this issue with Study 3.

3.5. Study 3: The role of emotions in tax compliance behavior: A mixed-methods approach

Enachescu, J., Olsen, J., Kogler, C., Zeelenberg, M., Breugelmans, S. M., & Kirchler, E. (2019). The role of emotions in tax compliance behavior: A mixed-methods approach. *Journal of Economic Psychology*, 74, 102194. <https://doi.org/10.1016/j.joep.2019.102194>

Study 3 comprised two studies that build up on each other and establish a baseline of emotions relevant to the context of taxation and a set of tax-related scenarios that elicit these emotions. The first study used a qualitative approach. Focus groups with self-employed and employed taxpayers, as well as tax auditors, were conducted to investigate the issue of emotions in tax compliance from a bottom-up perspective. Then, results from the focus group study were used to create authentic study materials for a systematic analysis of the role of emotions in tax compliance in a quantitative survey study that was administered to a representative sample of Austrian taxpayers.

The aim of the first study was to assess the subjective perspectives on procedures involved in paying taxes and to learn more about emotions involved. As in many countries, taxpaying procedures differ significantly for employed versus self-employed taxpayers in Austria. While employees' taxes are withheld automatically, the self-employed need to report their taxes proactively and pay them out of pocket. To capture the full picture, both groups of taxpayers were invited to participate in the focus group study. Additionally, focus groups with tax auditors were conducted, to learn more about taxpayers' reactions and emotional responses during the auditing process. The sample for this study comprised of 24 individuals (7 self-employed taxpayers, 9 employed taxpayers, and 8 tax auditors). The focus groups were moderated using a question route (Krueger, 1998) that covered the following issues; first, participants were asked to silently reflect about the process of paying taxes and to illustrate this process on a large sheet of paper. Then, these illustrations were used to structure the subsequent discussion on how the single steps they are required to complete make them feel. Tax auditors were asked to think of the audited taxpayers' perspectives. This structured procedure enabled an open discussion about the emotions involved in taxpaying in all seven focus groups that were conducted for this study. The results showed that paying taxes is indeed a context susceptible for emotion elicitation and revealed concrete situations that are strongly associated with emotions for taxpayers, such as contacting the tax authorities to resolve questions, receiving tax return feedback from the tax authorities, or being contacted for the announcement of an audit. Regarding the emotional responses,

fear, anger, stress, and nervousness were among the most frequently mentioned emotions for both groups of taxpayers.

The second study served to follow up on the question of which specific emotions are relevant in the context of taxation and to investigate how emotional responses correspond to specific tax-related procedures and situations. Moreover, the relationship between tax-related positive versus negative experiences and tax compliance intentions and their mediation by emotions was examined. Finally, we wanted to know whether positive versus negative experiences with the tax authorities spill over to general personal attitudes toward taxes.

To answer these research questions, the materials from the first study were used to create authentic tax-related scenarios that were likely to elicit emotions as study materials. Moreover, an emotions questionnaire comprising the most frequently mentioned emotions from the focus groups study was designed, to quantify emotional responses to the tax-related scenarios. An experimental survey was administered to a sample of Austrian taxpayers, representative for the Austrian working population regarding gender and age ($N = 523$, 42% female). The experimental design consisted of presenting the tax-related scenarios in either a positively or negatively framed version. The study design comprised a mixed design with seven separate scenarios (within-subject) framed either positively or negatively (between-subject) for both self-employed and employed taxpayers (between-subject).

Results showed that the positive and negative framing of scenarios was perceived as intended. A multidimensional scaling analysis of emotional responses to the scenarios allowed us to cluster the 19 emotions into four emotion indices that showed relevance in a taxation context. These were positive emotions (secure, relieved, satisfied, happy, and hopeful), anger-related emotions (annoyed, stressed, angry, and dissatisfied), fear-related emotions (fearful, insecure, nervous, and helpless), and emotions related to feelings of self-blame (sad, guilty, regretful, and ashamed). The seven scenarios elicited specific emotion patterns, with anger-related emotions playing the most dominant role. Audit-related scenarios were susceptible to elicit fear-related emotions in both the positive and the negative framed versions of scenarios. This finding was 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. Next, compliance intentions were higher in the positive as compared to the negative condition, and this relationship was partly mediated by the experienced emotions. Emotions related to anger and self-blame showed the largest mediation effects. Final-

ly, results also showed that the manipulation of positive versus negative experiences with paying taxes demonstrates carryover effects to general attitudes toward taxes. These findings imply the importance of taking subjective and emotional experiences of taxpayers into account, when designing taxation policies. Additionally, while tax administrations focused on hard facts such as audits and fines for a long time, this study emphasizes the importance of conveying a positive image of the tax authorities that elicits positive associations and emotions to promote compliance behavior. The willingness to comply with tax obligations declines when negative emotions, especially emotions related to anger, are elicited during the interaction with the tax authorities.

3.6. Study 4: Incidental emotions and tax compliance behavior

Enachescu, J., Puklavec, Z., Olsen, J., & Kirchler, E. (submitted). Tax compliance is not fundamentally influenced by incidental emotions: An experiment. *Economics of Governance*.

Study 4 investigated the influence of incidental emotions on tax compliance behavior in an experimental setting. Incidental emotions are elicited by surrounding circumstances such as sunny weather, which should from a rational perspective not influence the decision at hand. However, research showed that these unrelated emotions can nevertheless influence decisions by altering information processing (Forgas, 1995), making mood congruent information more accessible, or through emotion regulation processes (Isen & Geva, 1987). In an experimental study using a public goods game, participants contributed less to the common good and punished their peers harsher when they were induced with anger as opposed to happiness (Drouvelis & Grosskopf, 2016). A study in the taxation context used pictures to induce positive versus negative mood in an experimental setting and found that participants in a positive mood were less tax compliant than those in a negative mood (Fochmann et al., 2019).

The aim of this study was to investigate the influence of specific incidental emotions, as opposed to general positive versus negative affect. The differentiation between specific emotions is important as theories on the effects of positive and negative affect on risk decisions come to opposing conclusions. For instance, the mood congruency hypothesis predicts that negative mood makes negative information more accessible, therefore, fostering pessimistic judgments of risky choice (Johnson & Tversky, 1983). Conversely, from an emotion regulation perspective, one can argue for the opposite effect; in order to escape the negative affective state, individuals are prone to take larger risks (Isen & Geva, 1987). Moreover, negative emotions of the same

valence can result in opposite behavioral consequences (e.g., anger and fear). In this vein, the Appraisal Tendency Framework stresses the importance to take specific emotions into account when investigating behavioral consequences (Lerner & Keltner, 2000). The authors argue that each emotion is associated with specific appraisal patterns that determine how individuals react to incoming information. Hence, in this study, we induced specific emotions, namely anger, fear, and happiness.

Several techniques to induce incidental emotions exist, which come with different advantages and disadvantages. Techniques differ with regard to subtlety and the related demand effect (e.g., asking participants to actively think about an emotional episode in their life versus presenting an emotional video clip without further explanation). In this study, emotions were induced by showing a short video clip combined with background music. To avoid any demand effects, success of the emotion manipulation was assessed at the end of the study. Additionally, emotional arousal was assessed by measuring skin conductance response. Emotional arousal levels served as an additional check variable for the success of the emotion induction, as arousal levels were expected to be higher after the emotion induction.

The study comprised three between-subject conditions (anger, fear, and happiness). Each participant played 16 rounds of a tax game. In each round, participants received a base income of 1000 Experimental Currency Units (ECU) and could earn up to 1000 additional ECUs in an effort task (Gill & Prowse, 2012). Participants were required to report their income, in order to pay taxes at the end of each round. The tax rate was 40% of income, with a 25% audit probability. The first eight rounds of the tax game served as a baseline treatment. After round eight, participants were presented with a video clip (duration approx. 4.5 min) with background music. Participants in the anger condition watched a bully scene from the movie *My Bodyguard* (1980) (background music: *The Planets—Mars, the Bringer of War* by Gustav Holst); participants in the fear condition watched a scene from the movie *Shining* (1980) (background music from the movie's soundtrack, Krzysztof Penderecki - *Polymorphia*); and participants in the happiness condition watched a scene from *Mr. Bean's Holiday* (2007) (background music: *Symphony no. 70, D major* by Joseph Haydn). The background music continued to play throughout the remaining eight rounds of the tax game in order to enhance the emotion induction effect.

A total of 264 individuals participated in the study, with a mean age of 24.67 years ($SD = 6.12$), and 54.5% of participants were female. Participation was incentivized based on the income of a randomly drawn round of the tax game. The mean payoff was 5.25 Euro.

The manipulation of the respective emotions was successful. Participants indicated to experience higher levels of fear in the fear condition ($M = 1.84$, $SD = 1.00$) as in the other two conditions (anger: $M = 1.44$, $SD = 0.78$, happiness: $M = 1.31$, $SD = 0.76$) and higher levels of anger in the anger condition ($M = 2.21$, $SD = 1.22$) as in the other two conditions (fear: $M = 1.72$, $SD = 0.88$, happiness: $M = 1.74$, $SD = 0.87$). Only for happiness, the scores did not differ significantly between the three conditions, while the trend still was in the expected direction (happiness: $M = 2.93$, $SD = 0.96$, anger: $M = 2.66$, $SD = 1.02$, fear: $M = 2.55$, $SD = 1.08$). The analysis of the arousal data provided additional support for the success of the emotion induction, as arousal levels were significantly higher in rounds nine to sixteen, compared to rounds one to eight ($B = 1.49$, $p < 0.001$).

Despite the successful manipulation of specific emotions, results showed no differences in compliance behavior between the three conditions. Moreover, we investigated whether an interaction effect was present between arousal levels and the experimental condition on compliance behavior, in a sense that the condition only affects compliance levels when participants are strongly aroused by the emotional experience. However, none of these effects were found to be significant.

Several possible reasons for the lack of an effect of the emotion manipulation on tax compliance behavior exist. The possibility exists that tax compliance decision making requires a form of motivated information processing that is not susceptible to influences of incidental emotions (Forgas, 1995). However, scholars also argue whether or not the source of incidental emotions must be covert or not, in order to allow for misattributions of emotional arousal to the decision situation. In this study, the source for emotional experiences was salient, which could be a reason for a lack of influence. Moreover, it is very likely that the experimental setup elicited emotions integral to the taxpaying context in addition to the incidental emotion manipulation. Completing the effort task might have elicited stress; gaining money might have elicited happiness; and being audited might have evoked anger, to give some examples. In a given decision context, the effects of integral emotions are likely to dominate the effects of incidental emotions (Västfjäll et al., 2016). While the overt nature of the emotion manipulation and the elicitation of integral emotions during the experimental setup constitute weaknesses of this study, working around these challenges is methodological very difficult (or even impossible).

Possibilities for tax authorities to influence incidental emotional experiences of taxpayers are very limited. Besides playing pleasant music in tax offices or in the background of the tax authority's homepage, surrounding circumstances are difficult to control. However, from this

study alongside the results from Study 3, the results show that integral emotions play a more important role for tax compliance behavior than incidental emotions. With regard to practical implications, this is a very useful finding. Opposed to incidental emotions, shaping emotional experiences integral to the taxation context can be deliberately targeted when designing service structures and taxation policies. For instance, as demonstrated by Study 3, professional and friendly service provisions foster positive emotional experiences, whereas a lack of transparency of procedures foster anger and cause reactance.

4. Discussion

While paying taxes is generally perceived as a very dry and cognitive task, the studies presented above clearly show that this context is susceptible to emotions and that they have an influence on compliance intentions. The aim of this dissertation was to investigate which emotions play a role in the context of taxation and what their influence on compliance behavior is. To investigate this topic thoroughly, I approached the issue of emotions in taxation from different perspectives and combined diverse research methods.

Study 1 served to establish the status of tax compliance research that was conducted within the Slippery Slope Framework, a framework bringing together findings from economics and psychology. This review helped point out open questions that I addressed in the subsequent studies. While the main assumptions of the Slippery Slope Framework, namely the positive effects of trust on voluntary compliance and the positive effects of coercion on enforced compliance, were supported by the review, results revealed a complex dynamic between trust and power. Moreover, enforcement showed to demonstrate twofold effects on compliance. These findings were supported by results from Study 2. In this study, positive and negative affective responses to scenarios describing fictional tax authorities that were either described as being powerful (not powerful) and trustworthy (not trustworthy) were assessed. The twofold nature of power was reflected in the fact that powerful tax authorities increased both positive and negative affective responses. While enforcement can elevate positive affect when taxpayers perceive the tax authorities being competent to protect them from free riders, it can also elevate negative affect such as anger or fear. Moreover, the complex dynamic between trust and power was reflected in the results, as the positive effect of power on negative emotions was reversed when trust was high. This finding is in line with the notion that trust moderates the effectiveness of power, as suggested by a meta-analysis on the effects of punishment by Balliet and colleagues (Balliet & Van Lange, 2013).

Study 3 revealed the specific emotions that are relevant in the context of taxation and which situations in the process of paying taxes are associated to emotional responses by taxpayers. Relevant emotions were related to anger, self-blame, and fear in the domain of negative affect, next to positive emotions such as relief and happiness. Anger and self-blame were associated with lower compliance intentions and therefore should be avoided taxation procedures. In Study 2, high trust increased positive emotions but failed to decrease negative emotions. This is in line with the findings from Study 3, where some scenarios that are generally associated with negative experiences (e.g., a tax audit) still elicited negative emotions even when formulated positively and the taxpayer rationally did not need to fear any consequences. Moreover, Study 3 showed that reading about negative experiences with the tax authorities, such as bad services, unfriendly tax auditors, and receiving ambiguous information, results in carryover effects to general attitudes toward taxes. Hence, conveying a positive image and avoiding provocation of negative emotional experiences is in the interest of tax authorities, to foster positive attitudes toward taxes and promote compliance.

Study 4 investigated whether the established relevance of emotional experiences also applied to incidental emotions; both in terms of dimensional differences as well as between two selected specific emotions, namely anger and fear. Despite a successful experimental manipulation of the incidental emotions anger, fear, and happiness, no effect on compliance behavior could be demonstrated.

So far, existing research on tax compliance behavior mostly excluded aspects of taxpayers' emotions. However, results of this cumulative dissertation show that including emotions into existing models can help us to answer open questions. For instance, previous research showed that audits can result in twofold effects, both enhancing future compliance and undermining it. By paying attention to emotional responses, such phenomena can be better understood (Study 2 & 3). Lastly, opposing previous publications on this issue, emotions unrelated to the taxpaying situation seem to not influence compliance behavior. This is most likely because emotions elicited by the taxation situation itself (integral emotions) dominate the decision situation. Emotions elicited by the decision context itself seem to be more important for shaping compliance behavior than unrelated emotions. However, effects are difficult to separate as they will most likely be present together.

The results of this dissertation should be taken into consideration when designing taxation policies and providing tax services. The results of studies 1, 2, and 3 reveal twofold effects of power, and they show that negative affect due to the experience of enforcement measures can

undermine compliance. This finding must be taken seriously, as enforcement is a costly strategy and can result in long-term damaging effects on the confidence in tax authorities and voluntary compliance motivations. Moreover, the fact that integral emotions seem to be more important in this context and dominate the effects of incidental emotions is a very positive finding for policy makers. Opposed to incidental emotions that are due to a number of uncontrollable events, emotional experiences integral to the taxation context can be addressed and positively influenced by good policy design.

5. Outlook

In future research, I aim to address further questions evolved over the course of this dissertation. While the results from Study 2 and 3 give us first insights on the emotional background of the potentially negative effects of the excessive use of enforcement, further research is needed to fully understand the underlying reasons for this phenomenon. From this dissertation, I conclude that enforcement measures can evoke negative emotions, such as anger, when not employed cautiously. Those negative emotions might trigger reactance and retaliation behavior. However, learning more about related appraisal patterns by taxpayers and how much of this behavior happens consciously would be very helpful. Therefore, I plan to run a qualitative study, using verbal protocols and free associations, to further investigate under which circumstances excessive use of power actually backfires into lower compliance levels, in addition to which cognitions and specific emotional responses trigger this behavior.

Another open research question is the generalizability of emotional influences on tax compliance behavior to other cultural backgrounds. While the studies provided first insights into the impact of positive and negative affect from Turkey, the more comprehensive investigation of specific emotions in this context is based on data only from Austria. A replication of Study 3 was recently conducted in Italy, a country characterized by much lower tax compliance levels than Austria (Medina & Schneider, 2018). As the political climate and general public opinion on taxes in Italy differs significantly from Austria, Italy constitutes an interesting environment to test whether the effects of emotions in taxation are robust across countries. Results suggest that emotion patterns elicited by tax-related scenarios are very similar across these two countries (Privitera, Enachescu, & Kirchler, submitted).

Lastly, previous research showed that the misperception of probabilities, as suggested by the prospect theory (Kahneman & Tversky, 1979), is more pronounced in affectively laden situations than in natural situations (Rottenstreich & Hsee, 2001). Considering that paying taxes is

associated to emotional experiences in at least some instances, the idea that the subjective perception of audit probabilities is also affected by emotions is likely. In a further study, the moderating effect of negative emotions on the perception and effectiveness of audit probabilities is investigated. A taxation context charged with negative emotions, such as anger and fear, is assumed to lead to a stronger overestimation of small audit probabilities and hence moderate the effectiveness of audit probability on tax compliance.

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German summary

Individuelles Steuerverhalten wurde sowohl unter wirtschaftlichen als auch unter psychologischen Gesichtspunkten intensiv untersucht. Eine große Anzahl an Studien gibt Einblicke in sozioökonomische Faktoren, die Compliance-Entscheidungen beeinflussen. Trotz des zunehmenden Interesses an Emotionen in der Forschungsgemeinschaft sind die Ergebnisse zu den Auswirkungen von Emotionen auf das Steuerverhalten von Individuen rar. Diese Dissertation erweitert die vorhandene Literatur um eine umfassende Reihe von Studien, die unter Verwendung verschiedener Forschungsmethoden Einblicke in die Rolle von Emotionen auf Steuerverhalten aus verschiedenen Perspektiven bieten. Diese kumulative Dissertation umfasst vier Forschungsartikel:

1. Studie 1 ist ein Review über Studien, in denen die Annahmen des Slippery Slope Framework getestet wurden. Das Slippery Slope Framework beschreibt die Auswirkungen von Vertrauenswürdigkeit und Macht der Steuerbehörden auf die Steuer-Compliance von Individuen. Obwohl das Framework weithin akzeptiert und seine Annahmen hauptsächlich bestätigt sind, weist diese Überprüfung auf offene Fragen hin, da die dynamische Wechselwirkung zwischen den beiden Dimensionen noch nicht vollständig geklärt ist. Ein besseres Verständnis der Rolle von Emotionen in diesem Kontext soll dazu beitragen, diese offenen Fragen zu beleuchten.
2. Als erster Schritt zum Verständnis der Auswirkungen von Emotionen auf Steuer-Compliance wurde die allgemeinen Auswirkungen von positiven und negativen Emotionen in einer experimentellen Umfrage untersucht, die unter selbständigen Steuerzahlern aus der Türkei durchgeführt wurde. Die Ergebnisse zeigen zum Beispiel, dass Durchsetzungsmaßnahmen wie Prüfungen und Geldbußen negative Emotionen hervorrufen, die erzwungene Compliance-Absichten sowie Absichten zur Steuerhinterziehung auslösen.
3. In Studie 3 wurde anhand einer Studie, die qualitative und quantitative Methoden einsetzte untersucht, welche spezifischen Emotionen im Zusammenhang mit der Zahlung von Steuern relevant sind und in welchen Situationen sie ausgelöst werden. Diese Studie lieferte ebenfalls erste Einblicke in die Beziehung zwischen spezifischen Emotionen und Compliance-Absichten. Wut und Selbstbeschuldigung standen in einem negativen Zusammenhang mit Compliance-Absichten und sollten daher in Steuerverfahren vermieden werden.
4. Nachdem die Relevanz integraler Emotionen für Steuer-Compliance festgestellt wurde, wurde der Einfluss beiläufiger Emotionen auf die Steuer-Compliance in einer experimen-

tellen Studie untersucht. Trotz einer erfolgreichen Manipulation von Emotionen im Labor konnte kein Einfluss von beiläufigen Emotionen wie Wut, Angst und Glück auf das Compliance-Verhalten gezeigt werden.

Insgesamt liefert diese Dissertation zahlreiche Belege für die Bedeutung integraler Emotionen für Steuer-Compliance Entscheidungen und unterstreicht die Bedeutung der Berücksichtigung emotionaler Erfahrungen von Steuerzahlern bei der Gestaltung der Steuerpolitik.

Reprints of studies

THE SLIPPERY SLOPE FRAMEWORK OF TAX BEHAVIOUR: REVIEWED AND REVISED

Janina Enachescu and Erich Kirchler

ABSTRACT

Tax compliance decisions have attracted researchers' interest at least since the 1970s. Especially individual income tax decisions have been investigated from different perspectives. While early models explaining tax decisions and behaviour stem from economists and focus on factors such as audit probability, tax rates and fines, more recent research looks at this phenomenon from a psychological perspective. The Slippery Slope Framework (SSF) was developed in order to integrate findings on tax compliance behaviour from both disciplines. The framework summarizes the factors influencing tax compliance decisions by individual taxpayers along two dimensions: trust in tax authorities and power of tax authorities. A large body of literature confirms the main effects of these two factors on tax compliance. However, the dynamic interaction between trust and power of the authorities has been found to be more complex than assumed in the original framework. The goal of this review is to summarize the empirical evidence for the SSF, to analyse the dynamics between trust and power, and to identify knowledge gaps for further research.

5.1 THE BEGINNING OF THE SSF

The SSF (Kirchler, 2007; Kirchler, Hoelzl & Wahl, 2008) is a comprehensive frame that maps the field of tax compliance research and incorporates findings both from psychology and from economics. The SSF focusses on the interaction between taxpayers and tax authorities and allows for conclusions about the effects of the different interaction styles on compliance behaviours of taxpayers. In short, the SSF postulates that taxpayers comply either voluntarily or because they feel enforced to do so. The two different compliance motivations are strongly related to the interaction style between tax authorities and taxpayers, which can either be characterized by a cops-and-robbers mentality or shaped by the fact that the tax authorities are viewed as service providers and taxpayers as their customers.

The question what makes people pay their taxes according to the law has occupied researchers from different disciplines at least since the 1970s. The first model developed in order to explain tax compliance behaviour was the standard economic model by Allingham and Sandmo (1972) and Srinivasan (1973). The authors assume that compliance decisions are made strategically and depend on audit probability, fine rate and tax rate. When the expected payoff is larger for evasion than for compliance, individuals are expected to evade taxes. However, observed tax compliance levels are commonly much higher than what one would expect according to the standard economic model of income tax evasion, since audit probabilities in most countries are rather small (Andreoni, Erard & Feinstein, 1998).

While the traditional economic approach towards tax compliance assumes that taxpayers have the inherent predisposition to evade taxes, the Australian Taxation Office Compliance Model illustrates that a majority of the population is willing pay their taxes voluntarily and only smaller proportions of the population try to resist the law or are completely disengaged from it (Braithwaite, 2003). The tax authorities need to establish a psychological contract with the taxpayers, which ensures cooperation and is based on transparent and fair political procedures that regulate tax collections and the provision of public goods (Feld & Frey, 2007).

Ensuring high compliance levels by the means of strong enforcement measures, such as frequent audits and strict fines bears high costs for the state. Some estimates yield to enforcement costs of approximately 5% to 10% of tax revenues (Yitzhaki & Vakneen, 1989). Finding ways to promote voluntary tax compliance by the citizens that does not rely on a strong enforcement machinery is therefore of great interest for governments.

Tax compliance decisions have been investigated from various perspectives. Early research has focussed on economic factors. Higher audit probabilities and stricter fines are postulated to lead to higher compliance rates. Findings on audit probabilities show weak positive effects on tax compliance (Slemrod, Blumenthal & Christian, 2001). However, results are inconsistent (*e.g.* Friedland, 1982; Spicer & Thomas, 1982). It can be assumed that subjective audit probabilities are of higher importance than the actual objective probabilities (Andreoni et al, 1998). As for audit rates studies investigating the influence of fines also show inconsistent results. Fine rates are predicted to have a positive influence on tax compliance (Allingham & Sandmo, 1972). Some studies can confirm this relationship (*e.g.* Park & Hyun, 2003); in other studies results are less clear (*e.g.* Friedland, 1982).

A large body of research informs us about the effects of psychological factors such as fairness perceptions, subjective knowledge about taxes and social norms on tax compliance behaviour. Research shows for example that lower complexity of the tax law and increased subjective tax knowledge are positively related to tax compliance (Kirchler & Maciejovsky, 2001; Park & Hyun, 2003). Furthermore, measures that increase procedural fairness and acceptance of tax laws such as direct democracy have been shown to influence compliance levels positively (Feld

& Kirchgassner, 2000). A number of studies have focussed on the role of social norms about taxes. Social norms in favour of tax compliance are positively related to tax compliance behaviour (Wenzel, 2005). In an experimental study, Alm and colleagues (Alm, McClelland & Schulze, 1999) were able to show that participants developed a strong social norm to comply with tax regulations that lead to the voluntary acceptance of stricter enforcement measures, by being able to communicate with each other.

The SSF is built on the large body of research, which is exemplified by the findings outlined above. By incorporating conclusions from economics and psychology, the framework provides a comprehensive overview of tax compliance research and allows for conclusions about tax compliance behaviour by individual taxpayers. Tax compliance behaviour is believed to be influenced by the two dimensions of trust and power. While a trustful relationship between taxpayers and tax authorities, based on services and respectful treatment, promotes voluntary tax compliance, the conventional approach of power exertion fosters compliance based on enforcement. This review aims at compiling empirical evidence for the proposed model, shedding light at the dynamic interaction between the two dimensions of trust and power and identifying research gaps that need further investigation.

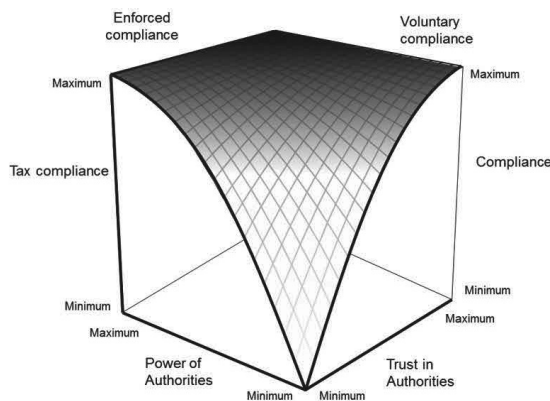
The following section introduces the components of the SSF and explains the assumptions of the model regarding the influence of its factors on tax compliance decisions.

5.2 THE COMPONENTS OF THE SSF

The SSF summarizes the factors that influence tax compliance behaviour along two dimensions: trust in the tax authorities and power of the tax authorities. The characterization of a state along these two dimensions determines the prevailing climate between tax authorities and taxpayers. The tax climate can vary on a continuum between an antagonistic climate, characterized by a cops-and-robbers mentality, and a synergistic climate, characterized by mutual trust and the provision of services by the tax authorities and cooperation with the taxpayers. In a state that relies mainly on enforcement measures such as frequent audits and strict fines, an antagonistic climate will most likely dominate. In such an environment taxpayers feel enforced to comply with the tax regulations. On the other hand, in a state that regards taxpayers as partners and focusses on cooperation by making procedures transparent and compliance easy, a synergistic climate is likely to be prevalent and taxpayers are more likely to cooperate voluntarily with the tax authorities. In a state that is neither perceived to have great enforcement capacities, nor to be particularly trustworthy, compliance levels are assumed to be low.

The label ‘slippery slope framework’ was coined by Henk Elffers at a conference organized by the Netherlands Tax and Customs Administration.¹ The term slippery slope stems from the assumption that compliance levels in a three-dimensional space, spanned by the dimensions trust, power and compliance, describe a flat that reaches its highest point when trust and power are at their maximum value and drops sharply when both dimensions are characterized by decreasing values at the same time (*see* Figure 5.1).

Figure 5.1 The slippery slope framework (adapted from Kirchler, 2007).



The power dimension refers to the tax authority’s perceived capacity to detect and punish tax evasion correctly. Apart from the economic factors audit probability and fines, this dimension also comprises subjective perceptions of enforcement capacities, which are related to subjective tax knowledge and attitudes towards taxes. Social norms also influence how the enforcement capacities of the authorities are perceived by the taxpayers. Communication about tax audits for example influences compliance behaviour of uninvolved taxpayers (Alm, Jackson & McKee, 2009).

Trust refers to the general belief of the citizens that the tax authorities are benevolent and are associated with general positive evaluations. Tax authorities are trustworthy, when they are believed to work for the common good. A general definition of trust comprises the components competence, benevolence and integrity (Mayer, Davis & Schoorman, 1995). Tax authorities are perceived as integer when there is no corruption and procedures are transparent and fair. Participation of the citizens in decision processes, for instance through direct democracy, has a positive impact on the trustworthiness of the authorities and therefore influences tax compliance positively (Feld & Kirchgassner, 2000). Subjective tax knowledge is also positively related to trust in the authorities. Research in an experimental setting could show that uncertainty about tax regulations decreases tax compliance

1. Managing and maintaining compliance conference organized by the Belastingdienst.

(Alm, 2014). Furthermore, the trust dimension is related to social norms about taxes that influence how tax evasion is perceived by citizens. In a society in which tax evasion is considered a serious crime that is not socially accepted, trust in the tax authorities is more likely to be high.

The trust and power dimension are dynamically related to each other. Perceived trustworthiness of the tax authorities can support enforcement measures by enhancing their acceptance. Also, the observation that wrongdoers are punished might enhance trust among honest taxpayers, as they feel protected from free riders. On the other hand, the exertion of power can easily undermine trust in the authorities when it is perceived as unfair or randomly applied to compliant and non-compliant citizens. If trust in the authorities is already impaired, further enforcement measures are easily perceived as arbitrary and will create further distrust.

The relationship between trust, power and compliance levels is depicted in Figure 5.1. Compliance levels are plotted on the vertical axis, while levels of power of the authorities are plotted on the left-hand side horizontal axis and trust in the authorities is plotted on the right-hand side horizontal axis. As depicted by the flat, spanned by these three dimensions, compliance levels are highest when either power or trust or both dimensions are expressed at their maximum. Depending on the levels of trust and power, compliance motivations move on a continuum between enforced compliance and voluntary compliance.

5.2.1 *The Extension of the SSF*

The original formulation of the SSF remains silent on the specific dynamics between the trust and power dimensions. It says that the two dimensions influence each other but does not clarify in which specific circumstances they reinforce or degrade each other. An extension of the SSF was developed in order to better explain the dynamic interaction between trust and power (Gangl, Hofmann & Kirchler, 2015; Hofmann, Gangl, Kirchler & Stark, 2014).

The authors argue that the unclear effects of power on trust may be explained by different conceptualizations of power. They propose to distinguish between coercive power and legitimate power, referring to the basis of power by French & Raven (1959). Furthermore, they suggest differentiating between two different forms of trust, namely reason-based trust and implicit trust (Castelfranchi & Falcone, 2010).

Power in general is commonly defined by the perceived capacity of a party to influence another party's behaviour (e.g. French & Raven, 1959). A widely acknowledged classification of forms of power by French and Raven (1959) differentiates between six different bases of social power. They can be sorted into two categories, namely harsh and soft forms of power. Harsh forms of power include coercive power and reward power and are referred to as coercive power in the

framework. Coercive power is based on compulsion and works through monetary, physical, social or psychological costs that result from wrongdoing. In the context of taxation, monetary fines, imprisonment or public shaming are examples for exertion of coercive power. Soft forms of power include information power, expert power, legitimate power and referent power. They are referred to as legitimate power in the framework and are facilitated by the provision of information, identification of the citizens with the authorities, social norms, perceived expertise of the authorities, transparency and democratic participation. In the presence of legitimate power citizens defer to laws voluntarily, because they feel obligated to do so (Tyler, 1997). Coercive and legitimate power are regarded as two independent factors in the current framework, therefore they do not necessarily exclude each other, but can exist in combination.

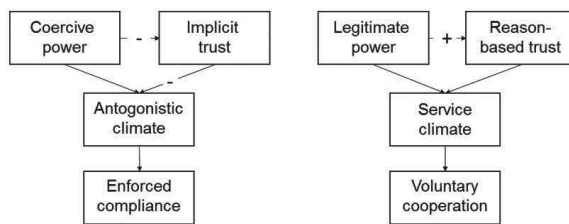
Trust is defined as the acceptance to be vulnerable to the actions of another party (Lewis & Weigert, 1985). We accept this vulnerability because we expect the outcome to be positive. These expectations can be formed on different bases that lead to two different qualities of trust that are distinguished in the extension of the SSF. One can either trust, because of rational reasons to belief that the trustee (the person who is trusted) will perform for our benefit. Dependency of the trustee on the trustor (the person who trusts) can be such a rational reason (Castelfranchi & Falcone, 2010). The evaluation of internal factors of the trustee such as competence, harmlessness and the willingness to cooperate are further reasons to build trust (Castelfranchi & Falcone, 2010). This form of trust is referred to as reason-based trust. In contrast, implicit trust is formed automatically through affective processes (Castelfranchi & Falcone, 2010). Implicit trust is evoked by associations that are built on the basis of positive experiences with the trustee. Additionally, the perception that one is similar to the trustee or holds the same values can enhance implicit trust formation.

Taxpayers may develop reason-based trust towards the tax authorities based on the perception that they are competent and work for the common good. Implicit trust on the other hand may be evoked by a warm and customer friendly presentation of the tax authorities, such as well-designed brochures and friendly customer services. In the long run, reason-based trust can develop into implicit trust based on repeated positive experiences and habit.

The distinction between the two forms of power and trust shall contribute to a better understanding of the dynamic interplay between trust and power in the SSF. This extension of the SSF was first mentioned in a paper by Hofmann et al (2014). The dynamic interactions between the different forms of power and trust were further explained in a theoretical paper by Gangl et al (2015). The model postulates that coercive power and implicit trust influence each other negatively, while legitimate power and reason-based trust enhance each other. The authors argue that perceptions of coercive measures erode implicit trust, because they foster negative experiences with the tax authorities. On the other hand, in the presence of implicit

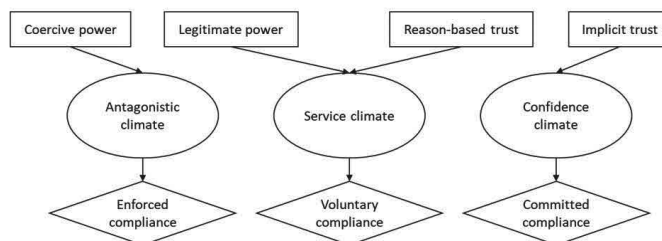
trust towards the tax authorities, enforcement measures might be perceived as misplaced and unnecessary. Legitimate power and reason-based trust however, are suggested to work closely together. Legitimacy perceptions are based on transparent procedures, beliefs that the authorities are competent and work for the common good. These factors are also sources of reason-based trust. The assumed relations between forms of trust and power are depicted in Figure 5.2.

Figure 5.2 The impact of coercive and legitimate power on trust, and their influence on the interaction climate and compliance according to the extension of the SSF (adapted from Hofmann et al, 2014).



Building on this theory the authors then further extended the original version of the SSF, which distinguishes only between an antagonistic and a synergistic climate, by separating the synergistic climate into two forms, namely the service and confidence climate (Gangl, Hofmann, & Kirchler, 2015, *see* Figure 5.3). As in the original version of the framework, coercive measures are believed to lead to an antagonistic climate in which taxpayers show enforced compliance. Legitimate power in combination with reason-based trust, is argued to lead to a service climate in which taxpayers comply voluntarily. Additionally, the authors describe a confidence climate, which is characterized by implicit trust and leads to committed cooperation.

Figure 5.3 Dynamics between power and trust affecting climates of cooperation and motivations to comply (adapted from Gangl et al, 2015).



While these theoretical considerations add to the understanding of the dynamics between trust and power, the empirical evidence presented in the next section

shows that the distinction between the employed concepts such as legitimate power and trust is to some degree artificial and difficult to apply in practice. Practical implications are discussed in the last section.

5.3 EMPIRICAL EVIDENCE FOR THE SSF

Tax compliance behaviour is a phenomenon that is difficult for scientific research to grasp. Due to the sensitivity of the topic, actual compliance data is rarely accessible. And even in cases where researches have access to the data of taxation offices, it lies in the nature of tax evasion that these cases often remain in the dark. Nevertheless, various methods have been developed to study tax compliance decisions of individuals which will be outlined in the following.

Laboratory studies are employed to mimic the situation of a taxpayer and observe compliance decisions. Decisions in these kinds of studies are usually incentivized in order to reduce social desirability effects in the artificial laboratory setting. The basic experimental procedure includes several rounds of a tax game, which is played in an anonymous environment on a laboratory computer. Each round represents a taxation period and begins with the earning of an income. This income can be a lump sum payment or might be influenced by the participants by their success in some kind of effort task. The tax game proceeds with the payment of required taxes. In some experiments participants can only decide to be either fully compliant or to fully evade income tax, in other experiments participants can decide on the specific sum of their tax payments. In most studies participants are informed about the audit probability and fine rates in the beginning of the experiment. However, experiments differ with regard to the timing of when they receive feedback whether they have been audited or not in a specific round. In some experiments participants receive this information only at the end of the experiment and in others after each round. In this setting various experimental manipulations can be employed in order to study specific aspects of the compliance decision. In experimental studies that aim at testing the assumptions of the SSF, participants are randomly assigned to one or more experimental condition, which corresponds to the different combinations of trust and power characteristics of a state. In each condition participants read a scenario that describes the characteristics of the state that they shall imagine to live, work and pay taxes in. Furthermore, the experimental setting in the laboratory allows also for the assessment of neurobiological data. In an experimental study using scenarios as described above, Gangl and colleagues additionally measured event-related potentials of the participants while they were making tax compliance decisions (Gangl, Pfabigan, Lamm, Kirchler & Hofmann, 2017). The results suggest that the presence of legitimate power of the authorities is related to higher cognitive demand during the compliance decision, due to greater decision conflict as compared to the presence of coercive power.

Scenarios that describe the characteristics of an imaginary country have also been employed in many survey studies either in paper-pencil format or online (Hofmann et al, 2014; Kaplanoglou, Rapanos & Daskalakis, 2016; Kogler et al, 2013; Lemoine & Roland-Lévy, 2013; Wahl, Kastlunger & Kirchler, 2010). As in the laboratory studies, participants are randomly assigned to one out of several conditions in which different versions of a scenario are presented. Different scenarios describing imaginary countries have been developed. In the scenario that describes the country Varosia, the factors trust and power are manipulated. In the high power condition, for example, the country is described as effectively pursuing tax evaders and that severe fines are to be expected. Tax audits are carried out frequently and the government is perceived to be very powerful. In the high-trust condition, Varosia is described as a country with democratic elections in which the government has a good reputation. The tax burden is distributed equitably among different occupation groups and the tax authorities offer qualified services in order to support taxpayers with their duties (Wahl et al, 2010).

The scenarios describing the countries Chomland and Tovland are developed to test the assumptions of the extended SSF. In these scenarios, the factors legitimate and coercive power are manipulated. In the version of high legitimate and high coercive power, for instance, the tax authorities of Chomland are described to carry out frequent tax audits and to employ strict enforcement measures such as high penalties for evasion. Taxpayers feel enforced to comply with the law. Furthermore, the tax authorities are described as being experts and offering professional advice (Hartl, Hofmann, Gangl, Hartner-Tiefenthaler & Kirchler, 2015).

In survey studies, these scenarios are combined with questions on tax compliance intentions. According to the theory of reasoned action (Ajzen & Fishbein, 1977), behavioural intentions are strongly related to behavioural outcomes, and therefore a good approximation when we cannot observe the actual behaviour of interest, as it is the case for tax compliance behaviour. Tax compliance intentions are best assessed with the Tax Inventory (TAX-I, Kirchler & Wahl, 2010), a validated and highly reliable scale developed to differentiate between voluntary and enforced compliance intentions as well to assess motivations to avoid or evade taxes.

Studies that investigate the assumptions of the SSF with the scenario method are summarized in Table 5.1.

Table 5.1 Studies investigating the assumptions of the SSF with the scenario method

Study	Sample	Format	Independent Variable (Manipulation)	Effects of Trust on...			Effects of Power on...			Main finding
				Com p.	Vol. Com p.	Enf. Com p.	Com p.	Vol. Com p.	Enf. Com p.	
(Wahl et al, 2010)	N=120 Students Austria	Varosia Computer, Monetary incentive, Between-subject	Trust (low/high)							Support for the SSF.
			Power (low/high)	0	+	-	+	0	+	Voluntary compliance is highest when authorities are trustworthy and powerful.
(Kogler et al, 2013)	N=127 Self-employed	Varosia Online Questionnaire, No incentive, Between-subject	Trust (low/high)							Confirmation of the results from study one with self-employed taxpayers.
			Power (low/high)	+	+	-	+	0	+	Additionally, older participants indicated higher intentions to comply than younger participants.
(Kogler et al, 2013)	N=1,350 Students Austria (329) Hungary (280)	Varosia Paper-pencil, No incentive, Between-subject	Trust (low/high)							Support for the SSF.
			Power (low/high)	+	+	-	+	0	+	The results indicate a main effect of the factor country, with tax compliance intentions being highest in Hungary and lowest in Russia. A significant interaction between trust and power indicates that com-

Study	Sample	Format	Independent Variable (Manipulation)	Effects of Trust on...			Effects of Power on...			Main finding
				Vol. Com p.	Enf. Com p.		Vol. Com p.	Enf. Com p.		
(Lemoine & Roland-Lévy, 2013)	N=320 Students France	Paper-pencil, No incentive, Between-subject	Trust (low/high) Power (low/high)	+	+	0	+	0	+	Support for the SSF. Compliance intentions were highest in the high-trust high-power condition.
(Hofmann et al, 2014)	N=62 Taxpayers	Online Questionnaire, No incentive,	Coercive Power (low/high)		+	0	+	0	+	Coercive power (CP) leads to higher intended tax compliance, feelings of enforced compliance, and the perception of an antagonistic climate.

pliance intentions are highest when trust and power are high simultaneously.

The significant interaction between power and country indicates that power shows different effects in Romania compared to the other countries.

The covariate gender showed significance, with women contributing more than men.

Study	Sample	Format	Independent- ent Variable (Manipula- tion)	Effects of Trust			Effects of Power			Main finding
				Vol. Com p.	Enf. Com p.	on...	Vol. Com p.	Enf. Com p.	on...	
	Between-subject									
	Chomland									
	N=120 Students Austria	Computer	Coercive							Tax payments are highest in the high coercive power condition compared to low coercive power.
		Experiment, monetary incentive, Within-subject	Power (low/high)							
	N=130 Students Austria	Computer	Legitimate							Tax payments are highest in the high legitimate power condition compared to the low coercive power condition.
		Experiment, monetary incentive, Within-subject	Power (low/high)							
N=368 Students Austria	Computer	Coercive							Tax payments were lowest in the condition of low coercive and low legitimate power and highest when both power qualities were described as high.	
	Experiment, monetary incentive,	Power (low/high)								

		Effects of Trust		Effects of Power			
		on...		on...			
Study	Sample	Format	Independent- ent Variable (Manipulation)	Vol. Com p.	Enf. Com p.	Main finding	
Legitimate Power (low/ high)							
(Kaplanoglou & Rapanos, 2015)	N=320 Students Greece	Vari	Trust (low/ high)			Support for the SSF. Trust is main driver of voluntary compliance while	
		Paper-pencil, No incentive, Between- subject				high power lowers voluntary compli- ance. Power is the main driver of enforced compliance.	
			+	+	0	+	-
Trust (low/ high) Power (low/ high)							
Ellopia (Var-							
(Kaplanoglou et al, 2016)	N=542 Employees of SME Greece	iosia)	Trust (low/ high)			SSF verified to large extend. Trust is main driver of voluntary compliance	
		Paper-pencil, No incentive, Between- subject					while power is the main driver of enforced compliance. The main effect of power is positive only under conditions of high trust.
			+	+	0	-	0
Trust (low/ high) Power (low/ high)							
Coercive							
(Gangl et al, 2017)	N=80 Austria	Computer Experiment, monetary incentive, Within-sub- ject	Power (low/ high) Legitimate Power (low/ high)			Perceived change from coercive power (CP) to legitimate power (LP) leads to less voluntary cooperation. LP has a negative effect on enforced compliance and reactance is particularly strong after change from CP to LP. The change between	
				LP > CP	LP > CP	LP > CP	CP > LP

Study	Sample	Format	Independent Variable (Manipulation)	Effects of Trust on...			Effects of Power on...			Main finding
				Com p.	Vol. Com p.	Enf. Com p.	Com p.	Vol. Com p.	Enf. Com p.	
										LP and CP is the most important factor affecting enforced compliance and reactance. LP leads to slightly higher tax payments than CP.
	N=78 Austria	Computer Experiment, monetary incentive, Within-subject	Coercive Power (low/high) Legitimate Power (low/high)				0	LP > CP LP > CP	CP > LP LP	Confirmed most results from study one. LP leads to heightened cognitive control and disrupted attention processing compared to CP.
	N=120 Students Austria	Chomland Computer Experiment, monetary incentive, Between-subject	Coercive Power (low/high)				+	0	+	Coercive power (CP) has a negative impact on implicit trust and initiates an antagonistic climate and enforced compliance. Coercive power does not affect reason-based trust, service climate or voluntary compliance.
(Hofmann, Hartl, Gangl, Hartner-Tiefenthaler & Kirchler, 2017)	N=130 Students Austria	Chomland Computer Experiment, monetary incentive, Between-subject	Legitimate Power (low/high)				+	+	+	High levels of legitimate power (LP) have a positive effect on reason-based trust, perception of service climate and voluntary cooperation.

		Effects of Trust		Effects of Power		Main finding
		on...		on...		
Study	Sample	Format	Independent- ent Variable (Manipula- tion)	Vol. Com p.	Enf. Com p.	
		monetary incentive, Between- subject				High levels of LP increase percep- tion of coercive power and enforced compliance, while the perception of an antagonistic climate are decreased.
						In the presence of high CP and LP at the same time an antagonistic cli- mate and enforced compliance are prevalent. Higher LP induces rea- son-based trust, service climate and voluntary cooperation, while it decreases the antagonistic climate. The effect of LP on tax honesty intention is mediated by reason- based trust.
						CP impacts antagonistic climate and enforced compliance. LP has a posi- tive impact on reason-based trust, perceptions of a service climate and voluntary cooperation. LP reduces the antagonistic climate.
					</	

Study	Sample	Format	Independent Variable (Manipulation)	Effects of Trust on...			Effects of Power on...			Main finding
				Vol.	Enf.	Com	Vol.	Enf.	Com	
				Com	Enf.	Com	Vol.	Enf.	Com	
				p.	p.	p.	p.	p.	p.	
Between-subject										

Note: The symbols + and – signify positive or negative effects that are significant on a 5% level of significance. Non-significant effects are indicated with 0.

Note: The symbols + and – signify positive or negative effects that are significant on a 5% level of significance. Non-significant effects are indicated with 0.

Another method to investigate tax compliance decision-making and to test the assumptions of the SSF is to conduct cross-cultural survey studies. The World Value Survey (WVS) offers a rich source of data which measures a large variety of variables related to moral standards and personal values. The data set of the WVS also offers various variables that can be used as approximations for the factors relevant in the SSF. Ruiu and Lisi (2011), for instance, investigate the SSF by approximating tax evasion by the size of the shadow economy (available from Schneider & Buehn, 2009). Trust is measured by the WVS items assessing confidence in the government. Power is measured by the Kaufmann indicator for law enforcement that includes items assessing different aspects of the quality of enforcement measures taken by the state (Kaufmann, Kraay & Mastruzzi, 2004). A very rich cross-cultural data set has been collected in a large-scale study including data from 44 nations across five continents. The data show that while corruption indices and happiness scores differ significantly across countries, the effects of trust and power on compliance intentions are quite stable (Batrancea et al, in preparation; Olsen, Kogler, Kirchler, Batrancea & Nichita, in preparation).

In other survey studies researchers develop their own scales to assess perceptions of trust and power across different countries and combine these items with questions from the TAX-I to assess voluntary and enforced compliance intentions (e.g. Muehlbacher, Kirchler & Schwarzenberger, 2011). Survey studies investigating the assumptions of the SSF are summarized in Table 2.

In contrast to most experimental studies that are conducted in the laboratory, for survey studies it is much easier to recruit participants from the population of real taxpayers. Most experimental studies use student samples, due to availability. Some critics argue that students are not representative for the working population because they are younger, more educated and have little or no personal experience with paying taxes (Levitt & List, 2007). However, studies that compare results from experimental settings with student samples and results observed from real taxpayers find little differences (Alm, Bloomquist & Mckee, 2015).

Table 5.2 Survey studies investigating the assumptions of the SSF

Study	Sample	Independent variables	Other variables assessed	Dependent variable	Main effect of trust	Main effect of power	Main finding
(Fischer & Schneider, 2009)	N=83,000 From 73 different countries Data from the WVS	Trust: Individual's confidence in national government and national parliament	GDP, religion, region, education, age, trust in others, income, and marital status	Tax morale	+	+	Support for SSF Power and trust aggravate each other.
		Power: Government effectiveness, rule of law index					
(Benk, Cakmak & Budak, 2011)	N=300 Self-employed taxpayers Turkey	Trust Power		Voluntary compliance Enforced compliance	+	0	Confirms the main assumptions of the SSF.
(Ruiu & Lisi, 2011)	N=46 Countries	Trust Power (proxy, i.e. law enforcement)	Tax morale, GDP per capita, religion, risk aversion, education level, employment status	Size of hidden economy	-	+	Support for SSF.
(Muehlbacher et al, 2011)	N=3,017 Taxpayers Austria, UK, and Czech Republic	Trust Power		Voluntary compliance Enforced compliance	+	-	Voluntary compliance depends on trust in authorities, enforced compliance

Study	Sample	Independent variables	Other variables assessed	Dependent variable	Main effect of Trust	Main effect of Power	Main finding
							on power attributed to tax authorities. Results show a positive interaction between trust and power.
(Lisi, 2012)	WVS data	Proxies for trust and power	GDP, tax morale	Size of hidden economy	-	-	Support for SSF.
(Gangl et al, 2013)	N=807 Private taxpayers N=1,377 Entrepreneurs Netherlands	Trust	Perceived service orientation, perceived audit probability, perceived severity of fines, personal norms, social norms, and societal norms	Tax compliance intentions	+		Perceived service orientation has a positive influence on tax compliance intentions, which is mediated by trustworthiness of authorities.
(Kastlunger, Lozza, Kirchler & Schabmann, 2013)	N=389 Self-employed taxpayers Italy	Trust Power: Coercive and legitimate		Voluntary compliance Enforced compliance	+	CP:- LP:+ CP:+ LP:+	Trust is positively related to voluntary compliance. Trust is positively related to legitimate power and voluntary compli-

Study	Sample	Independent variables	Other variables assessed	Dependent variable	Main effect of Trust	Main effect of Power	Main finding
(Lozza, Kastlunger, Tagliabue & Kirchler, 2013)	N=272 Self-employed taxpayers Italy	Trust Power: Coercive and legitimate	Political preference	Voluntary compliance	+	CP: +	Left-wing taxpayers express higher voluntary compliance and express higher reactance to coercive power. Right-wing taxpayers express higher enforced compliance and are averse to trust.
				Enforced compliance	+	LP: +	
(Niesiobędzka, 2014)	N=485 Taxpayers Poland	Institutional trust (in government, parliament, public administration, and tax administration)	Procedural fairness, tax scale, personal tax morale scale	Tax evasion	-		Procedural fairness affects trust and tax morale. Trust has a negative influence on tax evasion.
(Ali & Ahmad, 2014)	N=500 Young taxpayers	Trust (in tax system, in tax authority)	Tax knowledge	Tax return intentions	+		Trust in tax authority has a positive influence on tax evasion.

Study	Sample	Independent variables	Other variables assessed	Dependent variable	Main effect of Trust	Main effect of Power	Main finding
	Malaysia						ence on the tax return intention.
(Hauptman, Gürarda & Korez-Vide, 2015)	N=332 Taxpayers Slovenia	Trust	Social norms	Voluntary compliance	0		No consistent effects of trust on voluntary compliance were found.
(Mas'ud, Manaf & Saad, 2015)	N=37 Sub-Saharan countries	Trust (Corruption perception index) Power (rule of law)		Tax compliance	0	0	There is an association between trust, power and tax compliance, but there is no causing effect in Sub-Saharan countries.
(Kasper, Kogler & Kirchler, 2015)	N=487 Employees Austria	Trust Power		Intended tax compliance	+	+	Evidence of a link between trust, power, and tax compliance intentions in a real-world setting.
(Gobena & Van Dijke, 2016)	N=231 Business owners Ethiopia	Trust: Cognition-based and affect-based	Procedural justice, identification with the nation	Voluntary compliance Enforced compliance	CBT: + CP: +		Procedural justice associated with voluntary compliance when LP is low and

Study	Sample	Independent variables	Other variables assessed	Dependent variable	Main effect of Trust	Main effect of Power	Main finding
							CP is high. The positive effect of procedural justice on voluntary compliance is mediated by cognition-based trust (CBT). The effect of CBT on voluntary compliance is moderated by LP. CP predicts enforced compliance.
		Power: Coercive and legitimate					
(Pukellené & Kažemekaitytė, 2016)	N=28 EU countries	Trust (government effectiveness) Power (role of law)	Economic development, VAT gap	Tax compliance (% of GDP)	+	+/-	The effect of different determinants varies greatly across countries. SSF determinants were found to have a significant impact on tax compliance.

Study	Sample	Independent variables	Other variables assessed	Dependent variable	Main effect of Trust	Main effect of Power	Main finding
(Gobena & Van Dijke, 2017)	N=217 Taxpayers Ethiopia	Trust	Procedural justice Identification with nation	Voluntary compliance Enforced compliance	0 0		In a developing country, like Ethiopia, trust does not affect voluntary tax compliance.
	N=200 Taxpayers U.S.	Trust	Procedural justice, identification with nation	Voluntary compliance Enforced compliance	+	-	In a developed country, like the US, trust affects voluntary and enforced tax compliance.
	N=25 European countries Data from the WVS	Trust Power	GDP, unemployment, VAT full rate, and financial resources of tax administration	Tax compliance	+	+	Confirms the SSF on an aggregate level. Trust and power moderate each other, the lower trust, the greater is the positive influence of power on compliance.

Note: The symbols + and – signify positive or negative effects that are significant on a 5% level of significance. Non-significant effects are indicated with 0.

Note: The symbols + and – signify positive or negative effects that are significant on a 5% level of significance. Non-significant effects are indicated with 0.

Field studies are becoming more and more popular, especially in countries where the tax authorities actively seek cooperation with researchers as it is the case for example in some Scandinavian countries (Torgler, 2016). The advantage of field experiments is their high external validity. By collecting data from an experimental and a control group in a realistic setting, policy makers can directly evaluate the effectiveness of the employed measures. In a field experiment in Switzerland, Torgler (2013) sent out different kinds of letters in cooperation with the tax authorities to taxpayers in order to investigate the effects of moral suasion on compliance rates. Another field experiment conducted in Austria investigated the effect of early audits for newly founded firms (Gangl, Torgler, Kirchler & Hofmann, 2014). However, testing the assumptions of the SSF in a field experiment has not been attempted yet. It seems not feasible to manipulate the factors power of the tax authorities or trust in the authorities in a real-world setting and to randomly assign participants to one of the conditions. The assumptions about the effects of this kind of manipulation are too strong and the required changes in the administration too big to morally justify such an experiment. Therefore, field experiments have not yet been employed to verify the assumptions of the SSF.

A further method to investigate tax compliance decisions are simulation studies, generally conducted by economists (Hashimzade, Myles, Page & Rablen, 2014). Based on formalized models of the taxation environment (e.g. Prinz, Muehlbacher & Kirchler, 2014), the influence of certain factors is assessed by mathematically simulating the outcomes in accordance to change of single variables. Because in this review the focus lies on empirical results, we do not further elaborate on these kinds of studies.

5.4 CONCLUSION FROM THE EMPIRICAL EVIDENCE

The assumptions of the SSF have been tested in a large range of studies with different methods and across a wide range of cultures across the world. Generally, the results presented above are in line with the predictions of the framework. Compliance rates are highest in situations with high power and trust. Societies that trust their tax authorities exhibit greater levels of voluntary compliance than those who rely on coercive measures. However, the results become more complicated when it comes to the interaction of trust and power.

Many studies have focussed on the effects of enforcement measures such as audits and fines. The standard economic approach to tax compliance behaviour assumes that enforcement is the most effective way to promote compliance, as it makes non-compliance unattractive. However, policy makers are interested to

learn more about the size of the impact that can be expected from frequent audits and sanctions, because these measures are very costly.

Furthermore, regarding the effects of power, research has revealed a double-edged character of coercion (Gangl, Hofmann, Hartl & Kirchler, 2015). Audits, for instance, can have backfiring effects when adopted too often (Mendoza, Wielhouwer & Kirchler, 2015). The authors argue that frequent audits might impair levels of voluntary compliance. A study conducted with real taxpayer data from the IRS in the US comes to similar results. While audits have a positive long-term impact on compliance for those who have been caught cheating, the group of taxpayers who has been audited but found to be compliant decreases their tax payments in subsequent years (Beer, Kasper, Kirchler & Erard, 2015). One explanation could be that the experience of coercion through the tax audit undermines their willingness to cooperate with the tax authorities. Mooijman and colleagues also come to this conclusion in their study on the effects of justifications of sanctions (Mooijman, van Dijk, van Dijk & Ellemers, 2016). They argue that the feeling of being distrusted by the authorities erodes the willingness to cooperate voluntarily.

On the other hand, the exertion of power can also enhance the feeling of trust in the authorities when taxpayers feel protected from free riders and perceive the authorities as competent. This double-edged nature of coercive power can be explained by the moderating influence of trust or perceived legitimacy of the authority. A study with self-employed taxpayers from Austria showed that there are inter-individual differences in how taxpayers perceive coercive power wielded by the authorities. For one group of individuals that perceive enforcement actions as legitimate, compliance is influenced positively. However, for another group of taxpayers, who perceive the enforcement measures as illegitimate, trust is undermined and voluntary compliance decreases (Gangl, Hofmann, Hartl, et al, 2015). These results suggest that perceived legitimacy or trust in the authorities moderates the effectiveness of coercive power. This paper also demonstrates the circumstance that subjective interpretations of actions taken by authorities are far more important than the objective strategy.

The moderating role of trust for the effectiveness of power in promoting cooperation could also be shown in a meta-analysis that includes data from 18 different societies (Balliet & Van Lange, 2013). In high-trust societies, non-cooperation is perceived as a violation of a social norm and punishment is accepted. In low-trust societies, punishment for non-cooperation might be perceived negatively, inducing anger and promoting retaliation. Also, in the context of procedural fairness, trust has been shown to be a necessary precondition for the development of voluntary cooperation (van Dijke & Verboon, 2010).

From these results we can conclude that coercive power must be wielded with caution in order to be perceived as legitimate by the taxpayers and be supported by trust as opposed to undermining trust and therefore voluntary compliance. The Australian Tax Office Model (Braithwaite, 2003) suggests that enforcement meas-

ures should be targeted at high-risk taxpayer groups, whereas the majority of taxpayers that is assumed to be committed to the tax law should be supported by services to make compliance easy. When coercive measures are applied randomly with a watering can, honest taxpayers feel treated like criminals and voluntary cooperation is easily crowded out. However, when taxpayers believe that audits and fines are targeted at those who intentionally break the rules, they are more likely to feel safeguarded from free riders, and accept enforcement as a strategy to uphold social norms.

Throughout the discussion of the interaction effects between trust and power, it becomes clear that the concepts of trust and legitimate power are highly related to each other. The formulation of the extension of the SSF gives the impression that legitimate power and trust lie on two different dimensions. However, when we look at the definitions of trust and legitimacy, we see that it is difficult to sharply separate these two concepts. Legitimacy is defined as originating from two sources. The instrumental sources of legitimacy comprise outcome favourability and control, whereas relational sources of legitimacy comprise neutrality, trustworthiness and status recognition (Tyler, 1997). Tyler concludes that how one is treated by the authorities, the relational aspect of legitimacy, is more important than the instrumental aspects. According to Murphy (2004) trust in authorities depends on perceptions of procedural fairness, such as neutrality, respect, consultation and outcome favourability. Fair procedures seem to be an important precondition for both trust in the authorities and their perceived legitimacy. Procedures are perceived to be fair when citizens have an opportunity for voice and participation, when they are neutral and transparent, rules are applied consistently, rights are respected and citizens are treated with dignity and respect, and authorities are believed to follow trustworthy and benevolent motives (Tyler & De Cremer, 2005). Furthermore, the terms coercive and legitimate power suggest, that both are located on the power dimension and are independent from the trust dimension. Therefore, the conclusion that we can combine both forms of power with high- or low-trust conditions lies near. However, from the definition of legitimate, we see that legitimate power is not compatible with a low-trust environment and vice versa. It should be noted that trust and legitimate power are closely intertwined. Locating legitimate power on a different dimension from trust seems misleading.

The extension of the SSF predicts that in an environment of high-trust and legitimate power, coercive power will be unnecessary (Hofmann et al, 2014). However, the results from a survey study with self-employed taxpayers in Austria suggest that participants are not willing to trust an authority that wields no coercive power (Gangl, Hofmann, Hartl, et al, 2015), contradicting their theory. The results indicate that some form of power is needed in order for the authorities to be trusted. This finding is not surprising, since authorities without the means to enforce laws will be likely perceived as incompetent and not trustworthy. The assumption that coercive power is less effective or not relevant in the condition of high trust (Gangl,

Hofmann, Hartl, et al, 2015), does not hold because the two dimensions interact dynamically and reinforce each other (Balliet & Van Lange, 2013).

The authors further argue that coercive power can erode trust when it is applied without competence, whereas it can strengthen trust when it is used competently and in a targeted manner only against evaders. The distinction of these two cases are very similar to the definition of legitimacy. In other words, power when not legitimized, namely applied incompetently erodes trust, whereas power that is legitimately applied enhances trust.

5.4.1 *Future Research*

In the extension of the SSF reason-based and implicit trust are distinguished (Hofmann et al, 2014). This distinction aims at capturing the underlying psychological processes that lead to certain compliance behaviours. Implicit trust, for instance is described as being affect-based and unconsciously influenced by former experiences. Further investigating the underlying psychological processes seems to be a promising approach to better understand individual tax compliance decisions. Evidence from research on the influence of procedural justice perceptions on compliance behaviour suggests that these processes are mediated by emotional responses to actions taken by authorities (Barkworth & Murphy, 2015; Murphy & Tyler, 2008). Some experimental studies have started to investigate the role of emotions in cooperation decisions (Coricelli, Rusconi & Villeval, 2014; Drouvelis & Grosskopf, 2016). However, this stream of research is still in its beginning and the influence of specific emotions on compliance decisions is yet to be investigated. Preliminary results from a study combining qualitative and quantitative methods with a representative sample of Austrian taxpayers indicate that specific emotional responses to interactions with the tax authorities play an important role in determining subsequent compliance decisions (Enachescu et al., in preparation).

The discussion of the interaction between trust and power indicates that especially coercive power can work in two directions. These effects might be supported by emotional responses. Strong coercive measures that are perceived as not transparent might induce fear or anger. On the other hand, taxpayers might feel safe and satisfied when perceived retributive fairness is high.

Another research gap that should be empirically addressed concerns the application of the framework in related fields. While the SSF was originally formulated based on findings concerning individual taxpayers and their interaction with the tax authorities, the question in how far these insights also apply to corporate taxpayers seems highly relevant regarding currently ongoing debates on international taxation, aggressive tax planning, and tax heavens. While the transfer of findings from the individual taxpayer to corporations still needs to be investigated, the OECD already refers to the socio-psychological findings presented above in their report on cooperative compliance strategies that mainly aim at fostering corporate

tax compliance (OECD, 2013). Successful implementations of such cooperative compliance strategies that rely on mutual trust and transparency, suggest that the extension to corporate actors might be a promising path.

5.5 PRACTICAL IMPLICATIONS

The results from the research presented above demonstrate that enforcement alone does not suffice to promote and maintain high tax compliance levels. Research has shown that legitimacy and trust-building strategies are necessary in order to profit from the positive effects of coercion. Coercive power is a sensitive strategy as it can backfire and erode trust when unwisely applied. On the other hand, it can also enhance the trust in the authorities when applied with care, because taxpayers feel safeguarded against free riders and supports social norms.

As mentioned above, the OECD has acknowledged these findings and gives recommendations for policy makers that are summed up under the concept of cooperative compliance (OECD, 2013). In their report on cooperative compliance, the Forum on Tax Administration highlights the importance of increasing voluntary compliance in times of increased aggressive tax planning and global challenges, such as tax flight. Various cooperative compliance models are presented, such as the Horizontal Monitoring project in the Netherlands and in Austria, or the Compliance Assurance Process in the US to name just a few examples. These programmes have the aim in common to increase trust in the tax authorities and build a service climate in order to promote voluntary compliance. However, public perceptions of enforcement capacities of the tax authorities should not be underestimated. An evaluation of the first experiences with Horizontal Monitoring in Austria showed that caution is required. If the concept of Horizontal Monitoring and the goals of Horizontal Monitoring are not properly explained and understood by citizens, then the focus on cooperation and mutual trust-building strategies could be misperceived. Rather than interpreting Horizontal Monitoring as a paradigm that switches from command and control to mutual cooperation, mal-informed citizens might think of an invitation to corruption and sweet deals between taxpayers and tax authorities. This representation of Horizontal Monitoring would eventually erode trust in the tax authorities (BMF, 2016). Hence, a balanced application of enforcement measures signalling protection from exploitative free riders, and the building of trustful mutual relationships, promoted by the provision of services and respectful fair interaction, are of paramount importance.

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Emotions and tax compliance among small business owners: An experimental survey

Jerome Olsen^{a,*}, Matthias Kasper^a, Janina Enachescu^a, Serkan Benk^b, Tamer Budak^c,
Erich Kirchler^a

^a University of Vienna, Faculty of Psychology, Department of Applied Psychology: Work, Education and Economy, Universitaetsstrasse 7, 1010, Vienna, Austria

^b Inonu University, Faculty of Economics and Administrative Sciences, 44280, Malatya, Turkey

^c Inonu University, Faculty of Law, 44280, Malatya, Turkey



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ABSTRACT

Tax authorities' power to enforce compliance as well as taxpayers' trust in the tax agency shape taxpayers' compliance behavior. But while financial decisions often trigger strong emotional responses, little is known about the relation between taxpayers' emotions and their compliance choices. We hypothesize that emotions mediate the relationship between the perception of tax authorities and intended tax compliance. In a scenario-based experiment with 411 self-employed Turkish taxpayers, we find that highlighting authorities' enforcement capacity (i.e. high power) induces negative emotions while elevating enforced compliance and the readiness to evade. Trust, on the other hand, reduces negative emotions and raises positive feelings, which are associated with intentions to comply voluntarily. Moreover, a combination of high power and high trust reduces negative feelings and increases intentions to comply while undermining the readiness to evade. Our findings suggest that emotions matter in shaping compliance. Specifically, enforcement efforts that induce negative emotions might have negative compliance implications.

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1. Introduction

Tax policies are usually discussed controversially in the media (e.g. Kasper et al., 2015) and often provoke emotional responses in taxpayers. But despite a comprehensive body of research on tax compliance behavior (e.g., Kirchler, 2007) and the link between financial decisions and emotions (Pessiglione et al., 2007), little is known about the role of emotions in tax compliance decisions. This paper investigates the effects of tax authorities' behavior on self-employed taxpayers' emotions. Moreover, we analyze whether emotions mediate the effect of tax authorities' actions on intended compliance behavior.

A broad range of disciplines explore the determinants of taxpayer behavior. Early research defines tax compliance as a decision under uncertainty which is determined by audit probabilities, fines for non-compliance, tax rates, and income levels (Allingham and Sandmo, 1972). Particularly self-employed taxpayers have opportunities to cheat and are prone to do so (Kleven et al., 2011).

However, as compliance levels are often higher than theoretically predicted (Alm et al., 1992), more recent research emphasizes the importance of psychological determinants of compliance behavior (e.g. Kirchler, 2007; Mittone, 2006).

Findings from economic and psychological perspectives have been integrated into the "slippery slope framework" of tax compliance (SSF) (Kirchler et al., 2008), which postulates that tax compliance can either be achieved through exercising power (coercion) or result from a trustworthy relationship between tax authorities and taxpayers. But while a substantial body of literature confirms the main assumptions of the SSF (e.g. Kogler et al., 2013; Kasper et al., 2015; Kogler et al., 2015), research on tax compliance behavior has not yet considered the emotional implications of power and trust, which likely affect motivations to comply. Yet, understanding the emotional processes that underlie tax compliance behavior is crucial in order to develop strategies that strengthen voluntary compliance. Deterrence measures, for instance, might undermine compliance if taxpayers perceive enforcement as arbitrary or unjustified (Mendoza et al., 2017; Beer et al., 2015). Investigating taxpayers' emotional responses to tax authorities' behavior thus adds to the understanding of the dynamics between trust, power, and tax compliance. This is particularly

* Corresponding author.

E-mail address: jerome.olsen@univie.ac.at (J. Olsen).

relevant in the context of emerging economies such as Turkey where compliance levels are rather low (Riahi-Belkaoui, 2004) and small businesses account for a large share of the economy (OECD, 2004). Gaining a better understanding of the role of emotions in compliance behavior might thus facilitate the development of more efficient administrative strategies. Against this background, this paper aims to provide initial indication of the role of emotions in tax compliance behavior.

This paper proceeds as follows. The next sections discuss how motives (1.1) and emotions (1.2) affect tax compliance behavior and develops our hypotheses (1.3). Section 2 describes our method and empirical strategy. The third section presents our results. The fourth section discusses our findings and concludes.

1.1. Motives and tax compliance

Braithwaite (2003) established that different motivational postures drive tax compliance behavior. For instance, taxpayers comply because they fear punishment for non-compliance, or because they feel committed to society (James and Alley, 2002). Building on these insights, Kirchler (2007) developed the SSF and introduced *power* and *trust* as determinants of tax compliance (Kirchler et al., 2008). Deterrence measures such as audits and fines for non-compliance indicate a state's power and lead to enforced compliance. Socio-psychological factors, for instance fairness perceptions, social norms, attitudes towards taxes, and services provided by the authorities build trust and stimulate voluntary compliance. The SSF predicts high levels of tax compliance when trust and power are high. Conversely, when trust and power are low, compliance levels are low.

More recent work on the SSF used questionnaire techniques to investigate different facets of intended tax compliance. For instance, Kogler et al. (2013) used Likert-type survey questions to analyze the effects of trust and power on intended tax compliance, i.e., taxpayers' general willingness to pay taxes honestly. Wahl, Kastlunger, and Kirchler (2010) used questions on commitment and resistance to investigate the effects of trust and power on voluntary and enforced compliance, while other studies employed fictitious scenarios that describe specific opportunities to evade in order to assess intended tax evasion (Kirchler and Wahl, 2010). In line with prior work on the SSF, our study investigates (1) intended tax compliance, (2) voluntary tax compliance, (3) enforced tax compliance, and (4) intended tax evasion.

A growing body of evidence supports the assumptions of the SSF (e.g. Kirchler et al., 2008; Kogler et al., 2013; Kasper et al., 2015) and empirical studies suggest that compliance rates are highest when tax authorities are considered powerful and trustworthy (Kirchler et al., 2014). However, there is initial indication that enforcement activity might backfire (Mendoza et al., 2017) and crowd-out voluntary compliance (see Lederman (2018) for an overview). For instance, self-employed US taxpayers have been found to reduce their reporting compliance in response to tax audits that do not result in an additional tax assessment (Beer et al., 2015). While the drivers of these results remain unclear, emotional responses to coercive enforcement activity might contribute to unintended behavioral responses to tax audits.

1.2. Emotions and compliance behavior

One fundamental difficulty in studying emotions lies in the ambiguity of their definition. Emotions comprise behavioral, physiological, and expressive reactions, subjective experiences, and a cognitive, information processing component (Scherer, 2005). In order to differentiate emotions from other affect-related concepts, such as mood, we follow Scherer's approach by characterizing emotions as event focused and appraisal driven.

Over the past ten to fifteen years, the role of emotions in decision-making has been discussed increasingly among economists and psychologists (e.g., Lerner et al., 2015; Ekman, 2016; Volz and Hertwig, 2016). Emotions seem not only to be byproduct, but also drivers of decision processes (Summers and Duxbury, 2012) and several studies investigate the effects of emotions on decision-making and subsequent behavior (Zeelenberg and Pieters, 2006; Drouvelis and Grosskopf, 2016). Consequently, emotions have been found to affect the formation of political opinions (Petersen et al., 2012).

A growing body of research highlights the importance of emotions in compliance decisions (Hopfensitz and Reuben, 2009; Khadjavi, 2015). Emotional responses to sanctions seem to affect whether enforcement has positive or negative compliance implications (Sherman, 1993; Braithwaite, 1989). While emotional responses to perceptions of procedural justice appear to have positive effects on compliance (Barkworth and Murphy, 2015), feeling powerless or treated unfairly induces negative emotions and seems to stimulate criminal behavior (Agnew, 1992, 2001). Likewise, feelings of stigmatization and anger might induce desire for retaliation (Hopfensitz and Reuben, 2009) and thus promote future non-compliance (Barkworth and Murphy, 2015). On the other hand, feeling ashamed of one's wrongdoing might enhance the propensity of future compliance. Hopfensitz and Reuben (2009) show that guilt increases the effectiveness of deterrence measures and recent work finds that public shaming indeed elevates the willingness to comply with tax law (Alm et al., 2016; Coricelli et al., 2014).

Taken together, evidence on the relation between emotions and tax compliance is scarce and inconclusive. Initial work found that emotional arousal is associated with lower (Coricelli et al., 2010), but also with higher levels of tax compliance (Dulleck et al., 2016). But in order to gain a better understanding of the behavioral implications of emotions, it is critical to investigate not only arousal, but also valence of emotions (Russell, 2003). Against this background, this paper examines how emotional responses to tax authorities' actions affect the willingness to comply.

1.3. Hypotheses

In line with the assumptions of the SSF (Kirchler, 2007; Kirchler et al., 2008), we hypothesize that power and trust affect tax compliance. More specifically, we expect that both factors increase participants' general attitude towards complying with the law (intended tax compliance, see Kogler et al., 2013) while reducing the readiness to break the law in order to save on taxes (intended tax evasion, see Kirchler and Wahl, 2010). We further hypothesize that power induces enforced compliance, while trust elevates voluntary compliance (Kogler et al., 2013).

Moreover, we assume that emotions mediate the positive effects of trust and power on intended tax compliance. We expect that trust increases and power decreases positive emotions. Furthermore, and in line with prior findings (Balliet and Van Lange, 2013), we hypothesize that emotional responses to power are conditional on trust. We expect a significant positive interaction effect of trust and power on positive emotions. In turn, we expect positive emotions to translate into higher levels of intended tax compliance and lower levels of intended tax evasion.

We anticipate opposite effects for negative emotions. That is, we expect a negative effect of trust and a positive effect of power on negative emotions. Further, we assume a negative interaction effect of trust and power on negative emotions. Finally, we expect that negative emotions are related to lower levels of intended tax compliance and higher levels of intended evasion.

Because prior research on the role of emotions in tax compliance behavior is sparse, we refrain from a priori predictions on the effects of specific emotions on intentions to comply and focus on

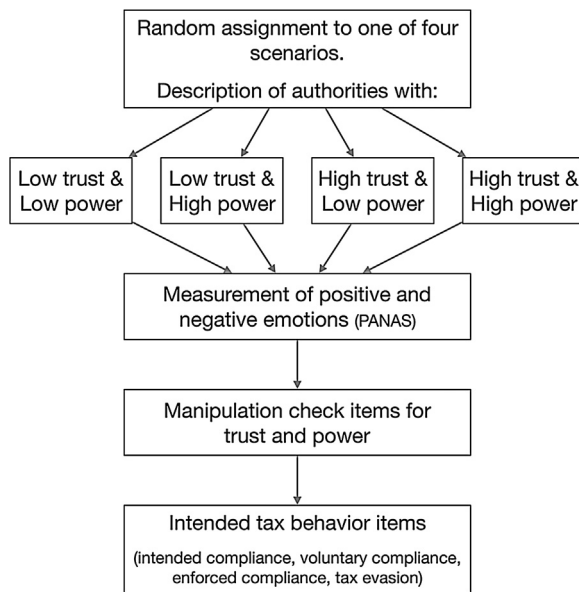


Fig. 1. Flowchart of the experimental-scenario procedure.

the role of the general affective state in terms of positive and negative emotions.¹ The exploratory analysis of specific emotions in the end of this paper provides first insights into relations between trust, power, and specific emotions.

2. Method

2.1. Procedure and participants

In order to investigate the role of emotions in tax compliance behavior, we conducted a scenario-based experiment with self-employed taxpayers in Malatya, Turkey. Scenario studies are widely used in business ethics research (Doyle et al., 2009), as they allow assessing complex research questions in real-world environments (Cavanagh and Fritzsche, 1985). Following Kogler et al. (2013) and Wahl et al. (2010), we used scenarios that described the tax system of a fictitious country named Varosia (see Appendix A for the complete scenario in Supplementary material). We experimentally manipulated the trustworthiness (low vs. high) and power (low vs. high) of Varosia's tax authorities, which resulted in a 2×2 between-subject design. Participants were randomly assigned to one of the following conditions: (1) *low trust and low power*, (2) *low trust and high power*, (3) *high trust and low power*, and (4) *high trust and high power*. Our materials are described in Section 2.2. After reading the scenario participants completed a survey on emotions and intentions to comply. The experimental procedure is depicted in Fig. 1.

A total of 600 paper-pencil surveys were randomly distributed by researchers of Inonu University among small-business owners in the city of Malatya. 468 surveys were completed and recollected (78% response rate). On average, it took about 20 min to complete the survey. Data collection took place between January 16th and March 18th 2015.

¹ In experimental settings, specific emotions are usually induced by exposing participants to emotional stimuli such as video clips (Andrade and Ariely, 2009; Drouvelis and Grosskopf, 2016). In our case, however, we do not directly manipulate specific emotions, but investigate the effect of described tax system characteristics on emotions. Previous work on the role of emotions focused on crime and deterrence rather than tax compliance (Hopfensitz and Reuben, 2009; Khadjavi, 2015; Thiel et al., 2011).

Table 1
Emotions by factor.

Factor	Emotion
Positive emotions	Active
	Alert
	Attentive
	Determined
	Enthusiastic
	Excited
	Inspired
	Interested
	Proud
	Strong
Negative emotions	Afraid
	Ashamed
	Distressed
	Guilty
	Hostile
	Irritable
	Jittery
	Nervous
	Scared
	Upset

Our sample comprised mainly owners of micro businesses such as groceries, restaurants, barber shops, and real estate agencies. The vast majority of participants worked in the trade (61.5%) and service (38.3%) sectors. We excluded employed taxpayers and participants who provided incomplete questionnaires from further analyses, so that the final sample comprised 411 self-employed participants (86.8% male²) with a mean age of 41.56 years ($SD = 8.80$). The number of observations per condition ranges from 102 to 104 and the distribution of gender and age did not differ between treatments. Participation was voluntary and not incentivized.

2.2. Materials

The study was conducted in Turkish. In the *high trust* scenarios, Varosia was described as a politically stable state with trustworthiness, supportive tax authorities and transparent legislation. The *low trust* conditions outlined a state with little political stability, an inefficient and intransparent tax system, and unsupportive authorities. Similarly, in the *high power* scenarios the enforcement capacity of Varosia's authorities and the severity of fines for non-compliance were highlighted, while the *low power* treatments described a state with little enforcement capacity and inefficient instruments to deter taxpayers from non-compliant behavior. After reading the scenario, participants were asked to imagine living, working and paying taxes in Varosia as self-employed business owners and to answer a questionnaire that comprised items on experienced emotions, manipulation checks for trust and power, and intended compliance behavior. All survey items are in the appendix (Supplementary material).

Emotions were assessed with the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988). Table 1 provides an overview of the emotions we assessed. Participants had to indicate their experience of 20 emotions when thinking about the fictitious country Varosia on a scale from 1 (*very slightly or not at all*) to 9 (*extremely*). The PANAS differentiates between ten positive and ten negative emotions (Watson et al., 1988). Both scales showed to be highly reliable with $\alpha = 0.83$ for positive, and $\alpha = 0.86$ for negative emotions. The correlation between the two measures was small but significant with $r = -0.17, p < .001$.

² In Turkey, 70.8% of males and 29.4% of women participate in the labor force (United Nations Development Programme, 2013). Against this background, men are not substantially over-represented in our sample.

Table 2

Means and standard deviations in parentheses of key variables by condition.

Dependent variables	Trust scale	Power scale	Positive Emotions	Negative Emotions	Intended Compliance	Voluntary Compliance	Enforced Compliance	Tax Evasion
Low trust & Low power	2.03(1.44)	2.14(1.55)	2.56(1.23)	3.23(1.47)	4.20(1.85)	3.10(1.90)	2.10(1.47)	4.36(2.15)
Low trust & High power	1.80(1.49)	7.94(1.51)	2.89(1.12)	4.00(1.67)	4.75(2.02)	3.69(1.53)	6.16(1.57)	5.08(2.14)
High trust & Low power	7.73(1.16)	2.40(2.23)	2.96(1.11)	2.88(1.00)	5.62(1.64)	4.67(1.59)	3.32(1.88)	3.76(1.94)
High trust & High power	8.35(0.97)	8.19(1.23)	3.58(1.19)	2.65(1.41)	7.92(0.93)	6.26(1.60)	6.32(1.50)	3.20(1.75)

Note: N = 411. Columns 4 through 9 are further illustrated in Fig. 3.

The manipulation check scales for trust (e.g., “The governmental authorities in Varosia act fair towards their citizens”) and power (e.g., “The governmental institutions in Varosia are very effective in the suppression of tax criminality”) comprised three items each. Both scales were highly reliable ($\alpha_{\text{Trust}} = 0.95$; $\alpha_{\text{Power}} = 0.93$).

The third set of questions assessed intended compliance behavior and was adapted from Kogler et al. (2013) and Kirchler and Wahl (2010). The intended compliance scale consisted of three items on individuals' general propensity to be compliant on their tax return (e.g., “How likely would you pay your tax completely honest?”; $\alpha = 0.82$). The voluntary compliance scale comprised five items (e.g., “When I pay my taxes in Varosia as required by the regulations, I do so because I regard it as my duty as citizen”; $\alpha = 0.92$), as did the enforced compliance scale (e.g., “When I pay my taxes in Varosia as required by the regulations, I do so because the tax office often carries out audits”; $\alpha = 0.94$). In contrast, the readiness to evade was assessed with five short scenarios of situations that allow non-compliant behavior (e.g., “A customer paid in cash and did not require an invoice. You could intentionally omit this income on your tax return. How likely is it that you would omit this income”; $\alpha = 0.89$). While intended tax compliance, i.e., the general tendency to comply, was assessed via Likert-type questions, fictitious scenarios were used to assess the propensity to evade in specific situations. The questionnaire concluded with a section on socio-demographic information. Descriptive statistics are displayed in Table 2.

3. Results

First, we report descriptive statistics. Second, we provide results of the manipulation checks. Third, we analyze whether positive and negative emotions mediate the effects of trust and power on compliance intentions. This section comprises four regression models, one for each dependent variable. Fourth, we explore how the experimental treatment affected specific emotions.

3.1. Descriptive statistics

Table 2 provides an overview of the key variables by condition. The first two columns depict the mean scores of the three manipulation check items and indicate a successful manipulation. The following two columns comprise the mean positive and negative emotion scores. Positive emotions were highest in the high trust and high power condition, while negative emotions were highest in the low trust and high power condition. The next three columns depict the three types of intended tax compliance. Compliance was lowest in the low trust and low power condition. In contrast, highest compliance rates were found in the high trust and high power condition. Finally, the last column presents mean tax evasion, which was highest in the low trust and high power condition.

3.2. Manipulation check

To check whether the manipulation of trust and power was successful, we calculated two multiple regression models with

trust, power, and their interaction as independent variables and the scores of the manipulation check scales for perceived trust and power as dependent variables.

With regard to indicated trust, the regression model explained 85%, $F(3, 406) = 780.81$, $p < .001$, of the variance in our data (untabulated). Trust had the strongest effect with $B = 5.70$, $p < .001$, while power, $B = -0.23$, $p = .197$, was not significant. The interaction of trust and power, $B = 0.85$, $p < .001$, showed a significant positive effect, indicating that power increased perceived trust in the case of trustworthy authorities. The regression model of perceived power explained 75% of total variance, $F(3, 407) = 415.12$, $p < .001$. The effect of power was significant with $B = 5.80$, $p < .001$. Neither trust, $B = 0.26$, $p = .262$, nor the interaction between trust and power were significant, $B = -0.01$, $p = .965$. Overall, the manipulation of trust in authorities and power of authorities was successful.

3.3. Mediation analyses

3.3.1. Direct and indirect effects on compliance

Following Hayes (2013), we first estimated the direct effects of trust, power, and emotions on the four compliance measures. Subsequently, we investigated the indirect effects of trust and power on compliance through positive and negative emotions. Fig. 2 summarizes our mediation model which is tested separately for each of the dependent variables.

We used ordinary least square regressions to calculate a mediation model for each compliance measure (Hayes, 2013). The notation in the text corresponds to the labels in Fig. 2. In a first step, we analyzed the direct effects of trust, power, and their interaction (X_i) as well as the proposed mediators (M_k) on the compliance measures (Y_j) (Eq. (1)). Direct effects (c'_{ij}) indicate the influence of an independent variable on the dependent variable with the proposed mediators (M_k) held constant.

$$Y_j = I_{Y_j} + c'_{1,j}X_1 + c'_{2,j}X_2 + c'_{3,j}X_3 + b_{1,j}M_1 + b_{2,j}M_2 + e_{Y_j} \quad (1)$$

Subsequently, we estimate the relationship between an independent variable (X_i) and a mediator (M_k), labeled $a_{i,k}$ (see Eq. (2)). Eq. (1) reveals that $b_{k,j}$ captures the association between a mediator (M_k) and a dependent variable (Y_j). The product of $a_{i,k}$ and $b_{k,j}$ ($a_{i,k}b_{k,j}$) is used to estimate the indirect effects of X_i on Y_j through M_k (Hayes, 2013).

$$M_k = I_{M_k} + a_{1,k}X_1 + a_{2,k}X_2 + a_{3,k}X_3 + e_{M_k} \quad (2)$$

We use bias-corrected bootstrap confidence intervals of 10,000 bootstrap samples to identify indirect effects (i.e., for $a_{i,k}b_{k,j}$). A mediator is regarded as significant if the 95% confidence interval of the effect does not include zero (Table 5). Finally, we report total effects of X_i on Y_j , denoted as $c_{i,j}$ (untabulated). Total effects result from the sum of direct and indirect effects, thus the overall effect of a variable X_i on the response variable Y_j (Eq. (3)).

$$Y_j = I_{Y_j} + c_{1,j}X_1 + c_{2,j}X_2 + c_{3,j}X_3 + e_{Y_j} \quad (3)$$

In order to interpret indirect effects not only based on statistical significance, but also based on practical effect size, we defined the following criterion: If the ratio of an indirect effect on the total

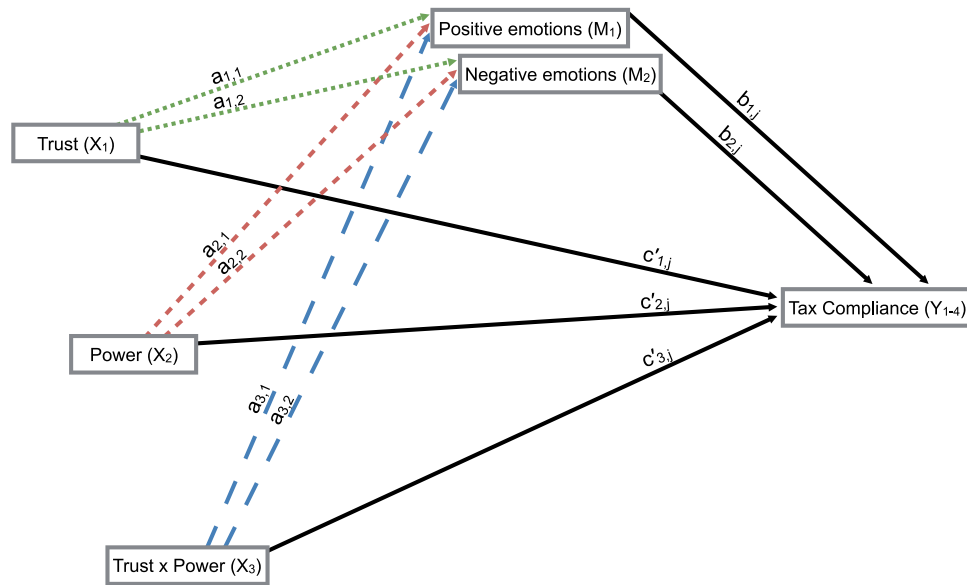


Fig. 2. Diagram of the general mediation model for all four dependent variables (Y_{1-4} : intended tax compliance, voluntary tax compliance, enforced tax compliance, and tax evasion). All reported regression coefficients in the text are labeled as presented in the diagram.

effect is ≥ 0.05 , we report it in the text. This value expresses the proportion of the total effect (X_i on Y_j) that is mediated by M_k .

Given that the relationship between the experimental manipulation of trust and power (X_i) and the two emotion scores (M_k) (i.e., path $a_{i,k}$ in the mediation model) is the same in all four models, we first present these results (Table 3 and Fig. 3A and B), followed by all remaining effects by dependent variable (Table 4). Note that all regression results in the text refer to unstandardized regression coefficients. Standardized regression coefficients are reported in the regression tables.

3.3.2. Emotions

In line with our hypotheses, we observed a significant positive effect of trust on positive emotions ($a_{1,1} = 0.40, p = .014$), indicating that high trust increased positive emotions. While we predicted a negative effect of power on positive emotions, the effect of power was also positive and significant, $a_{2,1} = 0.33, p = .043$. Moreover, there was no significant interaction effect between trust and power on positive emotions, $a_{3,1} = 0.29, p = .212$. Hence, trust and power both showed a positive effects on positive emotions.

Contrary to our hypotheses, we did not observe significant differences in negative emotions between the high and the low trust conditions $a_{1,2} = -0.35, p = .076$. As predicted, however, high power increased negative emotions significantly, $a_{2,2} = 0.77, p < .001$. We found a significant interaction term, $a_{3,2} = -1.00, p < .001$, indicating a reversed effect in the high trust and high power condition. In line with our hypothesis, the effect of power on negative emotions was conditional on the level of trust. Fig. 3A and B shows that negative emotions were highest when high power was presented along with low trust, but lowest when tax authorities were described as highly powerful and highly trustworthy.

In the next section, we present the mediation model for each dependent variable. Fig. 3C–F presents mean compliance by condition and dependent variable. Table 4 provides a summary of the mediation models.

3.3.3. Intended tax compliance

We observed positive direct effects of trust, $c'_{1,1} = 1.19, p < .001$, and power, $c'_{2,1} = 0.52, p = .021$, on intended tax compliance. Furthermore, the interaction of trust and power was significant, $c'_{3,1} = 1.48, p < .001$, indicating that a combination of high trust and

high power increased intended tax compliance beyond the additive prediction of the two main effects.

The direct effect of trust on intended tax compliance was mediated by positive emotions. Trust increased positive emotions ($a_{1,1}$), which were positively associated with intended tax compliance ($b_{1,1}$). The indirect effect was significant with $a_{1,1}b_{1,1} = 0.17 [0.04, 0.33]$.

Both emotion scores mediated the direct effect of power on intentions to comply. Power increased positive emotions ($a_{2,1}$), which were positively related to intended tax compliance ($b_{1,1}$). The indirect effect was significant with $a_{2,1}b_{1,1} = 0.14 [0.01, 0.30]$. However, power also significantly increased negative emotions ($a_{2,2}$), which were negatively related to intended tax compliance ($b_{2,1}$). The significant indirect effect was negative in this case with $a_{2,2}b_{2,1} = -0.11 [-0.26, -0.03]$.

Only negative emotions mediated the effect of the interaction between trust and power on intended tax compliance. The interaction reduced negative emotions ($a_{3,2}$). Because negative emotions were negatively associated with intended tax compliance ($b_{2,1}$), the significant indirect effect was positive with $a_{3,2}b_{2,1} = 0.15 [0.04, 0.34]$.

Total effects result from the sum of direct and all indirect effects of the respective predictor variable. Trust, for instance, had a direct effect ($c'_{1,1} = 1.19, p < .001$) and two indirect effects (0.17 and 0.05; see Table 5) on intended tax compliance. The resulting total effects were $c_{1,1} = 1.41, p < .001$ for trust, $c_{2,1} = 0.55, p = .019$ for power, and $c_{3,1} = 1.75, p < .001$ for the interaction of the two predictors.

3.3.4. Voluntary tax compliance

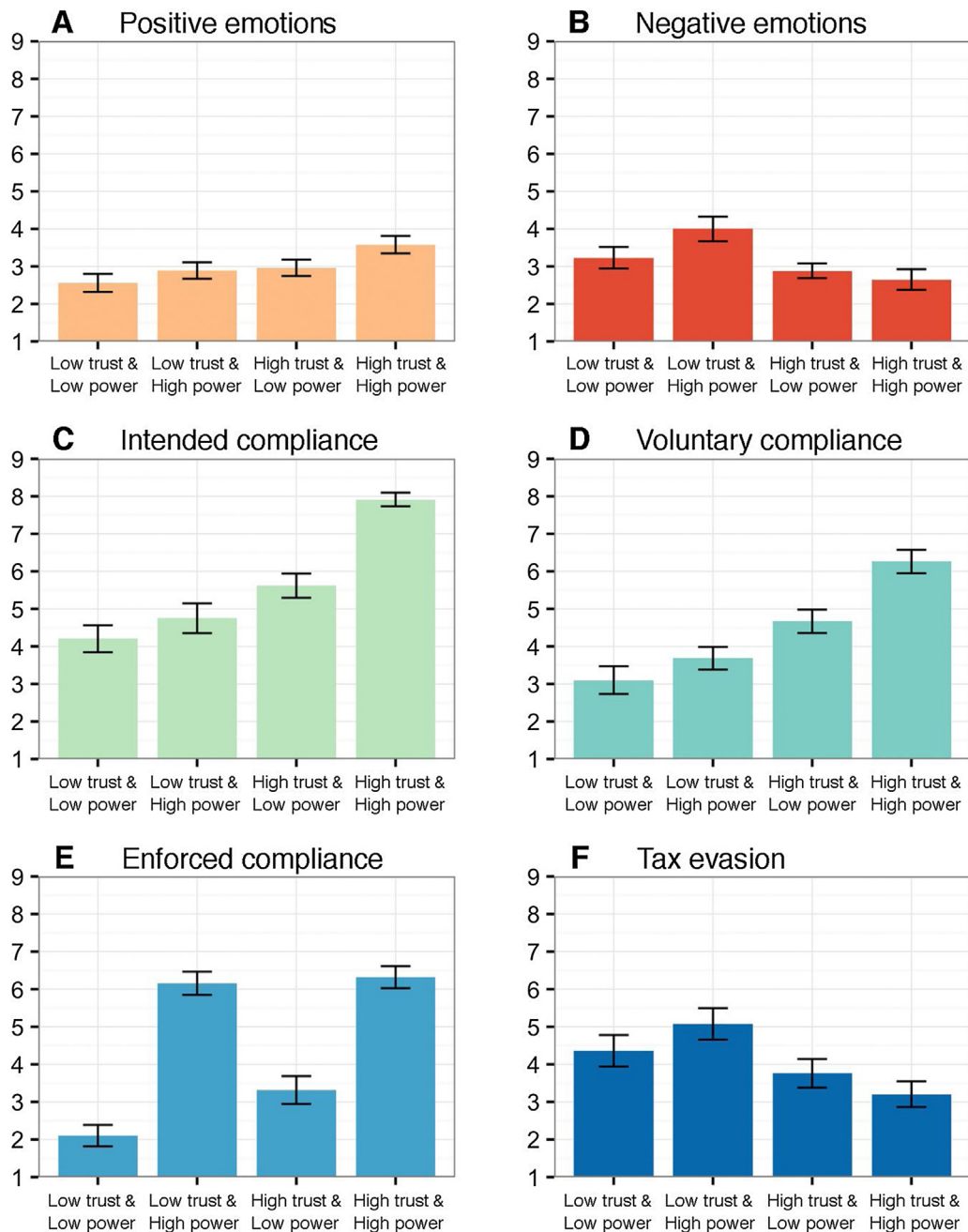
In line with our hypotheses, we find that trust had the strongest direct effect on voluntary tax compliance, $c'_{1,2} = 1.28, p < .001$. Moreover, we also observed a significant effect of power, $c'_{2,2} = 0.50, p = .020$. The interaction of trust and power, $c'_{3,2} = 0.70, p = .020$, showed a positive effect, indicating increased voluntary compliance intentions when authorities were described as trustworthy and also powerful.

Indirect effects follow the pattern of results described above. Positive emotions mediated the relationship between trust and voluntary tax compliance with $a_{1,1}b_{1,2} = 0.24 [0.06, 0.47]$. Trust increased positive emotions ($a_{1,1}$), which were positively associated with voluntary tax compliance ($b_{1,2}$).

Table 3

Summary of multiple regression analyses with trust, power, and their interaction as independent variables and the two emotion scores as dependent variables.

Variable		Positive emotions (M_1)				Negative emotions (M_2)		
		B	β	SE		B	β	SE
Intercept	I_{M1}	2.56***		0.11	I_{M2}	3.23***		0.14
Trust	$a_{1,1}$	0.40*	.16	0.16	$a_{1,2}$	−0.35	−.12	0.20
Power	$a_{2,1}$	0.33*	.16	0.16	$a_{2,2}$	0.77***	.26	0.20
Trust × Power	$a_{3,1}$	0.29	.10	0.23	$a_{3,2}$	−1.00***	−.29	0.28
R^2			.09				.12	
F			13.77***				17.86***	

Note: $N = 411$. Trust and power conditions were coded with 0 = low and 1 = high. * $p < .05$; ** $p < .01$; *** $p < .001$.**Fig. 3.** Mean response by experimental condition for both emotion scores and all four intended compliance measures. Error bars represent 95% confidence intervals.

Similarly, our analysis revealed that the relationship between power and voluntary tax compliance was mediated by positive emotions with $a_{2,1}b_{1,2} = 0.20$ [0.01, 0.40]. We moreover found a neg-

ative mediation effect of negative emotions with $a_{2,2}b_{2,1} = -0.11$ [−0.24, −0.03], where higher negative emotions were related to lower levels of voluntary tax compliance ($b_{2,2}$).

Table 4
Summary of multiple regression analyses with trust, power, their interaction, and the four mediators as independent variables and the four tax compliance measures as dependent variables.

Variable	Intended Compliance (Y ₁)			Voluntary Compliance (Y ₂)			Enforced Compliance (Y ₃)			Tax evasion (Y ₄)		
	B	β	SE	B	β	SE	B	β	SE	B	β	SE
Intercept	I _{Y1}	3.60***	0.31	I _{Y1}	2.06***	0.29	I _{Y1}	1.73***	0.31	I _{Y1,4}	1.66***	0.31
Trust	c' _{1,1}	1.19***	.27	c' _{1,2}	1.28***	.31	c' _{1,3}	1.13***	.23	c' _{1,4}	−0.27	−.06
Power	c' _{2,1}	0.52*	.12	c' _{2,2}	0.50*	.12	c' _{2,3}	4.02***	.83	c' _{2,4}	0.06	.01
Trust × Power	c' _{3,1}	1.48***	.30	c' _{3,2}	0.70*	.15	c' _{3,3}	−1.14***	−.20	c' _{3,4}	−0.38	−.08
Positive emotions (M ₁)	b _{1,1}	0.43***	.24	b _{1,2}	0.60***	.35	b _{1,3}	0.19**	.10	b _{1,4}	−0.06	−.03
Negative emotions (M ₂)	b _{2,1}	−0.15**	−.10	b _{2,2}	−0.14**	−.11	b _{2,3}	−0.04	−.02	b _{2,4}	0.88***	.62
R ²			.49			.47			.57			.46
F			77.92			72.72 ***			108.21 ***			67.72 ***

Note: N = 411. Trust and power conditions were coded with 0 = low and 1 = high. *p < .05; **p < .01; ***p < .001.

Table 5
Summary of all indirect effects.

Dependent Variable	Independent Variable	Mediator	Notation	Indirect effect	95% Confidence Interval		Ratio
					Lower limit	Upper limit	
Intended Tax Compliance	Trust	emo. +	a _{1,1} b _{1,1}	0.17*	0.04	0.33	0.12
		emo. −	a _{1,2} b _{2,1}	0.05*	0.00	0.14	0.04
	Power	emo. +	a _{2,1} b _{1,1}	0.14*	0.01	0.30	0.26
		emo. −	a _{2,2} b _{2,1}	−0.11*	−0.26	−0.03	−0.21
	Interaction	emo. +	a _{3,1} b _{1,1}	0.12	−0.06	0.36	0.07
		emo. −	a _{3,2} b _{2,1}	0.15*	0.04	0.34	0.08
Voluntary Tax Compliance	Trust	emo. +	a _{1,1} b _{1,2}	0.24*	0.06	0.47	0.15
		emo. −	a _{1,2} b _{2,2}	0.05*	0.01	0.13	0.03
	Power	emo. +	a _{2,1} b _{1,2}	0.20*	0.01	0.40	0.33
		emo. −	a _{2,2} b _{2,2}	−0.11*	−0.24	−0.03	−0.19
	Interaction	emo. +	a _{3,1} b _{1,2}	0.17	−0.08	0.45	0.17
		emo. −	a _{3,2} b _{2,2}	0.14*	0.04	0.31	0.14
Enforced Tax Compliance	Trust	emo. +	a _{1,1} b _{1,3}	0.08*	0.01	0.23	0.06
		emo. −	a _{1,2} b _{2,3}	0.01	−0.02	0.07	0.01
	Power	emo. +	a _{2,1} b _{1,3}	0.06*	0.00	0.20	0.02
		emo. −	a _{2,2} b _{2,3}	−0.03	−0.13	0.05	−0.01
	Interaction	emo. +	a _{3,1} b _{1,3}	0.06	−0.02	0.22	−0.05
		emo. −	a _{3,2} b _{2,3}	0.04	−0.06	0.17	−0.03
Tax Evasion	Trust	emo. +	a _{1,1} b _{1,4}	−0.02	−0.11	0.04	0.04
		emo. −	a _{1,2} b _{2,4}	−0.31*	−0.61	−0.01	0.51
	Power	emo. +	a _{2,1} b _{1,4}	−0.02	−0.10	0.03	−0.03
		emo. −	a _{2,2} b _{2,4}	0.67*	0.30	1.07	0.94
	Interaction	emo. +	a _{3,1} b _{1,4}	−0.02	−0.12	0.02	0.01
		emo. −	a _{3,2} b _{2,4}	−0.88*	−1.40	−0.41	0.69

Note: Effects are regarded as significant if the 95% confidence interval does not include zero. The respective indirect effects are marked with an asterisk symbol. The first column from right expresses the ratio of indirect effect to total effect of X on Y. Thus, it provides the relative contribution of the mediation effect on the total effect.

Finally, we observed that negative emotions mediated the relationship between the interaction of trust and power and voluntary tax compliance with $a_{3,2}b_{2,2} = 0.14$ [0.04, 0.31]. A combination of high trust and high power reduced negative emotions ($a_{3,2}$), which were negatively associated with voluntary tax compliance ($b_{2,2}$).

The resulting total effect of trust on voluntary compliance was $c_{1,2} = 1.56$, $p < .001$, while it was $c_{2,2} = 0.58$, $p = .012$ for power, and $c_{3,2} = 1.01$, $p = .002$ for the interaction.

3.3.5. Enforced tax compliance

Our analyses revealed significant effects of trust, power, and their interaction on enforced tax compliance. As expected, power had the strongest effect with $c'_{2,3} = 4.02$, $p < .001$, while high trust also resulted in higher enforced compliance levels, $c'_{1,3} = 1.13$, $p < .001$. The interaction effect of trust and power was negative and led to a decline in enforced tax compliance, $c'_{3,3} = -1.14$, $p < .001$, indicating that participants reported lower levels of enforced tax compliance, when trust and power were high.

As for indirect effects, trust increased the extent of positive emotions ($a_{1,1}$), which were positively associated with enforced tax compliance ($b_{1,3}$). Hence, the indirect trust effect was positive

with $a_{1,1}b_{1,3} = 0.08$ [0.01, 0.23]. We did not observe further indirect effects. As a result, the total effects were similar to the direct effects with trust, $c_{1,3} = 1.21$, $p < .001$, power, $c_{2,3} = 4.05$, $p < .001$, and an interaction effect of $c_{3,3} = -1.05$, $p = .001$.

3.3.6. Tax evasion

We did not find any direct effects of trust ($c'_{1,4} = -0.27$, $p = .221$), power ($c'_{2,4} = 0.06$, $p = .796$), or the interaction between trust and power ($c'_{3,4} = -0.38$, $p = .235$) on tax evasion. Significant indirect effects drive these results, as revealed by the total effects at the end of this section.

All three independent variables were significantly mediated by negative emotions. Trust decreased negative emotions ($a_{1,2}$), which were positively associated with intentions to evade ($b_{2,4}$). The resulting indirect effect was $a_{1,2}b_{2,4} = -0.31$ [−0.61, −0.01]. The indirect effect of power on tax evasion was positive $a_{2,2}b_{2,4} = 0.67$ [0.30, 1.07], and resulted from a positive association between power and negative emotions ($a_{2,2}$), as well as a positive relationship between negative emotions and tax evasion ($b_{2,4}$).

Finally, the interaction effect of trust and power on tax evasion was negatively mediated by negative emotions, $a_{3,2}b_{2,4} = -0.88$

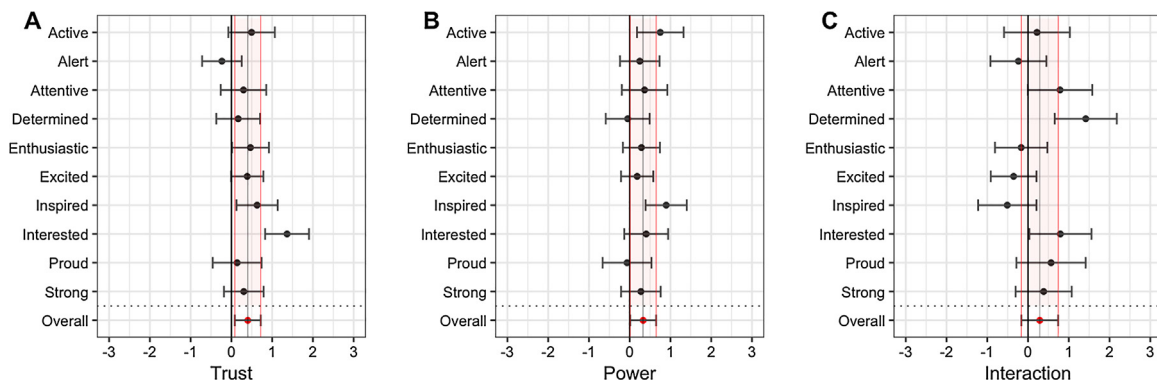


Fig. 4. The effects of trust and power on specific positive emotions. Dots indicate regression estimates. Error bars represent 95% confidence intervals of the effect estimate.

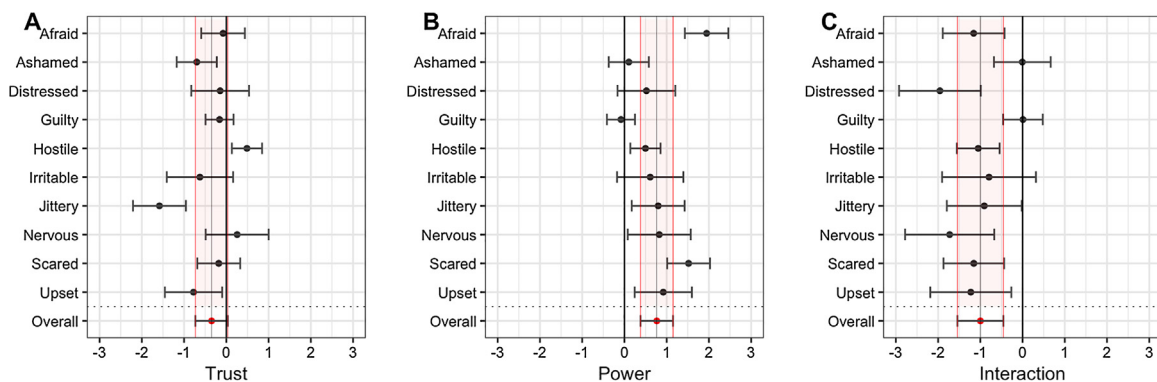


Fig. 5. The effects of trust and power on specific negative emotions. Dots indicate regression estimates. Error bars represent 95% confidence intervals of the effect estimate.

$[-1.40, -0.41]$. This result indicates that power triggered negative emotions, leading to more evasion, while a combination of high power and high trust yielded less negative emotions ($a_{3,2}$), alleviating intentions to evade ($b_{2,4}$).

The resulting total effects were all significant with trust decreasing tax evasion, $c_{1,4} = -0.60$, $p = .032$, power increasing tax evasion, $c_{2,4} = 0.71$, $p = .011$, and the combination of high trust and high power decreasing tax evasion, $c_{3,4} = -1.27$, $p = .001$.

3.4. Exploration of specific emotions

The aim of the exploratory analysis was to see to what extent specific emotions were influenced by trust, power, and their interaction. So far, the presented analyses focused on overall scores of positive and negative emotions, which comprise ten specific emotions each (see Table 1). Analyzing the predictors' effects on the specific emotions adds to the understanding of the dynamics underlying the mediation effects and – more globally – the relevance of specific emotions in tax decisions.

Figs. 4 and 5 show the effect estimates of trust, power, and their interaction on all twenty specific emotions as well as on the overall positive and negative emotion scores. To explain the rationale behind these analyses, we will focus on Panel A of Fig. 4 which illustrates the effect of trust on all ten specific positive emotions and the overall positive emotion score. To estimate the overall effect of trust we compared the low trust and low power condition against the high trust and low power condition. This effect parameter is depicted at the very bottom of the Figure and was introduced before as $a_{1,1} = 0.40$, $p = .014$ (Table 3) suggesting that increasing trust increased positive emotions. Additionally, the Figure displays the effect of trust on each specific positive emotion. The ten specific effects constitute the overall effect of trust on positive emotions.

In this case, increased feelings of interest and inspiration drive the positive main effect of trust on positive emotions.

Looking at Figs. 4 and 5, the following effects of trust, power, and their interaction on specific emotions seem to be most relevant. Trust increased interest and inspiration, while reducing jitter, upset, and shame. Power, on the other hand, increased inspiration, activation, fear, upset, and scare. The interaction of trust and power increased determination and interest, while reducing distress, fear, hostility, nervousness, scare, and upset. Overall, the patterns indicated considerable variation between different emotions of the same valence.

The differences in reported emotional reactions were particularly strong when comparing the low trust and high power condition to the high trust and high power condition. Two radar charts illustrate individuals' emotional responses to these two treatments (Figs. 6 and 7). For instance, if authorities were described as powerful but untrustworthy, participants indicated stronger feelings of upset, distress, jitter, scare, and nervousness compared to the case where authorities were powerful and trustworthy. In line with our main analyses, these results indicate that individuals' evaluation of deterrence were likely moderated by trust.

4. Discussion

The aim of this paper is to provide initial indication of the role of emotions in tax compliance behavior. More specifically, we investigate whether positive and negative emotions mediate the effects of tax authorities' characteristics on intentions to comply. Our findings are in line with the main hypotheses and indicate that taxpayers' feelings indeed mediate the effect of tax authorities' collection strategies on intended tax compliance. While, to our knowledge, studies on the SSF have neglected the role of emotions,

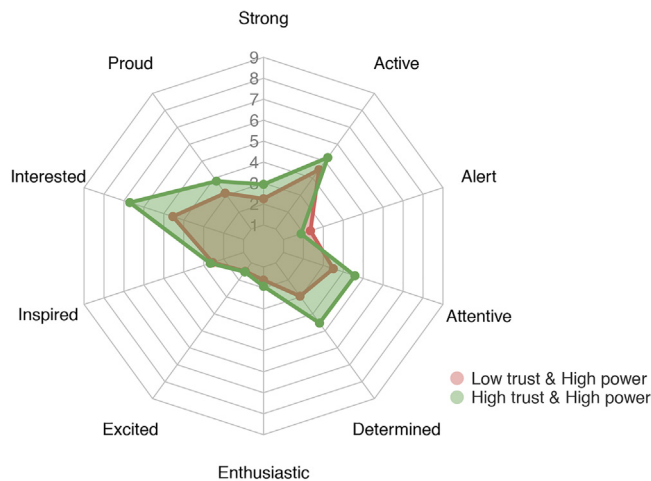


Fig. 6. Specific positive emotions for low trust and high power and for high trust and high power.

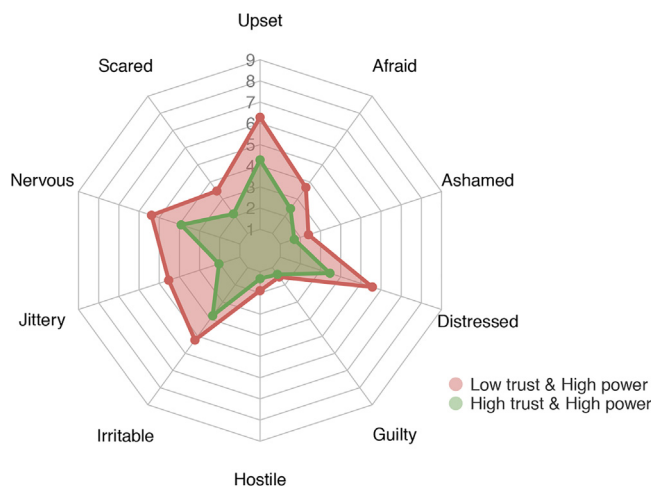


Fig. 7. Specific negative emotions for low trust and high power and for high trust and high power.

our findings indicate that emotional processes might contribute to tax compliance behavior.

In line with the SSF, the results confirm our hypotheses regarding the effects of trust and power. Trust in the tax authorities as well as deterrence measures show positive effects on intentions to comply. Furthermore, the positive effects of trust and power are amplified by a combination of high trust and high power.

With regard to the emotional implications of tax authorities' characteristics, the results partly confirm our hypotheses. As expected, the trust manipulation increases positive emotions. However, we are unable to confirm the hypothesis that trust decreases negative emotions.

While power, as expected, increases negative emotions, it also elevates positive emotions. This result seems contradictory. However, it indicates that deterrence measures may have differential effects on taxpayers. For instance, tax evaders may perceive power as a threat, inducing negative emotions. Honest taxpayers, on the other hand, might appreciate enforcement, because it protects them from free riders. Experiencing positive emotions, they are thus more likely to comply. The differential effect of tax enforcement has been shown in earlier studies on tax compliance behavior (Beer et al., 2015; Mendoza et al., 2017).

Furthermore, we find that trust moderates the effects of high power: the positive effect of high power on negative emotions and

its negative effect on positive emotions are reversed when trust levels are high. This is in line with previous findings from Balliet and Van Lange (2013), who find that the positive effect of power on cooperation is conditional on trust.

Regarding the mediation effects of emotions, we observe that powerful revenue bodies that force taxpayers to comply induce negative emotions such as anger, distress, and jitter. These negative feelings, however, have two-fold effects on compliance intentions: they increase enforced compliance but they also elevate the readiness to evade. Ultimately, negative emotions are likely to undermine tax morale, as they are negatively related to pro-social behavior (Drouvelis and Grosskopf, 2016). Against this background, it seems questionable whether deterrence measures have entirely positive compliance effects. We find that a combination of enforcement activities and trust building measures reduces negative feelings. This stimulates not only intentions to comply, but also alleviates the propensity to evade. Tax policies that aim at promoting voluntary compliance should thus complement traditional command and control approaches with efforts to build trust by promoting transparency, increasing procedural fairness, intensifying outreach to taxpayers, and strengthening the provision of services.

Our instrument (PANAS) measures a very broad set of emotions and allows identifying general levels of positive and negative emotions, yet it might not capture some emotions that are relevant in the context of taxation (Watson et al., 1988). This might explain why our global effect estimates and the effect sizes of the indirect effects, although statistically significant, are not very large.

Experimental evidence indicates that emotions which have the same valence and appear to be similar may lead to opposing behavioral outcomes (Summers and Duxbury, 2012). Against this background, it is instructive to analyze the differential impact of trust and power on specific positive and negative emotions. We explore the effects of trust and power on specific emotions and observe substantial variation in emotions of the same valence (c.f. Figs. 4 and 5 for details). For instance, power increases feelings of fear and scare but shows not to affect distress and irritation. A combination of power and trust, on the other hand, reduces negative emotions such as fear, scare, jitter, nervousness, and hostility, but does not affect feelings of guilt and shame. This indicates that building trust potentially mitigates negative emotional responses to enforcement activity.

Counterintuitively, negative emotions do not differ significantly between the low and high trust conditions. Analyzing the effects of trust on specific emotions, however, reveals that individuals indicate lower levels of shame, jitter, and upset in the high trust conditions, suggesting that trust alleviates certain negative emotions. This adds an interesting perspective to findings on the effectiveness of public shaming in deterring tax evasion (Alm et al., 2016). But while some studies find that public shaming reduces non-compliant behavior (Coricelli et al., 2014), we observe a positive correlation between feelings of shame and intentions to evade taxes (untabulated). This suggests that the dynamics between shame and trust might mitigate the compliance implications of public shaming, which offers a promising avenue for future research.

The survey-based approach used in this paper has some limitations. Generally, cross-sectional survey studies are unable to detect causal effects, while mediation models assume causal relationships (Fiedler et al., 2011; MacKinnon and Pirlott, 2015). Based on the experimental nature of our questionnaire, we may assume causality between the independent variables (trust and power manipulation) and the dependent variables (mediators and compliance intentions). We are, however, unable to provide proof of causality for the relationship between mediators and dependent variables. As emotional responses were measured after reading the scenario text and before providing answers to the compliance

measures, we believe that a directional interpretation is plausible. Future studies should experimentally manipulate emotions and test for causal effects on tax compliance behavior.

But while incentivized laboratory experiments allow identifying causal relationships, they often lack external validity. As it is difficult to recruit self-employed business owners for participation in laboratory experiments, most experiments rely on student samples. Conversely, scenario studies allow assessing complex research questions in real-world environments within more relevant populations (Cavanagh and Fritzsche, 1985). Scenario-based experiments usually use sample sizes comparable to laboratory experiments,³ and are widely used in business ethics research (Doyle et al., 2009). One strength of our approach is its external validity, as we investigate self-employed taxpayers in their actual business environment. This is particularly relevant when studying emotions, which are difficult to induce in the laboratory. However, as we cannot rule out self-selection, we acknowledge that our sample might not be fully representative for the population of self-employed business owners. Despite this, we believe that participants' emotional responses to the tax system characteristics described in our study do not differ systematically from taxpayers' feelings in real-life situations. Likewise, we do not believe that lack of incentives induced an experimenter demand effect, because we do not expect participants to share a uniform understanding of how trust and power should impact on emotions. For instance, some taxpayers might perceive enforcement as threatening and thus express fear, while others might feel protected by effective administrative structures.

Because our study assesses behavioral intentions rather than actual behavior, it does not provide insights into taxpayers' compliance choices. While a substantial body of evidence generally confirms a strong link between intended and actual behavior (e.g. Fishbein and Ajzen, 1975; Sheppard et al., 1988), the relationship is less clear in the field of taxation (Hite, 1988; Weigel et al., 1987), where external factors, such as audits, strongly affect behavior (e.g. Kleven et al., 2011). Nevertheless, it is likely that a decrease in attitudes towards taxation will have negative rather than positive compliance implications (Lewis, 1982). Against this background, we are confident that our study adds to the understanding of the dynamics between the behavior of tax authorities, emotions, and intentions to comply.

Conflict of interest

None.

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Appendix A. Supplementary data

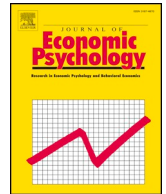
Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.irle.2018.05.004>.

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³ A power analysis revealed that a sample size of $N = 411$ in a multiple regression model with three to five predictors has a power of 0.80 to detect effects as small as Person $r = 0.14$ (Cohen's $d = 0.28$, odds ratio = 1.65). We are thus confident that our sample is sufficiently large.

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

Janina Enachescu^{a,*}, Jerome Olsen^a, Christoph Kogler^b, Marcel Zeelenberg^{b,c},
Seger M. Breugelmans^b, Erich Kirchler^a

^a University of Vienna, Faculty of Psychology, Department of Applied Psychology: Work, Education, and Economy, Austria

^b Tilburg University, School of Social and Behavioral Sciences, Department of Social Psychology, the Netherlands

^c Vrije Universiteit Amsterdam, School of Economics and Business, Department of Marketing, the Netherlands

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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

* Corresponding author at: Universitätsstraße 7, 1010 Vienna, Austria.

E-mail address: janina.enachescu@univie.ac.at (J. Enachescu).

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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

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
	N	Age	N	Age	
		M(SD)		M(SD)	
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.

Fixed effects	Manipulation Check			
	Model 1		Model 2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
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 were 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.

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 ($\sigma^2 = 0.04$, $\chi^2(3) = 21.40$, $p < .001$), which arises in the evasion scenario where employed participants report higher levels of self-blame emotions compared to self-employed participants.

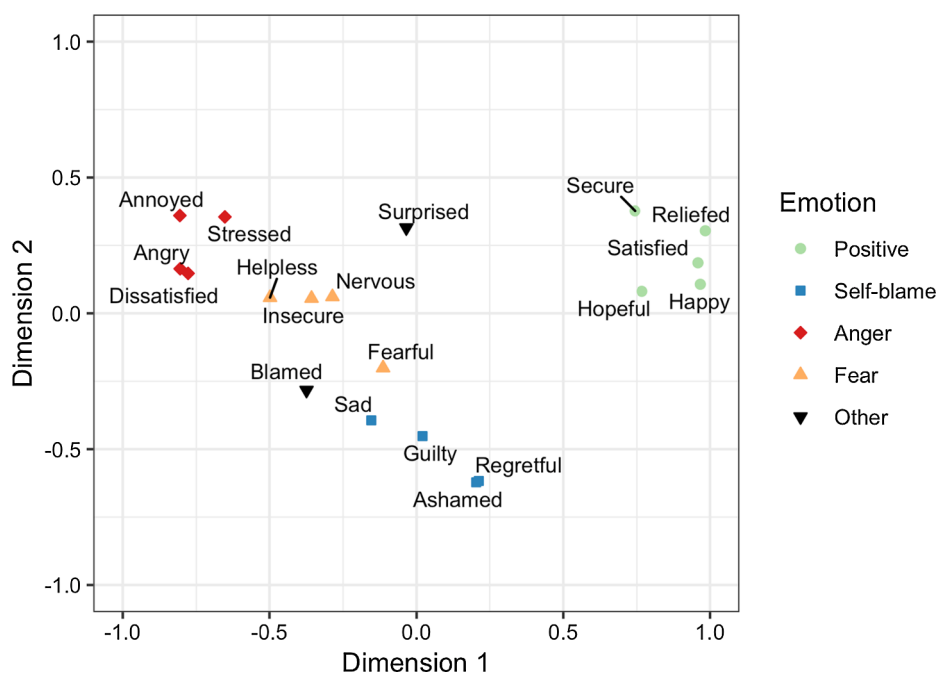


Fig. 1. MDS solution for single emotion items across all seven scenarios.

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-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

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.

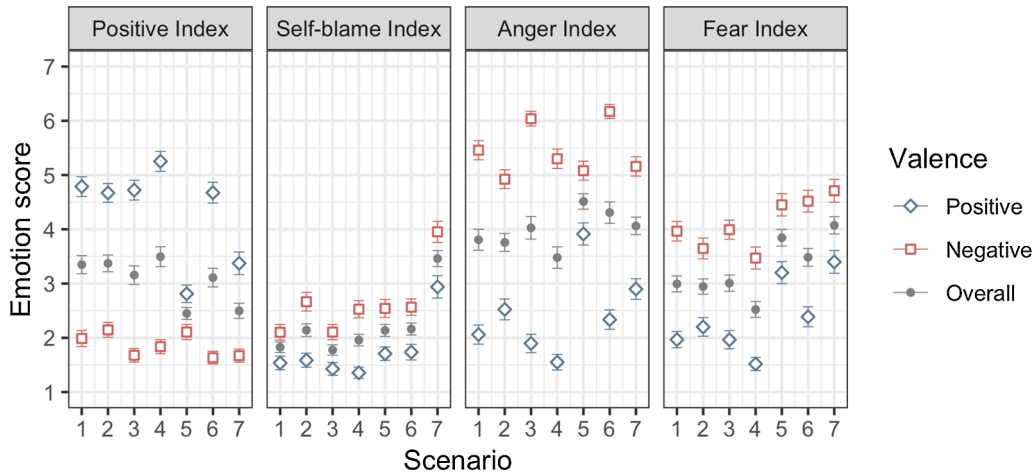


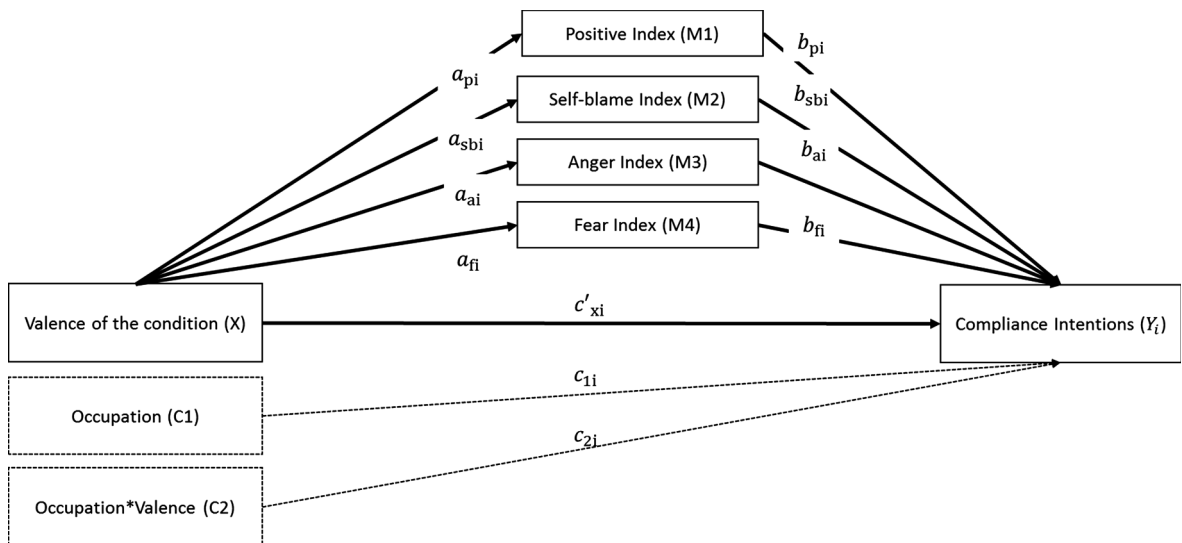
Fig. 2. Emotion indices for all seven scenarios.

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)					
		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>			
Intercept	<i>i</i> _{Y3}	5.10***	0.12	<i>i</i> _{Y6}	5.02***	0.12	<i>i</i> _{Y7}	5.45***	0.11			
Valence (X)	<i>c</i> _{X,3}	0.72***	0.17	<i>c</i> _{X,6}	0.87***	0.17	<i>c</i> _{X,7}	0.18	0.16			
Occupation (C1)	<i>c</i> _{1,3}	0.22	0.16	<i>c</i> _{1,6}	0.45*	0.16	<i>c</i> _{1,7}	0.18	0.15			
Valence × Occupation (C2)	<i>c</i> _{2,3}	−0.19	0.23	<i>c</i> _{2,6}	−0.42	0.23	<i>c</i> _{2,7}	−0.18	0.22			
		<i>R</i> ² = 0.06				<i>R</i> ² = 0.07				<i>R</i> ² = 0.004		
		<i>F</i> (3, 519) = 10.26				<i>F</i> (3, 519) = 12.80				<i>F</i> (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)		
		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>
Intercept (3)	<i>i_{p3}</i>	1.54***	0.11	<i>i_{sb3}</i>	2.03***	0.10	<i>i_{a3}</i>	6.14***	0.11	<i>i_{f3}</i>	4.01***	0.13
Valence (3)	<i>a_{p3}</i>	2.89***	0.16	<i>a_{sb3}</i>	−0.66***	0.14	<i>a_{a3}</i>	−4.21***	0.16	<i>a_{f3}</i>	−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
		<i>R</i> ² = 0.60			<i>R</i> ² = 0.10			<i>R</i> ² = 0.73			<i>R</i> ² = 0.34	
		<i>F</i> (3, 519) = 261.53			<i>F</i> (3, 519) = 18.30			<i>F</i> (3, 519) = 478.77			<i>F</i> (3, 519) = 90.02	
Intercept (6)	<i>i_{p6}</i>	1.53***	0.11	<i>i_{sb6}</i>	2.41***	0.11	<i>i_{a6}</i>	6.28***	0.11	<i>i_{f6}</i>	4.56***	0.14
Valence (6)	<i>a_{p6}</i>	2.89***	0.16	<i>a_{sb6}</i>	−0.87***	0.15	<i>a_{a6}</i>	−3.90***	0.16	<i>a_{f6}</i>	−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
		<i>R</i> ² = 0.59			<i>R</i> ² = 0.12			<i>R</i> ² = 0.70			<i>R</i> ² = 0.31	
		<i>F</i> (3, 519) = 251.25			<i>F</i> (3, 519) = 23.92			<i>F</i> (3, 519) = 396.22			<i>F</i> (3, 519) = 78.96	
Intercept (7)	<i>i_{p7}</i>	1.57***	0.12	<i>i_{sb7}</i>	3.70***	0.14	<i>i_{a7}</i>	5.19***	0.13	<i>i_{f7}</i>	4.57***	0.15
Valence (7)	<i>a_{p7}</i>	2.06***	0.17	<i>a_{sb7}</i>	−1.25***	0.20	<i>a_{a7}</i>	−2.52***	0.19	<i>a_{f7}</i>	−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
		<i>R</i> ² = 0.29			<i>R</i> ² = 0.13			<i>R</i> ² = 0.37			<i>R</i> ² = 0.16	
		<i>F</i> (3, 519) = 70.11			<i>F</i> (3, 519) = 26.92			<i>F</i> (3, 519) = 100.00			<i>F</i> (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.

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

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	
	<i>B</i>	<i>SE</i>
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.

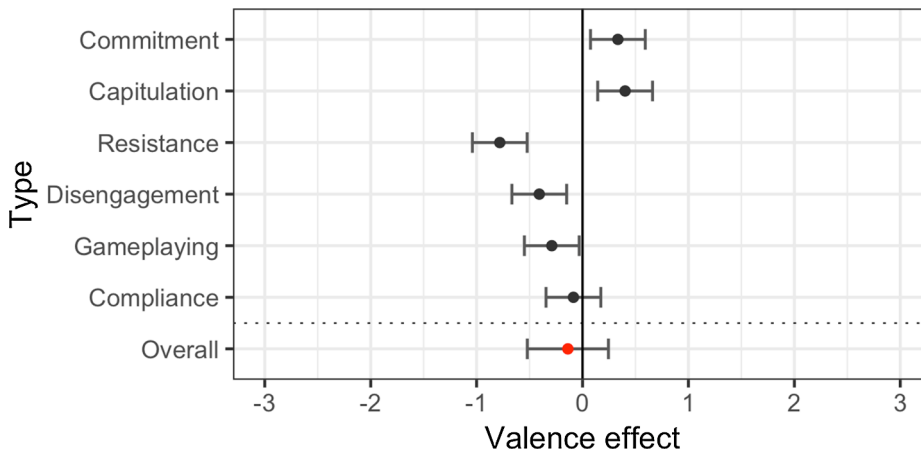


Fig. 4. Effects of valence for each of the six dependent variables.

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 results⁶ 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 ($\sigma^2 = 0.19$, $\chi^2(3) = 44.13$, $p < .001$). 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

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.

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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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Tax compliance is not fundamentally influenced by incidental emotions: An experiment

¹Janina Enachescu, ¹Ziga Puklavec, ²Jerome Olsen & ¹Erich Kirchler

¹ University of Vienna, Faculty of Psychology, Department Occupational, Economic and Social Psychology, Universitaetsstrasse 7, 1010 Vienna, Austria

²Max Planck Institute for Research on Collective Goods, Kurt-Schumacher-Str. 10, 53113 Bonn, Germany

Note: The first two authors contributed equally to this publication. Corresponding author: Janina Enachescu; email: janina.enachescu@univie.ac.at

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Abstract

The present study investigates the impact of incidental emotions on tax compliance behavior in an experimental setting. Different theories are divided about how experiencing incidental emotions should influence tax decisions and the few existing studies yield inconsistent results. Our aim was to investigate differences between three specific emotions, namely anger, fear, and happiness. This allowed a comparison in compliance behavior as a function of differences in emotional valence as well as in specific emotional qualities. For this purpose, a sample of 264 individuals participated in a classical tax experiment. After a baseline treatment, one of the three emotions was induced using video-clips with background music. Moreover, emotional arousal was assessed by measuring electrodermal activity. Manipulation check items as well as elevated arousal levels after the emotion induction provided support for the success of the emotion induction. Nevertheless, we did not observe any tax compliance differences between the anger, fear, and happiness conditions. Our results speak against a fundamental role of incidental emotions for tax compliance decisions.

Keywords: tax compliance, incidental emotions, experiment, emotion induction, electrodermal activity, arousal

JEL: H26

1 Introduction

While most people are assumed to pay their taxes honestly, not all do so voluntarily. Taxpayers show heterogeneity in their tax morale (Alm & Torgler, 2011) and motivations to pay (Braithwaite, 2007). Unsurprisingly, arguments against taxes are often emotionally charged and tax talk is often accompanied by strong feelings (Enachescu, Olsen, et al., 2019). But when people pay taxes, are their decisions made rationally as proposed by traditional economic models (Allingham & Sandmo, 1972) or led by how they feel in the decision situation?

From a theoretical perspective, two types of emotions are linked to decision making (Lerner, Li, Valdesolo, & Kassam, 2015). *Integral emotions* directly stem from the decision situation (e.g., a person is angry after receiving poor information from a tax officer), whereas *incidental emotions* are unrelated to the decision situation and occur casually (e.g., a person is angry because of a bad experience at the workplace). Previous studies have paid attention to a-priori selected integral emotions, namely shame, guilt, and anticipated regret (Casal & Mittone, 2016; Coricelli, Rusconi, & Villeval, 2014; Murphy & Harris, 2007), have explored which integral emotions are most relevant in tax decisions, namely anger, fear, self-blame, and general positive feelings (Enachescu, Olsen, et al., 2019), or what emotions are elicited by experiencing an audit (Erard, Kasper, Kirchler, & Olsen, 2018). Importantly, experiencing such emotions that directly stem from the decision context consistently show effects on (intended) tax compliance and suggest that tax compliance decisions are at least in part influenced by emotional processes.

For instance, taxpayers expiring anger due to poor services offered by the tax authorities are more likely to show dishonest compliance behavior (Enachescu, Olsen, et al., 2019). Publicly shaming tax evaders, on the other hand, can enhance future tax compliance if managed wisely (Coricelli et al., 2014). However, whether incidental emotions also affect tax

compliance is less clear and yielded mixed results so far (Enachescu, Puklavec, et al., 2019; Fochmann, Hechtner, Kirchler, & Mohr, 2019). To contribute to this question, in the present study, we therefore focus on incidental emotions and their relevance for tax behavior.

1.1 Emotion theories

Previous research has shown that emotions that are elicited by surrounding circumstances, such as sunny weather or a dispute with the partner, influence decisions in different contexts. For instance, sunny weather (usually associated with good mood) has been found to affect trading decisions on the stock market in the direction of more bullish behavior (Hirshleifer & Shumway, 2003; Saunders, 1993), as well as evaluations of one's general life satisfaction (Schwarz & Clore, 1983). Furthermore, carry-over effects were demonstrated in standardized laboratory settings, influencing the presence of the endowment effect (Lerner, Small, & Loewenstein, 2004), or affecting pro-social behavior like generosity and reciprocity (Cavanaugh, Bettman, & Luce, 2015; Kirchsteiger, Rigotti, & Rustichini, 2006). Findings from consumer research suggest that mood and the associated arousal levels influence which products are preferred (Di Muro & Murray, 2012).

There are different theoretical accounts of how incidental emotions can affect the decision-making process. The Affect Infusion Model (Forgas, 1995) emphasizes that those decisions which require substantial (computational) information processing and which are made heuristically are prone to be influenced by incidental emotions (as opposed to motivational or direct processing strategies that are not influenced by emotions). Tax compliance decisions are often assumed to require substantial information processing, as information about income, audit probabilities, tax rates, and fines has to be integrated. On the other hand, individuals with a tendency to follow norms and a high tax morale likely take decisions more heuristically in the direction of compliant behavior. The Affect Infusion

Model proposes two different infusion routes of affective influence: directly as described by the Feeling-as-Information Theory (Schwarz, 1989) or indirectly via mood congruent associations (Forgas, 1995).

The Feeling-as-Information Theory (Schwarz, 1989) postulates that current affect functions as a signal about the valence of a decision situation. Negative emotions are assumed to signal the presence of a problem that needs to be solved, leading to more thorough information processing. On the other hand, positive emotions should signal the absence of any threat or challenge, leading to the acceptance of the status quo. In line with this theory, participants relied more on general knowledge and heuristics when induced with happy as compared to sad mood in a recognition task (Bless et al., 1996). Similarly, a study using a foreign exchange trading task, found that participants induced with good mood made less accurate and faster decisions than those induced with neutral or bad mood (Au, Chan, Wang, & Vertinsky, 2003). Applied to tax decisions this means that negative incidental emotions can be expected to lead to more thorough processing of decision-relevant information such as audit levels and fine rates. Given that evasion is usually the monetarily optimal solution, tax compliance should be lower when experiencing negative emotions in comparison to positive emotions.

The Mood Congruency Hypothesis (Forgas, 1995) states that negative (positive) emotions make negative (positive) information more accessible, leading to more pessimistic (optimistic) judgments about the future. Note that this theory functions through the interplay of emotional states with risk perceptions. For instance, after manipulating affect by presenting newspaper articles about positive and negative events, participants evaluated subsequent risks more pessimistically (optimistically) when they were induced with negative (positive) mood, even when the content of the articles was unrelated to the risk evaluation task (Johnson & Tversky, 1983). In another study, participants that were induced with negative emotions via video clips made more risk averse decisions in a life dilemma choice task (common life

choices where options differed with regard to risk and reward), than those induced with positive or neutral mood (Chou, Lee, & Ho, 2007). Applied to tax decisions, negative emotions should lead to an overestimation of the probabilities of getting caught cheating and therefore to higher tax compliance in comparison to positive emotions.

A different theoretical approach comes from an emotion regulation perspective. The Mood Maintenance Hypothesis (Isen & Geva, 1987) assumes that when people experience positive emotions, they want to maintain this state and show risk-averse behavior, whereas negative emotions promote risk-seeking behaviors that might improve one's situation. Results from an experimental study showed that individuals showed cautious optimism when induced with positive mood (Nygren, Isen, Taylor, & Dulin, 1996). They evaluated risk optimistically but showed cautious gambling behavior when real losses were at stake in order to protect the positive state. Applied to the tax context, individuals would be expected to be less tax compliant when experiencing negative emotions in comparison to positive emotions.

In sum, the theoretical concepts suggest contradicting predictions about the influence of incidental emotions on tax decisions. Both the Feeling-as-Information Theory and the Mood Maintenance Hypothesis predict negative incidental emotions to promote *lower* tax compliance, whereas the Mood Congruency Hypothesis predicts negative incidental emotions to promote *higher* tax compliance (both in relative comparison to positive emotions).

1.2 Existing studies on the role of incidental emotions

Two recent articles have provided first empirical results on this question with inconclusive outcomes. The first suggested that negative emotions in fact lead to higher levels of tax compliance (Fochmann et al., 2019). In their experiment, the authors induced negative, neutral, and positive incidental emotions using emotionally rich pictures. Results indicated that taxpayers who experience negative emotions were more tax compliant than those

experiencing positive emotions. Moreover, they surveyed 22,220 German taxpayers and found that taxpayers demonstrate higher willingness to comply when asked on a Monday than on the weekend (assumingly then in a better mood). Participants were 2.27 % more likely to state favorable attitudes toward taxes on a workday compared to a weekend day.

The second study also aimed at experimentally manipulating incidental emotions, however, by playing background music in the lab; music by Wolfgang Amadeus Mozart (positive emotions), Gustav Holst (negative emotions), and a control condition without music (Enachescu, Puklavec, et al., 2019). This study failed to find compliance differences between the positive affect and the negative affect condition. The only observed difference was that compliance was higher in the positive affect than control condition. However, it is important to mention that the manipulation of incidental emotions via music alone was not successful in terms of the manipulation check scales. The present study builds on this design and was improved to increase the strength of the emotion induction.

1.3 The need for investigations of specific emotions

The theories and evidence outlined so far demonstrate approaches that reduce emotions to a single valence dimension. However, this is not the most informative approach when one is interested in risky decisions. Both the Feeling-is-for-Doing approach (Zeelenberg & Pieters, 2006) and the Appraisal Tendency Framework (Lerner et al., 2015) stress the importance of behavioral consequences of differential single emotions. The Feeling-is-for-Doing approach assumes that emotions have a motivational component that influence behavior directly. The Appraisal Tendency Framework on the other hand proposes that incidental emotions influence how incoming information is evaluated by activating differential appraisal patterns.

For instance, anger is associated with a high sense of control, low pleasantness, and high responsibility of others (among other factors) and is therefore associated with the tendency to appraise a future negative event as foreseeable and controllable, and is linked to taking responsibility for others (Lerner et al., 2015). Once this appraisal pattern is activated, risks tend to be perceived as lower than in a neutral emotional state. In contrast, fear is associated with a low sense of control and low certainty, and therefore leads to higher subjective risk perceptions. Applied to the tax context, individuals would then be expected to be more willing to evade taxes when induced with anger and more willing to comply when induced with fear. Importantly, a dimensional view would expect an effect in the same direction of anger and fear on compliance (depending on the theory, but consistent in terms of direction) and could be too simplistic.

Integrating the dimensional view and theories on specific emotions, one could expect that a fear appraisal makes pessimistic cues more available in line with the Mood Congruency Hypothesis. Anger on the other hand has a strong inherent action tendency (Frijda, Kuipers, & ter Schure, 1989), and is more likely to promote behavior aimed at changing the situation as proposed by the Mood Maintenance Hypothesis. In the present context, individuals would evaluate audit information more cautiously and be more compliant when induced with fear and seek to change their emotional state by increasing their income through non-compliance when induced with anger.

Regardless of the specific emotional quality, higher intensity of emotional experiences manifests itself by increased emotional arousal (Scherer, 2005). Two previous experimental studies have investigated the impact of emotional arousal on tax compliance behavior and came to inconclusive results (Coricelli, Joffily, Montmarquette, & Villeval, 2010; Dulleck et al., 2016). However, in these studies the authors argued that arousal was elicited by emotions directly related to the tax compliance decisions. In this study, we will assess emotional

arousal by measuring skin conductance response, in order to control for intensity of incidental emotional experiences.

1.4 Research aims and hypotheses

In the present study we investigated the influence of specific incidental emotions, namely happiness, anger, and fear, elicited by short video clips combined with background music, on tax compliance decisions in a mixed-design experiment. Participants faced multiple rounds of a tax game in which they earned money through a real effort task and then had to take tax compliance decisions with decision contingent monetary incentives. Emotional arousal was assessed by measuring skin conductance response. The extent of experienced specific emotions was measured in a post-experimental questionnaire.

Drawing on the assumptions of the Appraisal Tendency Framework, we expected that participants show higher tax compliance in the fear condition and lower compliance in the anger condition. However, we were unable to formulate directed hypothesis regarding the effect of the happiness condition compared to the other two emotions (i.e., fear and anger), as theories on the effects of positive and negative affect on risky decisions argue in different directions. According to the Feeling-as-Information Theory, we would expect more tax evasion in the fear and anger compared to the happiness condition, while the Mood Congruency Hypothesis and the Mood Maintenance Hypothesis would support the opposite prediction.

2 Method

2.1 Participants

The sample comprised 264 participants. Participants' mean age was $M = 24.67$ ($SD = 6.12$) and 54.5% were female. Participants were students from various fields. Due to possible

prior knowledge of the pursued research questions at the Department of Occupational, Economic and Social Psychology, psychology students were not eligible to participate.

None of the participants were excluded from the data analysis. However, due to unit malfunction (and in a single case, due to a matching error) the skin conductance measurement data of 24 participants was not recorded and thus not included in the respective arousal analyses. This does not affect the main behavioral analysis.

2.2 Experimental design

The experiment comprised a tax game with 16 repeated rounds that was administered in one of three different emotion conditions (happiness, anger, or fear). In each round, participants started with a fixed income of 1,000 Experimental Currency Units (ECU) and had the possibility to earn up to another 1,000 ECU in a real-effort slider task (20 seconds for 10 sliders; solved $Mdn = 7$; see Gill & Prowse, 2012). Following the effort task, participants faced an income tax declaration decision. The tax rate (40%), audit probability (25%), and fine in case of detected tax evasion (owed tax plus a fine of the same amount) were constant over all rounds. The audits were predetermined based on the audit probability and fixed to occur at the same time for each participant. Feedback about audits was given after each round. At the end of the experiment, one round was randomly drawn and the income was converted from ECU to Euro (1.50 Euro show-up fee plus 1.00 Euro per 300 ECU) and paid out to the participant. The mean payoff was 5.25 Euro.

2.2.1 Emotion induction

After the first eight rounds, which served as a within-person baseline, a short video clip (approx. 4.5 min.) with background music was played to induce the respective emotion. In the happiness condition, participants watched a funny scene from the movie Mr. Bean's

Holiday (2007), with Symphony no. 70, D major by Joseph Haydn as background music. In the anger condition, individuals watched a bully scene from the movie My Bodyguard (1980), with The Planets - Mars, the Bringer of War by Gustav Holst as background music. In the fear condition, participants watched a scene from the movie The Shining (1980), with background music from the movie's soundtrack (Polymorphia by Krzysztof Penderecki). The background music continued to play throughout the remaining eight rounds.

The selection of film clips and music used in the experiments was based on successful use in other experiments (Drouvelis & Grosskopf, 2016; Kreutz, Ott, Teichmann, Osawa, & Vaitl, 2008; Schaefer, Nils, Sanchez, & Philippot, 2010). The combination of music and film was chosen to reduce demand effects as compared to other methods (e.g. Velten technique¹; Buchwald, Strack, & Coyne, 1981) and because it has been reported to be one of the more successful methods of emotion induction in general (Gerrards-Hesse, Spies, & Hesse, 1994; Joseph et al., 2020; Westermann, Spies, Stahl, & Hesse, 1996).

2.2.2 Arousal measurement

Throughout the experiment, participants' arousal was measured by means of electrodermal activity (EDA). EDA refers to the variation of the electrical properties of the skin in response to sweat secretion, which is an index of sympathetic activity. EDA can be distinguished into the fast varying phasic activity (skin conductance response) and the slowly varying tonic activity (skin conductance level) (Benedek & Kaernbach, 2010). While phasic skin conductance response is useful for studying attentional processes, event related (stimuli) onsets, and behavioral differences, the tonic skin conductance level can be used to investigate general states of arousal and alertness (Dawson, Schell, Filion, & Berntson, 2007). The present study utilized the tonic skin conductance level. For acquisition of EDA, TMSi Mobi8-

¹ For the Velten technique, participants are asked to read emotionally laden statements (e.g. "I feel rather sluggish now.") and are instructed to try to feel the described mood (Westermann, Spies, Stahl & Hesse, 1996).

BP units were used. Participants had to wear two electrodes on their index and middle finger of the non-dominant hand.

2.2.3 *Post experimental questionnaires*

After completing the tax game, participants filled out a manipulation check questionnaire, provided their socio-demographic information, and answered two open questions (i.e., “What did you thinking about, while completing the tasks of this study?”, “What do you think was the purpose of this study?”). The manipulation check questionnaire consisted of an adapted German version of the PANAS² (Krohne, Egloff, Kohlmann, & Tausch, 1996; Watson, Clark, & Tellegen, 1988).

2.3 Procedure

The experiment took place in the Social Science Research Lab of the Department of Occupational, Economic and Social Psychology. Participants were recruited on campus and through the Laboratory Administration for Behavioral Sciences (LABS) recruitment system. Each session was run for one of the three conditions. Therefore, randomization took place on session level.

Upon arrival in the laboratory, participants took a seat at a computer cubicle of their liking. They received written instructions explaining the effort task and procedure of the tax game on the screen. Participants were instructed to put on a pair of headphones and were then attached to the electrodes of the EDA measurement on their non-dominant hand. They were told to move this hand as little as possible during the procedure. The experiment started with

² The adapted version of the questionnaire was constructed as follows: The adjectives active, interested, upset, strong, guilty, inspired, proud, irritable, enthusiastic, ashamed, alert, nervous, determined, attentive, and afraid from the PANAS were kept unchanged. Furthermore, the adjectives distressed, excited, scared, hostile, and jittery were removed, while the adjectives sad, happy, stressed, helpless, and insecure were added.

general instructions, followed by two test rounds to get familiar with the effort task and format of the tax compliance decisions. After the test rounds, the first eight experimental rounds were administered. Next, participants were presented with the respective video clip and corresponding background music via the headphones. The music continued to play after the video clip ended, accompanying the last eight rounds of the tax game. Then the music stopped and participants filled out the post experimental questionnaire before receiving information about their remuneration. Before leaving the laboratory, participants were paid and signed the receipt of the money. The experimental procedure is detailed in Figure 1. The study was approved by the Ethics Committee of the University of Vienna (reference number: 00373).

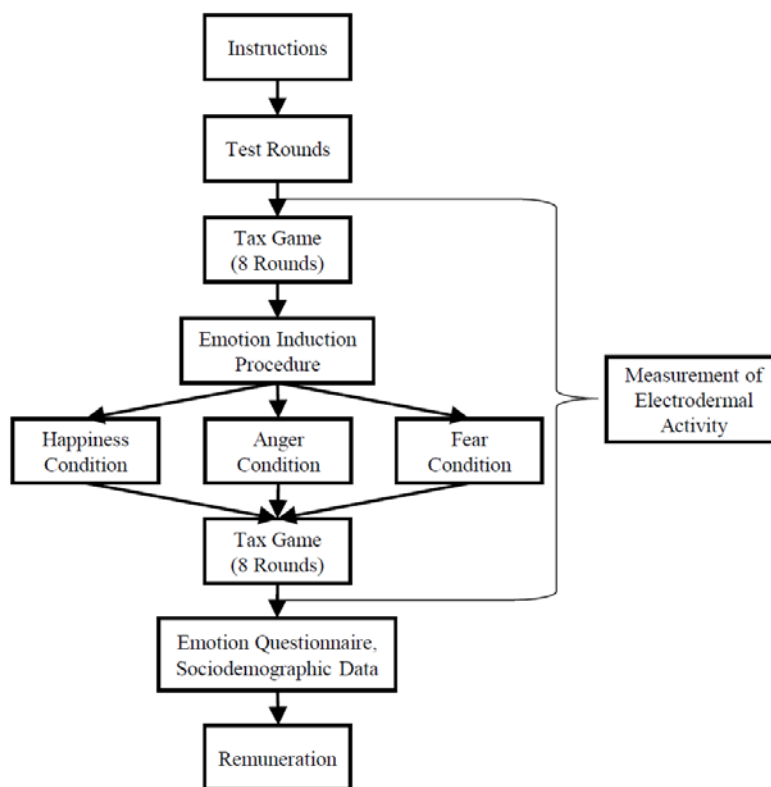


Figure 1. Experimental procedure

2.4 Data preprocessing

2.4.1 *Tax compliance*

As the earned income depended on the effort task results, the tax due amount was subject to variation. Therefore, we used relative tax compliance as a measure of tax compliance behavior. The score was computed by dividing the amount of tax declared by the actual tax due for each individual and round. Thus, the minimum value of zero represents full evasion, while the maximum value of one represents full compliance.

2.4.2 *Electrodermal activity*

The raw EDA data was first transformed from voltage values into conductance values (microsiemens). We downsampled the data by a factor of 4 (256Hz to 64Hz), applied a low-pass Butterworth filter (fourth order with 1Hz cutoff), and applied adaptive smoothing. The data was analyzed with LedaLab (a Matlab-based software) using the Continuous Decomposition Analysis (Benedek & Kaernbach, 2010) with four different sets of initial values considered for optimization. For the analyses, the tonic component of EDA was extracted and z-transformed on a within-subject level. The resulting data was a mean score of tonic activity for each experimental participant and round.

2.5 Data availability

The data and a codebook have been made publicly available on the Open Science Framework (https://osf.io/qych5/?view_only=887d854d026d46b481dc751cf1158b56).

3 Results

First, we analyze whether the emotion induction was successful in terms of the manipulation check scales as well as increases in measured arousal. Second, we test the effects of the experimental manipulation on tax compliance behavior.

3.1 Manipulation check

To test whether the induction of happiness, anger, and fear was successful in the respective conditions we ran a multivariate analysis of variance with the three measured emotion scores of the manipulation check scales as dependent variables and the condition as independent variable. Overall, we found that emotions differed between the three conditions, $F(6, 518) = 6.867, p < .001, \eta_p^2 = .074$. On univariate level, Table 1 reveals that participants reported higher levels of the emotion fear in the fear condition, $F(2, 261) = 9.240, p < .001, \eta_p^2 = .066$, higher levels of the emotion anger in the anger condition, $F(2, 261) = 6.809, p = .001, \eta_p^2 = .050$, and also higher levels of happiness in the happiness condition, $F(2, 261) = 3.187, p = .043, \eta_p^2 = .024$. Note that the confidence interval in the happiness condition overlapped. Planned contrasts revealed significantly higher levels of the emotion happiness in the happiness condition compared to the fear condition, $t(261) = -2.462, p = .015$, but no significant differences in comparison to the anger condition, $t(261) = -1.733, p = .084$.³ Figure S1 in the supplementary materials provides an overview of all 20 emotions.

³ Planned contrasts for the other two emotions revealed significantly higher levels of the respective emotion in comparison to both other conditions. More specifically, the level of the emotion anger in the anger condition was higher compared to the happiness condition, $t(261) = -3.090, p = .002$, and higher compared to the fear condition, $t(261) = -3.284, p = .001$. Also, the level of the emotion fear in the fear condition was higher compared to the happiness condition, $t(261) = -4.096, p < .001$, as well as compared to the anger condition, $t(261) = -3.161, p = .002$.

Table 1

Mean values, standard deviations, and confidence intervals of reported emotion scores by experimental condition.

Emotion	Condition					
	Happiness		Anger		Fear	
	M (SD)	CI 95%	M (SD)	CI 95%	M (SD)	CI 95%
Happy	2.93 (0.96)	[2.73, 3.13]	2.66 (1.02)	[2.45, 2.88]	2.55 (1.08)	[2.33, 2.77]
Angry	1.74 (0.87)	[1.56, 1.93]	2.21 (1.22)	[1.96, 2.47]	1.72 (0.88)	[1.54, 1.90]
Fearful	1.31 (0.76)	[1.15, 1.47]	1.44 (0.78)	[1.28, 1.60]	1.84 (1.00)	[1.64, 2.05]

Additionally, we investigated the change in arousal levels after the emotion induction. Figure 2 shows that arousal increased steadily over the course of the experiment in all three conditions. Importantly, the slope visually becomes steeper right after the emotion induction and settles at a higher level than in the first half of the experiment. To test this observation, we ran two linear mixed-effects regressions with a random intercept for individuals to account for the repeated measures structure of the data. The dependent variable was the average level of tonic arousal activity for each round (for details see section 3.4.2). In Model 1, we added an indicator for the emotion induction (dummy coded; before and after induction) as a fixed effect. Results (Table 2) are in support of the visual impression and revealed that there was a strong general increase in arousal levels right after the emotion induction occurred.

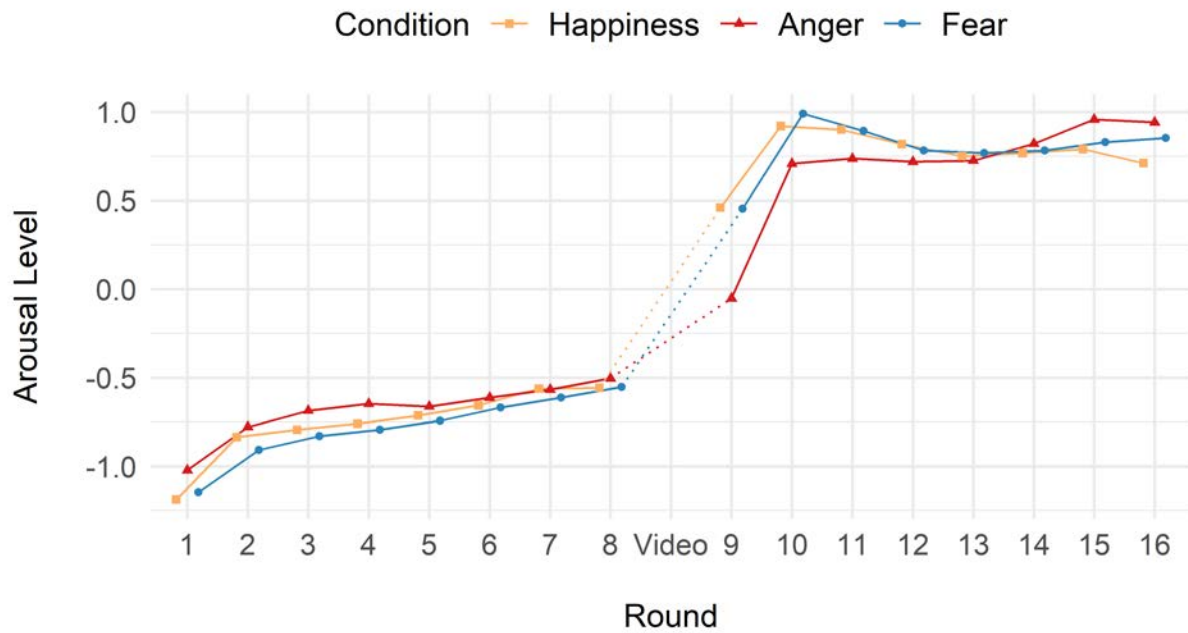


Figure 2. Arousal levels across all 16 rounds.

In Model 2, we additionally included the emotion condition (dummy coded) and the interaction terms between the emotion conditions and induction variable as fixed effects. We observed that the arousal levels did not differ between the happiness and fear condition after the induction. Yet, the interaction between emotion induction and the anger condition revealed that participants in this condition were relatively less aroused after watching the video (also see the red line in rounds 9 and 10 in Figure 2).

In combination, the manipulation check analyses showed that participants self-reported experiencing higher levels of specific emotions in the direction of our manipulations. Furthermore, participants felt more aroused in all three conditions after the emotion induction. We conclude that the manipulation of incidental emotions was successful.

Table 2

Linear mixed-effects regressions with arousal level as dependent variable

Variables	Arousal level			
	Model 1		Model 2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	-0.742***	0.013	-0.759***	0.024
Induction	1.493***	0.019	1.523***	0.033
Anger			0.073*	0.033
Fear			-0.023	0.033
Induction*Anger			-0.143**	0.047
Induction*Fear			0.053	0.046

* $p < .05$; ** $p < .01$; *** $p < .001$.

Note. $N = 240$ with 16 repeated measures (3,840 observations in total; some missing values due to failed EDA measurement). Induction = 0 for rounds before the emotion induction; Induction = 1 for rounds after the emotion induction. The emotion condition was dummy coded with the happiness condition as reference group.

3.2 Tax compliance decisions

To test whether tax compliance differed between the three conditions we ran two linear mixed-effects regressions with a random intercept for individuals. The dependent variable was the relative tax compliance score. Results are reported in Table 3. In Model 1, we entered the emotion condition (dummy coded), an indicator for the emotion induction, and their interactions as fixed effects. Figure 3 depicts relative tax compliance levels for the three conditions across all 16 rounds. A difference in tax compliance between the emotion conditions after the induction would be qualified by significant interaction terms. However, Model 1 attested that there were no significant interactions and therefore no difference in tax compliance in the second eight rounds. There only was a general decrease in compliance levels in the rounds after the induction, as indicated by the significant effect of the induction

dummy, meaning that compliance levels decreased with progression of the tax game, independent of the condition.

In Model 2, we additionally included mean arousal levels per round as well as interaction terms with the emotion conditions as fixed effects. After controlling for within-subject arousal level changes, again no interaction effect between the emotion condition dummies and the induction dummy were observed. This implies that individuals who were affected stronger (or weaker) by the respective emotion induction in terms of measured arousal levels, also did not show a different pattern in tax compliance decisions.

Table 3

Linear mixed-effects regressions with the relative tax compliance score as dependent variable

Variables	Relative tax compliance			
	Model 1		Model 2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	0.693***	0.032	0.680***	0.036
Anger	-0.018	0.045	-0.010	0.050
Fear	-0.019	0.045	0.019	0.050
Induction	-0.039*	0.017	-0.027	0.030
Arousal			-0.015	0.015
Induction*Anger	0.014	0.024	-0.009	0.039
Induction*Fear	0.000	0.024	-0.062	0.043
Arousal*Anger			0.018	0.021
Arousal*Fear			0.042	0.022

* $p < .05$; ** $p < .01$; *** $p < .001$.

Note. $N = 264$ with 16 repeated measures (4,224 observations in total) for Model 1. $N = 240$ with 16 repeated measures (3,840 observations in total; some missing values due to failed EDA measurement) for Model 2. The emotion condition was dummy coded with the

happiness condition as the reference group. Induction = 0 for rounds before the emotion induction; Induction = 1 for rounds after the emotion induction. Arousal is the level of tonic activity of each experimental round.

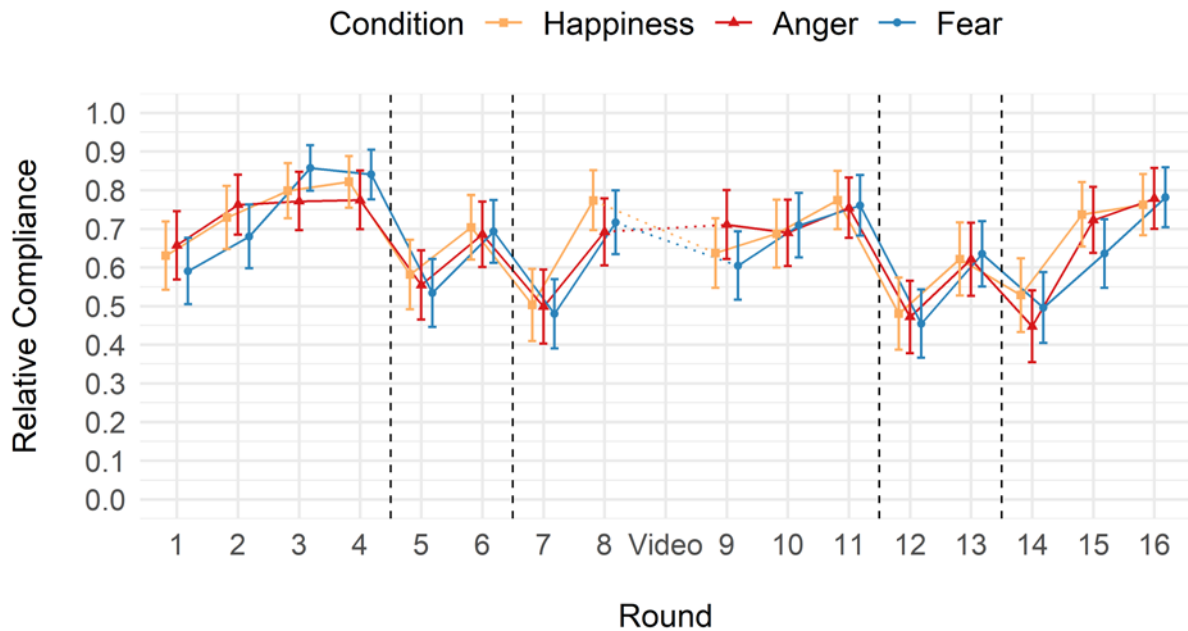


Figure 3. Relative tax compliance across all 16 rounds. Dashed vertical lines indicate the fixed audit positions.⁴

⁴ Note that the main variability in compliance is caused by post-audit decrease of compliance (i.e., the bomb-crater effect; Mittone, 2006) and is rather constant between conditions.

4 Discussion

We investigated the influence of incidental emotions on tax compliance decisions by inducing the specific emotions fear, anger, or happiness in an experimental setting. The experimental manipulation of emotions was successful. Participants self-reported experiencing the respective emotions significantly more intensively in the corresponding conditions. Additionally, skin conductance levels were elevated after the emotion induction, indicating the presence of strong emotional arousal. Despite the successful manipulation of specific emotions and major improvements in the design compared to previous studies (Enachescu, Puklavec, et al., 2019), we do not find any differences in tax compliance between the three conditions.

In line with the Appraisal Tendency Framework, we expected that participants would show higher compliance levels in the fear condition compared to the anger condition. Fearful participants were expected to appraise incoming information as uncontrollable, and evaluate risks negatively, while angry participants were expected to appraise risks as controllable and predictable. Regarding the effects of the happiness condition, the Feeling-as-Information Theory points into a different direction (positive affect should foster tax evasion) than the Mood Congruency and the Mood Maintenance Hypotheses (positive affect should foster tax compliance). Therefore, we did not formulate a directed hypothesis but expected a difference between compliance levels in the happiness condition compared to the two negative affect conditions (anger and fear). However, none of these effects could be shown in this study.

There are several possible reasons why we did not find the expected effects of incidental emotions on tax compliance behavior. First, we assumed that tax compliance decisions require substantial information processing, a form of processing that is theorized to be susceptible to emotional influences. However, it is possible that this kind of decisions are

based on motivated or direct information processing routes, which are less likely to be influenced by incidental affect (Forgas, 1995).

Second, the source of induced emotions was rather salient in this study, as participants attentively watched the four to five-minute-long video clips. Some authors argue that the carry-over effects of incidental emotions appear only when participants are unaware of the source of emotion and therefore misattribute it to the decision task (Schwarz & Clore, 1983). However, in a previous experiment that served as a starting point for this investigation it was tried to conceal the source of emotion induction by only playing background music (from an adjacent room) without offering further explanation (Enachescu, Puklavec, et al., 2019). In this study the emotion induction was not successful. Finding the balance between an emotion induction that is subtle but still works and one that is salient and prone to demand-effects, poses a challenge for this stream of research.

Third, integral emotions, elicited by the experimental situation itself could have interacted with the induced incidental emotions. The effort-task was likely to elicit stress-related feelings, as there was a time limit for completing the task. In addition, the tax decision might have elicited feelings of anxiousness or reactance. In a review on the integration of integral and incidental affect, Västfjäll et al., (2016) conclude that the effects of integral affect dominate the effects of incidental affect when both types are present, which is a possibility in our case. Furthermore, they argue that the effects of incidental affect are strongest when they are high in salience but participants are unaware of their source, which is not the case in the present study.

Notwithstanding these possible limitations, this study makes an important contribution to the field. By inducing anger and fear separately, we overcome one of the major flaws of previous studies that focused solely on positive versus negative affect. When the specificity of negative affect is unknown, it is not clear what effects to expect, as joined occurrences of specific emotions can add up or cancel out each other (e.g. anger and fear). The experimental

design allowed us to successfully induce these specific emotions and control for inter-individual differences in baseline emotionality (some participants might come to the lab stressed, while others are happy). Moreover, we assessed emotional arousal by measuring skin conductance response adding an additional dimension to the emotion measurement. The arousal measures provide less obtrusive information about the success of the emotion manipulation that is not prone to demand-effects.

In light of our results alongside the existing studies on emotions and taxes, one possible conclusion is that integral emotions are more likely to affect tax decisions than incidental emotions. Prior studies showed that emotions elicited in the taxation context itself influence compliance behavior. The various sources of these emotions could be receiving a balance notice, speaking to a tax officer, or experiencing an audit (Enachescu, Olsen, et al., 2019), or in response to social pressure (e.g. shame, Casal & Mittone, 2016). Even if there are effects of incidental affect that we missed in this study, the effects of integral emotions seem to be more relevant for the decision-making process. The implications for policy makers might be reassuring. The emotions that most likely affect taxpayers are not those that occur randomly, but those that can be deliberately influenced by the authorities themselves. Authorities should therefore aim at avoiding anger-provoking situations by fostering positive procedural experiences in a service-paradigm that makes compliance easy and less frustrating.

5 References

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