Cumulative Habilitation

“Trust and Cooperation Between

Public Authorities and Citizens”.

Fostering Tax Compliance and Other Types of Economic Cooperation

submitted to the
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by

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1. Introduction

States fundamentally depend on the cooperation of their citizens with the authorities. Citizens' cooperation in matters of taxation is a particularly significant case in point. A sufficient level of tax compliance is required to allow states to fund essential public goods such as schools or hospitals. Various theories suggest that citizens' cooperation with the authorities can be attained by at least two basic means: the recourse to enforcement and the fostering of trust (Kirchler, 2007; Alm & Torgler, 2011).

Classical economic theory assumes that enforcement is an adequate means of effecting cooperation with the authorities. Based on the theory of the *homo economicus*, individuals are perceived as egoistic and rational utility maximizers who cooperate only if doing so promises a higher utility than non-cooperation (Becker, 1968). Hence, a citizen would pay their taxes as required only if there is a high probability of being detected if they fail to do so and detected tax evasion carries a substantial penalty. Hence, the financial benefit of tax compliance is higher than that of tax evasion (Allingham & Sandmo, 1972; Srinivasan, 1973).

More recent research suggests that trust is crucial for cooperation, not only among individuals but also between individuals and the authorities (Goodsell, 2008; Levi & Stoker, 2000; Sullivan & Transue, 1999). Trust is defined as the willingness to take risks and be vulnerable to the actions of another party (Mayer, Davis & Schnorman, 1995). Numerous empirical studies show that trust in the authorities—including the tax authorities—increases the willingness of citizens to cooperate with them and pay their taxes as required (Feld & Frey, 2002; Torgler, Demir, Macintyre & Schaffner, 2008; Tyler & Degoey, 1996; van Dijk & Verboon, 2010). Consequently, numerous researchers and an increasing number of states and tax authorities emphasize the need, alongside the strengthening of enforcement measures, to foster trust in order to promote citizens' cooperation in matters including taxation.

The slippery slope framework combines insights from psychological and classical economic theory and integrates the most important determinants governing tax compliance in one coherent model (Kirchler, 2007; Kirchler, Hoelzl & Wahl, 2008). It suggests that the power of the authorities (i.e., the taxpayers' perception that the authorities will detect and punish tax evasion) and trust in the authorities (i.e., the taxpayers' perception that the authorities are benevolent and work for the common good) both play an important role in fostering tax compliance. However, these two determinants are related to different motivational processes and different tax climates between authorities and taxpayers.

The extended slippery slope framework (eSSF; Gangl, Hofmann & Kirchler, 2015) focusses specifically on the interaction between power and trust. Drawing on an analysis of the interaction between differing kinds of power (i.e., coercive and legitimate power) and varying kinds of trust (i.e., reason-based and implicit trust), the eSSF explains (1) how tax cooperation develops; (2) how specific tax climates can be promoted and modified, and (3) how tax motivations (i.e., enforced compliance, voluntary cooperation, committed cooperation) can be fostered and adjusted. The eSSF suggests that all these various factors relating to power, trust, tax climates and tax motivations play a role in explaining and facilitating tax compliance and offers a clear account of measures the authorities can take to foster the trust and cooperation of the citizenry.

The academic articles presented in the context of this Habilitation draw on the eSSF both directly and indirectly. In large part, they offer empirical analyses scrutinizing the validity of the eSSF's assumptions. Yet those not directly engaged in this scrutiny too are stimulated, be it on the theoretical or empirical plane, by the eSSF, for instance, by drawing on its theoretical concepts and measurement scales to examine types of economic cooperation other than tax compliance.

In what follows, I will first present a short outline of the eSSF. After that the distinct contribution of this cumulative Habilitation to research on trust and cooperation between public authorities and citizens is presented.

1.1 The Extended Slippery Slope Framework (eSSF)

The extended slippery slope framework conceptualizes the dynamic relationships between four key determinants of tax compliance: power, trust, tax climates, tax motivations. The eSSF defines power as the perceived ability of a party to influence another party's behaviour based on coercive or legitimate power (French & Raven, 1959; Raven, Schwarzwald & Koslowsky, 1998; Tyler, 2003). The perceived ability of the authorities to enforce compliance with the help of rigorous audits and substantial fines is classified as coercive power. The authorities' ability to persuade citizens to comply with the rules and regulations voluntarily on the basis of fair and legitimate procedures, expertise, information and a positive image qualifies as legitimate power.

The eSSF distinguishes between reason-based and implicit trust. This definition is based on the socio-cognitive trust model rooted in the differentiation between slow and fast cognitive processes (Castelfranchi & Falcone, 2010; Evans, 2003). The concept of reason-based trust covers instances in which taxpayers choose to trust the authorities based on the evaluation of various criteria such as the pursuit of an important goal, perceived motivation, competence or benevolence, and the perception that external conditions (e.g., political backing) allow the authorities to work efficiently. The concept of implicit trust denotes an automatic trust reaction to associative learned stimuli such as signs that remind people of positive experiences in the past, a perceived shared identity or friendly faces.

Drawing on research on regulation (Adler, 2001; Haslam & Fiske, 1999), the eSSF distinguishes between three basic tax climates characterizing the interaction and cooperation between tax authorities and taxpayers: the antagonistic, the service and the confidence climate. When the interaction between tax authorities and taxpayers is hostile and they work against each other like “cops and robbers”, the climate is antagonistic (Kirchler et al., 2008). The category of the service climate encompasses cases in which the tax authorities act as a service provider interacting professionally with taxpayers as clients on the basis of clear-cut bureaucratic procedures (new public management approaches are a case in point). In a confidence climate, mutual trust prevails. Tax authorities and taxpayers share the same values and cooperate as equal partners.

The eSSF further distinguishes between three different kinds of tax motivation reflecting gradations between extrinsic and intrinsic motivation (Ryan & Deci, 2000): enforced compliance, voluntary cooperation and committed cooperation. In the case of enforced compliance, taxpayers rationally consider the potential sanctions and pay their taxes as required only because they fear rigorous audits and substantial fines. In cases of voluntary cooperation, taxpayers pay their taxes as required because tax evasion would be more difficult and because they reciprocate to the tax authorities’ services. In cases of committed cooperation, taxpayers are personally convinced that paying their taxes as required is a moral obligation and the right thing to do.

The eSSF thus provides a flexible instrument facilitating the analysis of how these various factors—power, trust, tax climates and tax motivations—interact in any given context and are likely to develop over time. Moreover, it generates detailed conclusions as to how tax authorities can foster trust and tax compliance in specific contexts. One of its crucial insights is that the manner in which tax authorities deploy their power helps shape levels of trust and, consequently, the tax climate and tax motivations in any given setting. Figure 1 illustrates this mechanism.

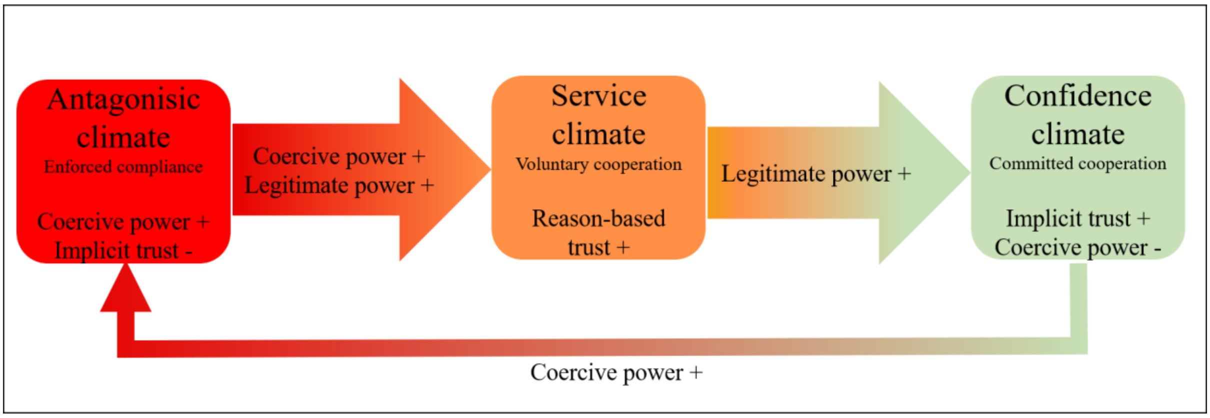

Figure 1: The development of tax climates and tax motivations according to the eSSF (adopted from Gangl, van Dijk, W., van Dijk, E. & Hofmann, 2020)

While the tax authorities can indeed generate tax compliance by deploying coercive power, they do so at the cost of creating an antagonistic climate and enforced motivation. Rigorous controls and substantial sanctions raise tax compliance while concurrently decreasing implicit trust, provoking reactance and creating a hostile climate (Feld & Frey, 2007; Kramer, 1999). Compliance in an antagonistic climate relies on a vicious cycle of high levels of coercion leading to low implicit trust which, in turn, necessitates more coercion and so on.

A combination of high levels of both coercive and legitimate power may break this vicious cycle by promoting reason-based trust, thus creating a service climate in which taxpayers are voluntarily cooperative. Reliance on legitimate power, based on voice and fair, transparent and democratically accountable procedures, allows taxpayers to place their trust in the contention that the tax authorities' use of coercive power is underpinned by competence and good faith. Numerous empirical studies have demonstrated that the combination of coercive and legitimate procedures can foster trust and cooperation with the authorities (Mooijman, Van Dijk, Van Dijk & Ellemers, 2017; Tyler, 2011; Wenzel, 2003). Thus, the combination of coercive and legitimate power leads to a service climate in which taxpayers pay taxes in response to professional services.

Over time, positive experiences with legitimate power in a service climate can foster the emergence of implicit trust and help create a confidence climate. If the tax authorities enjoy a sustained good reputation, reasoned trust can turn to implicit trust. Legitimate power commands taxpayers' implicit trust and results in their paying their taxes as a matter of course. Conversely, the tax authorities trust the taxpayers and see their role in helping taxpayers comply.

Confidence climates are put at risk by the authorities' use of coercive power. In a high-trust relationship of this kind, the deployment of massive coercive power is perceived as a betrayal of trust (Joskowicz-Jabloner & Leiser, 2013) and likely to transform a confidence climate into an antagonistic climate. The eSSF postulates that only the combination of low levels of coercive power with high levels of legitimate power can maintain a confidence climate by assuring taxpayers of the authorities' good faith.

The eSSF thus offers a holistic theoretical tool facilitating predictions as to how the tax authorities can build, maintain and maximize taxpayer trust and compliance. It thereby makes many theoretical contributions and renders a range of practical recommendations.

2. Trust and Cooperation Between Public Authorities and the Citizens

This cumulative Habilitation makes an interdisciplinary contribution to the fields of applied social and economic psychology, economics and administrative studies and, more specifically, to research on trust and cooperation between public authorities and citizens. It comprises twelve peer-reviewed articles published in leading international journals. The journals in question either rank in the top quartile (Q1) of social psychology journals (e.g., the *Journal of Social Issues and Policy Review* and the *Journal of Political Psychology*) or count among the most important outlets for research in the field of economic psychology (e.g., the *Journal of Economic Psychology* and *Economic Letters*). I closely collaborated with renowned international colleagues from a range of disciplines (including psychology, economics, law, and management studies), in writing all twelve articles, acting as first author for eight of them. The articles fall into three categories.

The first category comprises seven articles that test the theoretical assumptions of the extended Slippery Slope Framework (eSSF; Gangl et al., 2015) which was theoretically developed by me and my colleagues while working on my PhD thesis. In these articles a variety of empirical methods is applied such as incentivized laboratory tax experiments (Gangl, van Dijk, W., van Dijk, E. &

Hofmann, 2020; Hartl, Hofmann, Gangl, Hartner-Tiefenthalter & Kirchler, 2015; Hofmann, Hartl, Gangl., Hartner-Tiefenthalter & Kirchler, 2017), neuro-physiological experiments (Gangl, Pfabigan, Lamm, & Kirchler, 2017), online experiments (Gangl, van Dijk et al., 2020; Hofmann et al., 2017), online surveys (Gangl, Hofmann, de Groot, Antonides, Goslinga, Hartl, & Kirchler, 2015; Gangl, Hofmann, Hartl, & Berkics, 2020) or qualitative interviews with taxpayers and tax officers (Gangl, Hartl, Hofmann & Kirchler, 2019). Alongside their contribution to the validation of the eSSF, these articles also deepen our understanding of the effects of coercive and legitimate power on trust in public authorities and tax cooperation, of the relationship between tax motivations and tax compliance, of the extent to which self-employed taxpayers and tax officials rely on eSSF concepts, and of the means required to either sustain or regain a confidence climate.

The second category comprises three articles addressing other specific aspects of tax compliance. The article on the effect of close supervision on taxpayers' tax compliance (Gangl, Torgler, Kirchler & Hofmann, 2014) draws on a field experiment. The article on the effect of patriotism on tax compliance (Gangl, Torgler & Kirchler, 2016) draws on several online experiments. The third of these articles is an extensive review focusing on the tax compliance of the wealthy and policy instruments likely to increase their tax compliance (Gangl & Torgler, 2020).

The third category comprises two articles on aspects of trust and cooperation in the economic sphere more generally. The first article examines associations between trust in public institutions (e.g., the police or government) and trust between individuals (Spadaro, Gangl, Van Prooijen, Van Lange & Mosso, 2020). The second article presents a measurement instrument designed to assess a cooperative and ethical business culture (Tanner, Gangl & Witt, 2019).

2.1 Articles Comprising the Habilitation

Empirical Validation of the Extended Slippery Slope Framework

[1] Gangl, K., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2017). Coercive and legitimate authority impact tax honesty. Evidence from behavioral and ERP experiments. *Social Cognitive and Affective Neuroscience, 12*(7), 1108-1117, https://doi.org/10.1093/scan/nsx029

[2] Hartl, B., Hofmann, E., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E.

(2015). Does the description of a tax authority affect tax evasion? – The impact of displayed coercive and legitimate power. *PLoS ONE*, *10*(4), article e0123355, https://doi.org/10.1371/journal.pone.0123355

[3] Hofmann, E., Hartl, B., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (2017). Authorities' coercive and legitimate power: The impact on cognitions underlying cooperation. *Frontiers in Psychology, 8*(5)*,* 1-15*,* https://doi.org/10.3389/fpsyg.2017.00005

[4] Gangl, K., Hofmann, E., Hartl, B., & Berkics, M. (2020). The impact of powerful authorities and trustful taxpayers: Evidence for the extended slippery slope framework from Austria, Finland and Hungary. *Policy Studies*, *41*(1)*, 98-111,* https://doi.org/10.1080/01442872.2019.1577375

[5] Gangl, K., van Dijk, W., van Dijk, E. & Hofmann, E. (2020). Building versus maintaining a perceived confidence-based tax climate: Experimental evidence. *Journal of Economic Psychology, 81,* article 102310*,* https://doi.org/10.1016/j.joep.2020.102310

[6] Gangl, K., Hartl, B., Hofmann, E., Kirchler, E. (2019). The relationship between Austrian tax auditors and self-employed taxpayers: Evidence from a qualitative study. *Frontiers in Psychology, 10*(1034), https://doi.org/10.3389/fpsyg.2019.01034

[7] Gangl, K., Hofmann, E., de Groot, M., Antonides, G., Goslinga, S., Hartl, B., & Kirchler, E. (2015). Taxpayers' motivations relate to tax compliance: Evidence from two representative samples of Austrian and Dutch self-employed taxpayers. *Journal of Tax Administration, 1,* 15-25, http://jota.website/article/view/45

Other Specific Aspects of Tax Compliance

[8] Gangl, K., Torgler, B., Kirchler, E., & Hofmann, E. (2014). Effects of supervision on tax compliance: Evidence from a field experiment in Austria. *Economic Letters, 123,* 378-382, https://doi.org/10.1016/j.econlet.2014.03.027

[9] Gangl, K., Torgler, B., & Kirchler, E. (2016). Patriotism's impact on cooperation with the state: An experimental study on tax compliance. *Political Psychology, 37,* 867-881, https://doi.org/10.1111/pops.12294

[10] Gangl. K., & Torgler, B. (2020). Tax compliance by the wealthy: A review of the literature and agenda for research. *Social Issues and Policy Review, 14*(1), 108-151, https://doi.org/10.1111/sipr.12065

Aspects of Trust and Cooperation in the Economic Sphere more Generally

[11] Spadaro, G., Gangl, K., Van Prooijen, J.W., Van Lange, P.A.M., Mosso, C.O. (2020). Enhancing feelings of security: How trustworthy state institutions promote interpersonal trust. *PlosOne,15*(9), article 0237934, https://doi.org/10.1371/journal.pone.0237934

[12] Tanner, C., Gangl., K., & Witt, N. (2019). The German ethical culture scale (GECS): Development and first construct testing. *Frontiers in Psychology*, *10*(1667), https://doi.org/10.3389/fpsyg.2019.01667

2.1 Summary of the Articles by Category

2.1.1 Empirical Validation of the Extended Slippery Slope Framework

The first five articles test various assumptions of the eSSF concerning the deployment of coercive and legitimate power by tax authorities empirically and contribute to a better understanding of the two main means with which tax authorities seek to ensure tax compliance: the proverbial carrot and stick. The sixth article examines the extent to which taxpayers' and tax officials' actual assumptions about tax compliance correspond to the eSSF's concepts. The seventh article analyses the relationship between tax motivations and tax compliance.

Article 1. By examining the basic cognitive characteristics of coercive and legitimate power based on a neurophysiological ERP experiment, this article contributes to a better understanding of what motivates taxpayers to cooperate with the tax authorities. It presents the results of two incentivized laboratory tax experiments in which coercive power and legitimate power were manipulated in a between- and within-subject design based on scenarios in order to test the effect on tax payments, enforced compliance, voluntary cooperation, rational decision-making, decision-making times and ERP potentials. In this instance, voluntary cooperation was assessed with scales from the TAX-I (Kirchler & Wahl, 2010). This concept of voluntary cooperation is assessed in a manner similar to committed cooperation in the eSSF. In the scenarios, participants were asked to imagine they were self-employed and paying taxes on the income generated in this capacity in a fictitious country. The likelihood that the audits of the tax authorities of this fictitious country would detect tax evasion was given as fifteen per cent. In cases of detected tax evasion, participants would be required to pay the tax they had withheld and the same amount again as a fine. Participants knew that their behaviour in a randomly chosen tax round at the end of the experiment would determine their final remuneration for participation. They were randomly assigned to two possible scenarios. The tax authorities were described as relying predominantly either on rigorous audits and substantial fines (coercive power) or on legitimacy-based procedures and the provision of services (legitimate power). The actual behaviour of the fictitious tax authorities (e.g., the frequency of tax audits) did not vary, however. After paying taxes over 40 rounds while constantly being reminded of the tax authorities' reliance on coercive or legitimate power, respectively, participants completed a questionnaire using scales measuring enforced and voluntary compliance, rational decision-making and reactance in complying with the tax authorities. Subsequently, before embarking on another 40 rounds, in order to create balanced conditions, participants were told that, due to a change in government, the tax regime would switch from prioritizing legitimate power to relying principally on coercive power or vice versa. In addition, decision times were assessed in experiment 1 and ERPs (i.e., P2, MFN) in experiment 2.

The results of experiment 1 indicated that recourse to coercive power led to a lower level of tax payments, a higher degree of enforced compliance, less voluntary cooperation, more rational decision-making and more reactance than reliance on legitimate power. Also, tax decisions tended to be taken more quickly in the face of coercive rather than legitimate power. In experiment 2, the deployment of coercive power led again to a higher degree of enforced compliance, less voluntary cooperation and more reactance than recourse to legitimate power. There was no differential in terms of the actual level of tax payments or the relative extent of rational decision-making. Importantly, experiment 2 also showed that P2 amplitudes were more, and MFN amplitudes less, pronounced in the face of coercive rather than legitimate power. Based on previous ERP experiments on decision-making, the P2 variation suggests that reliance on legitimate power is more likely than recourse to coercive power to heighten arousal. The MFN variation suggests that the use of legitimate power precipitates an increased response conflict, likely resulting from the moral pressure associated with the need to negotiate possible contradictions between communal and individual benefits.

In conclusion, the data from the questionnaires completed at the end of both experiments bear out the assumptions of the eSSF: while recourse to coercive power generates enforced compliance and reactance, reliance on legitimate power fosters voluntary cooperation. Whether the authorities rely on coercive or legitimate power does not ultimately affect the actual level of tax payments, both ensure compliance. Importantly, the decision-time and ERP results suggest that while recourse to coercive power generates a simple stimulus-response reaction, reliance on legitimate power precipitates a complex moral conflict on the issue of whether to cooperate. Consequently, conventional assumptions regarding the effect of coercive power that initially fed into the eSSF needed to be revised. These findings suggest that coercive power may not in fact owe its effect to rational calculations in terms of the potential benefits or disadvantages but, rather, to an automatic response to the stimulus coercion.

Article 2. This article presents the results of four experiments undertaken to assess the respective impact of coercive and legitimate power on tax compliance and compare the effect of either in isolation as well as a combination of both. Building on the methodological approach outlined in the summary of the first article, we undertook four complex laboratory tax experiments based on scenarios in which the participants were again self-employed taxpayers confronted with tax authorities that prioritized either coercive or legitimate power or a combination of both. Experiment 1 examined the impact of the actual audit probability and the perceived deployment of coercive and legitimate power on tax payments. We undertook this experiment in order to test the assumption that, contrary to the claims of traditional neo-classical theories regarding tax evasion, not (only) the actual (audit probability) but the perceived form of power exercised by the tax authorities (coercive or legitimate) too influences the level of tax payments. While classical economic theories have acknowledged the significance of actual audits and fines they have dismissed the relevance of the way in which audits and fines are perceived. The results of experiment 1 bore out our assumption that, while actual differences in audit probability have very little effect on the level of tax payments, the perceived levels of coercive or legitimate power do impact them. Experiment 2 manipulated low versus high levels of coercive power in a between- and a within-subject design. The results demonstrated that high levels of coercive power precipitate a higher level of tax payments than low levels of coercive power, and that the sequence of experiencing low versus high levels of coercive power has no effect on the outcome. Experiment 3 manipulated low versus high levels of legitimate power in a between- and a within-subject design. The results showed that an increase in the level of legitimate power precipitates an increase in the level of tax payments. In this case too, the sequence of experiencing low versus high levels of legitimate power made no difference. Experiment 4 tested low versus high levels of coercive power in combination with low versus high levels of legitimate power in a between- and a within-subject design. The results confirmed the findings of the previous two experiments, underscoring that increases in the levels of coercive and legitimate power lead to increases in tax compliance *independently of each other*. This theoretical insight is also of considerable practical importance in that it clarifies that the tax authorities can take recourse to both coercive and legitimate power to effect cooperation.

Article 3. The third article investigates the cognitive effects that are elicited by coercive and legitimate power, respectively, and examines the extent to which these effects, in turn, influence tax payment levels. We set out to test the extent to which recourse to coercive and legitimate power, respectively, elicit implicit or reason-based trust and engender perceptions of the tax climate as antagonistic or service-oriented and of compliance as enforced or voluntary. The article reports four experiments, whereby experiment 1-3 were the same experiments as presented in article 2. However, other dependent variables than in article 2 were analyzed. Experiment 1 bore out the assumption of the eSSF that an increase in the level of coercive power precipitates a decrease in the level of implicit trust and contributes to a more antagonistic climate and a greater sense of enforced compliance. It also demonstrated that the impact of high levels of coercive power on taxpaying intentions is immediate (i.e., not mediated). Experiment 2 bore out the assumption of the eSSF that high levels of legitimate power have a positive impact on reason-based trust and the perception that the tax climate is service-oriented and taxpayers' cooperation voluntary. In this case, reason-based trust mediates the effect of legitimate power on taxpaying intentions. Experiment 3 compared the impact of low versus high levels of coercive and legitimate power in combination and largely confirmed the results of the first two experiments. However, in this case, the coercive power deployed had no negative effect on implicit trust. Experiment 4 utilized an experimental questionnaire and used a 2 (low versus high levels of coercive power) by 2 (low versus high levels of legitimate power) design to examine whether the eSSF's assumptions also hold in another context, in this case, that of insurance fraud. It transpired that while higher levels of coercive power increased the perception of an antagonistic climate and enforced compliance, they again had no negative impact on implicit trust. Higher levels of legitimate power had a positive impact on reason-based trust and the perception that the climate was service-oriented and cooperation voluntary.

In conclusion, the experiments presented in this article largely confirm the assumptions of the eSSF about the impact of the recourse to coercive and legitimate power on trust, tax climates, tax motivation and tax compliance. Moreover, we were able to demonstrate that the eSSF's assumptions are also applicable to fields of economic decision-making other than tax compliance (such as insurance fraud). However, the assumed negative relationship between coercive power and implicit trust was only partly confirmed. These findings are all of considerable importance to a better understanding of various psychological mechanisms that affect tax compliance.

Article 4. The fourth article presents the results of a study drawing on survey data pertaining to taxpayers in Austria, Hungary, and Finland. While the participants in the previous laboratory experiments were students, our principal aim with this study was to test the assumptions of the eSSF on a heterogeneous sample of actual taxpayers. The study demonstrated that perceived recourse to coercive power was related to lower levels of implicit trust and thereby indirectly also to less pronounced tax compliance intentions. Perceived reliance on legitimate power was directly and indirectly (via reason-based trust) related to more pronounced tax compliance intentions. The positive correlation between implicit trust and tax compliance intentions was mediated, as the assumptions of the eSSF suggested, via a perceived confidence climate and committed cooperation. In conclusion, we were able to demonstrate that the eSSF can account not only for the tax behaviour of students in a laboratory setting but also for "real" taxpayers' tax compliance intentions. However, contrary to the eSSF's assumptions, this study registered no positive correlation between the use of coercive power and tax compliance.

Article 5. The research presented in this article focussed specifically on the eSSF's assumption that a combination of coercive and legitimate power can facilitate the move from an antagonistic to a confidence climate, on the one hand, but erodes an existing confidence climate, on the other. This is an important assumption, given that the existing literature suggests that the combination of coercive and legitimate power is always suited to foster trust. Article 5 was based on an online experiment with taxpayers and an incentivized laboratory experiment with students. Participants were first asked to imagine they were self-employed taxpayers in either an antagonistic or confidence-based climate. Having paid their taxes for several years, they were informed that the government had changed and they would henceforth be facing a combination of low versus high levels of coercive power and low versus high levels of legitimate power. The results of both experiments supported the assumptions of the eSSF by demonstrating that the combination of coercive and legitimate power increases trust and a confidence climate, provided it was preceded by an antagonistic climate. By contrast, when preceded by a confidence climate, the same combination of coercive and legitimate power reduces trust and a confidence tax climate. Results showed as expected that the confidence climate was only maintained by the combination of low coercive power with high legitimate power.

While only one of these experiments demonstrated both a negative correlation between coercive power and the level of implicit trust and a positive correlation between coercive power and the level of tax cooperation, the recourse to legitimate power precipitated higher levels of reason-based trust and tax compliance in both experiments. These are important theoretically and practically relevant findings underscoring that the means the authorities need to deploy to *attain* trust differ from those required to *sustain* trust. The combination of high levels of both coercive and legitimate power serves to increase trust when preceded by an antagonistic tax climate but has the opposite effect in an already existing high-trust situation (i.e., a confidence climate).

Article 6. This article presents the results of in-depth interviews with 33 self-employed taxpayers and 30 experienced tax officials. It transpired that the explanations interviewees offered to explain their decision to pay taxes or motivate tax compliance, both in terms of their considerations and the situational factors influencing their decisions, closely matched the assumptions of the eSSF. In addition, new conceptual sub-categories emerged. These included the setting of deadlines as a means of exerting coercive power and personal support as a factor that increases implicit trust in the tax authorities. We also identified varying types of tax compliance. These included stalling behaviour and the intentional creation of complexity in tax documents. Alongside the practical importance of its structured holistic survey of actual practices and perceptions at the coal face and their relevance to, and impact on, actual and perceived tax compliance, the significance of this article rests on the new research hypotheses it generated.

Article 7. The research presented in this article subjected three tax motivations outlined by the eSSF—enforced compliance (i.e., willingness to pay one's taxes for fear of audits and fines), voluntary cooperation (i.e., willingness to pay one's taxes in reciprocation of the tax authorities' services) and committed cooperation (i.e., willingness to pay one's taxes out of a genuine sense of duty)—and their relationship to tax compliance. It draws on data from two representative samples of entrepreneurs in Austria and the Netherlands. Contrary to our expectations, we discovered a negative correlation between enforced compliance and tax compliance. Moreover, it transpired that voluntary cooperation did not translate into tax compliance. On the other hand, the research bore out our assumption of a positive correlation between committed cooperation and tax compliance. This suggests that high levels of tax compliance depend on committed cooperation, i.e., on taxpayers being willing to pay their taxes out of a genuine sense of personal duty. This has fundamental theoretical implications. Should these outcomes be confirmed by follow-up studies, the eSSF would need to be reconfigured to prioritize committed over enforced compliance or voluntary cooperation as a prerequisite for high levels of tax compliance.

2.2.2 Other Specific Aspects of Tax Cooperation

Although the next three articles address other specific aspects of tax compliance not directly related to the eSSF, they too have benefited from the research on the eSSF, either on a methodological plane or through the use of scales developed to test eSSF concepts. These articles make important contributions to the field of tax psychology by using innovative new methods such as field experiments (Article 8), by investigating assumptions about the relevance of patriotism to tax compliance (Article 9), and by reviewing research on one of the most pressing problems in the field, the high rate of tax avoidance among the wealthy (Article 10).

Article 8. This article presents the results of a field experiment in which recently established firms were exposed either to the tax authorities' standard treatment (i.e., no personal contact between tax authorities and taxpayers) or their close supervision. In the second case, the firms were regularly contacted and monitored by tax officials who informed and reminded them of their tax liabilities in a friendly and supportive manner. It transpired that the closely supervised firms were more likely to pay the taxes they owed but less likely to do so on time. In the article, we discuss possible reasons for the fact that the close supervision backfired in terms of getting the firms to pay their taxes on time. It may be that supervised firms concluded that they did not need to pay much attention to the due dates since tax officials would call and remind them anyway, while those who were not supervised may have been more worried about the presumed negative consequences of missing the deadlines. As one of the first field experiments undertaken in the field of tax compliance, and by demonstrating that the close supervision and monitoring of taxpayers can backfire, at least in part, this article made an important theoretical contribution to the field.

Article 9. This article presented research undertaken to determine whether patriotism is causally connected to tax compliance. Numerous surveys have reported a positive correlation between patriotism and tax compliance, but very few experiments have been conducted to test for a causal connection. There is, however, a snare. Social-identity theory suggests that the promotion of patriotism (i.e., of identification with, and positive emotions towards, one's own group) might also foster nationalism (i.e., the view that one's own country should dominate and discriminate against other countries and their citizens). In this case, the increase in nationalism would cancel out the beneficial effect of patriotism on tax compliance. Ordinarily, tax authorities would want to refrain from eliciting patriotism if doing so would also generate or increase (radical) nationalism. Relying on survey data, we initially demonstrated an indirect correlation, mediated by reason-based trust and/or voluntary cooperation, between national and local patriotism as well as nationalism, on the one hand, and tax compliance, on the other. In this instance, we again assessed voluntary cooperation using the scales from the TAX-I (Kirchler & Wahl, 2010). We then undertook three online tax experiments drawing on participants living in Austria whom we recruited through the economic discussion forums of certain newspapers.

In experiment 1, participants presented with the flag of the country (i.e., Austria) whose nationals they were subsequently displayed higher levels of national patriotism, reason-based trust, voluntary cooperation and tax compliance than their counterparts who had been shown a fictitious flag. However, the Austrian flag marginally also lead to more nationalism. In experiment 2, in order to prime their national patriotism, participants were asked to write down what they liked versus disliked about their lives in Austria. The national patriotic versus national non-patriotic priming increased reason-based trust and in turn voluntary cooperation and tax compliance; no relevant influence on nationalism was found. In experiment 3, participants were shown images of either Austrian or Australian landscapes which elicited high versus low local patriotism. Also, the local versus foreign landscapes directly and indirectly (via voluntary cooperation) increased tax compliance; no relevant effect on nationalism was found. Results thus show that national or local patriotism can be elicited without simultaneously fostering nationalism. In addition, article 9 promoted our understanding of the causal mechanisms that result in the positive correlation between patriotism and tax compliance.

Article 10. This article presents a review of existing literature on the tax compliance of the wealthy undertaken in order to demonstrate the need for further psychological research in this specific area and to develop initial ideas for a tailored approach suited to increase the tax compliance of the wealthy. Given that it fosters social inequality and reduces the ability of states to respond to challenges such as the climate crisis, tax evasion and avoidance among the wealthy is one of the most important problems of our time. The review begins with an outline of the history of taxing the wealthy, from the emergence of agricultural societies to the current globalized financial market that helps facilitate tax avoidance by wealthy individuals and large corporations. This is followed by the presentation of empirical research demonstrating that wealthy taxpayers tend to be less tax compliant than average taxpayers. We then discuss the political and economic conditions (macro level), the social contextual factors (meso level) and the individual variations (micro level) that likely explain the lower tax compliance among the wealthy in psychological terms.

A number of policy proposals tailored specifically to the issue in hand emerge from this review. At the micro, meso and macro levels alike, both coercive and legitimacy-based nuanced measures are required. On the macro level, states need to create stricter, more coercive legal environments, specialized revenue bodies and tailored marketing campaigns. On the meso level, tax practitioners need to be regulated more rigorously and a range of reputational and participatory mechanisms need to be introduced. On the micro-level, tax auditors need to be well trained, able to respond flexibly to individuals' personal motivation and willing to treat taxpayers with seriousness and respect. The research also suggests that the wealthy are particularly likely to react negatively to coercive power, given that they have the financial and psychological resources at their disposal to fight the tax authorities and evade sanctions. Conversely, legitimate power exercised by specialized revenue bodies that maintain personal contact and allow for more taxpayer participation would likely enhance tax compliance among the wealthy. By laying the conceptual groundwork and making specific suggestions for further research required to underpin the authorities' efforts to combat one of the major challenges of our time, the extreme tax avoidance among the wealthy, this article makes a crucial contribution to the field.

2.2.3 Aspects of Trust and Cooperation in the Economic Sphere more Generally

The final two articles deal with aspects of trust and cooperation in the economic sphere more generally. One of them makes a theoretical contribution to the better understanding of how the authorities impact trust between individuals, the other makes an important practical contribution by developing a psychological measure for the assessment of how ethical the climate in an organization is, which should, in turn, encourage enhanced compliance with ethical rules.

Article 11. This article presents research undertaken in order to explore whether and how the authorities can influence interpersonal trust (i.e., mutual trust among citizens). It has long been accepted that mutual trust between citizens enhances their trust in public institutions. Whether institutions can also help foster mutual trust between citizens, by contrast, has been a matter of considerable controversy. Drawing on data from three complementary sub-studies, we concluded that citizens' trust in public institutions can indeed foster interpersonal trust, provided the institutions are able to enhance the citizens' sense of security. Individuals are more likely to take the risk of trusting another unknown individual if they are confident that a trustworthy institution would step in and protect them if necessary. The first study focussed on survey data from Italy assessing participants' attitudes towards five public institutions including the police and the government. Results showed that trust in Italian institutions is related to general trust in Italian citizens via feelings of security (e.g., the feeling that one can count on public institutions if anything happens). The second study analysed data from the European Social Survey covering 16 countries and indicated that institutional trust is related to interpersonal trust via the feeling of being safe when walking alone after dark. Study 3 was an incentivized experiment in which participants were led to believe they were playing a trust game with a partner from a country whose police forces were either trustworthy or not. Participants who assumed they were playing with a partner from a country with trustworthy police forces felt more secure, were more likely to trust their partner, and willing to send them more money than participants who assumed they were playing with someone from a country with untrustworthy police forces. The finding that there is a causal mechanism form trusting institutions to interpersonal trust and not (just) vice versa that interpersonal trust impacts instructional trust is an extremely important theoretical and practical relevant contribution.

Article 12. This article presents a psychological scale for the assessment of how ethical the culture in any given organization is: the German Ethical Culture Scale (GECS). It is widely accepted that the compliance with ethical rules presupposes an ethical organizational culture. The GECS was a desideratum because there was previously no German-language scale that integrated important determinants of ethical conduct (e.g., ethical goal setting) in a theoretically satisfactory manner. The article frames the issue in terms of a theoretical differentiation between compliance factors (i.e., those that deter ethical misconduct) and integrity factors (i.e., those that facilitate ethical conduct). Compliance factors include (1) controlling, (2) sanctioning, (3) clarity of rules (4) avoidance of rule defectiveness and (5) rule viability. Integrity factors include (perceived) high levels of (6) accountability and (7) leaders' role modelling, on the one hand, and (perceived) low levels of (8) pressure to compromise, (9) obedience and (10) ill-conceived goals, on the other. The GECS was developed on the basis of three studies.

In study 1, a preliminary pool of items was generated based on a literature search and presented to a sample of Swiss employees. Results based on an exploratory (EFA) and confirmatory factor analysis (CFA) allowed us to reduce the number of items and develop an initial factor structure. In study 2, some of the factors were adapted slightly and new factors (based on input from practitioners) introduced before conducting another CFA based on a sample from Germany;

importantly, criterion validity was established by examining how the factors relate to "observed ethical misconduct". The results of these studies allowed us to generate the final set of items that constitute the GECS, confirming that variance in the application of the ten aforementioned factors correlated to, and explained, variance in observed misconduct above and beyond that explained by formal factors such as the non/existence of a code of conduct or ethics help-line. Study 3 drew on a Swiss and German sample and was designed to establish construct validity. The study also demonstrated, *inter alia*, that the composite integrity factor increased autonomous work motivation whereas the composite compliance factor decreased it.

By providing the first validated German-language instrument of its kind, this article makes an important practical contribution, helping organizations to identify and prioritize factors that help avoid misconduct and facilitate ethical conduct. This latter, crucial distinction between compliance and integrity factors is of theoretical significance to the assessment of ethical organizational culture.

3. Conclusion

This cumulative Habilitation makes a substantial theoretical as well as practical contribution to our knowledge of how trust and cooperation can be fostered between the authorities and the citizenry. In particular, it focusses on ways in which the authorities can encourage the citizens to trust them, and each other, in order to enhance citizens' cooperation, principally in the field of tax compliance but also in other areas. While the articles are generally based on, or draw on, the theoretical model of the eSSF, they also utilize a range of other methods to validate theoretical assumptions and pay concurrent attention to both conceptual and practical concerns.

For the most part, the empirical investigations confirm the assumptions of the eSSF. There were, however, a few exceptions in terms of the functionality of coercive power and enforced compliance. The notion of a negative correlation between recourse to coercive power and implicit trust, and a positive correlation between reliance on coercive power and tax compliance, was not borne out by all of the studies (see, Gangl, Hartl et al., 2020; Gangl, van Dijk et al., 2020; Hofmann et al., 2017). One of the studies also revealed a negative correlation between enforced cooperation and tax compliance (Gangl, Hofmann et al., 2015). This suggests that not all kinds of power, climate or motivation are equally capable of fostering tax cooperation. In this respect, legitimate power seems to be superior to coercive power. Not only does its use increase reason-based trust, the perception of dealing with a service- and/or confidence-based climate and committed tax cooperation. Its impact on tax compliance is also more stable than that of coercive power (Gangl et al., 2017; Hartl et al., 2015; Hofmann et al., 2017). Importantly, high-trust constellations (such as a perceived confidence climate) can be maintained only by combining a substantial measure of legitimate power with a low level of coercive power (Gangl, van Dijk et al., 2020). Thus, although coercive power is seen as necessary by taxpayers and tax officers (Gangl et al., 2019) the present Habilitation experiments indicate that its effects on trust depends on contextual factors. It matters whether it is combined with reliance on legitimate power or not, and its efficacy varies by existing tax climate. Further research is required to expand our knowledge regarding the efficient recourse to coercive power. One of the great benefits of the research undertaken on the basis of the eSSF is its ability to render clear-cut practical recommendations for the tax authorities, urging them to foster cooperation based on legitimate power, services, fair procedures, personal support and, more generally, a mindset geared to the goal of helping taxpayers comply rather than the detection of non-compliance.

The articles investigating other specific aspects of tax compliance have also generated pioneering theoretical insights and helped set the relevant research agenda. By elucidating the causal mechanism that allows patriotism to influence tax compliance (Gangl et al., 2016) this research is likely to generate further studies on how patriotism might be elicited (without fostering radical nationalism) in order to enhance cooperation with the authorities. The review article concerning the (deficient) tax compliance among the wealthy in particular will fuel future research. It has provided a comprehensive overview of psychological distinctions between wealthy and average taxpayers and outlined psychological measures potentially suited to increase wealthy taxpayers' compliance (Gangl & Torgler, 2020). Further qualitative interview studies, survey studies, online experiments and field experiments are required to enhance our understanding of how wealthy taxpayers might be motivated to be more compliant. Research on the impact of tax policies on distinct groups of taxpayers is in any case a notable desideratum. It should focus not only on differing levels of income and wealth but also on factors such as taxpayers' political orientation or (where applicable) migrant background.

The final two articles focussing on aspects of trust and cooperation in the economic sphere more generally have added substantive new insights to the literature on institutional and social trust by showing that the authorities can foster trust and cooperation between citizens by giving them a sense of security (Spadaro et al., 2020). A range of laboratory or field experiments should test this hypothesis further. The German Ethical Culture Scale (GECS) is the first German-language instrument of its kind and will play a prominent role in allowing enterprises and institutions in the DACH countries to assess how ethical their institutional culture is and develop strategies best suited to promote ethical standards.

In conclusion, the twelve peer-reviewed articles that form this cumulative Habilitation have consistently made significant theoretical and practical contributions to scholarship on trust and cooperation between the authorities and individuals, notably in the field of tax cooperation. They are theoretically and methodologically sophisticated and playing a significant role in shaping ongoing research in the field as well as the development of clear-cut recommendations as to how the authorities can increase trust and improve cooperation.

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5. Curriculum Vitae

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Married, 1 child

Education

2009–2013 **University of Vienna, Austria**
PhD in psychology, summa cum laude
specialization in Economic Psychology
- Thesis: The impact of power and trust on tax compliance

2001–2008 **University of Vienna, Austria**
Diploma degree in psychology
Specialization in Economic Psychology
- Thesis: Empirical testing of the Slippery Slope Framework

2006–2007 **Instituto Superior de Ciencias do Trabalho e da Empresa in Lisbon, Portugal**
Erasmus student of Management

Employment

2019– **Institute of Advanced Studies, Austria**
Senior Researcher at Insight Austria, Competence Centre for Behavioural Economics

2017–2019 **Georg-August-University of Göttingen, Germany**
Assistant Professor at the Chair for Applied Economic and Social Psychology

2018 **Maternity leave**

2015–2016 **Zeppelin University, Germany**
Postdoctoral Researcher at the Chair of Economic Psychology and Leadership Ethics

2013–2015 **University of Vienna**, **Austria**
Postdoctoral Researcher at the Chair of Economic Psychology

2013–2013 **Queensland University of Technology, Brisbane**, **Australia**
Visiting Scholar

2011–2013 **University of Vienna, Austria**
University Assistant at the Chair of Economic Psychology

2010 **University of Vienna, Austria**
Assistant of the head of the doctorate programme psychology

2010	**Vienna University of Business Administration and Economics, Austria** *Researcher*
2009	**International Organization for Migration, Vienna, Austria** *Researcher*
2008–2009	**Vienna University of Business Administration and Economics, Austria** *Researcher*
2007–2008	**University of Vienna, Austria** *Teaching Assistant*
2007–2008	**Trigon Development Consultant, Vienna, Austria** *Internship*

Teaching & Supervision

2013–2019	20 Master theses, 25 Bachelor theses
2020–	**University of Vienna:** Theory and Empirical Research Seminar (Work, Economy, Society)
2019	**University of Göttingen:** Seminar on Economic Psychology
2018	**University of Göttingen:** Seminar on Work Security
2017–2018	**University of Göttingen**: Seminar on Leadership in Organisations. Evaluation score: 2018: 5.8; 2017: Evaluation score: 5.4 (1 = poor; 7 = excellent); Seminar on Classics in Social Psychology Evaluation score: 2018: 5.7; 2017:5.6 (1 = poor; 7 = excellent)
2016-2018	**University of Göttingen**: Elective course in social psychology: Group Opinions, Decision Making and Effort. Evaluation score: 2016: 4.8; 2017: 3.8 (1 = poor; 7 = excellent)
2016	**Zeppelin University:** Seminar on Leadership in Organisations
2016	**Zeppelin University:** Social Science Seminar (empirical and statistical training)
2016	**Zeppelin University Executive Programme:** Behavioural Business Ethics Seminar
2013–2015	**University of Vienna:** Bachelor Seminar I (empirical training).
2015	Evaluation score: 2.25 (1 = excellent, 5 = poor)
2012	**Pedagogic School of Lower Austria:** Advanced training for teachers of psychology on motivation, leadership, and decision making
2012	**University of Vienna:** Presentation techniques for young scientists
2010-2013	**University of Vienna:** Seminar in Economic-, Work- and Organizational Psychology. Evaluation score: 2012: Evaluation score: 1.7 (1=excellent, 5= poor)
2010-2013	**University of Vienna:** Assistance in the “Research Project Seminar” (supervising of student groups), in the lecture on “Economic Psychology I and II” (substitution as lecturer, preparing and conducting lecture examinations) and in the “Advanced Research Seminar”

Ad-hoc reviewing

Journals: Journal of Economic Psychology (2018: member of the editorial board), Political Psychology, Frontiers in Psychology, Journal of Business Ethics, Journal of Behavioral Decision Making, Applied Psychology: An International Review, , Acta Psychologica, Public Finance Analysis, European Journal of Social Psychology, European

Journal of Social and Political Psychology, European Journal of Political Economy, European Journal of Political Science, Policy Studies, Review of Public Economics, Sage Open (article editor), Journal of Socio-Economics, Journal of Behavioral and Experimental Economics, Law & Policy, Journal of Economic Behavior & Organization, Behavioral Sciences, German Journal of Work and Organizational Psychology, Journal of Sustainable Tourism, Journal of Social and Political Psychology, International Journal of Public Policy, Journal of Accounting and Taxation, eJournal of Taxation
Funding agencies: Croatian Science Foundation (2018), European Commission: Horizon 2020 programme (2016), Czech Science Foundation (2015, 2017)

Academic memberships

2017 **Leibniz Science Campus Primate Cognition, Göttingen, Germany**

2016 **Zeppelin University, Germany**
Non-professorial faculty member of the Management Board of the University

2015 **University of Vienna, Faculty of Psychology, Austria**
Non-professorial faculty member of the Management Board of the Faculty

2013–2015 **Austrian Association of Psychologists (ÖGP)**
Speaker of the young scientists

2012–2015 **University of Vienna, Faculty of Psychology, Austria**
Member of the committee for young scientists

2012–2015 **Association of Economic Psychology, Austria**
Secretary

2010– **DGPS, IAREP, ÖGP**

Competitive research grants and awards

2020	OeNB Jubiläumsfonds: 214.000 Euro (PI)
2019	Diligentia: 11.646 Euro (Co-author)
2017	Leibniz-ScienceCampus: 9.939,7 Euro (PI)
2013	Travel Scholarship from the University of Vienna: 1.755 Euro
2012	Austrian Science Fund (FWF): 375.972,66 Euro (Co-author)
2012	Austrian Chamber of Commerce: 14.070 Euro (PI)
2008	Research Scholarship by the University of Vienna: 800 Euro

Project lead of commissioned research

Field experiment to foster bicycling (2020-21), Field experiment to foster recycling (2020-21), Evaluation of federal digitalization grants (2020-21), Evaluation of agriculture grants (2020-21), Evaluation of ways to introduce the 1-2-3 Ticket (2020), Field experiment in social housings' garbage areas (2020), Development of a Corona concept for the city of Vienna (2020), Development of a concept to foster bicycling on the countryside for Lower Austria (2020).

Media coverage

National Magazine 28.10.2020 Paying for the pandemic.
Wiener Zeitung 27.05.2020 KMUs in die Zukunft beamen.

ETV 05.10.2017 Fostering tax morale in the digital age: The evidence-based tax administration. (Livestream of the talk on the national Estonian TV station's website).
Frankfurter Rundschau 26.05.2017 Zwang oder Verantwortung: Warum wir Steuern zahlen
Die Presse 19.05.2017 Steuern zahlen: Zwang verkürzt das Überlegen
Göttinger Tageblatt 21.05.2017 Warum wir Steuern zahlen
Der Standard 20.05.2017 Zwang und Freiwilligkeit führen zu ähnlich hoher Steuerehrlichkeit
Die Presse 10.05.2016 Warum wir Steuern zahlen
Austrian Press Agency 04.02.2016 Steuern werden lieber an harte, aber gerechte Behörde bezahlt ORF online 03.02.2016 Gerechte Strafen stärken Vertrauen
Kleine Zeitung 03.02.2016 Steuern werden lieber an harte, gerechte Behörde bezahlt
Salzburger Nachrichten 03.02.2016 steuern werden lieber an harte, gerechte Behörde bezahlt
Der Standard 03.02.2016 An harte, aber gerechte Behörde zahlt man „gerne“ Steuern
Der Standard 07.06.2015 Aber wir zahlen doch gerne Steuern
Der Standard 02.10.2013 Steuerbetrug: „Blöd wär‘ ich, würd‘ ich das nicht tun“
Die Presse 29.12.2012 Steuerbehörden: Macht und Vertrauen

Key research areas

Cooperation between authorities and individuals, regulation & governance, tax compliance, ethical decision making, sustainable decision making, financial decision making, trust, identity & motivation

6. Full List of Scientific Publications

Impact (13/01/2020):

Source	*Citations*	*h-index*
Google Scholar	1005	14
Research Gate	596	12
Web of Science	223	9
Scopus	296	9

Academic profiles:

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Five most important publications

1. **Gangl. K.**, & Torgler, B. (2020). Tax compliance by the wealthy: A review of the literature and agenda for research. *Social Issues and Policy Review, 14*(1), 108-151. https://doi.org/10.1111/sipr.12065
2. **Gangl, K.**, van Dijk, W., van Dijk, E. & Hofmann, E. (2020). Building versus maintaining a perceived confidence-based tax climate: Experimental evidence. *Journal of Economic Psychology, 81,* article 102310*,* https://doi.org/10.1016/j.joep.2020.102310
3. **Gangl, K**., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2017). Coercive and legitimate authority impact tax honesty. Evidence from behavioral and ERP experiments. *Social Cognitive and Affective Neuroscience, 12*(7), 1108-1117*.* https://doi.org/10.1093/scan/nsx029
4. **Gangl, K**., Hofmann, E., & Kirchler, E. (2015). Tax authorities' interaction with taxpayers: A conception of compliance in social dilemmas by power and trust. *New Ideas in Psychology, 37*, 13-23. https://doi.org/10.1016/j.newideapsych.2014.12.001
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15. Kirchler, E., Hofmann, E., & **Gangl, K.** (2012). From mistrusting taxpayers to trusting citizens: Empirical evidence and further development of the Slippery Slope Framework. In A. N. Lebedev (Ed.), *Economic psychology in the modern world: Collected papers* (pp. 125-146). Moscow: Ekon-inform.
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Presentations

<u>Invited Presentations</u>

1. **Gangl, K.** (2019, December 5-7). *How to achieve tax compliance by the wealthy: A review of the literature and agenda for research and policy* [Invited presentation]. Enforcing tax compliance at the limits of third reporting, Freiburg, Germany.
2. **Gangl, K**. (2019, January 25). *Tax compliance of the wealthy in developing countries* [Invited presentation]. The role of tax morale in development, Paris, France.
3. **Gangl, K**. (2018, July 4-10). *Empirical research methods in tax psychology* [Invited lecture]. Summer School on Economic Psychology and Experimental Economics, Saratov, Russia.
4. **Gangl, K**. (2018, July 4-10). *Tax psychology: Status quo and future research possibilities* [Invited lecture]. Summer School on Economic Psychology and Experimental Economics, Saratov, Russia.
5. **Gangl, K.** (2018, March 26-27). *Die Psychologie der Steuerehrlichkeit* [The Psychology of tax honesty] [Invited key note]. Warum befolgen wir Recht?

Rechtsverbindlichkeit und Rechtsbefolgung in interdisziplinärer Perspektive [Why do we follow the law? Law acceptance and law compliance from an interdisciplinary perspective], Heidelberg, Germany.

6. **Gangl, K**., & Torgler, B. (2017, October 4-5). *Fostering tax morale in the digital age: The evidenced-based tax administration.* [Invited key note]. SmartEST Taxation conference, Tallinn, Estonia. https://youtu.be/yiAP2Tgg9W4
7. **Gangl, K**. (2016, February 25)*. State authorities' interaction with citizens: A conception of compliance in social dilemmas by power and trust* [Invited lecture]. University of Turin, Italy.
8. **Gangl, K**. (2015, April 23-24). *Stick or carrot on the firm level: When can a cooperative approach improve tax compliance?* [Paper presentation]. How to increase tax compliance – new tools and insights from behavioral economics, Kiew, Ukraine.
9. **Gangl, K**., Muehlbacher, S., de Groot, M., Goslinga, S., Hofmann, E., Kogler, C., Kirchler, E., & Antonides, G. (2012, July). *„How can I help you?" Perceived service orientation of tax authorities and tax compliance* [Paper presentation]. The Netherlands Tax and Customs Administration, Utrecht, Netherlands.

Organized symposia

1. Leiser, D., Gangl., K., Vohs, K.D., & Christandl, F. (2014, June 19-22). *Social injustice: People protest in the short term and acquire in the long term* [Symposium]. 15th biennial conference of the International Society of Justice Research (ISJR), New York, USA.

Presentations at conferences

1. **Gangl, K**., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2018, September 25-28). *Coercive and legitimate authority impact tax honesty: Evidence from behavioural and ERP experiments* [Conference presentation]. Conference on Decision Sciences, University of Konstanz, Germany.
2. **Gangl, K**., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2018, September 15-20). *Coercive and legitimate authority impact tax honesty: Evidence from behavioural and ERP experiments* [Conference presentation]. DFG Conference, Frankfurt, Germany.
3. **Gangl, K**., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2017, September 25-28). *Coercive and legitimate authority impact tax honesty: Evidence from behavioral and ERP experiments* [Conference presentation]. Conference on Decision Sciences, Konstanz, Germany.
4. **Gangl, K**., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2017, September 15-18). *Coercive and legitimate authority impact tax honesty: Evidence from behavioral and ERP experiments* [Conference presentation]. 51st Congress of the German Association of Psychology, Frankfurt, Germany.
5. **Gangl, K**., van Dijk, W., & van Dijk, E. (2017, September 3-6). *Changing interaction climates between public authorities and citizens: The impact of coercive and legitimate power* [Conference presentation]. IAREP conference, Rishon LeZion, Israel.
6. Spadaro, G., **Gangl, K**., & Mosso, C. O. (2016, September). *Caratteristiche e determinanti della fiducia interpersonale: il ruolo delle istituzioni. Features and determinants of interpersonal trust: the role of institutions*. [Conference presentation]. 12th National Congress of Italian Association of Psychology (AIP), Napoli, Italy.

7. Hofmann, E., **Gangl, K**., Hartl, B., Berkics, M., & Kirchler, E. (2015, June 24-26). *Powerful authorities and trusting citizens: Interaction climate and tax compliance in Austria, Finland and Hungary* [Conference presentation]. The Informal Economy - Global and Local – An International Conference, Sheffield, UK.
8. **Gangl, K.,** Hofmann, E., Hartl B., & Kirchler, E. (2015, July 23-26). *The double edged character of coercive power in social dilemmas. Evidence from a representative sample of self-employed taxpayers* [Conference presentation]. 16th International Conference on Social Dilemmas, Hongkong, China.
9. Hartl, B., Hofmann, E., Hartner-Tiefenthaler, M., **Gangl, K**., & Kirchler, E. (2014, September 22-25). *Severe punishment or supportive procedures? The impact of coercive power on tax* [Poster presentation]. Kongress der Gesellschaft für Psychologie, Bochum, Germany.
10. **Gangl. K**., Kirchler, E., & Lorenz, C. (2014, July 8-13). *Tax non-filing in Pakistan: Ignorance of one's own rights and corrupt authorities fuel non-filing* [Conference presentation]. 28th International Congress of Applied Psychology. Paris, France.
11. Hofmann, E., Hartl, B., **Gangl, K**., & Kirchler, E. (2014, July 8-13). *Interview studies in tax research. Using the example of interviews with Austrian taxpayers to assess their perception of tax authorities' measures* [Conference presentation]. 28th International Congress of Applied Psychology. Paris, France.
12. **Gangl, K**., Kastlunger, B., Kirchler, E., Voracek, M., & S. Tement (2014, June 19-22). *Confidence in the economy in times of crisis: Social representations of experts and laypeople* [Conference presentation]. 15th biennial conference of the International Society of Justice Research (ISJR), New York, USA.
13. Hartl, B., Hofmann, E., Hartner-Tiefenthaler, M., **Gangl, K**., & Kirchler, E. (2014, April 24-26). *Strenge Bestrafung oder Anbieten von Unterstützung? Der Einfluss coerciver und legitimer Macht auf das Steuerverhalten* [Strict punishment or offering support? The influence of coercive and legitimate power on tax behavior] [Conference presentation]. 11. Tagung Österreichische Gesellschaft für Psychologie, Vienna, Austria.
14. Hofmann, E., Hartl, B., **Gangl, K**., Hartner-Tiefenthaler, M., & Kirchler, E. (2014, April 24-26). *Steuerehrlichkeit durch strenge Strafen oder hilfreiche Unterstützung? Die Auswirkung von coerciver und legitimer Macht auf psychologische Prozesse zur Kooperation* [Tax compliance through strict penalties or helpful support? The impact of coercive and legitimate power on psychological processes of cooperation] [Conference presentation]. 11. Tagung Österreichische Gesellschaft für Psychologie, Vienna, Austria.
15. **Gangl, K**., Kleber, J., Hofmann, E., Florack, A., & Kirchler, E. (2014, March 6-8). *Regulatory fit increases efficacy of social norms' impact on tax compliance.* [Conference presentation]. Taxation, Social Norms and Compliance , Nuremberg, Germany.
16. Muehlbacher, S., **Gangl, K**., de Groot, M., Goslinga, S. Hofmann, E., Kogler, C., Antonides, G., & Kirchler, E. (2013, July 25-28). *"How can I help you?" Perceived service orientation of tax authorities and tax compliance* [Conference presentation]. The Shadow Economy, Tax Evasion and Governance, Münster, Germany.
17. Hofmann, E., Hartner-Tiefenthaler, M., **Gangl, K**., & Kirchler, E. (2013, July 25-28). *The impact of coercive and legitimate power on tax compliance:*

experimental evidence [Conference presentation]. The Shadow Economy, Tax Evasion and Governance, Münster, Germany.

18. **Gangl, K**., Hofmann, E., Kirchler, E., Hartmann, K., & Eder, M. (2013, March 24-27*). The impact of communication and motivation strategies on tax compliance* [Paper presentation]. TEAP, Vienna, Austria.
19. **Gangl, K**., Hofmann, E., Pfabigan, D., Kirchler, E., & Lamm, C. (2013, May 22-25). *The effect of coercive power and legitimate power of tax authorities on tax behavior* [Paper presentation]. EAWOP Conference, Münster, Germany.
20. **Gangl, K**., Hofmann, E., & Kirchler, E. (2012, September 20-21). *Tax Authorities' Interaction with Taxpayers: Compliance by Power and Trust* [Paper presentation]. Tax Governance – The Future Role of Tax Administrations in a Networking Society, Vienna, Austria.
21. Kirchler, E., **Gangl, K**., Muehlbacher, S., de Groot, M., Goslinga, S., Hofmann, E., Kogler, C., & Antonides, G. (2012, September). *Service orientation and tax compliance* [Paper presentation]. 21st annual conference of TRN-Tax Research Network, London, Great Britain.
22. **Gangl, K**., Muehlbacher, S., de Groot, M., Goslinga, S., Hofmann, E., Kogler, C., Kirchler, E., & Antonides, G. (2012, September). *Service orientation, trust and tax compliance* [Paper presentation]. IAREP Conference, Wrozlaw, Poland.
23. Hofmann, E., **Gangl, K**., Stark, J. & Kirchler, E. (2012, September). *The impact of coercive and legitimate power of tax authorities on taxpayers' trust in authorities and their tax behavior: An extension of the Slippery Slope Framework* [Paper presentation]. IAREP Conference, Wrozlaw, Poland.
24. **Gangl, K**., Hofmann, E., Pollai, M., & Kirchler, E. (2012, July). *The dynamics of power and trust in the „Slippery Slope Framework" and its impact on the tax climate* [Paper presentation]. International Society of Political Psychology Meeting "Power, Politics, and Paranoia", Amsterdam, Netherlands.
25. Hofmann, E, **Gangl, K**., & Kirchler, E. (2012, July). *SSF-Inventory: A measurement instrument to assess the perception of tax authorities' power and trust in authorities* [Paper presentation]. International Society of Political Psychology Meeting "Power, Politics, and Paranoia", Amsterdam, Netherlands.
26. **Gangl, K.**, Muehlbacher, S., Antonides, G., Goslinga, S., de Groot, M., Hofmann, Kirchler, E. & Christoph Kogler (2012, June). S*ervice orientation, trust and tax compliance in the Netherlands* [Poster presentation]. Posterausstellung der JungwissenschaftlerInnen der Fakultät für Psychologie, Universität Wien, Wien, Österreich.
27. **Gangl, K.,** Kirchler, E., Hofmann, E., & Pollai, M. (2012, April)*. Die Dynamik von Macht und Vertrauen im „Slippery Slope Framework" und ihr Einfluss auf das Steuerklima* [Paper presentation]. OeGP Conference, Graz, Austria.
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29. **Gangl, K**., Kirchler, E., Hofmann, E., & Pollai, M. (2011, July). *Managing tax climates: The interaction of power and trust in the "Slippery Slope Framework"* [Paper presentation]. IAREP/SABE/ICABEEP Conference, Exeter, Great Britain.
30. **Gangl, K**., Kastlunger, B., & Kirchler, E. (2011, June). *Confidence in the economy in times of crisis: Social representations of experts and laypeople* [Poster presentation]. Conference on Behavioural Decision Making, Herzliya, Israel.

31. **Gangl, K.,** Kastlunger, B., & Kirchler, E. (2010, July). *Confidence in the economy in times of crisis: Social representations of experts and* laypeople [Paper presentation]. 16th International Summer School of the European PhD on Social Representations and Communications, Rom, Italy.
32. Kirchler, E., Kastlunger, B. & **Gangl, K**. (2010, September). *Trust in times of financial crisis: An analysis of social representations of Austrian experts and laypeople about financial crisis* [Paper presentation]. IAREP/SABE/ICABEEP 2010 Conference, Cologne, Germany.

7. Full Texts of the Articles Compromising the Habilitation

[1] Gangl, K., Pfabigan, D., Lamm, C., Kirchler, E., & Hofmann, E. (2017). Coercive and legitimate authority impact tax honesty. Evidence from behavioral and ERP experiments. *Social Cognitive and Affective Neuroscience, 12*(7), 1108-1117, https://doi.org/10.1093/scan/nsx02

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Coercive and legitimate authority impact tax honesty: evidence from behavioral and ERP experiments

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Abstract

Cooperation in social systems such as tax honesty is of central importance in our modern societies. However, we know little about cognitive and neural processes driving decisions to evade or pay taxes. This study focuses on the impact of perceived tax authority and examines the mental chronometry mirrored in ERP data allowing a deeper understanding about why humans cooperate in tax systems. We experimentally manipulated coercive and legitimate authority and studied its impact on cooperation and underlying cognitive (experiment 1, 2) and neuronal (experiment 2) processes. Experiment 1 showed that in a condition of coercive authority, tax payments are lower, decisions are faster and participants report more rational reasoning and enforced compliance, however, less voluntary cooperation than in a condition of legitimate authority. Experiment 2 confirmed most results, but did not find a difference in payments or self-reported rational reasoning. Moreover, legitimate authority led to heightened cognitive control (expressed by increased MFN amplitudes) and disrupted attention processing (expressed by decreased P300 amplitudes) compared to coercive authority. To conclude, the neuronal data surprisingly revealed that legitimate authority may led to higher decision conflict and thus to higher cognitive demands in tax decisions than coercive authority.

Key words: taxpaying; cognitive control; social decision-making; MFN; P300; P2

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Introduction

Social systems are characterized by individuals who cooperate in the provision of non-excludable public goods, or defect and free-ride (Dawes, 1980). Tax honesty and tax evasion represent highly relevant examples of such cooperation. They do not only impact the possibilities of modern societies to provide schools or roads, but can also fuel social turbulences based on perceived injustice, if some taxpayers are perceived to systematically avoid paying their fair share of taxes. To uphold cooperation in these fragile systems, modern societies employ centralized institutions who wield *harsh* coercive or *soft* legitimate authority to ensure individual cooperation (Raven *et al.*, 1998; Turner, 2005; Güth *et al.*, 2007; Baldassarri and Grossman, 2011). Empirical evidence shows that the two qualities of authority lead to different motivations to cooperate (Kastlunger *et al.*, 2012; Hofmann *et al.*, 2014; Hofmann *et al.*, 2017), but rarely differ in their positive effect on cooperation (Alm *et al.*, 1992; Tyler and Fagan, 2008; Isakov and Rand, 2012; Hofmann *et al.*, 2014; Hartl *et al.*, 2015).

Coercive and legitimate authority promote cooperation originating from different motivational states (Koslowsky *et al.*, 2001; Kirchler *et al.*, 2008; Gangl *et al.*, 2015). Coercive authority based on control and punishment is assumed to fuel mistrust (Mulder *et al.*, 2006), to be perceived as ferocious and unfair (Mossholder *et al.*, 2009), and to induce calculative cost-benefit analyses (Kirchler, 2007), which frame the decision to cooperate as a business decision rather than as an ethical decision (Tenbrunsel and Messick, 1999). Thus, the decision to cooperate might become a deliberate rational decision about one's own egoistic utility and societal goals become less salient. Consequently, coercive authority is seen to cause resistance, reactance (Brehm, 1966) and negative emotional arousal (Coricelli *et al.*, 2010), and it enforces motivation to comply out of feared penalization (Frey, 1997; Kirchler *et al.*, 2008). In contrast, legitimate authority is based on acceptance, appreciation, perceived expertise and information provision (Raven *et al.*, 1998; Gangl *et al.*, 2015). It is assumed to increase trust and fairness (Tyler and Fagan, 2008; Hechter, 2009) and might be perceived as the communication of a widely accepted rule by community members (Bendor and Mookherjee, 1990), or as an instrument to establish fairness and a social norm of cooperation (Fehr and Fischbacher, 2002). Legitimate authority might induce moral pressure and psychological stress (e.g. a conflict, Erard and Feinstein, 1994; Dulleck *et al.*, 2016) in response to the felt urge to reciprocate to legitimate authority (Fehr *et al.*, 1997). Legitimate authority might provoke a deliberate conflict between self-interest and community interests which, in turn, fosters a voluntary motivation to cooperate (Tyler, 1997; Kirchler *et al.*, 2008; Hofmann *et al.*, 2014). Thus, decisions about cooperation under coercive or legitimate authority do reflect rational economic choices (Camerer, 2003) *and* social motives of reciprocity or inequity aversion (Fehr and Fischbacher, 2002). Although coercive and legitimate authority are perceived so differently, their positive effects on cooperative behavior do not seem to vary dramatically (Hartl *et al.*, 2015).

Taxpaying can be considered as a highly relevant real life example for cooperation in a social context. Tax behavior is frequently investigated in laboratories. Referring to experimental games, income, tax rates, audit probabilities and fine rates are manipulated and tax payments over several tax filing trials are registered as dependent variable (Mittone, 2006; Alm *et al.*, 2010; Hartl *et al.*, 2015). Although a bulk of empirical studies on tax behavior has been published, studies on cognitive processes underlying tax behavior are rare and neurophysiological insights are missing.

We performed an event-related potentials (ERPs) study, investigating how tax payment decisions are affected by different types of centralized authorities. ERPs have been repeatedly used to gain insights into social decision-making, with their high temporal resolution enabling detailed insights into the mental chronometry of decision-making. In particular, amplitude variation of the Medial Frontal Negativity component (MFN; Gehring and Willoughby, 2002) has been investigated in this regard. It is a negative scalp potential within 200–300 ms after (feedback) stimulus onset at fronto-central electrodes, with the anterior midcingulate cortex (aMCC) and ventral striatum as potential neuronal generators (Debener *et al.*, 2005; Becker *et al.*, 2014). Generally, MFN amplitudes are more negative after unfavorable compared to favorable (Miltner *et al.*, 1997), unexpected compared to expected (Alexander and Brown, 2011; Pfabigan *et al.*, 2011), and salient compared to insignificant outcomes (Talmi *et al.*, 2013). Moreover, MFN enhancement was interpreted as a signal of enhanced cognitive control (Botvinick *et al.*, 2001; Yeung *et al.*, 2004), which describes, among others, the monitoring and regulation of response strategies, feedback processing yielding strategy regulation and response conflict (i.e. concurrent activation of incompatible response options; Folstein and Van Petten, 2008). Taken together, MFN amplitude variation reflects early and coarse stimulus evaluation processes (Yeung *et al.*, 2004; Hajcak *et al.*, 2006). Regarding social decision-making, the MFN is usually observed in economic games focusing on asset distribution, such as the Ultimatum Game (UG; Güth *et al.*, 1982). There, MFN amplitude enhancement indicates unfair compared to fair outcomes (Boksem and De Cremer, 2010; Alexander and Brown, 2011; Alexopoulos *et al.*, 2012, 2013), concurrently also reflecting cognitive control.

Another ERP component frequently investigated during social decision-making is the P300. This positive-going component peaks within 300–500 ms after (feedback) stimulus onset at posterior electrodes (Polich, 2007). More pronounced P300 amplitudes have been reported in response to a greater change in evaluative stimulus categorization (Cacioppo *et al.*, 1993; Ito *et al.*, 1998) and greater attention allocation (Polich, 2007). Larger P300 amplitudes were found after positive compared to negative outcomes (Bellebaum and Daum, 2008; Pfabigan *et al.*, 2015). In UG studies, P300 amplitudes were also sensitive to outcome fairness–usually larger after fair compared to unfair offers (Wu *et al.*, 2012; Qu *et al.*, 2013).

We conducted two experiments introducing taxpaying in two centralized institutional contexts. In the first experiment, we collected behavioral data and reaction times while participants performed repeated fast tax decisions under coercive and legitimate authority. In the second experiment, the tax paradigm was slightly adapted to an individual assessment and such that the speed of participants' proceeding the tax decision was reduced, to allow a more valid assessment of ERP data.

As in previous studies, we expected that in contrast to legitimate authority, coercive authority will lead to self-reported enforced motivation to comply, low voluntary motivation to cooperate (Kastlunger *et al.*, 2012; Hofmann *et al.*, 2014) and enhanced rational decision-making and reactance than legitimate authority (Brehm, 1966, Kirchler, 2007). Overall tax payments should not differ between the authority conditions (Hartl *et al.*, 2015). For reaction times (experiment 1) and ERP data (experiment 2) we tested two opposing hypotheses. On the one hand, coercive authority might induce a more complex decision process than legitimate authority. It provokes a comparatively effortful calculative cost-benefit analysis and deliberation about possible ways to reduce the tax burden. Legitimate authority might be perceived as a positive signal and thus produces a fast response to spontaneously cooperate (Tenbrunsel and Messick, 1999; Kirchler, 2007). On the other hand, legitimate authority might induce more complex cognitive processes than coercive authority, as personal utility optimization motives might be in conflict with the moral pressure to pursue societal goals. Reciprocity towards the legitimate authority might elicit a cognitive response conflict whereas coercive authority produces a fast response to cooperate (Fehr *et al.*, 1997). Reaction times serve as indicator of cognitive effort and indicate whether cost-benefit analysis induced by coercive authority or the heightened response conflict induced by legitimate authority lead to more complex, deliberate and, thus, slower decisions (Rubinstein, 2007). For the ERP data, we expected MFN enhancement to indicate heightened cognitive control demands due to response conflict either in the coercive or the legitimate context (Botvinick *et al.*, 2001). Enhanced P300 amplitudes should reflect enhanced categorization demands and attentional processing (Cacioppo *et al.*, 1993; Ito *et al.*, 1998; Polich, 2007) in case either coercive or legitimate authority induce a more complex decision process. In addition, we explored the P2 component prior to the MFN, which is indicative of arousal levels (Carretié *et al.*, 2001) and attention capture (Potts, 2004).

Experiment 1

Method

The following section describes the central methodological aspects of our study; additional methodological details are provided in Supplementary Material.

Sample

The sample consisted of 80 volunteers (38 men, 1 did not indicate sex; $M_{\text{age}} = 24.89$, $SD_{\text{age}} = 6.48$). Participants were randomly assigned to one of two taxpaying conditions (coercive authority of tax administration followed by legitimate authority [$n = 39$], or legitimate authority followed by coercive authority, [$n = 41$]. The study was conducted in accordance with the Declaration of Helsinki (7th revision, 2013) and local ethical guidelines for experimentation with human participants (including approval by an institutional review board) at the Faculty of Psychology, University of Vienna.

Procedure

Participants were asked to imagine being self-employed, earning money in Experimental Currency Units (ECU) and paying taxes (40% of their income) over several trials in a fictitious country. They were informed that the tax administration would conduct tax audits with a chance of 15%. In case of detected tax evasion they would have to pay back the evaded amount plus a fine of the same amount. Participants were informed that a randomly chosen trial determinates their final remuneration for participation. After the introduction to the rules of the tax game, in counterbalanced order, 40 coercive and 40 legitimate authority trials followed, presented on a PC. After introducing the first authority, each trial started with the endowment of one out of five incomes (each presented eight times per authority in exactly the same sequence for all participants; the randomized sequence was determined prior to the experiment) and the presentation of 40% tax rate. Then participants decided how much tax they wanted to pay. After 40 trials in the first country, participants filled out the first self-report questionnaire. Subsequently, they were told to move to another country with a changed authority where they filed taxes during another 40 trials, ending by filling out the second self-report questionnaire. Participants were reminded of the respective authority manipulation every 10th trial. Finally, one prior to the experiment randomly selected trial determined the payment of all participants based on their behavior in this trial. On average, individuals earned €10.78.

Material

To manipulate authority, two scenarios were developed which described tax administrations that basically work with harsh controls and punishments (coercive authority) or with professional experts who support taxpayers filing their taxes (legitimate authority). To allow a direct comparison of the effect of both scenarios, a within-subjects design was used in which all participants were presented with both scenarios, in counterbalanced order. A manipulation check revealed that the centralized institutions were perceived as manipulated (see Supplementary Material [1.1.3, 3] for material and details on the manipulation check).

Tax behavior was assessed by averaging taxpaying decisions over 40 tax filing trials. For each tax filing trial one out of five incomes (60.000 ECU, 70.000 ECU, 75.000 ECU, 85.000 ECU, or 90.000 ECU) was assigned to the participants. Participants read the information about coercive or legitimate authority, their income, and the tax rate until they choose to terminate the slide by pressing key 1. Afterwards, participants were presented with a slide with five possible tax amounts to pay corresponding to 0% (fully dishonest), 25%, 50%, 75% and 100% (fully honest) of the tax due. This slide was presented until participants choose one of the options via button press (keys 1–5, pre-assigned to the respective percent value). The different income levels ensured that participants varied the responses over the 40 trials.

Mean reaction times were assessed from the onset of the tax amount screen until button press. For each trial, outliers (2.17% of all data points) were discarded in case reaction times were longer than the mean reaction time plus three times the standard deviation.

Self-reports were assessed with two identical questionnaires. Perception of coercive authority and legitimate authority was assessed with the Interpersonal Authority Inventory (Raven *et al.*, 1998; Hofmann *et al.*, 2014) adapted to our tax context. Reactance was measured by the adapted Hong Psychological Reactance Scale (Shen and Dillard, 2005). Deliberate rational decision-making was measured by the adapted Rational-Experiential Inventory (Pacini and Epstein, 1999). Enforced compliance was measured by the TAX-I (Kirchler and Wahl, 2010), voluntary cooperation by items adapted from the motivational posture scale capitulation (Braithwaite, 2003). Response scales were 7-point Likert scales (1–disagree, 7–agree). Items and their reliability scores are reported in Supplementary Material (4).

Statistical analyses

To analyze the differential impact of the two centralized institutions, 2 x 2 univariate analysis of variance with authority manipulation (coercive *vs* legitimate) as within-subject factors, and order of manipulation (coercive followed by legitimate authority

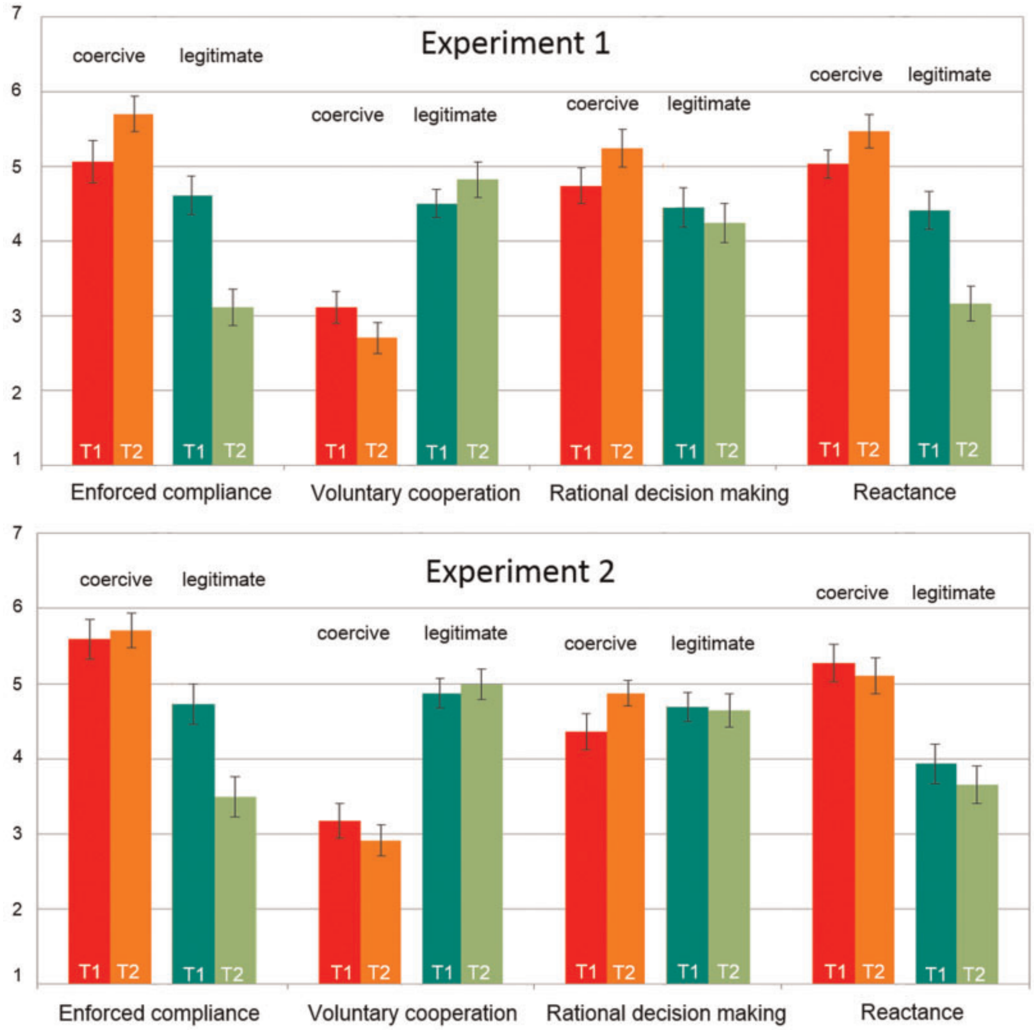

Fig. 1. Differences in self-reports in experiment 1 and 2.
Note: The bars represent means with the standard error. T1 and T2 indicate whether the authority was presented first (T1, i.e. first 40 trials) or second (T2, i.e. second 40 trials). 1 = disagree, 7 = agree.

or vice versa) as between-subjects factor was performed, with self-report, behavioral and reaction time data as dependent variables. Effect sizes of significant results are specified with partial eta squared (η_p^2) and *Cohen's d*; the alpha-level was set at $P < 0.05$. In the following, we present only the significant results of main effects. Detailed results and robustness checks are presented in Supplementary Material (1.1.4, 1.1.5).

Results

Self-report data. Self-reported enforced compliance was significantly affected by the type of authority ($F(1,77) = 54.55$, $P < 0.001$, $\eta_p^2 = 0.42$). As Figure 1 shows, enforced compliance was higher in the coercive ($M = 5.39$, $SE = 0.18$) than in the legitimate authority condition ($M = 3.88$, $SE = 0.20$). This is especially true if coercive authority follows legitimate (for details on an interaction effect see Supplementary Material). On the other hand, voluntary cooperation was only affected by authority ($F(1,77) = 59.51$, $P < 0.001$, $\eta_p^2 = 0.44$), it was higher under legitimate ($M = 4.65$, $SE = 0.15$) than coercive authority ($M = 2.90$, $SE = 0.15$). Also, rational decision-making was affected by authority ($F(1,78) = 11.55$, $P < 0.001$, $\eta_p^2 = 0.13$) and was higher under coercive ($M = 5.00$, $SE = 0.17$) than legitimate authority ($M = 4.35$, $SE = 0.18$). Reactance was also higher under coercive ($M = 5.25$, $SE = 0.15$) than legitimate authority ($M = 3.80$, $SE = 0.18$; $F(1,78) = 81.77$, $P < 0.001$, $\eta_p^2 = 0.51$; for details see Supplementary Material).

Behavioral data. Tax compliance was significantly higher under legitimate ($F(1,78) = 5.96$, $P = 0.017$, $\eta_p^2 = 0.07$; $M = 4.07$; $SE = 0.12$) than coercive authority ($M = 3.77$, $SE = 0.14$). Reaction times were significantly affected by the contrast between coercive and legitimate authority ($F(1,78) = 177.63$, $P < 0.001$, $\eta_p^2 = 0.70$). Compared to time 1 (first 40 trials) ($t(78) = 1.05$, $P = 0.295$), at time 2 (second 40 trials) ($t(78) = -1.97$, $P = 0.052$, $d = 0.45$) coercive authority ($M = 1784.67$ ms, $SE = 138.61$) by trend yielded faster responses than legitimate authority ($M = 2230.02$ ms, $SE = 138.98$).

Discussion experiment 1

Corroborating previous studies, experiment 1 shows that a perceived coercive compared to a legitimate authority led to less voluntary cooperation (Hofmann *et al.*, 2014). For enforced compliance and reactance, we observed sensitivity to the change from coercive to legitimate authority. More specifically, legitimate authority's negative effect on enforced compliance and reactance was particularly strong when a legitimate authority was perceived as the direct change following coercive authority. Overall and in line with previous studies (e.g. Hofmann *et al.*, 2014), the effect sizes indicated that the difference between coercive and legitimate authority was the most important factor affecting enforced compliance and reactance. Results also showed that legitimate authority led to slightly higher tax payments than coercive authority. Coercive authority induced more self-reported rational decision-making than legitimate authority. However, reaction time results indicate that the decision under coercive authority was quicker to reach compared to legitimate authority. At time 2 (second 40 trials), coercive authority led to faster reactions than legitimate authority. Experiment 1 is one of the rare attempts showing that the different psychological meanings of coercive and legitimate authority can also be detected by indirect measures of cognitive processes such as reaction times. To clarify the exact nature of these processes and how coercive and legitimate authority affect them, data providing access to the temporal sequence and different cognitive processes underlying decision-making and behavior are needed. Therefore, our second experiment assessed ERPs while participants made tax decisions under different tax authorities.

Experiment 2

Method

Sample

The sample consisted of 81 volunteers of which three were excluded because of limited task comprehension or excessive alpha-band EEG activity (final sample: $n = 78$, 40 men, $M_{age} = 24.51$, $SD_{age} = 5.05$). All participants were right-handed (Oldfield, 1971), had normal or corrected-to-normal vision, and reported no past or present neurological or psychiatric disorder. All participants gave written informed consent prior to the experiment. Recruitment and ethical guidelines were comparable to experiment 1. They were again randomly assigned to one of two taxpaying conditions (coercive authority of tax administration followed by legitimate authority [$n = 38$], or legitimate authority followed by coercive authority [$n = 40$]).

Procedure

Participants were tested individually in a sound-attenuated, shielded chamber. As in experiment 1, they were asked to imagine being self-employed, earning income, and paying taxes over several years. To ensure that participants understood the instructions, they were led through a taxpaying example and performed 10 training trials. Then, identical to experiment 1 (order counterbalanced), 40 coercive and 40 legitimate authority trials followed. However, different to experiment 1, participants were reminded every 5th trial to make the manipulation more salient. Each trial started with the presentation of a white fixation cross on black background (1000ms). Afterwards, the flag of the respective country, the fictitious income, and the 40% tax rate in total numbers were presented centrally on black background (3000 ms). Prior to the actual tax decision, another screen was blended in asking 'How much tax would you pay in [current country]?' (2000 ms). This slide was added to the experimental design to avoid fast responses to the tax decision as in Experiment 1. Afterwards, participants were presented with five options for taxpaying, either representing 0%, 25%, 50%, 75% or 100% of the 40% tax rate (absolute numbers). Participants had to choose between the keys 1–5 on a standard keyboard to indicate their tax decision via button press. No time limit was given for their decision. A variable inter-stimulus-interval (1400–1600 ms) was presented afterwards depicting the fixation cross. After 40 trials in the first context, participants filled out the first self-report questionnaire and were subsequently informed that they would move to a different country with a different tax administration. After introducing the second context, another 40 trials were presented applying the same experimental design as before, ending with filling out the second self-report questionnaire. At the end, participants were remunerated based on a €10 show-up fee and their tax decision in one randomly chosen tax trial (on average €22.12).

Material

The same material as in experiment 1 was used (Supplementary Material 1.2.3).

EEG was recorded from 57 equidistantly arranged electrodes in a cap. Signal preprocessing and artefact correction was conducted using EEGLAB (Delorme and Makeig, 2004). Please refer to Supplementary Material for further details on data collection and preprocessing (1.2.2).

To assess ERP amplitudes, data were epoched time-locked to the onset of the income separately for coercive and legitimate trials. MFN amplitudes were extracted at FCz as peak-to-peak-to-peak values (Yeung and Sanfey, 2004); i.e. difference between the MFN component and the mean of the preceding P2 and the subsequent P300 component) in the time window 150–400 ms post income. P300 amplitudes were extracted at Pz as peak-to-peak values (Pfabigan *et al.*, 2011); i.e. difference between the P300 and the preceding N2 component in the time window 200–600 ms post income.

Statistical analyses

Several 2 x 2 univariate analyses of variance with manipulation of authority (coercive *vs* legitimate authority) as within-subjects factors, and order of manipulation (coercive followed by legitimate authority and vice versa) as between-subjects factor were performed with self-report data, behavioral data, and P2, MFN and P300 amplitudes as dependent variables. Again, we present only significant results. Detailed results and robustness checks are presented in Supplementary Material (1.2.4–6).

Results

Self-report data. As shown in Figure 1, self-reported enforced compliance was again significantly higher under coercive ($M = 5.65$, $SE = 0.17$) than legitimate authority ($M = 4.13$, $SE = 0.20$; $F(1,76) = 50.78$, $P < 0.001$, $\eta_p^2 = 0.40$). Again, voluntary cooperation was significantly higher under legitimate ($M = 4.92$, $SE = 0.14$) than coercive authority ($M = 3.03$, $SE = 0.15$; $F(1,76) = 103.11$, $P < 0.001$, $\eta_p^2 = 0.58$). Rational decision-making did not differ between coercive and legitimate authority. Again, reactance was significantly higher under coercive ($M = 5.18$, $SE = 0.17$) than legitimate authority ($M = 3.79$, $SE = 0.18$; $F(1,75) = 50.17$, $P < 0.001$, $\eta_p^2 = 0.40$).

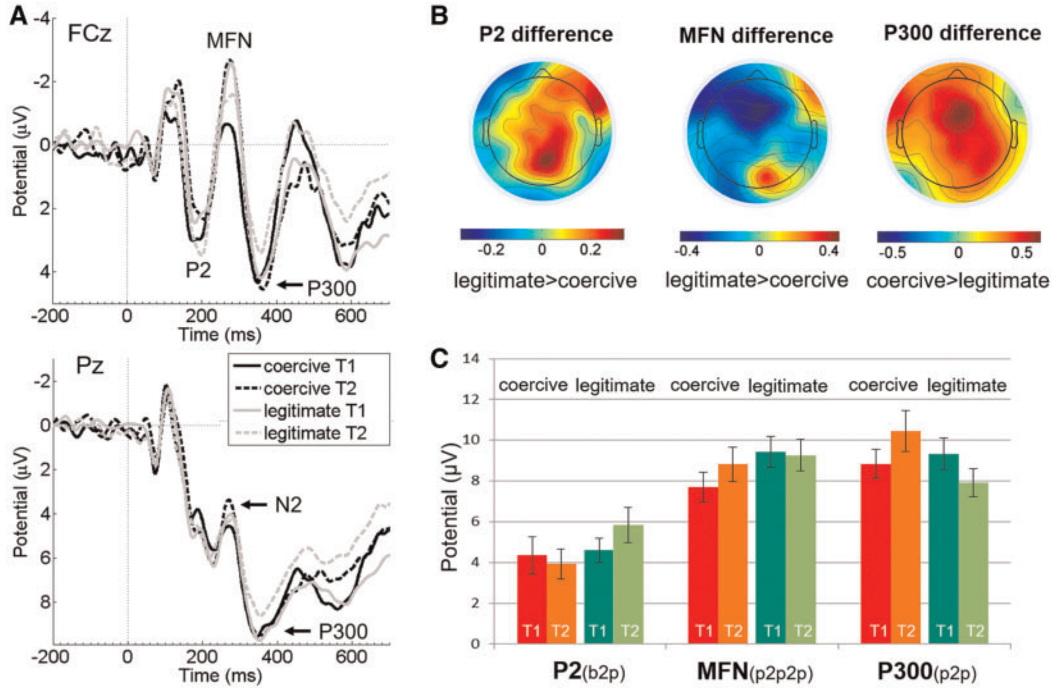

Fig. 2. (A) Time-courses of the P2 and MFN component at FCz (upper panel; also showing P300 peak used for peak quantification [Yeung and Sanfey, 2004]) and the P300 component at Pz (lower panel; also showing N2 peak used for peak quantification [Pfabigan et al., 2011]). Time point zero indicates onset of the flag, tax income, and the 40% tax rate. Negative is drawn upwards per convention. (B) Scalp topographies of the mean difference between coercive and legitimate trials in the P2 time interval (170–210 ms; left side), MFN time interval (260–300 ms; in the middle) and the P300 time interval (300–400 ms, right side). (C) Bar graph depicting mean and SE of P2, MFN and P300 peak values per condition and time point. Please note that absolute values of the three ERPs (in µV) were plotted for a uniform display. Note: b2p = base-to-peak; p2p = peak-to-peak; p2p2p = peak-to-peak-to-peak approaches for ERP quantification.

Behavioral data. Tax payments were not affected by our experimental manipulation (all P-values > 0.195). See Supplementary Material 1.2.5 for descriptive statistics.

ERP data. P2 amplitudes were significantly more pronounced under legitimate ($M = 5.20$, $SE = 0.52$) than coercive authority ($M = 4.13$, $SE = 0.58$; $F(1,76) = 5.30$, $P = 0.024$, $\eta_p^2 = 0.07$). As Figure 2a indicates, MFN amplitudes were significantly more pronounced under legitimate ($M = -9.35$, $SE = 0.54$) than coercive authority ($M = -8.27$, $SE = 0.56$; $F(1,76) = 9.43$, $P = 0.003$, $\eta_p^2 = 0.11$). P300 amplitudes were significantly more pronounced under coercive ($M = 9.67$, $SE = 0.62$) than legitimate authority ($M = 8.64$, $SE = 0.52$; $F(1,76) = 6.81$, $P = 0.010$, $\eta_p^2 = 0.08$). See Supplementary Material 1.2.6 for descriptive statistics.

Discussion experiment 2

Experiment 2 confirmed most of the results of experiment 1, apart from the absent differences in tax payments and self-reported rational decision making. However, these absent differences replicate existing findings (Hartl et al., 2015) and might originate from the different settings in both experiments. Concerning ERP data, results show that coercive authority differentially affected attentional processing (P2, P300) and reduced cognitive control demands (MFN) compared to legitimate authority.

General discussion

We investigated whether or not coercive and legitimate centralized institutions elicit comparable cognitive and neuronal processes to reach the final tax payment decision. In experiment 1, coercive authority led to less tax payments, faster decisions and more self-reported rational decision-making, and to less voluntary cooperation than legitimate authority. In experiment 2, no difference in tax payments and self-reported rational decision-making was found. This can be due to differences in experimental procedures, fostering less spontaneous decisions in experiment 2. On the neuronal level, tax authority influenced all ERPs. P2 and MFN amplitudes were more pronounced in legitimate compared to coercive conditions, while P300 amplitudes were more pronounced in coercive than legitimate ones.

In tax experiments which applied a similar paradigm, both coercive and legitimate authority are shown to increase tax payments (Wahl et al., 2010; Hofmann et al., 2014; Hartl et al., 2015). This, however, is based on different motivations. Coercive authority was shown to lead to less trust in institutions, more enforced compliance and less voluntary cooperation than legitimate authority (Hofmann et al., 2014). The different psychological processes underlying both types of authority might explain why some previous studies (Hofmann et al., 2014) as well as experiment 1 show that legitimate authority generates higher tax payments than coercive authority. Enforced compliance elicited by coercive authority reduces tax payments; voluntary cooperation based on legitimate authority increases tax payments (Kastlunger et al., 2012; Gangl et al., 2015). Thus, particularly when individuals decide spontaneously these different motivational processes related to voluntary cooperation and enforced compliance might generate higher tax payments for legitimate than for coercive authority.

In ultimatum game studies, enhanced MFN amplitudes are usually observed after unfair compared to fair offers, and most likely reflect fairness-related norm enforcement in these situations (Feng *et al.*, 2015). Along these lines, Fehr and Camerer (2007) reported that unfair offers in economic games induce motivational response conflict between economic self-interest and norm enforcement. MFN amplitude variation in the current study might therefore reflect enhanced response conflict induced by legitimate compared to coercive tax authority since evading tax might be perceived as more conflicting in the legitimate than the coercive context because of moral pressure to pursue community goals on costs of egoistic motives. Legitimate authority is likely perceived as positive and as community-serving, which in turn calls for reciprocity (Fehr *et al.*, 1997; Tyler and Fagan, 2008), mirrored by enhanced voluntary cooperation (Hofmann *et al.*, 2014). Thus, MFN and voluntary cooperation data indicate that legitimate authority might make it more difficult to defect than coercive authority. Moreover, we observed significantly larger P2 amplitudes during legitimate than coercive trials. This further corroborates the MFN results. Thus, even before indicating response conflict by MFN variation, legitimate tax authority stimuli induced heightened arousal levels (Carretié *et al.*, 2001) or higher attention capture (Potts, 2004) than coercive tax stimuli.

In contrast to the early evaluation indicated by P2 and MFN components, enhanced P300 amplitudes were observed in coercive compared to legitimate trials. This finding suggests at first glance that coercive authority might yield greater evaluative changes and attention (Cacioppo *et al.*, 1993; Ito *et al.*, 1998; Polich, 2007), which disagrees with a simple calculative cost-benefit heuristic. However, Fabre *et al.* (2015) proposed that larger P300 amplitudes during asset distribution might reflect more automatic processing in line with simple heuristics in working memory (Khader *et al.*, 2011), while decreased amplitudes might reflect a disruption of heuristic-driven processing. For example, P300 amplitudes are larger for fair compared to conflicting unfair and mid-fair proposals (Hewig *et al.*, 2011; Wu *et al.*, 2012; Qu *et al.*, 2013). Also, in dual-task settings, P300 amplitudes are larger in the main task if the second task is an easy compared to a difficult cognitive task (Kramer *et al.*, 1985). Therefore, we belief that legitimate compared to coercive authority is related to a rather difficult decision conflict which disrupts also stimulus categorization (mirrored in P300 decrease).

Faster decisions in experiment 1 in the coercive condition also indicate that a simple calculative cost-benefit analysis might represent an easy-to-apply cognitive heuristic, which is processed faster than the response conflict induced by reciprocity during legitimate authority. Thus, our findings indicate that tax decisions under coercive authority were processed more easily than under legitimate authority.

Self-reported rational decision-making was enhanced under coercive compared to legitimate authority in experiment 1. However, no such difference was observed in experiment 2. Although reaction time and ERP data indicate that the legitimate condition is the more complex one, this self-report finding suggests that the decision complexity under legitimate authority was not consciously perceived by the participants. The different experimental settings might be partly responsible for this. The rather spontaneous tax decision in experiment 1 might have led to more conscious cognitive workload in the coercive than in the legitimate condition. In contrast, the experimentally prolonged tax decision in experiment 2 might have reduced the conscious workload for coercive compared to legitimate authority. Alternatively, the rational decision-making scale might not be able to differentiate between simple calculative cost-benefit analysis and deliberate decisions about the social consequences of one's decision. The present results suggest that both, coercive and legitimate authority, lead to deliberate considerations, but with varying cognitive demands.

Concerning our opposing hypotheses, we found that coercive authority induces simpler calculative cost-benefit analysis instead of more complex social evaluation processes, which in turn make it less conflicting to defect under coercive compared to legitimate authority (Tenbrunsel and Messick, 1999). Surprisingly, the hypothesis that the cost-benefit analysis induced by coercive authority is more complex than the tax decision under legitimate authority is not supported by our data. Relating our findings to previous literature (Coricelli *et al.*, 2010; Dulleck *et al.*, 2016) suggests that coercive authority might induce less deliberate and less emotional demands compared to legitimate authority, which might provoke a straining conflict on reciprocity and fairness accompanied by psychological stress. Thus, coercive and not legitimate authority might provoke more instinctive economic choices (Rubinstein, 2007) and allows a fast calculative response whereas legitimate authority introduces a complex conflict between self- and social interests. Our finding that legitimate authority leads to more fairness-related response conflict might also serve as explanation for why legitimate authority sometimes leads to higher tax payments than coercive authority (e.g. when spontaneous decisions are made such as in experiment 1 and Hofmann *et al.*, 2014). Legitimate more than coercive authority might trigger and explain individuals' tax morale (Frey and Torgler, 2007).

Taxpaying is an excellent example for social decision-making and implies financial decisions which affect both self-interest and other-orientation (Fehr and Camerer, 2007). Several authors suggested that a dual-process system is at work during decision-making reflecting the interplay of self-interest *vs* other-orientation (see Sanfey and Chang, 2008). System 1 is assumed to represent an automatic, fast, effortless, unconscious and slow-learning system implementing automatic and heuristic-based judgements. Contrarily, system 2 is assumed to represent a controlled, slow, effortful and fast-learning system implementing more deliberate reasoning and potentially reappraising input from system 1, and balancing competing interests. Thus, the question arises whether tax decisions under coercive and legitimate authorities are purely based on heuristic-based judgments (system 1) or involve more deliberate reasoning (system 2). The calculative cost-benefit analysis as a heuristic might be used to easily assess self-interests, while social norm enforcement might be reflective of other-orientation. Enhanced MFN amplitudes during legitimate compared to coercive trials might reflect system 1 activity, since MFN variation usually reflects automatic, coarse stimulus evaluation (Hajcak *et al.*, 2006)–indicating enhanced response conflict between self- and other-interests. Subsequent P300 variation indicates that participants might have countered system 1 and tried to costly implement more deliberative reasoning during legitimate trials resulting in diminished P300 amplitudes compared to coercive trials (Fabre *et al.*, 2015).

Limitations of the current study concern the consequences of the necessary compromise between research methods in tax psychology and neuroscience. The experimental setting (within-subject design), number of assessed trials (40) and the assessment of tax decisions (5-point Likert-type scale) deviates from the standard tax paradigms but was necessary to meet the requirements of EEG measurement. However, replication of the effects of coercive and legitimate authority on enforced compliance and voluntary cooperation (Hofmann *et al.*, 2014) show that the present experiments can be compared with previous ones, providing evidence for the internal validity of the present results.

Future studies on cognitive and neuronal processes involved in tax decisions should examine more realistic settings by analyzing the impact of a combination of high *vs* low coercive with high *vs* low legitimate authority on cooperation (Hartl *et al.*, 2015). Moreover, trust is argued to be as important for cooperation as coercive and legitimate authority (Kirchler *et al.*, 2008).

Cooperation in social systems is organized by centralized institutions such as tax administrations which aim to motivate tax honesty. The present experiments are the first attempt of generating insights into psychological, cognitive and neuronal processes involved in taxpaying under coercive or legitimate authority. Our results also have policy implications: legitimate compared to coercive authority makes tax compliance to a complex social instead of a simple economic problem, thus should be a preferred strategy of tax administrations to foster general tax morale. A better understanding of tax compliance might help to ensure sufficient funds for public goods and might increase public confidence if all taxpayers are perceived to contribute their fair share instead of exploiting the system.

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Supplementary data

Supplementary data are available at *SCAN* online.

Conflict of interest. All authors declare that this research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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RESEARCH ARTICLE

Does the Sole Description of a Tax Authority Affect Tax Evasion? - The Impact of Described Coercive and Legitimate Power

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Abstract

Following the classic economic model of tax evasion, taxpayers base their tax decisions on economic determinants, like fine rate and audit probability. Empirical findings on the relationship between economic key determinants and tax evasion are inconsistent and suggest that taxpayers may rather rely on their beliefs about tax authority's power. Descriptions of the tax authority's power may affect taxpayers' beliefs and as such tax evasion. Experiment 1 investigates the impact of fines and beliefs regarding tax authority's power on tax evasion. Experiments 2-4 are conducted to examine the effect of varying descriptions about a tax authority's power on participants' beliefs and respective tax evasion. It is investigated whether tax evasion is influenced by the description of an authority wielding coercive power (Experiment 2), legitimate power (Experiment 3), and coercive and legitimate power combined (Experiment 4). Further, it is examined whether a contrast of the description of power (low to high power; high to low power) impacts tax evasion (Experiments 2-4). Results show that the amount of fine does not impact tax payments, whereas participants' beliefs regarding tax authority's power significantly shape compliance decisions. Descriptions of high coercive power as well as high legitimate power affect beliefs about tax authority's power and positively impact tax honesty. This effect still holds if both qualities of power are applied simultaneously. The contrast of descriptions has little impact on tax evasion. The current study indicates that descriptions of the tax authority, e.g., in information brochures and media reports, have more influence on beliefs and tax payments than information on fine rates. Methodically, these considerations become particularly important when descriptions or vignettes are used besides objective information.

Introduction

Official announcements of tax authorities as well as media reports provide taxpayers with descriptions of their tax authority. The question arises how taxpayers respond to such information and whether different descriptions of a tax authority affect taxpayers`beliefs regarding tax authority's power (coercive power or legitimate power), and most interestingly tax evasion [1]. Taxpayers' subjective beliefs regarding tax authority's coercive or legitimate power, may even outweigh economic key determinants [2]. While coercive power bases on frequent audits and severe fines in case of tax evasion, legitimate power rests upon the legitimacy of the position of the authority, its expertise, its dissemination of information, and its ability to be a role model for identification [3].

Field experiments show that audit information letters from the tax authority to taxpayers impact self-reported income [4–6]. Some of these letters can be seen as unintentional manipulation of two forms of power: coercive power and legitimate power. First, taxpayers were informed that both their state and federal tax returns would be closely examined [6]. This description of coercive power such as severity of fines may change taxpayer's beliefs regarding tax authority`s coercive power and increase tax honesty by leading to an overestimation of the actual audit probability. Second, letters in the field experiment contain department phone numbers to call for information and assistance with tax filing. This assurance of support corresponds with the concept of legitimate power [7]. Strategies of good governance, establishing a customer orientation and focusing on supportive and transparent processes, lead to higher tax compliance [8–10]. These measures of legitimate power promise to be more effective than traditional coercive methods [9,11] because the perception of transparency and fairness induces a feeling of reciprocity at the taxpayers, which in turn enhance tax compliance [12].

The aim of the current study is to analyze whether taxpayers base their decisions to pay taxes honestly on beliefs about tax authority's power rather than on economic key determinants, and whether the description of a tax authority (as wielding coercive and legitimate power) affects taxpayers' beliefs and as a result tax evasion, although objective information concerning audit probability and fines is available. Contrary to previous research, the isolated effects of the description of coercive and legitimate power are examined. Further, it is of interest whether these isolated effects of coercive and legitimate power still hold when a tax authority is described as wielding both forms of power simultaneously.

Theoretical background

The classical economic model of tax evasion [13–15] is the dominant theoretical model in research on tax compliance. In this model, taxpayers are treated as expected utility maximizers, confronted with a decision under risk. Basically, individuals decide whether to evade taxes running the risk of getting audited and fined ending up with less money than if they had declared all income honestly, or to pay honestly, which results in a sure loss. The implementation of audits and fines increases the costs of non-compliance [15]. Thus, audits and fines are researched as authorities' means for enhancing taxpayers`compliance [6, 16–22]. The probability of an audit is positively related to tax compliance [6,17,21,23–25], as are high fines for tax evasion [17,22].

In the simplest form of the economic model of tax evasion [16], taxpayers receive an amount of income I, and have to decide how much income to report to the tax authority (see also [6]). If income I is reported honestly, the income is taxed according to the tax rate t and taxpayers end up with an income of IH = I—t x I. If taxpayers fully evade taxes, they save money, but run the risk of getting caught, as audits take place with a fixed probability p. When taxpayers are audited, than all unreported income can be discovered and the audit results in a payment of a fine at rate f. The income IC therefore equals IC = I – f x (t x I). When taxpayers have not reported any income to the tax authority and no audit takes place, then they end up with an income of IN = I. Taxpayers are therefore assumed to choose between a sure loss (paying honestly, E(IH) = I—t x I) or the probability of a gain or a major loss according to the expected utility function of E(I) = p(IC) + (1-p) (IN).

Literature reviews report inconsistent empirical findings concerning the relationship between audits, fines, and tax evasion [18,26,27]. Although laboratory experiments have consistently supported the positive impact of audits on tax behavior, levels of tax honesty in field experiments are far higher than a simple risk-return model would predict [28]. In almost all countries in the world the audit probability is low, which should result in low levels of tax compliance. Contrary to this economic assumption, tax honesty is still high in most countries [29].

These findings may be due to the fact that individuals find it hard to deal with uncertainty. Several studies show that taxpayers poorly predict audit probabilities and fine rates [18,30,31]. Rather than on objective key economic figures, taxpayers seem to base their tax behavior on their subjective beliefs regarding tax authority's ability to detect evasion, that is the tax authority's power [2,32]. Prior research has shown different ways by which taxpayers become aware of enforcement strategies of the tax authority [33]. According to these insights, taxpayers pay attention to official information disseminated by the tax authority as well as unofficial information. It is therefore of relevance to investigate how the description of the tax authority modifies taxpayers' beliefs of tax authority's power and tax evasion.

A tax authority can be believed to be powerful, holding coercive power or legitimate power. Descriptions of coercive power comprise the severity of fines for tax evasion [10,34]. In such a case taxpayers overestimate the probability of audits and fine rates, even when fully informed, so that there is far less tax evasion than predicted by the economic model [16]. Beliefs on tax authorities' coercive power instead of accurate information on audits and fines rates should act as an indicator for the estimation of audit probability and fines and therefore affect tax compliance [35]. Describing a tax authority as wielding high coercive power should positively impact tax honesty.

The perception of legitimate power origins from taxpayers' conviction that the tax authority holds expertise [10]. Savvy information for taxpayers to pay their taxes correctly prompts a perception of legitimate power. Another source of legitimate power roots in the feeling of identification with the tax authority and the authority's goals. Legitimate power also stems from the perception that the tax authority is in a (legal) position that gives authority over taxpayers. Beliefs on tax authorities' legitimate power should increase tax honesty as they lead to perceptions of fairness and transparency, and in turn call for reciprocal behavior ("You scratch my back, and I'll scratch yours", [36]). Taxpayers are more likely to report their income honestly when they think that the tax authority is doing a good job [1]. When the tax authority works in a way that is beneficial for the taxpayers (e.g., provides services), they cooperate in paying taxes even when defection would rationally be the best option in the short-term [12,26]. The impact of perceived legitimate power on tax compliance has only been investigated indirectly, for instance, by investigating the impact of service considerations on tax payments [7] or by investigating the effect of legitimate power on intended tax compliance [10]. Empirical evidence shows that legitimate power enhances tax payments. However, it is relevant to examine if descriptions of legitimate tax authorities initiate beliefs on legitimate power and affect tax evasion even in cases where objective information about economic key figures are present.

It is necessary to examine the isolated effects of descriptions of coercive and legitimate power, as they are supposed to impact tax evasion in different ways. Up to now, field experiments using announcements and tax letters do not explicitly address coercive or legitimate power or only trigger the perception of both forms of power [6]. Likewise, descriptions or vignettes on power of the tax authority used in experiments with behavioral data do not explicitly differentiate between coercive and legitimate power [2,37].

Different qualities of power do not exist independently of each other [38]. Tax authorities usually do not choose one set of policies over another, but rather set measures of both, coercive and legitimate power [10]. A few studies address interaction effects of different types of social power in an organizational context [39,40]. It was shown that employees comply with managerial directions in particular when their supervisors exert coercive as well as legitimate power [41]. In the context of taxes, the perception of a high audit probability and severe fines (coercive power) may be of little deterrent value when taxpayers think that an audit will fail to uncover tax evasion [18]. Although the combination of coercive power and legitimate power might lead to a reduction of beliefs of coercive measures, additional legitimate power is discussed to signal efficiently applied audits to discover non-compliance, as experts are at work. Research has shown, that if sanction mechanisms are believed to be fair (that is legitimate), cooperation increases [42]. Hofmann et al. [10] assume that in the tax context coercive and legitimate power exercised in combination generate the highest degree of intended tax honesty because the tax authority is perceived as a legitimate and expert power holding authority. In this vein, the joint description of coercive and legitimate power may have a higher impact on tax payments than if only one quality of power is perceived.

Although descriptions of coercive and legitimate power may outweigh objective information, the effect could differ according to taxpayers' prior experience with the tax authority. External factors, like a change of government after an election or a revolution, can prompt a change of the belief of the intensity of power. How do taxpayers react to such a change of power? As tax authorities worldwide start changing their policy to enhance compliance by using supportive procedures rather than means of enforcement, it is relevant to further research how taxpayers adjust their beliefs and react to such a contrast of power. As descriptions on prior events are used to qualify current judgments, a change could foster contrast effects [43,44]. A change of the description of the tax authority will lead to a comparison process, in which new evidence on the tax authority will be evaluated in contrast to the previous description. For instance, after experiencing a contrast from high to low coercive power of the tax authority, taxpayers may react with less compliance than they would without the specific prior descriptions of power, even if economic key figures remain constant. On the other hand, a contrast from high to low legitimate power indicates that the tax authority has reduced its services, which leads to decreased reciprocal behavior. Taxpayers experiencing these contrasting descriptions might be less compliant than taxpayers who do not undergo this change but constantly face descriptions of low legitimate power. The contrast of described power (low to high power; high to low power) may therefore impact tax evasion.

The Current Studies

Based on the inconsistent findings regarding the relationship between the severity of fines and tax evasion, we first conduct an experiment, in which we examine the impact of information on one economic key determinant, i.e., fine rates (0.5 vs. 1 vs. 2 times the evaded amount) on tax evasion, the impact of beliefs regarding tax authority's power on tax evasion and whether beliefs are based on the information about the fine rate (Experiment 1). Further, we extend previous research by modifying participants' beliefs regarding tax authority's power with varying description about the tax authority, and investigate whether the descriptions of the authority affect tax evasion. Three experiments are conducted with varying descriptions of the tax authority (Experiment 2–4). The procedures were similar and economic key figures, such as audit probability and fine rate, were kept constant throughout the three experiments. In particular, we investigate whether the description of a tax authority exerting low versus high coercive power (Experiment 2) or low versus high legitimate power (Experiment 3) impacts tax evasion while economic key figures are held constant. Building on these findings, we examine whether the combination of high coercive and legitimate power induce higher tax payments than if the intensity of only one quality of power is described as high (Experiment 4). A possible contrast effect of presentations of the tax authority is examined in the experiments 2, 3, and 4.

Ethic Statement

All four experiments reported here were conducted in respect to the Declaration of Helsinki (revised 1983) and local guidelines of the Faculty of Psychology, University of Vienna. According to the Austrian Universities Act 2002 (UG2002), only medical universities are required to appoint ethics committees for medical research. Therefore, no ethical approval was required for the present study. The majority of participants were recruited via an online data bank of the Department of Applied Psychology, for which they had to provide their written consent to participate in studies. All participants were invited to the laboratory of the Faculty and gave their verbal consent to participate in the study. Information about the duration, the tasks, the payment, and the confidentiality was provided to participants prior to attending the experiments. All participants voluntarily took part in the experiment and could withdraw at any time during the experiment with no further consequences. Data were collected anonymously and no harming procedures were used. The experiments are part of a project proposal approved by three international scientific peer-reviewers from the field for the Austrian Science Fund (FWF).

Experiment 1: Fine Rate

Materials and Methods

Participants. Overall, 108 students (32% males, *M*[age] = 23.96, *SD* = 5.92) majoring in different fields from management to biology (not acquainted with the tested theories and hypotheses) took part in the study. Thirty-eight percent of participants had no experience with the tax authority; the others reported at least some contact.

Procedure. The experiment was conducted with the software z-Tree [45]. Participants were invited to the laboratory and randomly assigned to one of three conditions, manipulating the fine rate in case of detected tax evasion (0.5 vs. 1 vs. 2 times the evaded amount).

Introduction. At the beginning of the experiment, participants were introduced to the rules of the experiment and informed about audit probability (kept constant in all conditions) and fine rate (0.5 vs. 1 vs. 2 times the evaded amount). A numeric example helped to understand the information.

> In the following you are taking part in an experiment on tax behavior which takes 20 periods. In each period a certain income is allocated to you, of which you have to pay taxes. The tax rate is 40% of your income. In each period your final income is the result of the allocated income minus the taxes paid. At the end of the experiment one period will be selected randomly. The income that you have gained in this period will be paid to you by the experimenter. Additionally, for each period there exists a tax audit probability of 15%. In case you are audited and you have evaded taxes, you have to pay back the evaded amount plus a fine of [0.5] [1] [2] time/s the evaded amount.

After the introduction, participants were asked to imagine being a self-employed taxpayer in a fictitious state who has to pay taxes. They also received the information that only at the end of the experiment they get to know if and when an audit had taken place. After every fifth period, participants were briefly asked to remember that they are self-employed and that they will have to pay taxes in Chomland for the next remaining years (periods). We repeated the following analysis, controlling for a possible effect of the reminder. The analysis showed that the reminder has no effect on the tax payments, revealing the same results.

Experimental task. In each of the 20 periods, participants received varying incomes in experimental currencies (ECU) on which they had to pay taxes. Every participant received the same amount of money in every round, ranging from 50,000 ECU to 95,000 ECU (sequence was set before the experiment). They were asked to indicate how much tax they will pay from the allocated income. For further analyses, the relative tax compliance (ranging from 0 to 1) was used.

Questionnaire. After the 20^{th} period, participants filled in a questionnaire to assess their beliefs about tax authorities' coercive (4 items) and legitimate power (22 items). Reliability of scales, tested with Cronbach α, was .85 for coercive power and .90 for legitimate power. The scale legitimate power compounds four subscales (legitimacy, expertise, information, identification). For the sake of simplicity and due to the measurement model the subscales were combined to one scale. All items can be found online in supplementary material (see S1 Table).

Remuneration. At the end of the experiment, participants were remunerated for participation. One period out of 20 was randomly selected and participants were remunerated according to their decisions in this period. The participants' earnings depended on their tax payments, random tax audits and the respective fines in case of detected tax evasion (participants received on average 2.53 EUR or 3.16 USD, respectively).

Results

Fine rate on tax evasion. To test whether different fine rates have an impact on tax evasion, the three conditions (0.5 vs. 1 vs. 2 times the evaded amount) are included as dummy variables in a repeated measures regression, analyzing all 20 periods of taxpaying (F(17, 106) = 2.18, p = .008, R^2 = .18). Fine rate 1 serves as reference group. The analysis reveals no significant differences between 1 time and 0.5 times the evaded amount, β = -.04, t(106) = -0.55, p = .58 and 1 time and 2 times the evaded amount, β = .02, t(106) = 0.32, p = .75. Regardless of the manipulation, tax evasion is equally low when the fine was 0.5 times ($M_{0.5x}$ = .82, SD = .29), 1 time (M_{1x} = .84, SD = .23) or 2 times the evaded amount (M_{2x} = .85, SD = .23). The amount of fine (0.5 vs. 1 vs. 2 times fine) has no impact on tax evasion.

Beliefs on tax evasion. To test whether beliefs about tax authority's coercive and legitimate power impacts tax evasion, a repeated measure regression is conducted, F(18, 105) = 4.14, $p < .001$, R^2 = .31. The analysis reveals a significant main effect of coercive power, β = .83, t(105) = 2.19, p = .03 and significant main effect of legitimate power, β = .65, t(105) = 2.37, p = .02, but no significant interaction effect of coercive and legitimate power (p = .10). As expected, the perception of the tax authority as wielding high coercive or high legitimate power leads to higher tax payments.

Fine rate on beliefs. A MANOVA reveals no significant effect of different fine rates on participants`beliefs regarding tax authority's coercive power (F(2, 104) = 0.77, p = .47) or legitimate power (F(2, 104) = 0.47, p = .63). Regardless of severity of fines, the beliefs of coercive power ($M_{0.5x}$ = 4.50, SD = 1.46; M_{1x} = 4.49, SD = 1.33; M_{2x} = 4.86, SD = 1.57) and legitimate power ($M_{0.5x}$ = 4.40, SD = 0.84; M_{1x} = 4.60, SD = 0.93; M_{2x} = 4.58, SD = 1.03) are equally high in all three conditions. This indicates that tax evasion is related to participants`beliefs regarding tax authority's power, but the manipulation of fine rates does not affect the beliefs of coercive and legitimate power.

General Method for Experiment 2, 3, and 4

In experiment 2, 3, and 4, we examine whether descriptions of the tax authority affect participant's beliefs regarding tax authority's power and further affect tax evasion, while all economic key figures, including fine rate are held constant.

Procedure

The following procedure was identical for experiment 2, 3, and 4. The experiments were conducted with the software z-Tree [45] and took place in the laboratory.

Economic determinants. Equal to experiment 1, participants were introduced to the rules and informed about audit probability and fine rate at the beginning of the experiments. A numeric example helped to internalize the information.

> In the following you are taking part in an experiment on tax behavior which takes 40 periods. In each period a certain income is allocated to you, of which you have to pay taxes. The tax rate is 40% of your income. In each period your final income is the result of the allocated income minus the taxes paid. At the end of the experiment one period will be selected randomly. The income that you have gained in this period will be paid to you by the experimenter. Additionally, for each period there exists a tax audit probability of 15%. In case you are audited and you have evaded taxes, you have to pay back the evaded amount plus a fine of 1 time the evaded amount.

Introduction to the fictitious scenario. Participants were asked to imagine being a self-employed taxpayer in a fictitious state who has to pay taxes. They also received the information that only at the end of the experiment they get to know if and when an audit had taken place.

> Imagine that you are a citizen in the fictitious state Chomland. You are self-employed and you will have to pay taxes in Chomland for the next 40 years (40 periods). In Chomland, you only get to know if and when a tax audit took place after employment has ended (40 periods).

Manipulation I: Description of tax authority. The description of the tax authority in the fictitious state differed between the three experiments. After the introduction to the fictitious state, participants read a description of the tax authority, which was holding different qualities of power. The description contained data about the way in which the authority makes sure that taxpayers comply. Coercive power and legitimate power were manipulated either separately (Experiment 2 and 3) or in combination (Experiment 4). After every fifth period, participants were reminded of the features of the respective tax authority by means of sentences repeated from the description of the tax authority (i.e. short sequences repeated from the description they had received in the beginning; additional analysis for all three experiments showed that the reminder had no effect on the tax payments). To check whether the description of the tax authority affects participants' beliefs about tax authorities power, participants filled in a questionnaire assessing their perception of wielded coercive and legitimate power by the tax authority twice, after the 20th period (first sequence) and the 40th period (second sequence) of the experimental task (Table 1). Reliability of scales was tested with Cronbach α, ranging from .89 to .97 over the experiments.

Table 1. Manipulation of coercive and legitimate power before (Periods 1–20) and after the change in the tax authority (Periods 21–40).

	Experimental conditions		Control conditions	
	Periods in experiment		Periods in experiment	
	1–20	21–40	1–20	21–40
Experiment 2	low coercive	high coercive	high coercive	high coercive
	high coercive	low coercive	low coercive	low coercive
Experiment 3	low legitimate	high legitimate	high legitimate	high legitimate
	high legitimate	low legitimate	low legitimate	low legitimate
Experiment 4	high coercive/ low legitimate	high coercive/ high legitimate	high coercive/ high legitimate	high coercive/ high legitimate
	low coercive/ high legitimate	high coercive/ high legitimate		
	high coercive/ high legitimate	high coercive/ low legitimate	high coercive/ low legitimate	high coercive/ low legitimate
	low coercive/ low legitimate	high coercive/ low legitimate		
	high coercive/ high legitimate	low coercive/ high legitimate	low coercive/ high legitimate	low coercive/ high legitimate
	low coercive/ low legitimate	low coercive/ high legitimate		
	high coercive/ low legitimate	low coercive/ low legitimate	low coercive/ low legitimate	low coercive/ low legitimate
	low coercive/ high legitimate	low coercive/ low legitimate		

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Manipulation II: Contrast of power. In all three experiments, control conditions and experimental conditions were realized. After the 20th period (first sequence), participants were informed that due to a change of the government, the intensity of power of the tax authority had changed. Participants in the experimental conditions received a different description of this new tax authority contrasting the first description. In the control condition, the hypothetical tax authority was the same in the first and second sequence. Table 1 provides an overview of all experimental and control conditions for the three experiments.

Experimental task. Equal to experiment 1, in each period, participants received varying incomes in experimental currencies (ECU) on which they had to pay taxes. They were asked to indicate how much taxes they will pay. For further analyses, the relative tax compliance (ranging from 0 to 1) was used.

Remuneration. One period out of 40 was randomly selected and participants were remunerated according to their decisions in this period. The participants' earnings depended on their tax payments, random tax audits and the respective fines in case of detected tax evasion (participants received on average 6.20 EUR or 8.18 USD, respectively).

Experiment 2: Coercive Power

Materials and Methods

Participants. Overall, 120 students (64% males, M[age] = 24.48, SD = 5.85) majoring in several different fields from management to biology (not acquainted with the tested theories and hypotheses) took part in the study. Forty-seven percent of participants had no kind of experience with the tax authority; the others reported at least some contact with them.

Procedure. Participants were randomly assigned to one of four conditions (two experimental conditions: low coercive power (lcp) → high coercive power (hcp), hcp → lcp; two control conditions: lcp → lcp, hcp → hcp), in which the tax authority were described as holding low and/or high coercive power.

Low/high coercive power manipulation. The tax authority of Chomland calculated that the tax revenue was about 200 billion ECU for the past year. Of this income, about 0.09/2 billion ECU was spent on tax audits and punishments of taxpayers. In general, the tax authority is well known for its mild/severe punishments. Since it has so far rarely/always conducted strict audits, the taxpayers feel little/very forced to cooperate.

The tax authority consists of employees who work with lax/strict audits.

For the tax authority, the severity of punishment for tax evasion is of low/high importance. It works on the basis of lax/strict control measures. Its working principles are based little/particularly on the penalties for tax evasion.

After every fifth period, participants received a reminder of the features of the respective tax authority by means of sentences repeated from the description of the tax authority. For instance, participants in the condition, in which the tax authority held high coercive power received the following reminder:

> Please remember! You are a citizen in Chomland, in which the tax authority is well known for its severe punishment. Tax auditors work on the basis of lax/strict control measures.

Additionally, during their 'experimental' life as a taxpayer, power of the tax authority changed in the experimental conditions from low/high coercive power to high/low coercive power (Table 1).

Results

Coercive power on beliefs. A repeated measures regression ($F(27, 119) = 31.70$, $p < .001$, $R^2 = .66$) reveals a significant main effect of intensity of power, $\beta = .78$, $t(119) = 15.41$, $p < .001$ and a significant interaction effect of intensity of power and sequence, $\beta = .10$, $t(119) = 3.24$, $p = .002$. As expected, the description of the tax authority as wielding low or high coercive power affects the participant's beliefs regarding the tax authority's power. Whereas the belief of low coercive power is equally low in the first sequence ($M = 2.60$, $SD = 1.34$) and the second sequence ($M = 2.52$, $SD = 1.67$), high legitimate power is perceived to be lower in the first sequence ($M = 5.51$, $SD = 1.37$) than in the second sequence ($M = 6.06$, $SD = 0.87$). Thus, descriptions of low and high coercive power initiate respective beliefs.

Coercive power on tax evasion. To test whether coercive power has an impact on tax payments, again a repeated measure regression was conducted, analyzing all 40 periods of taxpaying. The model with all variables significantly predicts tax payments, $F(26, 119) = 5.10$, $p < .001$, $R^2 = .15$. As expected, there is a significant main effect of intensity of power, $\beta = .14$, $t(119) = 2.64$, $p = .009$, with higher tax payments in conditions with high coercive power than with low coercive power. In addition, there is a significant main effect of sequence, $\beta = .07$, $t(119) = 3.22$, $p = .002$, with higher tax payments in the second sequence than in the first sequence (Fig 1). The other main effects and interaction effects do not reach significance, $p > .20$. Therefore, descriptions of coercive power impact tax payments. Table 2 provides the results for the repeated measure regression for all three experiments.

Contrast effect of coercive power. To test for a contrast effect of descriptions, all conditions are compared with an ANOVA due to the tax payments in the second sequence, i.e., the last 20 periods. The analysis shows that overall, the four treatment conditions significantly differed (lcp → hcp, hcp → lcp, lcp → lcp, hcp → hcp), $F(3, 116) = 3.52$, $p = .02$, $\eta_p^2 = .08$. But post hoc tests show that the comparison of the relevant experimental and control conditions in the second sequence (lcp → hcp versus hcp → hcp, hcp → lcp versus lcp → lcp) reveals no significant result: Participants who experienced a contrast from low to high coercive power declare the same amount of income as participants in the control conditions, who experienced only high coercive power ($p = .18$). Equally, a change from high to low coercive power does not

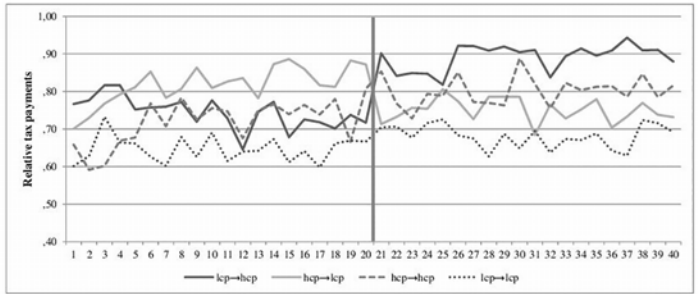

Fig 1. Experiment 2. The impact of low and high coercive power on relative tax payments before and after the change in tax authority. Note. lcp . . . low coercive power, hcp . . . high coercive power.

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lead to lower tax payments than when the tax authority wielded only low coercive power (p = .30). Therefore, a change in coercive power does not lead to a contrast effect in beliefs.

Experiment 3: Legitimate Power

Materials and Procedures

Participants. Students (N = 130, 60% males, M[age] = 24.40, SD = 4.89) majoring in different fields took part in the study. Most participants had at least some contact with the tax authority, but 43% of participants reported to have no experience with them.

Table 2. Repeated measure regression predicting relative tax payments in Experiment 2, 3, and 4.

	Experiment					
	Experiment 2		Experiment 3		Experiment 4	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model	.15***		.22***		.12***	
Coercive Power (CP)		.14**				.20***
Legitimate Power (LP)				.33***		.12***
Sequence		.07**		.02		.04***
Condition		.10		.05		-.04
CP X LP						.01
CP X Sequence		.04				.04
CP X Condition		.02				.02
LP X Sequence				.03		.01
LP X Condition				-.05		.02
Sequence X Condition		-.01		-.03		.02
CP X LP X Sequence						-.01
CP X LP X Condition						-.09**
CP X Sequence X Condition		.00				.03
LP X Sequence X Condition				-.02		-.01

Note. Repeated measure regression was clustered at the individual level, controlling for gender, age, income, nationality, employment, conditions of work and experience with tax authority.

**p < .01,

***p < .001

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Procedure. For Experiment 3, basically the same procedure as in Experiment 2 was applied. However, the description of the tax authorities depicted legitimate power instead of coercive power as in Experiment 2. Again, participants were randomly assigned to one of four conditions (two experimental conditions: low legitimate power (llp) → high legitimate power (hlp), hlp → llp; two control conditions: llp → llp; hlp → hlp), in which the fictitious tax authority held either low or high legitimate power.

Low/high legitimate power manipulation. The tax authority of Chomland calculated that the tax revenue was about 200 billion ECU for the past year. Of this income, about 0.09/2 billion ECU was spent on the training of employees of the tax authority and on the advising of taxpayers.

In general, the tax authority is little/very appreciated for its work. As it has provided bad/good service so far, the taxpayers feel little/much obliged to cooperate.

The tax authority consists of early school leavers/experts who work with non-professional/professional advice. For the tax authority, the accuracy of the tax returns is of low/high importance. It works on the basis of unlawful/lawful measures. Its working principles are based little/particularly on the traceability of decisions.

Similar to Experiment 2, the power of the tax authority changed in the experimental conditions during the life as taxpayers from low/high legitimate power to high/low legitimate power (Table 1).

Results

Legitimate power on beliefs. A repeated measures regression ($F(27, 129) = 22.17$, $p < .001$, $R^2 = .59$) reveals a significant main effect of intensity of power, $\beta = .69$, $t(129) = 13.23$, $p < .001$ and a significant interaction effect of intensity of power and sequence, $\beta = .14$, $t(129) = 3.85$, $p < .001$. As expected, the description of the tax authority as wielding low or high legitimate power affects the participants' beliefs regarding the tax authority's power. Whereas low legitimate power is perceived as significantly lower in the first sequence ($M = 3.48$, $SD = 1.64$) than in the second sequence ($M = 3.84$, $SD = 1.72$), high legitimate power is perceived as equally high in the first sequence ($M = 4.51$, $SD = 1.57$) and in the second sequence ($M = 4.76$, $SD = 1.39$). Thus, descriptions of low and high legitimate power initiate respective beliefs.

Legitimate power on tax evasion. Again, to test whether legitimate power has an impact on tax payments, a repeated measures regression is conducted, analyzing all 40 periods of tax-paying (Table 2). The model with all variables significantly predicts tax payments, $F(27, 129) = 9.45$, $p < .001$, $R^2 = .22$. As expected, there is a significant main effect of intensity of power, $\beta = .33$ $t(129) = 6.86$, $p < .001$, with higher tax payments in conditions with high legitimate power than low legitimate power (Fig 2). The other main effects and interaction effects do not reach significance, $p > .22$. Therefore, descriptions of legitimate power increase tax payments.

Contrast effect of legitimate power. Again, the impact of the contrast of power intensity on tax payments is tested with an ANOVA to examine the difference between the tax payments in all four treatment conditions (llp → hlp, hlp → llp, llp → llp, hlp → hlp) in the second sequence. The analysis shows that overall, the treatment conditions significantly differ, $F(3, 126) = 11.32$, $p < .001$, $\eta_p^2 = .21$. Again, the post hoc analysis comparing the relevant experimental and control conditions (llp → hlp versus hlp → hlp, hlp → llp versus llp → llp) reveals no significant result: Participants in the experimental condition, who experienced a change from low to high legitimate power, do not pay significantly more taxes than participants in the control condition who experienced only high legitimate power ($p = .59$). Contrary to expectation, results revealed a tendency that a change from high to low legitimate power leads to higher tax

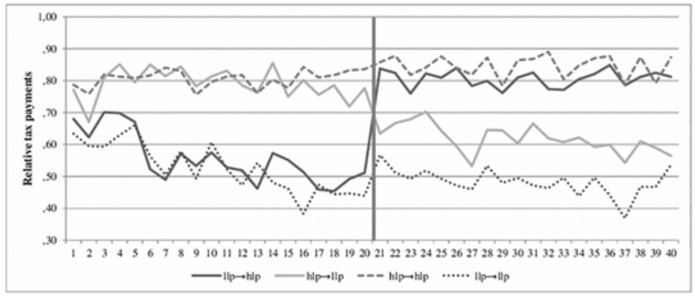

Fig 2. Experiment 3. The impact of low and high legitimate power on relative tax payments before and after the change in tax authority. Note. llp . . . low legitimate power, hlp . . . high legitimate power.

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payments (M = .62, SD = .29) than if the tax authority wields only low legitimate power (M = .48, SD = .35; p = .06).

Experiment 4: Coercive and Legitimate Power Manipulated Combined

Experiment 2 and 3 confirmed that descriptions of coercive power or legitimate power have an impact on tax payments: in Experiment 4, both forms of power were combined with the same design and material as in Experiments 2 and 3.

Materials and Procedures

Participants. Overall, 368 students (34% males, M[age] = 24.26, SD = 5.56) majoring in different fields participated in the experiment. Again, 41% of participants had no experience with the tax authority, the others mainly very little experience.

Procedure. For Experiment 4, basically the same procedure as in the other experiments was applied. The description of the tax authority differed only in the combined display of coercive and legitimate power of the tax authority. Participants were randomly assigned to one of twelve treatment conditions (eight experimental conditions; four control conditions), in which the fictitious tax authority are described as holding low or high coercive power and low or high legitimate power.

Low/high coercive power and *low/high legitimate power* manipulation. The tax authority of Chomland calculated that the tax revenue was about 200 billion ECU for the past year.

Of this income, about 0.09/2 billion ECU was spent on tax audits and punishments from taxpayers and about *0.09/2* billion for the training of employees of the tax authority and on the advising of taxpayers.

In general, the tax authority is known for its low/high penalties for tax evasion, and is *little/very* appreciated for its work. It works on the basis of *unlawful/lawful* measures as well as lax/strict control measures. Since so far, it has rarely/always conducted strict audits, the taxpayers feel little/very forced to cooperate.

The tax authority consists of employees who work with lax/strict controls.

In addition, the tax authority consists of *early school leavers/experts* who work with *non-professional/professional* advice. Its working principles are based *little/particularly* on the traceability of its decisions and little/particularly on the penalties for tax evasion.

As the authority has provided *bad/good* service so far, the taxpayers feel *little/much* obliged to cooperate.

Overall, for the tax authority the severity of punishments for tax evasion is of little/high importance and the accuracy of the tax returns is of *little/high* importance

In the experimental conditions, the tax authority was described as changing after 20 periods from, e.g., high coercive power and low legitimate power to high coercive power and high legitimate power (Table 1).

Results

Coercive and legitimate power on beliefs. A repeated measure regression ($F(34, 367) = 40.74$, $p < .001$, $R^2 = .63$) reveals a significant main effect of intensity of coercive power, $\beta = .77$, $t(367) = 25.44$, $p < .001$ and a significant main effect of sequence, $\beta = .07$, $t(367) = 3.77$, $p < .001$. As expected, the description of the tax authority as wielding low or high coercive power affects the participant's beliefs regarding the tax authority's power. The perception of coercive power was lower in the first sequence ($M = 4.06$, $SD = 1.90$) than in the second sequence ($M = 4.35$, $SD = 2.06$).

The analysis for legitimate power ($F(34, 367) = 19.80$, $p < .001$, $R^2 = .50$) reveals a significant main effect of intensity of legitimate power, $\beta = .62$, $t(367) = 16.87$, $p < .001$ and a significant interaction effect of intensity of legitimate power and condition, $\beta = .13$, $t(367) = 3.41$, $p = .001$. In the experimental conditions, low legitimate power is perceived as significantly lower ($M = 3.11$, $SD = 0.94$) than in the control conditions ($M = 3.38$, $SD = 1.05$), whereas high legitimate power is perceived as higher ($M = 5.05$, $SD = 1.04$) in the experimental conditions than in the control conditions ($M = 4.79$, $SD = 0.87$). Thus, descriptions of coercive and legitimate power induce respective beliefs.

Coercive and legitimate power on tax evasion. To test the impact of the description on tax payments a repeated measures regression is conducted, analyzing all 40 periods of taxpaying (Table 2). The model with all variables significantly predicts tax payments, $F(34, 367) = 4.86$, $p < .001$, $R^2 = .12$. As expected, there is a significant main effect of coercive power, $\beta = .20$ $t(367) = 5.57$, $p < .001$, as well as legitimate power, $\beta = .12$ $t(367) = 3.04$, $p = .003$. The description of high coercive power leads to significant higher tax compliance ($M = .81$, $SD = .32$) than the description of low coercive power ($M = .66$, $SD = .37$). Likewise, a tax authority wielding high legitimate power leads to significant higher tax compliance ($M = .77$, $SD = .34$) than a tax authority wielding low legitimate power ($M = .70$, $SD = .34$). Additionally, a significant three-way interaction effect of intensity of coercive power, legitimate power and condition, $\beta = -.09$, $t(367) = -2.88$, $p = .004$ is found. In the control conditions, the combination of high coercive and high legitimate power leads to significantly higher tax payments ($M = .89$, $SD = .23$) than when only one quality of power was high ($M_{hcp} = .73$, $SD_{hcp} = .35$; $M_{hlp} = .68$, $SD_{hlp} = .37$). In contrast, in the experimental conditions, the combination of low coercive and low legitimate power leads to significantly lower tax payments ($M = .58$, $SD = .38$) than when one quality of power is applied ($M_{hcp} = .80$, $SD_{hcp} = .31$; $M_{hlp} = .72$, $SD_{hlp} = .36$). The other main and interaction effects do not reach significance, $p > .22$. Therefore, simultaneous descriptions of coercive and legitimate power lead to an increase of tax payments. Fig 3a–3d provide an overview of the relative tax payments in all 40 rounds, grouping together the experimental conditions with the corresponding control conditions.

Contrast effects of coercive and legitimate power. The impact of a contrast of power is tested with an ANOVA comparing tax payment in the second sequence. The analysis shows that overall, the treatment conditions significantly differ, $F(11, 356) = 4.98$, $p < .001$, $\eta_p^2 = .13$. A post hoc test shows that participants who experienced a change from 'low coercive/high legitimate power' to 'low coercive/low legitimate power' declare less income ($M = .52$, $SD = .37$) than the control group 'low coercive/low legitimate power' ($M = .69$, $SD = .27$; $p = .02$). All

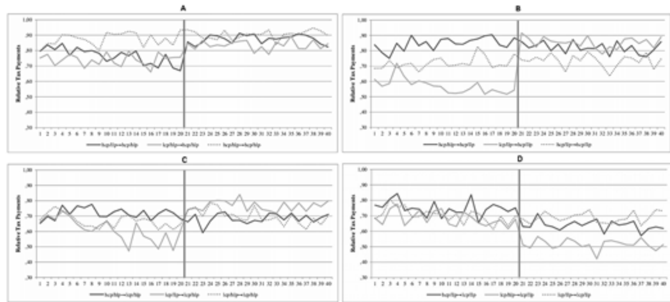

Fig 3. Experiment 4. The impact of coercive power and legitimate power on relative tax payments. (a) Relative tax payments in the experimental conditions and control conditions with high coercive power and high legitimate power in the second sequence. (b) Relative tax payments in the experimental conditions and control conditions with high coercive power and low legitimate power in the second sequence. (c) Relative tax payments in the experimental conditions and control conditions with low coercive power and high legitimate power in the second sequence. (d) Relative tax payments in the experimental conditions and control conditions with low coercive power and low legitimate power in the second sequence. Note. lcp . . . low coercive power, hcp . . . high coercive power, llp . . . low legitimate power, hlp . . . high legitimate power

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other relevant comparisons show no significant results, $p > .24$. Thus, from all eight possible contrasting descriptions only one has an impact, i.e., the contrast from high to low legitimate power when it is combined with low coercive power.

General Discussion

Based on the neo-classical economic model of tax evasion [13–15], the severity of fines is one key determinant for taxpayers' decisions to evade taxes. When integrating the economic determinants of Experiment 1 (40% tax rate; 15% audit probability; 0.5 vs. 1 vs. 2 times fine) into the economic model of tax evasion [16], the rational decision should always be to fully evade taxes, as the expected utility of paying honestly is always lower. Nevertheless, tax evasion is low in all conditions, regardless of the amount of fines. It seems that participants base their tax decision on beliefs regarding tax authority's power rather than on objective information about the fine rate. This finding is in line with earlier research showing that taxpayers find it hard to deal with economic key figures [18,30,31]. Additional experiments were conducted to examine whether descriptions of the tax authority affect participants' beliefs regarding tax authority's power and further affect tax evasion, while all economic key figures, including the fine rate are held constant. Three laboratory experiments confirmed that the description of a tax authority and therefore additional information about coercive and legitimate power has an effect on beliefs on tax authority's power and most interestingly on tax payments. The positive impact of coercive power is in line with earlier research that stresses the effectiveness of informing taxpayers about coercive means [4–6]. Further, this result extends previous research by showing that even when taxpayers have objective knowledge of audit probability and severity of fines, additional coercive information has an impact on tax evasion. Current findings therefore underline the assumption that subjective beliefs on the probability may be more important for understanding tax evasion than objective criteria [2,18,30]. The impact of the description of legitimate power on tax compliance supports the assumption that the perception of service orientation leads to reciprocal behavior [1,12]. Thus, taxpayers are more likely to report their income honest, when they think that the tax authority works in a way that is beneficial for them. Current findings show that this effect still holds despite available information about economic key figures.

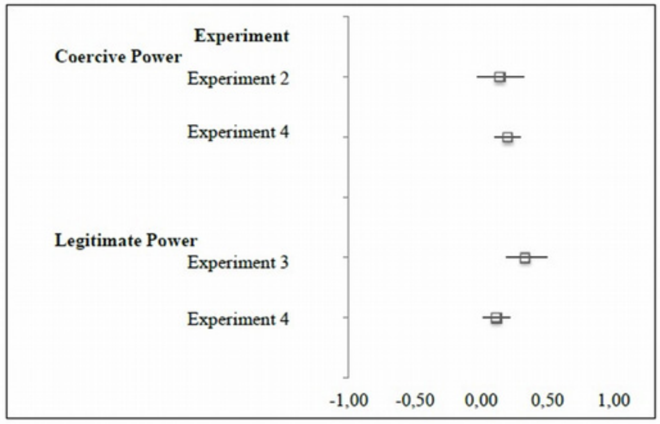

Fig 4. Forest Plot of regression coefficients for coercive power and legitimate power.

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An additional objective of the current paper was to investigate possible interaction effects of tax authority's power. A very important and new finding is that the effect of coercive and legitimate power on tax payments still holds when both qualities of power are applied. However, unlike assumed by previous studies on intended tax compliance [10], legitimate power did not alter the effect of coercive power. Both qualities of power have a similar strong and independent impact on tax compliance (Fig 4).

The current study analyzes possible contrast effects of the description of a tax authority. Contrary to expectations, the contrast of descriptions has little impact on tax evasion. A contrast effect was not found when coercive power and legitimate power are described solely. The description of both qualities of power only leads to a contrast effect in one of eight conditions. When the tax authority is described as holding low coercive power, a decrease in legitimate power leads to higher tax evasion than in the control condition. Future research needs to clarify if and why a decline in perceived legitimacy is more severe for tax compliance than a decline in perceived coercion. For that, additional laboratory experiments and field experiments are needed to clarify this important practical impact.

Like all laboratory experiments, the current study has some limitations; the ecological validity of the results can be questioned. The fact that the amount of tax payments were unrelated to the well-being of the 'society' of the fictitious country does not fully represent the situation taxpayers experience in the field. Nevertheless, considering this fact, the results might become even more meaningful. In the current study, evading taxes was not harming anyone and would therefore certainly be the profit-maximizing strategy. However, in no experimental condition did average tax contributions ever drop below 40%; actually, they even reached 94% in one treatment condition. Concerning the interpretation of the results, it has to be taken into account that additional information on tax authority's coercive power may have increased uncertainty, which is assumed to lead to reporting of more income [46,47]. Information on legitimate power on the other hand includes the perception of the tax authority as doing a good job and therefore may affect tax morale and social norms [48]. Especially the source of information [33] may be relevant for the perception of social norms. Information on tax authority's power through informal communication with other taxpayers may affect the perception of social norms of cooperation, which are relevant determinants of tax compliance [49]. Further research needs to clarify if the impact of additional information on tax evasion is mediated through the perception of social norms or tax morale. The current studies cannot explain whether additional information on power outweighs economic determinants or rather shapes the interpretation of economic key figures. It is needed to be investigated further, whether taxpayer still believe in objective determinants, although they receive additional information.

It might be argued that the descriptions of the tax authorities in experiments 2–4 induce a demand effect that participants feel forced to act according to the descriptions (c.f., [50,51,52]). Although in principle this is correct, it is also the actual objective of the experiments to investigate this effect (c.f., [53]). Further, the experimental setting reproduces taxpayers' reality, who are confronted rather with descriptions and stories of tax authorities than with economic key figures. Thus, the experimental manipulation is increasing external validity (c.f., [54]).

In reality, taxpayers are confronted with a lot of information displaying the tax authority of their country through several information sources. The manipulation in the current studies compromises information on tax authority's coercive and legitimate power, but cannot fully represent the complexity of the presentation of the authority in reality. Field experiments as well as further laboratory experiments should focus on how taxpayers deal with the wealth of information they receive through various sources and how tax authority's power should be displayed in order to be recognized by taxpayers.

Taxpayers' beliefs about tax authority's power may not only be modified by information about the authority, but are likely to change according to the experience with the tax authority. Beliefs may especially change after taxpayers experienced an audit. In the current study, participants only got to know at the end, which period was selected for tax audits and if they are audited and fined or not. To further eliminate the impact of real life beliefs on the perception of the fictitious tax authority, students were used as experimental participants, like in similar tax experiments [31], as they are naïve regarding tax payments. The real life beliefs might have interfered with the manipulated perception of the fictitious tax authority. It can be assumed that actual information about the tax authority, for instance, through information letters or newspaper articles, might be even more effective in collecting taxes than a simple description in an experimental setting, and assure robustness and generalization of the findings. As taxpayers usually lack information about the exact audit probabilities [55], official information of the tax authority as well as unofficial information from other taxpayers may be an even more important information source for tax decisions [33]. This certainly needs to be investigated further.

Concluding, the insight gained from the current study has a considerable scientific as well as practical impact. It clearly demonstrated that despite the provision of objective economic figures, such as audit probability and fines, the subjective perception of power of the tax authority impacts tax payments. From a scientific perspective, this finding is particularly important for field experiments or laboratory experiments, where descriptions or vignettes are used to inform participants about the tax authority. According to the current results, researchers should pay attention on how they supply information since more information is needed to fully understand the interaction of different qualities of power. From a practical perspective, the study sheds some light on the effect of the perception of the tax authority's power on tax compliance. Perception of power is modified by the information provided by the tax authority. Thus, sending letters or changing the presentation by means of public information sources are a field for future research [1]. As audits are costly for the tax authority and the government and large fines are recommended to be utilized only when absolutely necessary [56], such strategies could be considered as alternatives to lower the cost for levying taxes [4,5,26].

Supporting Information

S1 Data. Raw data for Experiment 1.
(SAV)

S2 Data. Raw data for Experiment 2 and 3.
(SAV)

S3 Data. Raw data for Experiment 4.
(SAV)

S1 Table. Items for participants`beliefs about tax authority`s power.
(PDF)

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Author Contributions

Conceived and designed the experiments: EH KG BH EK. Performed the experiments: EH MHT BH. Analyzed the data: BH EH. Contributed reagents/materials/analysis tools: BH EH MHT KG. Wrote the paper: BH EH KG MHT EK.

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Authorities' Coercive and Legitimate Power: The Impact on Cognitions Underlying Cooperation

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The execution of coercive and legitimate power by an authority assures cooperation and prohibits free-riding. While coercive power can be comprised of severe punishment and strict monitoring, legitimate power covers expert, and informative procedures. The perception of these powers wielded by authorities stimulates specific cognitions: trust, relational climates, and motives. With four experiments, the single and combined impact of coercive and legitimate power on these processes and on intended cooperation of $n_1 = 120$, $n_2 = 130$, $n_3 = 368$, and $n_4 = 102$ student participants is investigated within two exemplary contexts (tax contributions, insurance claims). Findings reveal that coercive power increases an antagonistic climate and enforced compliance, whereas legitimate power increases reason-based trust, a service climate, and voluntary cooperation. Unexpectedly, legitimate power is additionally having a negative effect on an antagonistic climate and a positive effect on enforced compliance; these findings lead to a modification of theoretical assumptions. However, solely reason-based trust, but not climate perceptions and motives, mediates the relationship between power and intended cooperation. Implications for theory and practice are discussed.

Keywords: coercive power, legitimate power, trust, authority, cooperation

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INTRODUCTION

In a community, contributions to public goods are often obligatory (e.g., paying taxes in order to finance health services), but some individuals exploit the vulnerable system, refraining from participation, and consequently free ride (Marwell and Ames, 1979). Paying taxes and filing insurance claims are classic real world examples of the free-rider problem. Thus, communities employ regulating formal authorities (e.g., tax administration, insurance companies) with legal measures to persuade free-riders to follow their obligations and to contribute for the benefit of the community. Thereby, we define authorities as processes or individuals which organize the cooperation in a community by an assigned social position that allows to create and maintain environments and thereby influence the behavior of individuals (cf. Andringa et al., 2013). In the current article, we focus on formal authorities. Such authorities have different mechanisms to foster cooperation: the coercive power and the legitimate power (Andreoni et al., 1998; Braithwaite, 2009; Gangl et al., 2013). Employing coercive power, an authority manages behavior with strict monitoring and heavy punishment whereas by using the legitimate power approach, an authority operates through legitimacy of its position, expertise, a policy to disseminate relevant information, and its ability to make others identify with it (Andreoni et al., 1998; Braithwaite, 2009; Gangl et al., 2013, 2015). The slippery slope framework (Kirchler et al., 2008; Gangl et al., 2015) postulates that the perception of both kinds of power stimulate cooperative behavior, but that the underlying cognitions differ.

We shed light on the cognitions that are elicited via coercive and legitimate power of authorities and in turn impact the intention to cooperate. Earlier research shows that coercive power and legitimate power both enhance cooperation in public good dilemmas, where individual interests collide with collective ones (Masclet et al., 2003; Tyler, 2006; Van Lange et al., 2013; Hartl et al., 2015). However, the actual underlying cognitions responsible for the increase in cooperation are not well-understood.

According to the slippery slope framework the perception of authorities' power is assumed to impact individuals' cognitions, such as trust in authorities (implicit and reason-based trust), the relational climate (antagonistic and service climate), and motives for contribution (enforced compliance, voluntary cooperation; Gangl et al., 2015). Implicit trust is diminished when authorities apply coercive power; in contrast, reason-based trust is strengthened by legitimate power. Coercive power induces an antagonistic climate between authorities and individuals. Legitimate power stimulates a service climate. Finally, coercive power leads to enforced compliance, and legitimate power results in voluntarily cooperation.

In this paper, we investigate the cognitions that operate when coercive and legitimate power are wielded to prohibit free-riding (e.g., tax evasion and insurance fraud). The study investigates how coercive power and legitimate power solely or in combination over perceptions of power influence trust in authorities, the climate between authorities and individuals, and the motives of cooperation. Additionally, it analyzes whether the cognitions such as trust, perceived relational climates or motives, mediate the relationship between power and intention to cooperate.

In the remainder of this article, the impact of coercive power and legitimate power on cooperation, trust, relational climates, and motives are defined. Three laboratory experiments in the tax context and one online experiment in the insurance context are described, each assessing the impact of power. Finally, we discuss the results and identify their theoretical and practical implications for legislation and law enforcement.

THE IMPACT OF POWER ON COOPERATION

Power is conceptualized as the capacity of an organization or person to influence another parties' behavior (e.g., Freiberg, 2010; Gangl et al., 2015). Following theory on power (cf. harsh vs. soft power in Raven et al., 1998; coercion vs. persuasion and authority in Turner, 2005; instrumental vs. normative in Tyler et al., 2010) we distinguish between two primary concepts of power, *coercive power* based on deterrence and *legitimate power* based on persuasion (Gangl et al., 2015). Coercive power is defined as "harsh" power, as the capacity to detect and sanction unlawful behavior (Raven et al., 1998; Turner, 2005). Legitimate power is defined as "soft" power and refers to the power of position, expertise, dissemination of relevant information, and identification (Raven et al., 1998, cf. Tyler, 2006). Thus, legitimate power is defined by formal and informal rules established by a rightfully elected government (power of position), and by their knowledge about skillful procedures (power of expertise). In addition, information power and power of identification are seen as means of legitimate power, whereby information, for example, is given on how to behave in accordance with the law, and identification with the authority means that individuals identify with the ideas of the authority such as a specific political party.

Coercive power and legitimate power are two independent forms, which can be wielded exclusively or in combination (cf. French and Raven, 1959; Raven, 1992, 1993; Raven et al., 1998). For instance, wielding coercive power by threatening severe sanctions for unwanted behavior alone is not enough to explain compliant and cooperative behavior (Fehr and Falk, 2002); underlying cognitions such as expectations (Copeland and Cuccia, 2002), reciprocity (Feld and Frey, 2007), and fairness (e.g., Hartner-Tiefenthaler et al., 2012) additionally encourage cooperation. In line with these aspects, we argue that legitimate power, such as distributing information about what the "morally" desired behavior is and the expertly handling of members' contributions to the communal good, becomes important. Empirical evidence shows that coercive power, as well as legitimate power, has a positive impact on cooperative behavior (e.g., Tyler et al., 2010; Hofmann et al., 2014; Hartl et al., 2015). An interaction effect of coercive and legitimate power on cooperation has not been found (e.g., Hofmann et al., 2014; Hartl et al., 2015). Nevertheless, theoretically we would expect that the combination of coercive power and legitimate power is affecting the cognitions underlying cooperative behavior via perception of power (Gangl et al., 2015). Thus, although cooperation might be the same, the underlying cognitions are supposed to be different.

POWER AND TRUST

The application of power is strongly related to trust, whereby trust means "to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer et al., 1995, p. 712). However, the exact nature of the dynamics and relationship between power and trust is not clear. Power was shown to decrease but also to increase trust in authorities (Bachmann, 2001; Bijlsma-Frankema and Costa, 2005; Mulder et al., 2006; Weibel, 2007; Chenhall et al., 2010; Fu et al., 2013). One reason for the divergent results might be that the decision to trust can be either based on reasons or taken implicitly (Castelfranchi and Falcone, 2010), resulting in two forms of trust: implicit trust (system 1 trust) and reason-based trust (system 2 trust). Implicit trust is defined as an automatic and unintentional reaction to stimuli that are associated with positive past experiences or a shared identity. For instance, a taxpayer trusts implicitly in a tax authority, if s/he feels trust immediately without any considerations; this automatic reaction can stem from past positive experiences that ended in a learning process that the tax authority can be trusted. Reason-based trust is defined as a deliberate decision to trust another party based on the evaluation of the other parties' good intentions and internal and external fostering and hindering circumstances to comply with the good intentions (Castelfranchi and Falcone, 2010). Such as a taxpayer weighs whether a tax authority is to be trusted by considering whether the tax authority is pursuing a goal that is valuable to the taxpayer, whether the tax authority is acting motivated, benevolently, and competently, and whether there are external factors fostering or hindering the tax authority's actions.

The slippery slope framework argues that coercive power damages implicit trust (Gangl et al., 2015); as coercion signals authorities' distrust, it may weaken affective and social bonds with authorities, thereby interrupting habitual and implicit cooperation (Kramer, 1999; Das and Teng, 2001). Legitimate power, on the other hand, strengthens trust (Fu et al., 2013); when authorities are perceived as knowledgeable and legitimate in their position, reason-based trust increases. Perceived assistance by experts who work on a transparent legal basis provides many reasons to trust in the competence, motivation, and benevolence of authorities (Bijlsma-Frankema and Van de Bunt, 2002; Malhotra and Murnighan, 2002). For reason-based trust, a strong relationship with legitimate power is assumed because authorities with high levels of legitimate power are perceived as being competent to provide assistance and support (Gangl et al., 2015).

The direct impact of power on trust might in turn also impact cooperation. Thus, trust might be a mediator for the relationship between power and cooperation. However, up to now, most empirical research treats trust as a moderator of the impact of power on cooperation. A meta-analysis shows that power in a trusted environment leads to more cooperation than does power that is exerted in a low-trust environment (Balliet and Van Lange, 2013). Furthermore, experiments show that sanctions exerted by trusted authorities, compared to non-trusted authorities, evoke stronger moral judgments about free-riders (Mulder et al., 2009). There is empirical evidence that power also directly impacts trust (Kramer, 1999; Bijlsma-Frankema and Costa, 2005; Fu et al., 2013). Thus, we assume that trust is not only a moderator but also a mediator between power and cooperation. Coercive and legitimate power impact trust and might consequently influence cooperation with the authorities.

POWER AND RELATIONAL CLIMATES

The slippery slope framework postulates that exerting power establishes specific relational climates, whereby climate is defined as the perceived quality of interaction between authorities and individuals (Victor and Cullen, 1988; Martin and Cullen, 2006). This is a "psychological climate that characterizes climate as an individual-level and personal perception" (Ehrhart et al., 2013, p. 70). Two climates can be distinguished in relation to power, the antagonistic climate and the service climate (Kirchler et al., 2008; Gangl et al., 2015). Coercive power and negative experiences with authority trigger an aversive antagonistic climate in which distrust prevails. In such a climate, the authority convicts members of misconduct and suspects others as criminals. In turn, individuals hide from the authority, which justifies stricter controls and sanctions that intensify the vicious circle of distrust (Kirchler et al., 2008).

In contrast, legitimate power and positive impressions of the authorities' intents and work lead to a friendly relational climate in which the authority acts client-oriented. In such a service climate, the authority presents all necessary information for the community members to behave in accordance with the rules. It applies services to support members' cooperation (e.g., preprinted tax forms) to make cooperation easier and non-cooperation more difficult (Gangl et al., 2015).

Empirical research on the impact of power on climates is rare (Alm and Torgler, 2006; Hofmann et al., 2014). Derived from a study on the relationship commitment of business partners (Fu et al., 2013), connections between power and the service climate can be assumed. Legitimate power relates positively to a service climate (i.e., relationship commitment), whereas coercive power relates negatively to it. Based on these results, we predict that in general, coercive power stimulates an antagonistic climate, whereas legitimate power stimulates a service climate. However, the effects on climate when coercive power and legitimate power are exerted simultaneously are not clear as empirical studies are lacking.

POWER AND MOTIVES FOR COOPERATION

Forms of power also encourage different motives for cooperation (Kirchler et al., 2008; Gangl et al., 2015). The punishment aspect of coercive power prompts enforced compliance as threat of severe punishment. Thus, enforced compliance is defined as motive to cooperate because of the deterrent effect of monitoring and punishment (Kirchler et al., 2008). Enforced motivation only leads to cooperation when individuals fear monitoring and punishment and therefore think there is no alternative to comply with the rules (van Meegeren, 2001; Kirchler et al., 2008). Coercive power is effective as long as there are sufficient resources to detect breaches of rules and to undertake subsequent punishment (Becker, 1968; Mulder et al., 2009). In cases in which violations are not discovered or not avenged, coercive power is perceived as weak and, therefore, enforced motives, as well as cooperation decline.

Legitimate power, on the other hand, increases voluntary cooperation. Voluntary cooperation is defined as a motivation to cooperate with the authorities because one wants to reciprocate the positive experience gained through applied legitimate power (Kelman, 2006). Legitimate power activates a felt urge to reciprocate the legitimate treatment (Feld and Frey, 2007). Thus, individuals voluntarily accept their obligation to cooperate. Authorities support customers and clients (e.g., tax authorities offer pre-printed forms that can be submitted without the need for the taxpayer to fill in the form) so that cooperation is perceived as easy and a natural reciprocal act. Although, coercive power and legitimate power are assumed to increase cooperation, the rationale behind cooperation differs fundamentally[1].

When coercive and legitimate power are applied together, the resulting motives to comply are unclear. Although, results indicate cooperative behavior based on coercive and legitimate power, the underlying cognitions are still unexplored (Hofmann et al., 2014; Hartl et al., 2015). First, empirical evidence indicates that people cooperate voluntarily when legitimate power is high, but only under the condition that rule-breakers can be punished (Kroll et al., 2007). Thus, the combination of coercive and legitimate power seems to increase voluntary cooperation and enforced compliance. In general we assume that the combination of coercive power and legitimate has the same impact as if coercive power and legitimate power were applied solely.

OVERVIEW OF STUDIES

We examine the cognitions underlying the intentions to cooperate in different social dilemma situations. In order to investigate differences in cognitions induced by extremely low or high levels of coercive and/or extremely low or high levels of legitimate power an experimental design is opted for. The experiments allow for controlling other possible influences and showing the pure influence of coercive and legitimate power.

The current studies were embedded in a broader research program testing the impact of the two forms of power—solely and combined. Hartl et al. (2015) examined the impact of beliefs of coercive and legitimate power on tax behavior and found a significant effect of both on experimental cooperative behavior. However, so far, the underlying and probably mediating cognitions of why people intent to cooperate with authority have not been analyzed. Hence, this study investigates the underlying cognitions of this behavior. As such, we analyze intended tax compliance but not behavior (partial correlation controlling for conditions between tax honesty intention and tax payments is $r = 0.58$, $p < 0.001$ in Study 1, $r = 0.60$, $p < 0.001$ in Study 2, and $r = 0.64$, $p < 0.001$ in Study 3). We examine the following three hypotheses:

Hypothesis 1a: *Coercive power leads to low levels of implicit trust, an antagonistic climate, and enforced compliance.*

Hypothesis 1b: *Coercive power leads to low levels of implicit trust, an antagonistic climate, and enforced compliance, when at the same time legitimate power is wielded.*

Hypothesis 2a: *Legitimate power leads to reason-based trust, a service climate, and voluntary cooperation.*

Hypothesis 2b: *Legitimate power leads to reason-based trust, a service climate, and voluntary cooperation, when at the same time coercive power is wielded.*

Hypothesis 3: *The relationship between coercive power and/or legitimate power and intended cooperation is mediated by implicit trust, reason-based trust, the antagonistic climate, the service climate, enforced compliance and voluntary cooperation.*

To test these hypotheses, following standard procedures (cf. Kirchler et al., 2009) we conducted laboratory experiments and an online experiment. In the laboratory experiments, participants imagined being a taxpayer in a fictitious country (Chomland) in which tax authorities wield coercive power (Study 1) or legitimate power (Study 2) exclusively or in combination (Study 3). In the online experiment, coercive and legitimate power were manipulated in combination, but rather than investigating tax compliance, the decision concerned an insurance claim (Study 4).

To measure the level of cooperation, participants had to decide how much of their income they declare honestly to pay taxes and how much they claim at the insurance for compensation, respectively. For reasons of comparison, the designs of the four studies and the procedures are similar, facilitating conclusions on the effects of the different forms of power across various contexts. A between-subjects design of the laboratory experiments assured that participants were confronted with low or high forms of power.

STUDY 1: COERCIVE POWER IN THE TAX CONTEXT

Methods

Participants

In all, 120 students (64% men, $M_{\text{age}} = 24.48$, $SD = 5.85$) majoring in several different disciplines participated on a voluntary basis and were paid according to their behavior in the experiment. As student populations are specifically naïve regarding experiences with tax authorities and our hypotheses, they specifically suit hypotheses testing in this context (Mittone, 2006).

Experimental Design and Procedure

The study was conducted by randomly assigning participants to one of two conditions. All participants were asked to imagine being self-employed taxpayers in the fictitious country Chomland with a hypothetical tax authority (for similar tax experiments see, e.g., Kirchler et al., 2009; Andrighetto et al., 2016). Specifically participants learnt "In each period a certain income is allocated to you, of which you have to pay taxes. The tax rate is 40% of your income. In each period your final income is the result of the allocated income minus the taxes paid. At the end of the experiment one period will be selected randomly. The income that you have gained in this period will be paid to you by the experimenter. Additionally, for each period there exists a tax audit probability of 15%. In case you are audited and you have evaded taxes, you have to pay back the evaded amount plus a fine of 1 time the evaded amount." The final income was paid out by the experimenter.

In the two conditions, the tax authority held either low or high levels of coercive power. A tax authority with low/high levels of coercive power was, for example, described as "... well-known for its lenient/hard sanctions." After participants were introduced to the experimental set-up, a taxpayer's life was simulated using the software z-Tree (Fischbacher, 2007). Participants were asked

[1]Although, enforced compliance and voluntary cooperation seem similar to the concept of extrinsic and intrinsic motivation (Ryan and Deci, 2000), this is not the case. While enforced compliance is comparable to extrinsic motivation based on external regulation, voluntary cooperation can neither be classified as other forms of extrinsic (based on introjection, identification, integration) or intrinsic information, because it is actually a reciprocal act.

to answer two items about their intention to pay taxes honestly in this situation (tax honesty intention, two items; e.g., "How likely is it that you, as a citizen of Chomland, state your income and expenses totally correctly?"). After that, participants paid their taxes, whereby at the end of the experiment participants were remunerated based on their behavior [participants received on average 5.99 EUR ($SD = 1.22$) or 7.66 USD ($SD = 1.56$), respectively].

Material

In all treatment conditions, participants had to fill out a questionnaire. The questionnaire assessed implicit trust (three items; e.g., "I trust the tax authority in Chomland without thinking about it."), reason-based trust (seven items; e.g., "I trust the tax authority in Chomland because it gives me competent advice."), the antagonistic climate (three items; e.g., "Between the tax authority in Chomland and taxpayers there exists a climate of ruthlessness."), the service climate (three items; e.g., "Between the tax authority in Chomland and taxpayers there exists a climate that is characterized by its service-oriented nature."), enforced compliance (three items; e.g., "When I pay taxes according to the law in Chomland, I do so because the tax authority often carries out audits."), and voluntary cooperation (three items; e.g., "When I pay taxes according to the law in Chomland, I do so because the tax authority supports taxpayers who make unintentional mistakes."). As a manipulation check, we asked participants' perceptions of the tax authority's coercive power (four items; e.g., "I believe that the tax authority persecutes taxpayers with audits and fines.") and legitimate power (22 items; e.g., "I believe that the tax authority knows how to give good advice to taxpayers.") by adapting published scales from the organizational context (Hinkin and Schriesheim, 1989; Raven et al., 1998) to the tax context (all items are listed in Supplementary Material). The scale of legitimate power compounded four sub-scales (legitimacy, expertise, information, identification), but for the sake of simplicity and due to the tested measurement models, the sub-scales were combined into one scale. Responses were indicated on a seven-point Likert scale ranging from 1 ("*I totally disagree*") to 7 ("*I totally agree*"). Cronbach's α for the eight scales were excellent and can be found in **Table 1**.

Socio-demographics (gender, age, income, nationality, employment, form of employment, working hours, and experience with tax authorities) were also assessed.

Results

Preliminary Data Analyses

To check whether the manipulation of coercive power was successful, an ANOVA[2] was performed with the perceptions of coercive power as the dependent variable. The results showed that the manipulation was successful as low (cp_{low}) and high (cp_{high}) levels of perceptions regarding coercive power were in line with the manipulation (cp_{low}: $M = 2.60$, $SD = 1.34$; cp_{high}: $M = 5.51$, $SD = 1.37$; **Table 1**). The manipulation of coercive power had no significant effect on the perceptions of legitimate power (**Table 1**).

[2]All ANOVAs (studies 1–4) were also undertaken as ANCOVAs with socio-demographic control variables, resulting in the same results as the reported ANOVA results.

TABLE 1 | Study 1: Results of the ANOVAs with *coercive power* as independent variable.

Dependent variables	α	F (df_1, df_2)	p	η_p^2
Perceptions of coercive power	0.93	139.26 (1, 118)	< 0.001	0.54
Perceptions of legitimate power	0.90	0.37 (1, 118)	0.55	< 0.01
Implicit trust	0.89	3.27 (1, 118)	0.07	0.03
Reason-based trust	0.84	0.00 (1, 118)	1.00	< 0.01
Antagonistic climate	0.78	9.80 (1, 118)	< 0.01	0.08
Service climate	0.76	1.00 (1, 118)	0.32	0.01
Enforced compliance	0.94	57.97 (1, 118)	< 0.001	0.33
Voluntary cooperation	0.74	0.03 (1, 118)	0.87	< 0.01
Intended tax honesty	0.90	6.61 (1, 118)	< 0.05	0.05

α, Cronbach α.

Participants experiencing low or high levels of coercive power reported equal perceptions of legitimate power (cp_{low}: $M = 4.13$, $SD = 1.04$; cp_{high}: $M = 4.24$, $SD = 0.90$; see **Table 1**).

Coercive Power

The impact of coercive power on trust, climates, and motives

To test Hypothesis 1a, ANOVAs were conducted, including coercive power (low vs. high) as factor variables and implicit and reason-based trust, antagonistic and service climate, and enforced compliance and voluntary cooperation as dependent variables (see **Table 1** for ANOVA results; for a graphical representation see **Figure 1** in the Discussion Section). As expected, coercive power showed a tendency to decrease implicit trust (cp_{low}: $M = 2.43$, $SD = 1.70$; cp_{high}: $M = 1.93$, $SD = 1.31$; **Table 1**). Furthermore, no matter whether participants experienced low or high levels of coercive power, they reported an equal intensity of reason-based trust (cp_{low}: $M = 3.50$, $SD = 1.28$; cp_{high}: $M = 3.50$, $SD = 1.25$; **Table 1**).

Regarding the perception of the relational climate, the analysis showed that, as expected, high levels of coercive power led to a higher perception of an *antagonistic climate* (cp_{high}: $M = 3.86$, $SD = 1.68$) compared to when coercive power was low (cp_{low}: $M = 2.96$, $SD = 1.47$; **Table 1**). *Service climate* was not affected by different levels of coercive power (cp_{low}: $M = 3.34$, $SD = 1.61$; cp_{high}: $M = 3.05$, $SD = 1.55$; **Table 1**).

Regarding the motives for cooperation, as expected, participants felt more *enforced* to comply when coercive power was high (cp_{high}: $M = 5.27$, $SD = 1.80$) rather than low (cp_{low}: $M = 2.73$, $SD = 1.86$; **Table 1**). Participants experiencing low or high levels of coercive power reported equal levels of *voluntary cooperation* (cp_{low}: $M = 3.56$, $SD = 1.51$; cp_{high}: $M = 3.61$, $SD = 1.42$; see **Table 1**).

The mediating role of implicit trust, the antagonistic climate, and enforced compliance

Investigating Hypothesis 3 regarding whether implicit trust, the perception of the antagonistic climate and enforced compliance mediate the relationship between coercive power and the intention to pay taxes honestly, we first tested, using an ANOVA, whether or not the manipulation of coercive power impacted the intention to pay taxes honestly. The manipulation of high levels

TABLE 2 | Study 1: Mediation analysis from coercive power to tax honesty intention (THI) (standard errors in parentheses).

	Path coefficients				Indirect effects		
	To THI	To IT	To AC	To EC	Estimate	Sobel Z	Symmetric 95% CI
From coercive power (CP)	0.77 (0.38)	−0.50 (0.28)	0.90 (0.29)	2.54 (0.33)			
From implicit trust (IT)	0.28 (0.10)						
From antagonistic climate (AC)	−0.03 (0.11)						
From enforced compliance (EC)	0.08 (0.90)						
CP→IT→THI					−0.14 (0.10)	−1.505	−0.31; −0.01
CP→AC→THI					−0.03 (0.10)	−0.271	−0.20; 0.13
CP→EC→THI					0.21 (0.24)	0.088	−0.17; 0.61

of coercive power lead to higher tax honesty intention ($M = 4.92$, $SD = 1.70$) compared to low levels of coercive power ($M = 4.10$, $SD = 1.78$; **Table 1**).

In a second step, we applied the program Mediate (Hayes et al., 2011) to test whether the relationship between coercive power and tax honesty intention is mediated by the proposed variables (i.e., implicit trust, antagonistic climate, and enforced compliance) at the same time. With this method, we received outcomes on simple (mediators and criterion regressing on predictor) and multivariate linear regressions (criterion regressing on mediators and on predictor; Hayes et al., 2011; Hayes, 2013).

The mediator analysis revealed one indirect effect from coercive power to tax honesty intention, the relation was only found to be mediated by implicit trust (95% CI [−0.31; −0.01]; **Table 2**). However, Sobel test statistics (Sobel test = −1.51, p = 0.13) do not indicate a significant mediation.

Discussion

As predicted, coercive power generally has a negative impact on implicit trust and initiates the perception of an antagonistic climate and enforced compliance, overall confirming hypothesis 1a. Coercive power applied alone does not impact reason-based trust, the perception of a service climate or voluntary cooperation. In addition, the relationship between coercive power and intended tax honesty seems not to be mediated. Implicit trust, a perceived antagonistic climate and the enforced motive to cooperate are not mediators. Thus, Hypothesis 3 is not confirmed.

STUDY 2: LEGITIMATE POWER IN THE TAX CONTEXT

Methods

Participants

Overall, 130 students (60% men, $M_{age} = 24.40$, $SD = 4.86$) majoring in different fields participated on a voluntary basis and were paid based on their behavior in the experiment. Again, this population was selected because of their naivety regarding experiences with tax authorities (Mittone, 2006).

TABLE 3 | Study 2: Results of the ANOVAs with *legitimate power* as independent variable.

Dependent variables	α	F (df$_1$, df$_2$)	p	$\eta_p{}^2$
Perceptions of coercive power	0.89	13.38 (1, 128)	<0.001	0.10
Perceptions of legitimate power	0.95	79.66 (1, 128)	<0.001	0.38
Implicit trust	0.88	1.84 (1, 128)	0.18	0.01
Reason-based trust	0.89	59.04 (1, 128)	<0.001	0.32
Antagonistic climate	0.83	41.15 (1, 128)	<0.001	0.24
Service climate	0.88	47.11 (1, 128)	<0.001	0.27
Enforced compliance	0.91	19.75 (1, 128)	<0.001	0.13
Voluntary cooperation	0.85	13.81 (1, 128)	<0.001	0.10
Intended tax honesty	0.78	20.38 (1, 128)	<0.001	0.14

α, Cronbach α.

Experimental Design and Procedure

The experimental design and procedure was similar to Study 1. Two conditions were used, in which the tax authority was described as holding either low or high levels of legitimate power. The tax authority with low levels of legitimate power was characterized as being, for example, "poorly appreciated for its work"; the ones holding high levels of legitimate power were presented as, for example, being "highly appreciated for its work." The scenario contains all aspects of legitimate power (legitimacy, expertise, dissemination of information, and identification). Cronbach's α for the eight scales were excellent and can be found in **Table 3**. The participants were remunerated according to their behavior and received, on average, 6.40 EUR ($SD = 1.38$) or 8.18 USD ($SD = 1.76$), respectively.

Results

Preliminary Data Analyses

The manipulation was successful as low and high levels of legitimate power induced perceptions according to the manipulation (lp_{low}: $M = 3.16$, $SD = 1.05$; lp_{high}: $M = 4.89$, $SD = 1.16$; **Table 2**). Surprisingly, the analysis showed that the manipulation of legitimate power had a significant impact on the perceptions of coercive power (**Table 3**). The perceptions of coercive power were higher when legitimate power was high (lp_{high}: $M = 4.51$, $SD = 1.57$) rather than low (lp_{low}: $M = 3.48$, $SD = 1.64$).

TABLE 4 | Study 2: Mediation analysis from legitimate power to tax honesty intention (THI) (standard errors in parentheses).

	Path coefficients				Indirect effects		
	To THI	**To RBT**	**To SC**	**To VC**	**Estimate**	**Sobel Z**	**Symmetric 95% CI**
From legitimate power (LP)	0.79 (0.32)	1.74 (0.23)	1.89 (0.28)	1.06 (0.29)			
From reason-based trust (RBT)	0.28 (0.15)						
From service climate (SC)	−0.10 (0.11)						
From voluntary cooperation (VC)	0.09 (0.11)						
LP→RBT→THI					0.48 (0.27)	1.812	0.05; 0.94
LP→SC→THI					−0.18 (0.20)	0.900	−0.51; 0.15
LP→VC→THI					0.09 (0.12)	0.798	−0.09; 0.30

Legitimate Power

The impact of legitimate power on trust, climates, and motives.

Testing Hypothesis 2a, ANOVAs were conducted including legitimate power (low vs. high) as factor and implicit and reason-based trust, antagonistic and service climate and enforced compliance and voluntary cooperation as dependent variables (see **Table 3** for ANOVA results; for a graphical representation see **Figure 1** in the Discussion Section). Regardless of whether or not participants experienced low or high levels of legitimate power, they reported an equal intensity of implicit trust (lp_{low}: $M = 1.97$, $SD = 1.55$; lp_{high}: $M = 2.34$, $SD = 1.54$; see **Table 3**). As expected, participants experiencing high levels of legitimate power reported high levels of reason-based trust (lp_{low}: $M = 2.55$, $SD = 1.09$; lp_{high}: $M = 4.29$, $SD = 1.48$; see **Table 3**).

Regarding the perception of the relational climate, unexpectedly the analysis revealed that low levels of legitimate power led to a higher perception of an *antagonistic climate* (lp_{low}: $M = 4.47$, $SD = 1.47$) compared to when legitimate power was high (lp_{high}: $M = 2.80$, $SD = 1.48$). In line with the hypothesis, the perception of a *service climate* increased with legitimate power (lp_{low}: $M = 2.57$, $SD = 1.50$; lp_{high}: $M = 4.46$, $SD = 1.64$; see **Table 3**).

Regarding the motives for cooperation, participants in the condition of high levels of legitimate power felt more *enforced* to comply (lp_{high}: $M = 4.70$, $SD = 1.68$) compared to participants in the condition of low levels of legitimate power (lp_{low}: $M = 3.36$, $SD = 1.75$). In line with predictions, participants experiencing high levels of legitimate power reported higher levels of *voluntary cooperation* (lp_{high}: $M = 3.90$, $SD = 1.61$) than did participants experiencing low levels of legitimate power (lp_{low}: $M = 2.84$, $SD = 1.65$; see **Table 3**).

The mediating role of reason-based trust, the service climate, and voluntary cooperation.

Testing Hypothesis 3, we first investigated for the impact of legitimate power on tax honesty intention. The ANOVA revealed that high levels of legitimate power lead to higher tax honesty intention ($M = 4.92$, $SD = 1.43$) compared to low levels of legitimate power ($M = 3.74$, $SD = 1.55$; **Table 3**).

In a second step, we used Mediate (Hayes et al., 2011) for the mediator analysis. The findings showed that an indirect effect from legitimate power to tax honesty intention was solely explained by reason-based trust (95% CI [0.05; 0.94]; **Table 4**). Also Sobel test statistics (Sobel test = 1.81, $p = 0.07$; $R_M = 0.62$[3]) do by trend indicate this significant mediation.

Discussion

Consistent with Hypothesis 2a, high levels of legitimate power have a positive effect on reason-based trust, on the perception of a service climate and on voluntary cooperation. Not hypothesized, high levels of legitimate power also increase perceptions of coercive power, and higher enforced compliance. Furthermore, legitimate power profoundly reduces the perception of an antagonistic climate. Although, coercive power was assumed to be the only quality of power to have an impact on enforced compliance and the perception of an antagonistic climate, the findings point out that legitimate power is additionally interfering. Regarding Hypothesis 3, only reason-based trust is by trend mediating the relationship between legitimate power and tax honesty intention. In the third experiment, the relationship between coercive power and legitimate power is examined.

STUDY 3: COERCIVE POWER AND LEGITIMATE POWER COMBINED IN THE TAX CONTEXT

Methods

Participants

Analogous to Study 1 and 2, 368 students (34% men, $M_{age} = 24.26$, $SD = 5.56$) majoring in different disciplines participated in the experiment and were paid based on their behavior in the experiment.

Experimental Design and Procedure

Experimental design and procedure were similar to Studies 1 and 2, but four conditions were designed in which the hypothetical tax authority held either low or high levels of coercive power *and* low or high levels of legitimate power. The combination of low/high levels of coercive power and *low/high levels of legitimate power* was operationalized through scenarios (e.g., "In general,

[3]We us R_M, the ration of the indirect effect to the direct effect, as an effect size for the mediation (Preacher and Kelley, 2011).

the tax authority is known for its low/high penalties for tax evasion, and is *little/very* appreciated for its work."). Cronbach's α's are excellent and are presented in **Table 3**. Participants were remunerated according to their behavior and received, on average, 6.21 EUR ($SD = 1.32$) or 7.94 USD ($SD = 1.69$), respectively.

Results

In the following, only hypothesized and/or significant results are reported; however, for completeness, **Table 5** displays all findings independently of whether or not they were significant.

Preliminary Data Analyses

Checking the coercive power manipulation with the participants' perceptions of coercive power, the ANOVA showed that low and high levels of coercive power conditions induced respective perceptions (cp_{low}: $M = 2.67$, $SD = 1.21$; cp_{high}: $M = 5.50$, $SD = 1.33$; **Table 5**).

Likewise, a manipulation check for legitimate power confirmed the manipulation (**Table 5**). Participants experiencing high levels of legitimate power reported perceptions of higher legitimate power (lp_{high}: $M = 4.82$, $SD = 0.94$) than did participants who experienced low levels of legitimate power (lp_{low}: $M = 3.20$, $SD = 0.99$). Similar to Study 2, the analysis showed that the manipulation of legitimate power had a significant impact on the perceptions of coercive power (**Table 5**). Participants perceived coercive power to be stronger when legitimate power was high (lp_{high}: $M = 4.82$, $SD = 0.94$) rather than low (lp_{low}: $M = 3.20$, $SD = 0.99$).

Coercive Power and Legitimate Power

The impact of coercive and legitimate power on trust, climates, and motives

Testing Hypotheses 1b and 2b, 2 (low vs. high levels of coercive power) by 2 (low vs. high levels of legitimate power) ANOVAs with the depending variables implicit and reason-based trust, antagonistic and service climate and enforced compliance and voluntary cooperation were applied. Contrary to expectations, participants in conditions with low/high levels of coercive power and low/high levels of legitimate power reported equal intensity of *implicit trust* (main effects: cp_{low}: $M = 2.17$, $SD = 1.39$; cp_{high}: $M = 2.00$, $SD = 1.33$; lp_{low}: $M = 2.02$, $SD = 1.39$; lp_{high} $M = 2.16$, $SD = 1.33$; see **Table 5**; for a graphical representation see **Figure 1** in the Discussion Section). Regarding *reason-based trust*, the analysis revealed, as expected, that participants reported higher levels of reason-based trust when *legitimate power* was high (lp_{high}: $M = 4.39$, $SD = 1.17$; lp_{low}: $M = 2.69$, $SD = 1.04$; see **Table 5**).

Regarding the perception of the relational climate, the analysis showed that the perception of an *antagonistic climate* increased with coercive power (cp_{low}: $M = 3.35$, $SD = 1.51$; cp_{high}: $M = 4.08$, $SD = 1.81$) and decreased with legitimate power (lp_{low}: $M = 3.38$, $SD = 1.58$; lp_{high}: $M = 3.03$, $SD = 1.56$; see **Table 5**). Furthermore, as expected, the analysis showed that the perception of a *service climate* increased with legitimate power (lp_{low}: $M = 2.47$, $SD = 1.33$; lp_{high}: $M = 4.11$, $SD = 1.43$, see **Table 5**).

TABLE 5 | Study 3: Results of the ANOVAs with *coercive power* and *legitimate power* as independent variables.

Dependent variables		α	F (df_1, df_2)	p	η_p^2
Perceptions of coercive power		0.91			
	CP		459.61 (1, 364)	<0.001	0.56
	LP		5.71 (1, 364)	0.02	0.02
	CPxLP		0.18 (1, 364)	0.68	<0.01
Perceptions of legitimate power		0.94			
	CP		0.26 (1, 364)	0.61	<0.01
	LP		260.33 (1, 364)	<0.001	0.42
	CPxLP		0.07 (1, 364)	0.79	<0.01
Implicit trust		0.86			
	CP		1.42 (1, 364)	0.24	<0.01
	LP		0.94 (1, 364)	0.33	<0.01
	CPxLP		0.09 (1, 364)	0.76	<0.01
Reason-based trust		0.86			
	CP		1.29 (1, 364)	0.26	<0.01
	LP		217.19 (1, 364)	<0.001	0.37
	CPxLP		1.78 (1, 364)	0.18	<0.01
Antagonistic climate		0.84			
	CP		21.40 (1, 364)	<0.001	0.06
	LP		70.871 (1, 364)	<0.001	0.16
	CPxLP		0.33 (1, 364)	0.56	<0.01
Service climate		0.85			
	CP		0.09 (1, 364)	0.76	<0.01
	LP		128.81 (1, 364)	<0.001	0.26
	CPxLP		1.08 (1, 364)	0.30	<0.01
Enforced compliance		0.92			
	CP		90.24 (1, 364)	<0.001	0.20
	LP		5.49 (1, 364)	0.02	0.02
	CPxLP		0.07 (1, 364)	0.79	<0.01
Voluntary cooperation		0.83			
	CP		0.11 (1, 364)	0.75	<0.01
	LP		45.37 (1, 364)	<0.001	0.11
	CPxLP		0.02 (1, 364)	0.89	<0.01
Intended tax honesty		0.86			
	CP		34.50 (1, 364)	<0.001	0.09
	LP		19.75 (1, 364)	<0.001	0.05
	CPxLP		0.04 (1, 364)	0.85	<0.01

α, Cronbach α; CP, main effect coercive power; LP, main effect legitimate power; CPxLP, interaction effect of coercive and legitimate power.

Regarding the motives for cooperation, the analysis highlighted that, as expected, in conditions with low levels of coercive power, participants reported feeling less *enforced* than in conditions with high levels of coercive power (cp_{low}: $M = 3.35$, $SD = 1.67$; cp_{high}: $M = 5.06$, $SD = 1.80$; see **Table 5**). Furthermore, as expected, participants reported more *voluntary cooperation* when legitimate power was high (lp_{high}: $M = 4.04$, $SD = 1.55$; lp_{low}: $M = 2.99$, $SD = 1.43$, see **Table 5**). No other main effects and no interaction effects were significant (see **Table 5**).

The mediating role of trust, climate, and motive.

Testing Hypothesis 3, the ANOVA found that coercive and legitimate power had a significant impact on intended tax honesty and that no significant interaction existed. High levels of coercive power led to higher tax honesty intention ($M = 4.98$, $SD = 1.41$) than did low levels of coercive power ($M = 4.02$, $SD = 1.78$). Similarly, manipulations of high levels of legitimate power stimulated higher tax honesty intention ($M = 4.86$, $SD = 1.50$) than did lower legitimate power ($M = 4.13$, $SD = 1.76$; **Table 5**).

In a second step, we again used Mediate (Hayes et al., 2011) for the mediator analysis, this time working with two predictors, i.e., coercive power and legitimate power. The results showed that there is only one indirect effect, that is, from legitimate power to tax honesty intention via reason-based trust (95% CI [0.10; 0.65]; **Table 6**). Also Sobel test statistics (Sobel test = 2.11, $p = 0.03$; $R_M = 0.37$) do indicate this significant mediation. All the other indirect effects from coercive and legitimate power are not significant.

Discussion

The analyses partly confirm Hypotheses 1b and 2b. The manipulation of coercive power and legitimate power at the same time in the context of taxpaying confirmed that in cases of high levels of coercive power, the antagonistic climate and enforced compliance are more distinct. In addition, higher legitimate power induced reason-based trust, a distinct service climate and voluntary cooperation. Contrary to Hypothesis 1b, high levels of coercive power did not reduce implicit trust. Also, high levels of legitimate power fundamentally reduced an antagonistic climate. Regarding the mediating effect testing Hypothesis 3, only reason-based trust mediated the relationship between legitimate power and tax honesty intention. In Study 4 the impact of coercive power and legitimate power is investigated in another situation.

STUDY 4: COERCIVE POWER AND LEGITIMATE POWER COMBINED IN THE INSURANCE CONTEXT

Methods

Participants

Overall, 102 students (83% men, $M_{age} = 22.66$, $SD = 3.12$) majoring in industrial engineering participated in the study. For participation, all students received bonus points for one of their courses. Again, this population primarily was selected because

TABLE 6 | Study 3: Mediation analysis from power to tax honesty intention (THI; standard errors in parentheses).

	Path coefficients							Indirect effects		
	To THI	**To IT**	**To RBT**	**To AC**	**To SC**	**To EC**	**To VC**	**Estimate**	**Sobel Z**	**Symmetric 95% CI**
From covercive power (CP)	1.02 (0.18)	−0.17 (0.14)	0.13 (0.12)	0.74 (1.16)	−0.04 (0.14)	1.71 (0.18)	−0.05 (0.16)			
From legitimate power (LP)	0.32 (0.22)	0.14 (0.14)	1.71 (0.12)	−1.34 (0.16)	1.64 (0.14)	0.42 (0.18)	1.05 (0.16)			
From implicit trust (IT)	0.04 (0.06)									
From reason-based trust (RBT)	0.22 (0.10)									
From antagonistic climate (AC)	−0.04 (0.06)									
From service climate (SC)	−0.05 (0.07)									
From enforced compliance (EC)	−0.03 (0.05)									
From voluntary cooperation (VC)	0.08 (0.07)									
CP→IT→THI								−0.01 (0.02)	−0.584	−0.04; 0.01
LP→IT→THI								0.01 (0.01)	0.554	−0.01; 0.03
CP→RBT→THI								0.03 (0.03)	0.972	−0.01; 0.08
LP→RBT→THI								0.37 (0.17)	2.174	0.10; 0.65
CP→AC→THI								−0.03 (0.05)	−0.461	−0.10; 0.04
LP→AC→THI								0.05 (0.08)	0.664	−0.08; 0.18
CP→SC→THI								0.00 (0.01)	0.265	−0.02; 0.02
LP→SC→THI								−0.09 (0.11)	−0.831	−0.28; 0.10
CP→EC→THI								−0.05 (0.08)	−0.599	−0.19; 0.09
LP→EC→THI								0.09 (0.08)	−0.581	−0.05; 0.02
CP→VC→THI								−0.00 (0.02)	−0.301	−0.04; 0.02
LP→VC→THI								0.09 (0.08)	1.126	−0.04; 0.21

of their naivety regarding the hypotheses and because of their inexperience with insurance organizations.

Experimental Design and Procedure

In contrast to Studies 1–3, in Study 4 scenarios in an online experiment were used in which an insurance organization was presented as wielding high or low levels of coercive power and high or low levels of legitimate power. Participants were randomly assigned to one of four conditions. The combination of low/high levels of coercive power and of low/high levels of *legitimate power* was operationalized through items such as, "In general, the insurance company is known for its low/high penalties for insurance fraud. It is *little/very appreciated* for its work." After the scenarios, the respondents had to report damage to the insurance organization. They had to "... imagine that [their] television set broke from the wall so that it was now in pieces. The television set had a value of 600 MU [MU, monetary units], which [they] had to report to the insurance company according to the terms. With the help of a friend, who can fake an invoice up to a maximum of 1000 MU, [they] could report a higher claim to the insurance company." The amounts of respondents' claims (ranging from 600 to 1.000 MU) were collected to assess their relative cooperation with the insurance organization and will further be displayed in percentages [(reported amount − 600)/400]. The questionnaire that was used in Studies 1–3 was adapted to the insurance context and was applied to measure insurance fraud intention [one item; "Which damage sum would you claim at the insurance company (min. 600 MU, max. 1000 MU):"], implicit trust (three items; e.g., "I trust the insurance company Chom-Insurance without thinking about it."), reason-based trust (seven items; e.g., "I trust the insurance company Chom-Insurance, because it gives me competent advice."), the antagonistic climate (three items; e.g., "Between the insurance company Chom-Insurance and the insurants, there exists a climate of ruthlessness."), the service climate (three items; e.g., "Between the insurance company Chom-Insurance and the insurants, there exists a climate, which is characterized by its service-oriented nature."), enforced compliance (three items; e.g., "When I hand in my damage claims according to the rules of Chom-Insurance, I do so because the insurance company often carries out controls."), and voluntary cooperation (three items; e.g., "When I hand in my damage claims according to the rules with Chom-Insurance, I do so because the insurance company supports me if I have unintentionally filled in my damage claim incorrectly."). Analog to the tax context, the participants' perceptions regarding wielded coercive power (four items; e.g., "I believe that the insurance company Chom-Insurance persecutes insurance fraudsters with audits and fines.") and legitimate power (22 items; e.g., "I believe that the insurance company Chom-Insurance knows how to give good advice to insurants.") of the insurance organization were adapted for insurance and assessed as manipulation check. Responses were indicated on a seven-point Likert scale ranging from 1 ("*I totally disagree*") to 7 ("*I totally agree*"). Cronbach's α's are excellent and presented in **Table 7**. Socio-demographics (gender, age, income, nationality, employment, and experience with insurance organizations) were also assessed.

TABLE 7 | Study 4: Results of the ANOVAs with *coercive power* and *legitimate power* as independent variables.

Dependent variables		α	F (df_1, df_2)	p	η_p^2
Perceptions of coercive power		0.87			
	CP		69.94 (1, 98)	<0.001	0.42
	LP		0.90 (1, 98)	0.35	<0.01
	CPxLP		5.99 (1, 98)	0.02	0.06
Perceptions of legitimate power		0.94			
	CP		0.46 (1, 98)	0.50	<0.01
	LP		16.80 (1, 98)	<0.001	0.15
	CPxLP		0.16 (1, 98)	0.69	<0.01
Implicit trust		0.95			
	CP		1.14 (1, 98)	0.29	0.01
	LP		1.43 (1, 98)	0.23	0.01
	CPxLP		0.00 (1, 98)	0.29	0.01
Reason-based Trust		0.88			
	CP		0.01 (1, 98)	0.94	<0.01
	LP		23.67 (1, 98)	<0.001	0.20
	CPxLP		0.00 (1, 98)	0.95	<0.01
Antagonistic climate		0.89			
	CP		7.62 (1, 98)	<0.01	0.07
	LP		4.47 (1, 98)	0.04	0.04
	CPxLP		1.73 (1, 98)	0.19	0.02
Service climate		0.88			
	CP		1.08 (1, 98)	0.30	0.01
	LP		26.69 (1, 98)	<0.001	0.21
	CPxLP		0.30 (1, 98)	0.59	<0.01
Enforced compliance		0.89			
	CP		4.56 (1, 98)	0.04	0.04
	LP		3.30 (1, 98)	0.07	0.03
	CPxLP		0.23 (1, 98)	0.63	<0.01
Voluntary cooperation		0.81			
	CP		2.73 (1, 98)	0.13	0.02
	LP		10.72 (1, 98)	0.001	0.10
	CPxLP		0.06 (1, 98)	0.81	<0.01
Intended insurance fraud					
	CP		2.03 (1, 98)	0.16	0.02
	LP		0.00 (1, 98)	0.99	<0.01
	CPxLP		1.46 (1, 98)	0.23	0.02

α, Cronbach α; CP, main effect coercive power; LP, main effect legitimate power; CPxLP, interaction effect of coercive and legitimate power.

Results

In the following, only hypothesized and/or significant results are reported; for completeness, **Table 7** displays all findings independently, whether significant or not.

Preliminary Data Analyses

The manipulation check showed that perceptions on coercive power and legitimate power were induced in line with the manipulation (**Table 7**). Participants held perceptions of lower coercive power in the low levels of coercive power condition (cp_{low}: $M = 3.17$, $SD = 1.32$) than in the high levels of coercive power condition (cp_{high}: $M = 5.28$, $SD = 1.31$). A weak interaction of coercive and legitimate power on the perceptions of coercive power existed, but as this interaction explains only 6% of the variance and the main effect of coercive power explains 42%, this interaction is negligible. Participants experiencing high levels of legitimate power held perceptions of higher legitimate power (lp_{high}: $M = 4.74$, $SD = 1.14$) than the participants experiencing low legitimate power (lp_{low}: $M = 3.79$, $SD = 1.15$; **Table 7**).

Coercive Power and Legitimate Power

The impact of coercive and legitimate power on trust, climates, and motives

Testing Hypotheses 1b and 2b, 2 (low vs. high levels of coercive power) by 2 (low vs. high levels of legitimate power) ANOVAs with the dependent variables implicit and reason-based trust, antagonistic and service climate and enforced compliance and voluntary cooperation were conducted. Similar to the experiments in the tax context, participants in conditions with low/high levels of coercive power and low/high levels of legitimate power reported equal intensity of *implicit trust* (main effects: cp_{low}: $M = 2.02$, $SD = 1.62$; cp_{high}: $M = 2.35$, $SD = 1.55$; lp_{low}: $M = 2.00$, $SD = 1.43$; lp_{high} $M = 2.40$, $SD = 1.70$, see **Table 7**; for a graphical representation see **Figure 1** in the Discussion Section). As expected, participants reported high levels of *reason-based trust* when legitimate power was high (lp_{high}: $M = 4.46$, $SD = 1.14$; lp_{low}: $M = 3.22$, $SD = 1.37$, see **Table 7**).

The analysis showed that, as expected, the perception of an *antagonistic climate* increased with coercive power (cp_{low}: $M = 2.84$, $SD = 1.71$; cp_{high}: $M = 3.84$, $SD = 1.85$) and decreased with legitimate power (lp_{low}: $M = 3.84$, $SD = 1.81$; lp_{high}: $M = 2.99$, $SD = 1.81$, see **Table 7**). Furthermore, as expected, the perception of a *service climate* increased only with legitimate power (lp_{low}: $M = 3.05$, $SD = 1.62$; lp_{high}: $M = 4.58$, $SD = 1.33$, see **Table 7**).

Regarding motives for cooperation, the analysis showed that, as expected, participants in conditions with low levels of coercive power reported feeling less *enforced* (cp_{low}: $M = 3.69$, $SD = 1.81$) compared to conditions with high levels of coercive power (cp_{high}: $M = 4.37$, $SD = 1.66$; see **Table 7**). As expected, participants reported more *voluntary cooperation* when legitimate power was high (lp_{high}: $M = 4.35$, $SD = 1.49$; lp_{low}: $M = 3.37$, $SD = 1.44$, see **Table 7**). No other main effects or interaction effects were significant (see **Table 7**).

The mediating role of trust, climate, and motive

Testing Hypothesis 3, an ANOVA revealed no significant main effect of coercive power, no impact of legitimate power and no significant interaction (**Table 7**).

In a second step, we applied again the program Mediate (Hayes et al., 2011) for the mediator analysis. The results revealed that there are three indirect effects from power to insurance fraud. First, legitimate power impacts insurance fraud intention via reason-based trust (95% CI [−20.80; −0.44], **Table 8**). Second, coercive power impacts insurance fraud intention via enforced compliance (95% CI [0.77; 10.64]) and third, legitimate power also impacts insurance fraud intention via enforced compliance (95% CI [0.28; 9.38]). However, Sobel test statistics revealed only a trend for a mediation from coercive power to enforced compliance to insurance fraud (CP→EC→IFI: Sobel test $= -1.72$, $p = .08$; $R_M = -0.26$). All other mediation were not significant (LP→RBT→IFI: Sobel test $= -1.60$, $p = 0.11$; LP→EC→IFI: Sobel test $= 1.52$, $p = 0.13$). The other indirect effects from coercive and legitimate power are not significant.

Discussion

The predictions of Hypotheses 1b and 2b are partly confirmed. The combination of coercive and legitimate power backs up the prediction that coercive power impacts the antagonistic climate and enforced compliance (Hypothesis 1b). Furthermore, legitimate power had a positive impact on reason-based trust, the perception of a service climate and voluntary cooperation (Hypothesis 2b). In line with Study 3 but contrary to predictions, legitimate power reduced the antagonistic climate. In contrast to Studies 1–3, results of the mediator analysis showed that coercive power increases enforced compliance, which in turn decreases the intention to commit insurance fraud.

GENERAL DISCUSSION

Overall, all four studies confirm the hypothesized impact of coercive and legitimate on cognitions when deciding to cooperate with authorities (**Figure 1**). As expected, when coercive power was applied exclusively, it decreased implicit trust, increased the perception of an antagonistic climate, and enforced compliance. For the combined prevalence of coercive and legitimate power, coercive power does not impact implicit trust, but leads to a perceived antagonistic climate and to an enforced motive to comply. The missing impact of coercive power on implicit trust, when combined with legitimate power, might stem from the fact that legitimate power stimulates rational considerations because of reason-based trust, and rational considerations are aspect of system 2, so that implicit trust (system 1) cannot arise (cf. Sittenthaler et al., 2015). Coercive power has a direct impact on tax cooperation intention and an indirect effect mediated via enforced compliance on insurance fraud intention.

As expected, legitimate power (wielded exclusively or in combination with coercive power) increases reason-based trust, the perception of a service climate and the motive to cooperate voluntarily. The relationship of legitimate power and intended cooperative behavior is mediated by reason-based trust.

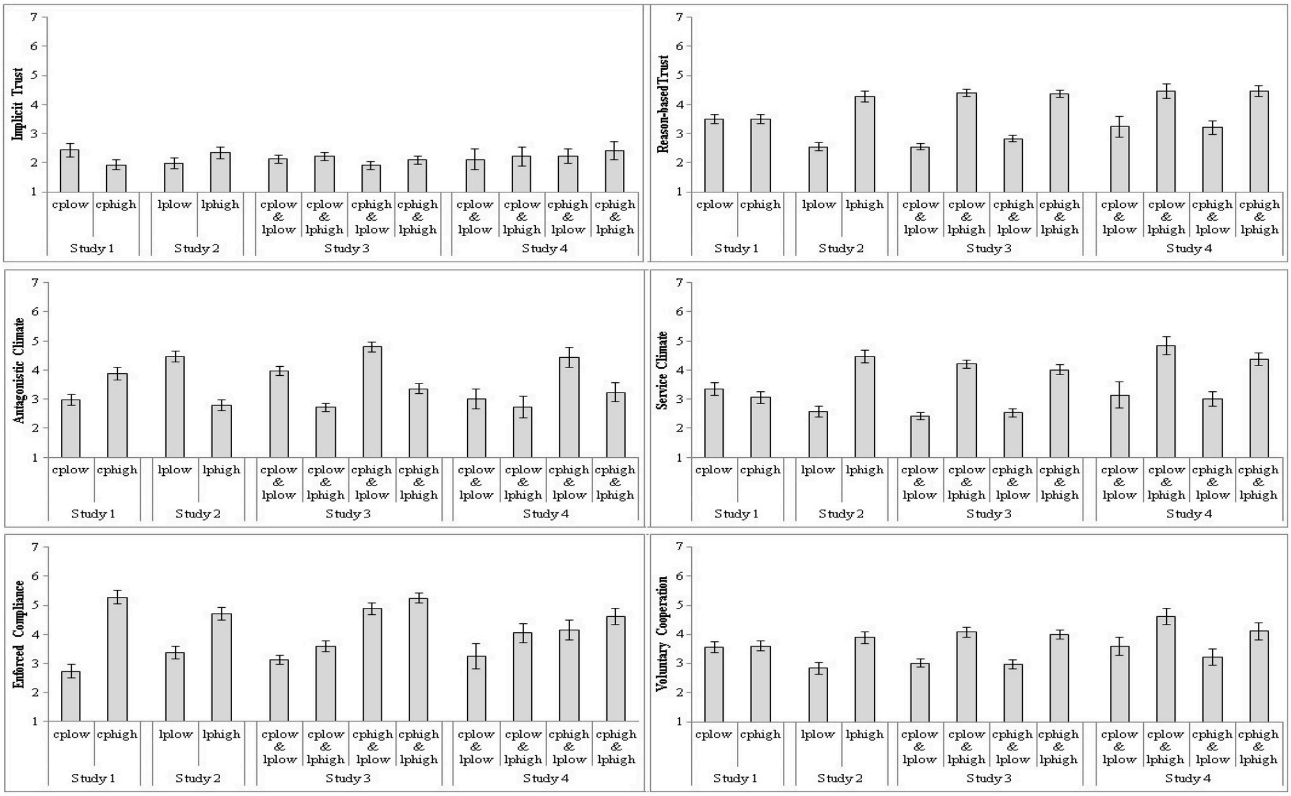

FIGURE 1 | The impact of coercive and legitimate power on the trust, climate, and motive scales in Study 1–4.

Two unexpected results were found. First, in Study 2, and by tendency in Studies 3 and 4, legitimate power, contrary to expectations, increased the enforced motive to cooperate. One explanation is that due to feelings of reciprocity, even the wielding of legitimate power might make participants experience some "social" coercion that is responsible for motives of enforced compliance. This is in line with Ouchi's (1979) informal clan control, which sees reciprocity and a legitimate organization as the foundation. Additionally, social agreement, such as common values and beliefs, would constitute a further pre-requisite for clan control. Another possible reason is that legitimate power leads to the impression that authorities have a high proficiency for detecting and punishing defecting individuals, which results in feelings of enforced compliance. This result shows that a relations between legitimate power and enforced compliance needs to be included in the Slippery Slope Framework (Gangl et al., 2015) so that future research will consider this issue.

Second, contrary to expectations but in line with earlier findings (Hofmann et al., 2014), legitimate power, even when combined with coercive power, reduced the perceived antagonistic climate (Studies 2–4). When combined, the exertion of audits and fines (i.e., coercive power) can be believed to be legitimate and, thus, be accepted as the right thing to do. This assumption was supported by Study 2, which showed that coercive power is more pronounced when legitimate power is rather high (in this study, only legitimate power was manipulated and no information on coercive power was given). Then, trust in authorities and relational climates were more effected by legitimate power than by coercive power alone. This is suggested by the relatively strong impact of legitimate power on reason-based trust in Study 2–4. Overall, the present results certainly indicate a connection between coercive power and legitimate power. With the current experiments, this connection, e.g., how the application of legitimate power impacts the perception of coercive power, cannot sufficiently be tested, but the Slippery Slope Framework (Gangl et al., 2015) needs to be modified including a connection between coercive power and legitimate power and future research will have to investigate this aspect.

The current studies have some limitations that have to be addressed in future research. The research theoretically bases on the slippery slope framework postulating that authorities' different forms of power influence cognitions and subsequently cooperative behavior. It can be argued that this causal relationship could be the other way round that not power impacts cognitions but actual cognitions are responsible for the perceptions of power. This certainly can be the case and needs further empirical evidence, nevertheless, as our studies show, there certainly is a significant impact of power on cognitions. As with most laboratory experiments, the investigated samples are not representative, they are specifically comprised of students who are not well-experienced with tax authorities and/or insurance organizations. This, nonetheless, is actually an

TABLE 8 | Study 4: Mediation analysis from power to insurance fraud intention (IFI; standard errors in parentheses).

	Path coefficients							Indirect effects		
	To IFI	To IT	To RBT	To AC	To SC	To EC	To VC	Estimate	Sobel Z	Symmetric 95% CI
From covercive power (CP)	−18.96 (7.39)	0.36 (0.32)	−0.02 (0.25)	0.94 (0.35)	−0.32 (0.29)	0.72 (0.34)	−0.45 (0.29)			
From legitimate power (LP)	1.83 (7.86)	0.42 (0.31)	1.24 (0.25)	−0.80 (0.35)	1.51 (0.29)	0.60 (0.34)	0.95 (0.29)			
From implicit trust (IT)	4.10 (2.43)									
From reason-based trust (RBT)	−7.99 (4.74)									
From antagonistic climate (AC)	2.23 (2.78)									
From service climate (SC)	1.45 (4.46)									
From enforced compliance (EC)	6.89 (2.32)									
From voluntary cooperation (VC)	0.76 (3.19)									
CP→IT→IFI								1.46 (1.75)	0.936	−0.69; 4.77
LP→IT→IFI								1.72 (1.81)	1.056	−0.51; 5.13
CP→RBT→IFI								0.15 (2.38)	0.080	−3.70; 4.21
LP→RBT→IFI								−9.89 (6.14)	−1.596	−20.80; −0.44
CP→AC→IFI								2.10 (2.89)	0.769	−2.09; 7.34
LP→AC→IFI								−1.77 (2.51)	−0.076	−6.31; 1.79
CP→SC→IFI								−0.46 (1.98)	−0.311	−4.08; 2.31
LP→SC→IFI								2.19 (6.89)	0.032	−8.62; 13.70
CP→EC→IFI								4.99 (3.09)	1.724	0.77; 10.64
LP→EC→IFI								4.16 (2.85)	1.517	0.28; 9.38
CP→VC→IFI								−0.35 (1.74)	−1.375	−3.43; 2.39
LP→VC→IFI								0.73 (3.15)	0.238	−4.29; 6.02

advantage. For naïve participants, it is easier to imagine the fictitious scenario and act based on the presented scenarios and not on prior experiences with the authority (Mittone, 2006). That said, laboratory experiments still create a highly artificial situation in which individuals might not behave as in an everyday context. Therefore, allowing participants to take part in an online experiment at home (Study 4) is a possibility to counteract this artificiality without changing manipulation. Nevertheless, future field experiments that not only investigate the direct impact of power on cooperation (e.g., Ariel, 2012; Gangl et al., 2014) but also investigate the underlying processes could strengthen the current results; tax authorities and/or insurance organizations displaying coercive and/or legitimate power would show the effects of power *in vivo*. Furthermore, the experimental design of the current study can only test for differences. The correlative connections between power and processes are only assumed. Thus, this design only allows for limited conclusions regarding the mediators since they are based on manipulated factors of fictitious authorities and not on actual existing authorities. However, due to the experimental setting, we were able to obtain high internal validity. Future research needs to increase external validity and address the studied relationships by using field data.

Literature indicates that the severity of punishment is contingent on the type of social dilemma situation (Molenmaker et al., 2014). It has to be mentioned that legal circumstances of tax authorities and insurance organizations are different. While in comparison to tax authorities, insurance organizations do not have the legal right to punish insurance fraud. Taxpayers, compared to insurance holders, also do not have the option to turn to another tax authority if they are not satisfied with a specific tax authority's conduct. Taxpayers are at the mercy of one specific tax authority in a certain country. Nevertheless, results on the impact of power work similarly in both contexts. The two authorities in the studies, the tax authority and the insurance organization, represent a small range of authorities that wield power to control individuals' behavior in different situations. In future research, other institutions, such as governments ensuring citizens' environmental friendliness, should be investigated. Research on how their power affects trust, relational climates, and motives for cooperation will further support, as well as extend, current findings.

From a practical point of view, the present findings are of value, not only for tax authorities and insurance companies, but for all authorities wielding power. Results show that sanctions of undesired behavior, as well as legitimate procedures, both not only foster cooperation, but also have different impacts on underlying cognitions. Severe punishments lead to a hostile and antagonistic climate that should be avoided, whereas supportive procedures foster trust toward the authority and the perception of a reciprocative service climate. Legitimate power operates via establishing reason-based trust. Tax authorities and insurance organizations are supposed to reduce costly punishments, provide supportive procedures and helpful information, and pursue societal goals to assure a service climate. This would, in the long run, create trust toward them which fosters cooperative behavior. The findings also indicate that strict audits and severe fines might alienate individuals that are either reacting with enforced compliance or looking for more appealing alternatives.

Thus, the current results should initiate rethinking power of all authorities shaping individual behavior.

Highlighting the mechanisms by experimentally showing how coercive and/or legitimate power of authorities affect trust in authorities, the relational climate, and their motives over different contexts expanded the understanding of the operating mode of authorities' power. While the mediating effects clearly show that a key factor in understanding the mechanisms is reason-based trust, implicit trust, the relational climates and motives to comply become of marginal interest. They are mainly a product of specific forms of power, but they do not interfere with the actual connection of power and behavioral intention. These findings have extensive consequences for theory, as well as for real world authorities, giving direction for future research and specifying actions for power wielding authorities. In a nutshell, trust building measures are central, as reason-based trust is mediating the impact of power on cooperation, but other cognitions (interaction climates, motives) might not have that importance for cooperation.

ETHICS STATEMENT

The present study was conducted in accordance with the Declaration of Helsinki (7th revision, 2013) and local ethical guidelines for experimentation with human participants at the Faculty of Psychology of the University of Vienna. All participants gave written informed consent prior to the experiment.

AUTHOR CONTRIBUTIONS

EH: Research design, conduction of Studies 1–4, analyses of Studies 1–4, drafting of article. BH: Conduction of Study 4, analyses of Studies 1–4, drafting of article. KG: Research design, analyses of Studies 1–4, drafting of article. MH: Conduction of Studies 1–4, drafting of article. EK: Drafting of article.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: http://journal.frontiersin.org/article/10.3389/fpsyg.2017.00005/full#supplementary-material

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The impact of powerful authorities and trustful taxpayers: evidence for the extended slippery slope framework from Austria, Finland, and Hungary

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ABSTRACT
Tax authorities utilize a wide range of instruments to motivate honest taxpaying ranging from strict audits to fair procedures or personalized support, differing from country to country. However, little is known about how these different instruments and taxpayers' trust influence the generation of interaction climates between tax authorities and taxpayers, motivations to comply, and particularly, tax compliance. The present research examines the extended slippery slope framework (eSSF), which distinguishes tax authorities' instruments into different qualities of power of authority (coercive and legitimate) and trust in authorities (reason-based and implicit), to shed light on the effect of differences between power and trust. We test eSSF assumptions with survey data from taxpayers from three culturally different countries ($N =$ 700) who also vary concerning their perceptions of power, trust, interaction climates, and tax motivations. Results support assumptions of the eSSF. Across all countries, the relation of coercive power and tax compliance was mediated by implicit trust. The connection from legitimate power to tax compliance is partially mediated by reason-based trust. The relationship between implicit trust and tax compliance is mediated by a confidence climate and committed cooperation. Theoretical and practical implications are discussed.

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Tax compliance; tax evasion; trust; relationship climate

Introduction

Tax authorities apply different measures to increase tax compliance. These measures differ from country to country. Nevertheless, many practical and theoretical accounts such as the slippery slope framework of tax compliance (Kirchler 2007) have categorized different measures into two basics approaches: the power approach and the trust approach (Feld

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and Frey 2007; Kirchler 2007; Luttmer and Singhal 2014). The power approach (also termed deterrence or the command and control approach) relies on frequent audits and severe fines in case of tax evasion (Allingham and Sandmo 1972). In contrast, the trust approach originates from transparency, fair procedures, or the conviction that paying taxes honestly is a binding social norm (Braithwaite 2003a; Kirchler, Hoelzl, and Wahl 2008; Luttmer and Singhal 2014). The mutual influence, interaction, and dynamic between these two approaches is seen as important for tax compliance. Whereas some authors suggested that power and trust mutually enhance each other's effect on compliance, others assumed that power can also erode trust and in turn could reduce compliance (Bijlsma-Frankema and Costa 2005; Das and Teng 1998). However, only few studies exist that examined this dynamic empirically (Hofmann et al. 2017).

To explain the dynamic between power and trust, the original slippery slope framework was extended by differentiating the power of tax authorities into coercive and legitimate power and trust in tax authorities into reason-based and implicit trust (Gangl, Hofmann, and Kirchler 2015). Based on this, the extended slippery slope framework (eSSF) describes how the different qualities of power and trust interact with each other and lead to specific relationship climates between tax authorities and taxpayers and to tax motivations that determine tax payments (Gangl, Hofmann, and Kirchler 2015). Coercive power is suggested to decrease implicit trust in tax authorities and to lead to an antagonistic climate and an enforced motivation to pay taxes. Legitimate power fosters reason-based trust, a service climate, and a voluntary motivation to pay taxes. Based on positive experiences with tax authorities, the eSSF suggests that over time, reason-based trust evolves to implicit trust, which leads to a confidence climate with a committed motivation to pay taxes (Gangl, Hofmann, and Kirchler 2015). Whereas the original slippery slope framework received empirical support in numerous survey studies and experiments (e.g. Muehlbacher, Kirchler, and Schwarzenberger 2011; Wahl, Kastlunger, and Kirchler 2010), only some of the assumptions of the eSSF were tested, mostly based on experiments (e.g. Hartl et al. 2015; Hofmann et al. 2014). Throughout empirical analyses of all dynamics between power and trust that are assumed in the eSSF and studies based on data from real taxpayers living in different countries are rare. Closing this empirical gap allows an examination of the eSSF and tests whether tax authorities' approaches directly or indirectly influence tax compliance via changing the perceived relationship with authorities and taxpayers' motivations. Testing eSSF assumptions with data from different countries also informs whether different approaches aimed to increase tax compliance work in the same manner independent of the country and cultural specifics in which they are applied.

The aim of the present paper is to test the eSSF assumption on the psychological processes and consequences of the power-trust dynamic. Therefore, the present paper examines the underlying psychological processes that allow power and trust approaches to influence tax compliance. To increase the generalizability of found results and to test whether tax authorities' approaches have similar consequences in different countries, we also aim to analyse taxpayer data from different countries that have varying tax cultures.

The extended slippery slope framework

Tax researchers agree that tax authorities need to apply the full range of possible instruments in order to guarantee tax compliance from citizens (Alm and Torgler 2011;

Braithwaite 2003a, 2003b). These instruments include the classical deterrence approach, based on the force of the law through coercive audits and fines, and alternative approaches including regulation, incentives, participation, fairness, or support and service. Although the positive effect of each of these approaches on tax compliance received much theoretical and empirical support (Alm and Torgler 2011; Blackwell 2007; Murphy 2004; Wahl, Kastlunger, and Kirchler 2010), their dynamic and joint influence on tax compliance is still largely unexplored (Gobena and Van Dijke 2016).

Experiments from fields other than tax compliance indicated that coercive control and punishment is more effective if applied in a fair versus unfair manner (Mooijman et al. 2017; Verboon and van Dijke 2011). Similar experiments demonstrated that punishments exerted by a trusted authority have stronger effects on moral judgments about rule-breaking behaviour than punishments exerted by an untrusted authority (Mulder, Verboon, and De Cremer 2009). A meta-analysis also showed that punishments are more effective in countries in which general trust is high compared to low (Balliet, Mulder, and van Lange 2013). On the other hand, it is claimed that coercive control and punishment break the social contract between authorities and citizens, decreasing trust between authorities and fellow citizens (Feld and Frey 2007; Kramer 1999; Tenbrunsel and Messick 1999); this in turn can lead to lower cooperation (Ariel 2012; Gangl et al. 2014; Slemrod, Blumenthal, and Christian 2001). Thus, coercive punishment, trust, and fair procedures can mutually work together to either strengthen or weaken each other and in turn have different effects on cooperation with authorities. However, thorough theoretical and empirical examinations of the power-trust dynamic, particularly in tax research, is missing. For instance, it is not clear how audits and fines may increase trust in the tax system instead of decreasing it. Insights into these mechanisms could fortify our understanding of contradictory results from studies that have shown a positive effect (Hasseldine et al. 2007), no effect (Ariel 2012), or even negative effects of audits and fines (Gangl et al. 2014; Slemrod, Blumenthal, and Christian 2001).

The eSSF aims to explain these contradictory findings and the dynamics and interactions between different approaches. Therefore, the eSSF categorizes tax authorities' different approaches into various qualities of power (i.e. coercive power and legitimate power) and different qualities of trust (i.e. reason-based trust and implicit trust).

The power of tax authorities, which is defined based on the theory of the "bases of social power" (French and Raven 1959; Pierro et al. 2012), is differentiated into coercive power and legitimate power (Raven, Schwarzwald, and Koslowsky 1998). These two qualities of power are conceptualized as independent qualities; they can be applied alone or in combination with each other.

Coercive power represents the power to punish and the power to reward; thus, it becomes either a negative and positive incentive for behaviour. Examples of punishment are fines or negative disclosure through transparent tax returns (Bø, Slemrod, and Thoresen 2014) or black lists (Perez-Truglia and Troiano 2015). Examples of rewards are wellness vouchers for timely payment (Koessler et al. 2016) or the promise of privileged treatment (Simone, Sansing, and Seidman 2013). Both punishments and rewards likely crowd out intrinsic motivation (Deci 1971) and are seen as a form of coercion (Raven, Schwarzwald, and Koslowsky 1998).

Legitimate power is defined as the perception that authorities work based on a legitimate foundation, expertise and information provision, and a positive reputation

(Raven, Schwarzwald, and Koslowsky 1998). Different subcategories of legitimate power are related to transparency and fairness (Wenzel 2002), legitimate regulation (Murphy 2005), taxpayer's voice and participation (Pommerehne and Weck-Hannemann 1996), the provision of relevant information (Alm et al. 2010), and to supportive services (Gangl et al. 2013).

Based on the socio-cognitive trust theory (Castelfranchi and Falcone 2010), trust is differentiated into reason-based and implicit trust. Reason-based trust is defined as the deliberate decision to trust tax authorities based on their perceived goals; their perceived competence, motivation, and benevolence; and perceived supportive external circumstances. Reason-based trust is related to tax knowledge (Eriksen and Fallan 1996), the perceived competence and good intentions of authorities (e.g. Gangl et al. 2013; Murphy 2004), and perceived institutional quality and corruption (e.g. Cummings et al. 2009).

In contrast, implicit trust is an automatic and associative reaction to a stimuli such as a friendly face or voice or official-looking documents (Castelfranchi and Falcone 2010). However, reason-based and implicit trust are related. Along System 1 and System 2 conceptualizations, it is assumed that trust is first based on rational considerations and becomes implicit over time as a result of positive experiences (Evans 2008). Implicit trust summarizes determinants of tax compliance related to marketing and newspaper campaigns (Cyan, Koumpias, and Martinez-Vazquez 2017), social norms of tax honesty (Hallsworth et al. 2017), and the perception of a shared identity (i.e. patriotism; Gangl, Torgler, and Kirchler 2016). Nudges, such as automatic reminders or prepopulated tax forms (Behavioural Insights Team 2011; Chirico et al. 2017), are also likely to trigger automatic and implicit trust.

The eSSF assumes that two main mechanisms drive the dynamic between the different qualities of power and trust that in turn impact the perceived relationship climate between authorities and taxpayers and taxpayers' motivation to comply (Figure 1; Gangl, Hofmann, and Kirchler 2015). First, the eSSF suggests a negative relationship between coercive power and implicit trust, which leads either to an antagonistic or confidence-based climate. In an antagonistic climate, coercive power is high and implicit trust is low, and tax authorities are perceived to persecute taxpayers primarily interested in catching them as tax evaders. As a consequence, taxpayers pay their taxes because they feel enforced to do so by control and punishment (Braithwaite 2003a, 2003b; Feld and Frey

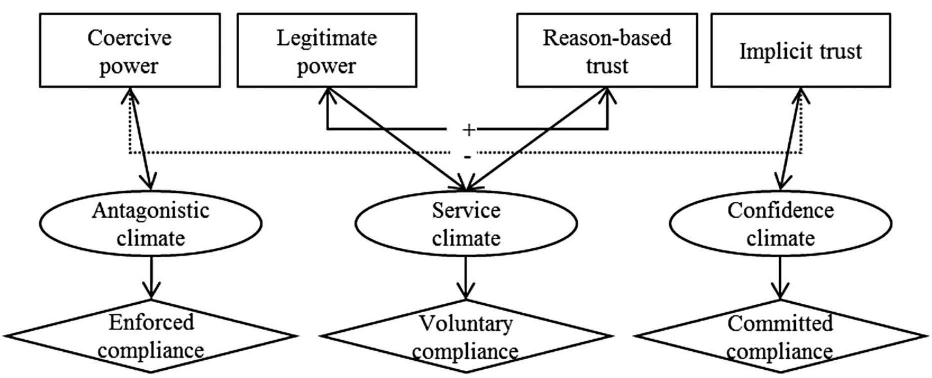

Figure 1. Extended slippery slope framework (Gangl, Hofmann, and Kirchler 2015).

2002). In a confidence climate, implicit trust is high whereas coercive power is low. The interaction between tax authorities and taxpayers is characterized by mutual trust and respect; therefore, harsh coercive power is not perceived as necessary. In such a climate, taxpayers feel committed to the tax system and see taxpaying as their moral obligation.

Second, the eSSF suggests a positive relationship between legitimate power and reason-based trust that fosters a service climate. In a service climate, tax authorities and taxpayers have a professional, bureaucratic relationship in which tax authorities as service providers interact with taxpayers as clients (Alm and Torgler 2011; Braithwaite 2003b).

Based on these assumptions, it can be suggested that a pure coercive deterrence approach has a negative effect on trust, interaction climates, and motivation, and in turn tax compliance intentions. In contrast, if authorities' power is perceived to be legitimate, or if authorities' coercive power is combined with legitimate power, a positive effect on trust, climate, motivation, and tax compliance can be expected.

Experiments on the effects of coercive power and legitimate power, applied solely or in combination, largely confirmed the above mentioned assumptions (Gangl et al. 2017; Hartl et al. 2015; Hofmann et al. 2014, 2017). In these experiments, participants were asked to act as self-employed taxpayers who must pay taxes on a given income. Low versus high coercive and legitimate power was manipulated by describing tax authorities as applying lenient or severe controls (to manipulate coercive power) with ill or well-trained tax officers (to manipulate legitimate power). These experiments showed, as expected, that coercive power but not legitimate power increases taxpayers' reactance and reduces implicit trust in tax authorities, which in turn leads to an antagonistic climate and enforced motivation to comply (Gangl et al. 2017; Hofmann et al. 2014). However, these experiments only analysed the effect of coercive and legitimate power but not trust (largely due to the difficulty of experimentally manipulating implicit trust). In addition, survey studies on representative samples of self-employed taxpayers from Austria and the Netherlands on the correlation of different motivations to comply (i.e. enforced compliance, voluntary cooperation, and committed cooperation with tax compliance intentions) were conducted (Gangl et al. 2013). These studies showed that enforced compliance was negatively related to tax compliance, whereas voluntary and committed cooperation were positively correlated to tax compliance. Thorough survey studies that analysed all assumed dynamics between power and trust in the eSSF are rare. One exception offered confirmation of the framework (Gangl et al. 2016). However, this study was small in sample size, based on just one country, and did not include tax compliance intentions. Hence, it is still not clear how robust the assumed dynamics are between power, trust, interaction climates, motivation to comply, and tax compliance.

National differences in tax behaviour

In the present study, we used data from three European countries that strongly vary concerning authorities' perceived power and citizens' trust in authorities: Austria, Finland, and Hungary. According to the European Value Survey (2011), only 15.7% of citizens in Austria and 19.1% in Finland claim that the state should increase control of firms. In contrast, 43.8% of Hungarians demand more frequent and efficient control. This might indicate that in Hungary there are higher authoritarian attitudes and that authority is perceived as more legitimate than in Finland or Austria. Particularly, trust in authorities differs across the three countries (e.g. Kogler et al. 2013). Data from the European Value Survey (2011) showed that citizens' trust in national authorities (i.e. the parliament) is highest in Finland (42.1% of the Finnish have confidence in parliament), followed by Austria (29.9%) and Hungary (20.7%). The data from the European Value Survey indicated that Finland is the democratic extreme, whereas Hungary is on the authoritarian extreme and Austria represents a middle position between the two.

The aim of the present study is to test the eSSF assumptions by examining whether the relationship between power, trust, and tax compliance intentions is mediated by perceived tax climates and motivations. Figure 2 visualizes our hypotheses. To increase the robustness of our results, we examined the data of taxpayers from three countries differing in regulation and citizens' trust – Austria, Finland, and Hungary – who likely also differ concerning power and trust, perceived tax climates, and motivation to comply with taxes.

Method

Samples and procedure

Overall, 700 taxpayers (253 Austrians, 223 Finnish, and 224 Hungarians) completed an online survey. The first item on the questionnaire was a filter item asking whether participants had ever paid taxes in the past. Only those participants who indicated that they had experience with taxpaying continued the survey. After additional exclusion of participants who denied the question, "I have read all written instructions and questions carefully and have given my personal opinion", data of 249 Austrian (57% male; $M_{age} = 35.06$, $SD =$

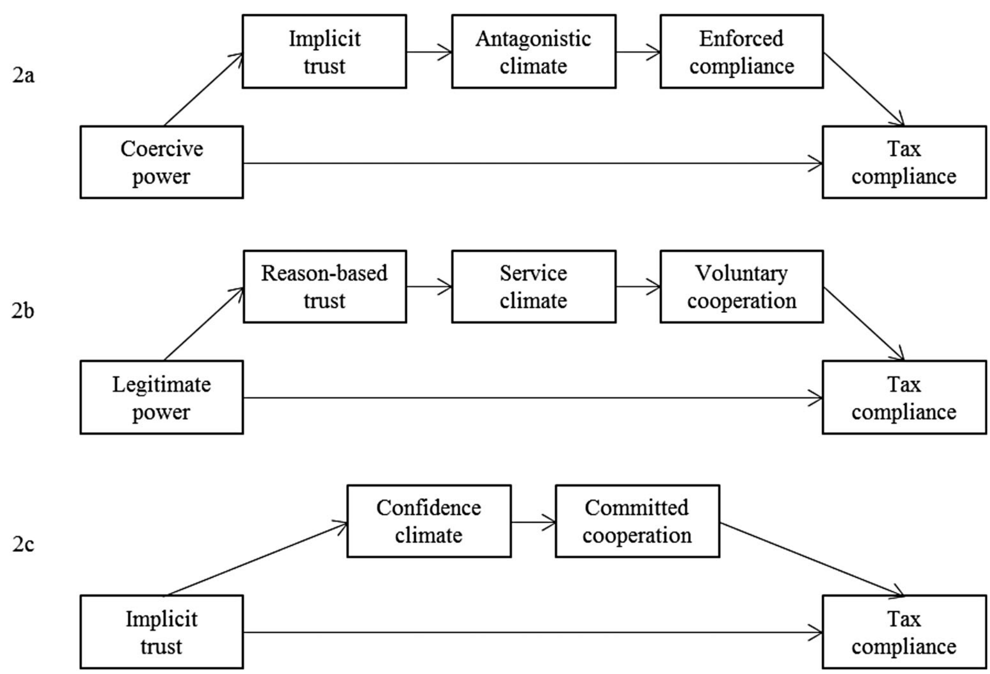

Figure 2. (a – c) The extended slippery slope framework and tax compliance.

12.82), 219 Finnish (48% male; $M_{age} = 45.94$, $SD = 13.34$), and 222 Hungarian participants (39% male; $M_{age} = 39.98$, $SD = 12.50$) were considered in the analyses. Participants in Austria and Hungary were recruited from acquaintances of university members. Finnish participants were recruited by a market research agency and received a choice of low-price items as a reward for participation.

Material

The online questionnaire was used to assess (a) *perceived coercive power* (three items; e.g. "Tax authorities punishes severely"), (b) *perceived legitimate* power (seven items; e.g. "Tax authorities do share understandable information"), (c) *implicit trust* (three items; e.g. "I trust tax authorities most of the time automatically"), (d) *reason-based trust* (14 items; e.g. "I trust tax authorities because they have committed employees"), (e) *perceived antagonistic climate* (three items; e.g. "Between the tax authority and taxpayer there exists a climate of inconsiderateness"), (f) *perceived service climate* (three items; e.g. "The relationship between the tax authority and taxpayer is service-oriented in nature"), (g) *perceived confidence climate* (three items; e.g. "The relationship between the tax authority and taxpayer is characterized by joint responsibility"), (h) *enforced compliance* (four items; e.g. "When I pay taxes, I do so because I know I will be audited"), (i) *voluntary cooperation* (four items; e.g. "When I pay taxes, I do so because the tax authority will probably reciprocate my cooperation"), and (j) *committed cooperation* (four items; e.g. "When I pay taxes, I do so because I feel a moral obligation to pay taxes"). Participants were also surveyed on tax compliance (one item; "How likely will you pay your taxes for the current year correctly and in full extent to the tax authority?") and socio-demographic characteristics. Scales and items are based on Hofmann et al. (2017) and Gangl et al. (2015) and were answered on a 7-point Likert scale (1 = *totally disagree*, 7 = *totally agree*). Cronbach's α for all scales were sufficient (see Table 1).

Results

In the following section, our preliminary analysis aimed to show that Austria, Finland, and Hungary significantly differ regarding perceived power, taxpayer trust, interaction climates, and motivation for tax compliance. After that, we tested the dynamic between power and trust, interaction climates, motivation, and tax compliance intentions by applying a mediation analysis.

Preliminary analysis: differences between Austrian, Finish, and Hungarian taxpayers

To confirm that Austria, Finland, and Hungary differ concerning power and trust, perceived tax climates, and motivations to comply with taxes, ANOVAs (Table 1) were computed. Coercive power was perceived as higher in Hungary than in Austria and Finland ($F(687, 2) = 11.60$, $p < .001$, $\eta_p^2 = .03$), whereas legitimate power was significantly perceived as higher in Finland than in Austria and Hungary ($F(687, 2) = 27.03$, $p < .001$, $\eta_p^2 = .07$). Trust – both implicit ($F(687, 2) = 9.83$, $p < .001$, $\eta_p^2 = .03$) and reason-based ($F(687, 2) = 19.24$, $p < .001$, $\eta_p^2 = .05$) – was higher in Finland than in Austria and Hungary. An antagonistic

Table 1. Reliabilities, means, standard deviations, and partial inter-correlations of the slippery slope framework scales for Austria, Finland, and Hungary.

	α	AUT M (SD)	FIN M (SD)	HUN M (SD)	1	2	3	4	5	6	7	8	9	10
1 Coercive Power	.75	4.60 (1.41)	4.58 (1.38)	5.12 (1.22)										
2 Legitimate Power	.81	3.85 (0.91)	4.27 (0.96)	3.65 (0.84)	−.12**									
3 Implicit Trust	.93	3.84 (1.88)	4.40 (1.65)	3.72 (1.65)	−.13**	.54***								
4 Reason-based Trust	.91	3.36 (1.04)	3.98 (1.16)	3.48 (1.21)	−.15***	.66***	.73***							
5 Antagonistic Climate	.90	3.94 (1.61)	3.72 (1.67)	4.44 (1.72)	.42***	−.33***	−.35***	−.35***						
6 Service Climate	.86	3.14 (1.41)	4.16 (1.49)	2.76 (1.35)	−.25***	.57***	.43***	.58***	−.38***					
7 Confidence Climate	.88	3.05 (1.39)	3.64 (1.48)	2.62 (1.30)	−.22***	.62***	.56***	.70***	−.44***	.68***				
8 Enforced Compliance	.84	4.11 (1.47)	3.75 (1.54)	3.67 (1.69)	.23***	.03	−.07	−.04	.31***	−.01	−.08*			
9 Voluntary Cooperation	.75	3.34 (1.30)	3.80 (1.34)	2.89 (1.33)	−.06	.52***	.41***	.53***	−.20***	.48***	.51***	.17***		
10 Committed Cooperation	.90	4.90 (1.56)	5.49 (1.32)	5.50 (1.42)	−.07	.36***	.35***	.41***	−.17***	.23***	.26***	−.16***	.26***	
11 Intended tax behaviour		6.13 (1.54)	6.34 (1.15)	6.28 (1.23)	.02	.11**	.15***	.15***	−.11**	.07	.08*	−.09*	.07	.27***

Note. α = Cronbach-α, AUT = Austria, FIN = Finland, HUN = Hungary.
*$p < .05$, **$p < .01$, ***$p < .001$.

climate was perceived as higher in Hungary than in Austria and Finland ($F(687, 2) = 11.02$, $p < .001$, $\eta_p^2 = .03$). A service ($F(687, 2) = 57.82$, $p < .001$, $\eta_p^2 = .14$) and confidence climate ($F(687, 2) = 29.87$, $p < .001$, $\eta_p^2 = .08$) were both perceived as highest in Finland, as second highest in Austria, and as lowest in Hungary. Finish and Hungarian participants appeared to feel less enforced to pay taxes than Austrians ($F(687, 2) = 5.25$, $p < .01$, $\eta_p^2 = .02$). Finnish participants were the highest motivated to pay voluntary; Austrians were second highest; and Hungarians were the least motivated to pay their taxes voluntarily ($F(687, 2) = 26.24$, $p < .001$, $\eta_p^2 = .07$). Austrians felt less committed to pay their taxes than Finnish and Hungarian participants ($F(687, 2) = 13.55$, $p < .001$, $\eta_p^2 = .04$). However, concerning intended tax behaviour, no difference was observed between the three countries ($F(687, 2) = 1.63$, $p = .20$, $\eta_p^2 = .01$). Table 1 shows means and standard deviations separately for Austria, Finland, and Hungary.

Test of the extended slippery slope framework of tax compliance

To test whether the assumed dynamics between power and trust were related to tax compliance intention via perceived climates and motivations, we conduced serial mediation analyses (Process Model 6; Hayes 2012, 2013), controlling for participants' country. The first analysis comprised coercive power as a predictor and tax compliance as criterion, whereby implicit trust, antagonistic climate, and enforced compliance were the mediators (Figure 2(a)). Results showed a full mediation (95% CI [-0.0985; -0.0300], R2 =.04). However, coercive power was only related to implicit trust ($b = -.15$, $SE = .05$, $p = .002$), which in turn influenced tax compliance intentions ($b = .12$, $SE = .03$, $p < .001$; 95% CI [-0.0309; -0.0029]). Country controls ($p = .001$) showed that in Austria, coercive power was positively related to implicit trust ($b = .19$, $SE = .37$, $p = .024$) whereas it was negatively related to implicit trust in Finland ($b = -.38$, $SE = .08$, $p < .001$) and Hungary ($b = -.37$, $SE = .09$, $p < .001$). However, in the final model, concerning the relationship between implicit trust and tax compliance, the country controls were not significant (all p's $> .22$).

The second analysis comprised legitimate power as predictive and tax compliance as criterion, whereby reason-based trust, service climate, and voluntary cooperation were the mediators (Figure 2(b)). Country controls ($p = .001$) showed that the positive relationship between legitimate power and reason-based trust varied in strength but not direction (Austria: $b = .67$, $SE = .06$, $p < .001$; Finland: $b = .90$, $SE = .06$, $p < .001$; Hungary: $b = .90$, $SE = .08$, $p < .001$). In the final model, concerning the relationship between reason-based trust and tax compliance country controls were not significant (all p's $> .25$).

The third analysis comprised implicit trust as a predictor and tax compliance intention as criterion, whereby confidence climate and committed cooperation were the mediators (Figure 2(c)). Country controls ($p < .001$) showed that in Finland and Hungary, the relationship between implicit trust and tax compliance is only mediated via committed cooperation (Finland: $b = .31$, $SE = .06$, $p < .001$, Hungary: $b = .24$, $SE = .06$, $p < .001$) but not via the confidence climate (min. $p = .24$). However, in the final overall mediation model, country controls were not significant (all p's $> .25$).

Discussion

The present paper examined the dynamic between power and trust as outlined in the extended slippery slope framework in three different countries that vary in tax regulations and citizens' trust. The aim was to shed light on how classical deterrence instruments of audits and fines and alternative approaches of participation, fairness, and trust approaches impact relationship climates, motivation to comply, and intended tax compliance. Therefore, the present paper also informs the broader study of tax policy by highlighting that authorities' instruments do not impact taxpayers' compliance in a vacuum but change the relationship climate between tax authorities and taxpayers and the motivation of taxpayers. Thus, the present paper sheds light on complex, underlying psychological mechanisms that enable power and trust to indirectly – versus directly – affect tax compliance. Survey results from taxpayers confirm most assumptions of the extended framework and show that based on data from countries with different tax cultures, general patterns of how tax instruments influence tax compliance can be found. Even if these general patterns vary in a single country such that in one country trust, climates or motivations are more or less affected by tax instruments, the overall relationship and effect on citizens' perceptions and behaviours is likely very similar among different countries.

Overall counties, coercive power was negatively related to implicit trust and in turn to intended tax compliance. Specifically, this result confirms that coercive powers' positive impact on tax compliance is undermined if coercive power reduces implicit trust (Gangl et al., 2015). This outcome also might explain previous studies showing weak or no relationship between coercive power and compliance (Ariel, 2012; Hofmann et al., 2014). However, in one country (i.e., Austria) coercive power was positively related to implicit trust. This result indicates as previous studies did, that the negative relationship between coercive power and implicit trust is not stable (c.f. Hofmann et al., 2014, 2017) and may depend on the cultural background and related to that, to the perception of coercive power as safeguard or threat.

In the mediator analysis, results showed that for all countries, legitimate power positively impacted tax compliance intention only via reason-based trust. This result confirms previous studies about the relationship between legitimacy and trust in police studies (Jackson et al. 2012) and tax research (e.g. Gangl et al. 2013; Hartl et al. 2015; Verboon and van Dijke 2011) and again highlights the unconfined positive effect of legitimate power on trust, motivation, and compliance.

Results confirm that the impact of implicit trust on tax compliance intentions is mediated via a perceived confidence climate and committed cooperation. Country characteristics are only marginally relevant for this relationship. These findings extend previous empirical research on the importance of implicit trust for climates and motivations (Gangl et al. 2016). In addition, this result highlights the importance of tax authorities' instruments that foster implicit trust. Marketing measures (Cyan, Koumpias, and Martinez-Vazquez 2017), the communication of warmth and friendliness (e.g. via a website, telephone hotline, or officers), the use of symbols of legitimacy (e.g. flags, stamps, certifications; Gangl, Torgler, and Kirchler 2016), or highlighting shared values can increase tax motivation as a moral duty and in turn improve tax compliance intentions.

The present research has clear practical implications. Whereas coercive power can have negative side-effects, fostering legitimate power seems to have a positive impact on a large set of indicators such as trust, climate, motivation, and compliance. Thus, tax authorities' instruments that aim to increase their perceived law-abiding behaviour, professionalism, and expertise; provide clear and transparent information on tax procedures; and foster a positive reputation as a service provider can increase citizens' trust and cooperation. Tax authorities should also consider ways to increase taxpayers' implicit trust. Such measures (e.g. building a long-term relationship between a specific tax officer and taxpayer) have a significantly positive influence on compliance.

The present research must be considered in light of specific strengths and limitations. A clear strength of the present research is the examination of taxpayer data from three countries with different legislation and citizens' levels of trust. Since general assumptions of the eSSF received support among all countries, they can be seen as relatively robust. A limitation of the present research is that only intentions and not real behaviour was assessed. However, intentions are predictors of fraudulent behaviour (Carpenter and Reimers 2005); thus, the present results may have some validity for the field.

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Building versus maintaining a perceived confidence-based tax climate: Experimental evidence

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ABSTRACT

A confidence-based climate between public administrations and citizens is essential. This paper argues and provides empirical evidence that depending on the perceived interaction history, different policies are needed to build versus maintain confidence. Applying the extended Slippery Slope Framework of tax compliance, an online and a laboratory experiment were conducted to explore whether tax authorities' coercive and legitimate power have different effects depending on whether they are situated in an antagonism-based or confidence-based climate. Results showed that in an antagonism-based interaction climate, a combination of high coercive and high legitimate power changed the climate into a confidence-based interaction climate. In contrast, in a confidence-based climate the same power combination did not maintain but erode the climate. Results also suggest that confidence-based climates are maintained by low coercive power combined with high legitimate power. The paper concludes that interaction climates operate as psychological frames which guide how policy instruments affect taxpayers' trust in the tax authorities.

1. Introduction

Mutual confidence is important. This is as true for couples and families, as it is for societies. A confidence-based climate in which citizens and the public administration trust each other, share the same values, and perceive each other as partners enhances cooperation and is an important pillar for functioning democracies (Goodsell, 2008; Putnam, 1995). In this paper we want to focus on trust in tax authorities, as an essential determinant of citizens' tax compliance and thus, the provision of public goods such as schools or health care (Kirchler, Hoelzl, & Wahl, 2008). However, countries differ concerning the prevailing level of trust in their tax authorities. Whereas trust is low in some countries such as in the U.S. or Italy (Drake, 2013) there is high trust in other countries such as in Switzerland (Lozza & Castiglioni, 2018).

Some tax authorities are perceived as antagonistic and need to build a confidence-based climate with citizens, whereas others already have citizens' trust so that they face the challenge of maintaining trust. Both building and maintaining trust may be imperative for tax authorities to ensure cooperation. Research identified several determinants of trust in public administrations, such as law enforcement or legitimacy (Mishler & Rose, 2001; Tyler, 2003). But do tax authorities in need of building trust have to implement

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the same policy measures as those in need of maintaining trust? One might argue that measures that are good for building trust will also work for maintaining trust. Note, however, that a climate in which trust is absent (or low) presents a markedly different context than a climate in which trust is already present (and high).

In particular, determinants of trust may differ depending on whether the initial interaction climate is antagonism-based (i.e., related to mutual hostility) versus confidence-based (e.g., in a trusting partnership with shared values). Testing this relation requires a set-up that addresses the situational differences and temporal dynamics of building versus maintaining confidence-based climates; aspects that empirical research has not yet incorporated (Keele, 2007; Rothstein, 2000). Also theoretical accounts, for public administration in general (Battaglio, Nicola, Paolo, & Paola, 2018) and tax administration in particular (Braithwaite, 2003) as well as empirical studies (Batrancea et al., 2019), highlighted the importance of context for the effect of authorities' enforcement but only for rule compliance and not for trust in authorities.

Additionally, these assumed contextual and temporal dependencies were rarely tested empirically. Based on the theory of the extended Slippery Slope Framework, the aim of the present research is to experimentally examine the differential determinants of trust building versus trust maintenance.

2. The extended Slippery Slope Framework

The Slippery Slope Framework was developed as a conceptual tool to summarize determinants of tax compliance into the dimensions power of authorities (i.e., the perception that authorities are able to ensure compliance) and trust in authorities (i.e., the perception that authorities work for the common good; Kirchler et al., 2008). The extended Slippery Slope Framework (eSSF) posits that the dynamic between power and trust explains how interaction climates between taxpayers and tax authorities can be built and changed (Gangl, Hofmann, & Kirchler, 2015). It distinguishes between two types of power (perceived coercive and legitimate power) and two types of trust (reason-based and implicit trust) which in combination constitute different perceived interaction climates between citizens and the tax authorities. Thereby, the eSSF examines and predicts the perceptions of taxpayers which motivate tax compliance behavior.

With coercive and legitimate power, the eSSF connects to the main power theories in economics and psychology concerning the potential and perceived ability of a party to influence another parties' behavior (French & Raven, 1959; Tyler, 2003). Coercive power is the perceived ability of the administration to enforce law compliance through incentives (i.e., the capability to control and punish or reward citizens). Legitimate power is the administration's ability to convince citizens to comply voluntarily with rules and regulations through legitimate procedures, expertise, information, and a positive image.

Reason-based and implicit trust are defined in line with the socio-cognitive trust theory of Castelfranchi and Falcone (2010), and relate to distinctions made in include a dash theories of social cognition (Kahneman, 2003). Reason-based trust means that citizens deliberately trust the tax authorities on which they depend, because it pursues an important goal, is perceived as motivated, competent, and benevolent, and external conditions allow it to work professionally. In contrast, implicit trust is considered a more automatic trust reaction to associative learned stimuli, such as perceived shared identity, friendly faces, or official documents.

Referring to research on regulation (Adler, 2001; Haslam & Fiske, 1999), the eSSF defines three interaction climates: antagonism-based, service-based, and confidence-based climates. Antagonism-based climates are defined as hostile climates in which mistrust prevails and authorities and citizens work against each other like "cops and robbers" (Kirchler et al., 2008). In service-based climates, such as in new public management approaches (Bryson, Crosby, & Bloomberg, 2014), the tax administration (as service provider) and citizens (as clients) cooperate on the basis of a technical-bureaucratic relationship. In confidence-based climates, tax authorities and taxpayers share the same values, trust each other implicitly and collaborate as partners (Alm & Torgler, 2011; Brenninkmeijer, 2016). Compared to antagonism-based and service-based climates, confidence-based climates are likely also characterized by positive social norms concerning tax honesty. This belief that most other citizens are honest taxpayers is another important determinant of high individual tax honesty (Hallsworth, List, Metcalfe, & Vlaev, 2017). Thus, confidence-based climates need fewer resources on monitoring and administrative procedures as citizens are committed to cooperate with the authorities. It is therefore advantageous for administrations to build a confidence-based climate or to maintain it.

3. Building, changing, and maintaining interaction climates

The eSSF describes how tax administrations can build, change, and maintain perceived interaction climates ranging from antagonism-based to service-based and confidence-based climates (see Fig. 1). A key element is the notion that tax authorities' use of power may affect trust, and thereby affect interaction climates. In particular, coercive power is assumed to foster mistrust and to hinder implicit trust reactions which, in turn, builds an antagonism-based climate in which the tax authorities and taxpayers work against each other (Gangl et al., 2015; Hofmann, Gangl, Kirchler, & Stark, 2014; Hofmann, Hartl, Gangl, Hartner-Tiefenthaler, & Kirchler, 2017). This notion fits well with research showing that control and sanctioning can undermine trust (Das & Teng, 1998; Kramer, 1999), and fuel suspicion about the good intentions of an administration (Feld & Frey, 2007; Rothstein, 2000) or fellow citizens (Bohnet & Baytelman, 2007; Mulder, Van Dijk, De Cremer, & Wilke, 2006). Experiments also show that coercive power leads to reactance and enforcement, and drives out the moral implications of tax cooperation (Gangl, Pfabigan, Lamm, Kirchler, & Hofmann, 2017).

The eSSF framework also posits that, by combining high coercive power with high legitimate power, tax administrations may increase reason-based trust which can change antagonism-based climates into service-based ones (Gangl et al., 2015; Hofmann et al., 2017). This insight relates to findings showing that legitimate and fair sanctioning systems overcome the negative effects of pure

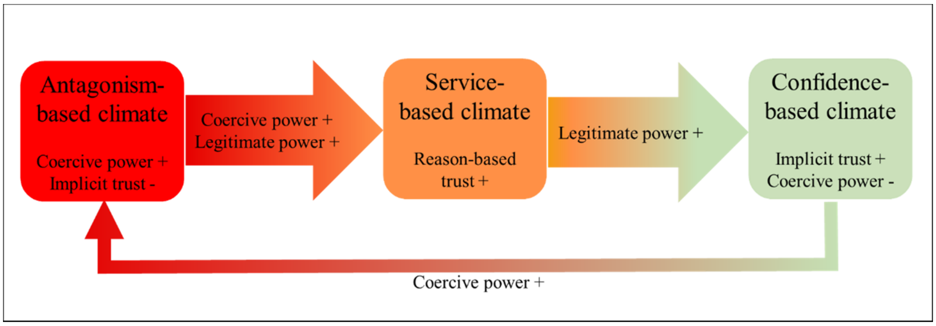

Fig. 1. Building, changing, and maintaining interaction climates according to the eSSF.

sanctioning systems and instead, foster trust in public administrations (Mooijman, Van Dijk, Van Dijk, & Ellemers, 2017). Thus, coercive power combined with legitimate power might foster the feeling that sanctions are used in a professional and targeted way, to restore justice and uphold cooperation (Mooijman et al., 2017; Wenzel, 2003). Actually, there is a large body of literature from other disciplines than tax research that argues that coercion which is used in a fair manner is essential for cooperation (Fehr & Rockenbach, 2003) because it generates instead of destroys legitimacy and trust (Hough, Jackson, Bradford, Myhill, & Quinton, 2010; Tyler, 2011). Based on this literature, the eSSF suggests that coercive power which is combined with high legitimate power gives good reasons to trust, reduces perceptions of an antagonism-based climate and increases perceptions of service-based climates.

Service-based climates fall in-between antagonism-based and confidence-based climates. Over time and with positive experiences related to legitimate power, service-based climates change into confidence-based climates (Gangl et al., 2015). A good reputation and positive experiences with legitimate power can transform reason-based trust into implicit trust. This idea streams from the literature on dual-process theories suggesting that cognitions, initially based on more deliberate processes, over time and through repetition can change to more automatic processes (Evans 2008). Thus, trust first based on and built by deliberate considerations may transcend to new settings through automatic and associative learning processes (Castelfranchi & Falcone, 2010).

Confidence-based climates are jeopardized if authorities use coercive power. In a high trust relationship harsh coercive power might be perceived as a betrayal of trust (Joskowicz-Jabloner & Leiser, 2013). Thus, the eSSF suggests that if individuals perceive a confidence-based climate, only low coercive power combined with high legitimate power can maintain this climate. High coercive power, even when applied legitimately, will be seen as a sign of distrust (Kramer, 1999; Van der Weele, 2009). It will interrupt implicit trust reactions and trigger deliberate considerations about whether or not to trust. Thus, it will erode a confidence-based climate and change it into an antagonism-based climate. However, this assumption that high coercive power combined with high legitimate power erodes a confidence-based climate and thus, only has a positive effect in an antagonism-based climate, to the best of our knowledge, has not yet been tested empirically. This differential effect of legitimate coercion has also rarely been tested related to other theories than the eSSF. This is surprising, as behavioral science scholars state that the effectiveness of any public policy intervention is depending on the context (Ruggeri, 2019).

4. Research aims and research questions

The current psychological research aims to experimentally examine how perceptions of antagonism-based and confidence-based climates can be changed or maintained by the means of perceived coercive and legitimate power and how this affects cooperation, i.e., tax payments. In the following we present our research questions.

Research Question 1 (RQ1): Does high coercive power compared to low coercive power decrease implicit trust, foster a perceived antagonism-based climate and reduce a perceived confidence-based climate?

Research Question 2 (RQ2): Does high legitimate power compared to low legitimate power increase reason-based trust, reduce a perceived antagonism-based climate and foster a perceived confidence-based climate?

Research Question 3(RQ3): Does high coercive power combined with high legitimate power in a confidence-based climate compared to in an antagonism-based climate, decrease reason-based trust, implicit trust, a perceived confidence-based climate and increase a perceived antagonism-based climate?

Research Question 4(RQ4): Does low coercive power combined with high legitimate power maintain reason-based trust, implicit trust and a perceived confidence-based climate in an initial confidence-based climate?

Research Question 5(RQ5): Does high coercive power compared to low coercive power increase tax payments?

Research Question 6(RQ6): Does high legitimate power compared to low legitimate power increase tax payments?

5. Experiment 1

To examine our research questions with a sample of citizens, we conducted an online experiment. We used scenarios to manipulate the interaction between tax authorities and taxpayers in a 2 (antagonism-based versus confidence-based climate) × 2 (low versus high coercive power) × 2 (low versus high legitimate power) within-between factorial design.

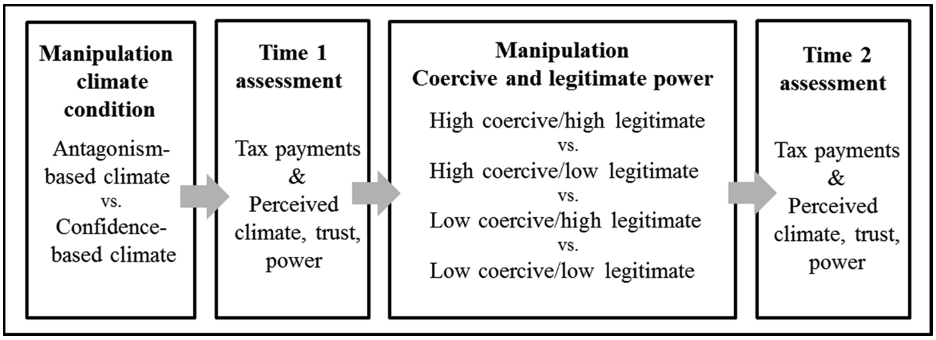

Fig. 2. Experimental procedure.

5.1. *Sample and design*

Two hundred and thirty participants were recruited in Austria online via postings in newspaper comment sections, among family and friends of students, and among Rotary club members. After finalizing data collection, we excluded data of 31 participants (because they indicated in an open comment box to not have followed instructions or because their responding time was longer than the mean plus three standard deviations; these participants did not differ concerning gender or age from the final sample, all $ps < .11$). The final sample of 199 participants consisted of 72.9% men with an average age of 42.2 years ($SD = 12.58$; range 21–74; two missing values on age). Participants were allowed to give multiple answers on their educational status; most had a university degree (51.3%, high school degree: 39.2%, vocational school: 7.0%, vocational training: 6.0%, basic school degree: 3.5%, other: 9.5%). Concerning working status most were employed (66.3%, self-employed: 28.6%, in education: 13.1%, retired 8.0%, maternity leave: 2.5%, at home: 2.5%, unemployed: 2.0%).

5.2. *Procedure*

Participants were randomly assigned to one of eight conditions of a 2 (antagonistic versus confidence climate) × 2 (low versus high coercive power) × 2 (low versus high legitimate power) factorial design (see Fig. 2). At the beginning, participants were asked to imagine being in their first year of business as a self-employed in the fictitious country Chomland. They were also asked to imagine to earn a specific yearly gross income in Euro over several years on which they would have to pay taxes. Moreover, the tax authorities would conduct audits with a 1:6 change (approx. 17%) and those who would be detected as evaders would have to pay back the evaded amount plus the same amount as a fine. After this introduction, the study proceeded with the manipulation of the interaction climate, the first assessment at time 1 (T1) of tax payments, perceived climate, trust and power; the manipulation of coercive and legitimate power and the second assessment at time 2 (T2) of tax payments, perceived climate, trust and power. In addition, sex, age, employment status, and income were assessed as sociodemographic characteristics. The original material in German in presented in the Supplementary material.

5.3. *Experimental manipulations:*

5.3.1. *Manipulation of Perceived Antagonistic- (Confidence-) based climate condition (T1).*

Assume that as a self-employed in Chomland you are talking to another self-employed friend about the tax climate in Chomland. He tells you that the climate between the state tax authorities and the citizens of Chomland is characterized by mutual (mis)trust. The tax authorities assume that most taxpayers evade (pay) taxes and therefore must be prosecuted (respected) and punished (supported). The taxpayers, in turn, feel tortured (understood). They think the authorities are interested to catch taxpayers doing something wrong (in working in the interest of taxpayers). Put yourself in this situation! How do you think you'd be treated personally by this authority? What feelings and thoughts would you have as a taxpayer to that tax office in Chomland? Write down three of these feelings or thoughts:

5.3.2. *Manipulation of Perceived high (low) Coercive and Legitimate Power (T2).*

Participants read that the government of Chomland changed which also led to a change in the tax administration:

The tax authority is now imposing very high (low) penalties for tax evasion and is (not) acting in an exemplary manner. It works both based on legal (illegal) measures and with frequent (rare) controls. In addition, the tax authority is mainly composed of very well (poorly) trained employees who provide (un)professional consulting and apply strict (few) tax audits. Their working principles are based especially (little) on the traceability of their decisions and especially (little) on penalties for tax evasion. Overall, the rigour of controls and the severity of penalties for tax evasion are of great (minor) importance to the tax authority and the accuracy of tax returns is of minor (great) importance.

5.4. Dependent variables

Tax Payments. All participants filled in five identical tax compliance scenarios (Alm, Sanchez, & Juan, 1995), representing five years of a self-employed taxpayer at T1 and T2. In each scenario, participants learned their income (ranging from 20,000 to 30,000 Euro), the tax rate (30%), audit probability (1:6), and fine (twice the evaded amount).

Assume it has passed another year. In this year you have earned a gross income of 35,000,- (30,000; 25,000; 40,000; 20,000) Euro. According to the legal regulations, you have to pay 10,500 (9,000; 7,500; 12,000; 6,000) Euros (30%) as taxes from your gross income. You have various options for claiming payments that are not necessarily tax deductible, or to not declare some revenues. If a tax audit should take place, you will have to pay back the evaded amount as well as a penalty of the same amount. How much tax do you decide to pay (0 to 10,500 (9,000; 7,500; 12,000; 6,000)) Euros?

Participants filled in the concrete number themselves. We calculated the mean of the relative honesty at T1 and T2 resulting in values between 0 (full dishonesty) and 1 (full honesty).

After the tax scenario, we assessed the following scales, adapted from Hofmann et al. (2014), all answered on a seven-point Likert type scale with labeled endpoints (1 = I totally disagree/7 = I totally agree):

Perceived antagonism-based climate was assessed with three items (time 1: Cronbach $\alpha = 0.87$, time 2: $\alpha = 0.88$): Between the tax authority and taxpayers there exists a climate… of inconsiderateness/ruthlessness/cops and robbers.

Perceived Confidence-based climate was assessed with three items (time 1: $\alpha = 0.94$, time 2: $\alpha = 0.95$): Between the tax authority and taxpayers there exists a climate which is characterized by… mutual trust/shared responsibility/cooperation.

Perceived Implicit Trust was assessed with three items (time 1: $\alpha = 0.88$, time 2: $\alpha = 0.90$): I trust the tax authority… mostly without thinking about it/without much concern/in most cases automatically.

Perceived Reason-based Trust was assessed with seven items (time 1: $\alpha = 0.82$, time 2: $\alpha = 0.87$): I trust the tax authority because… there is no alternative/its goals seem plausible to me/it has dedicated employees/it does its job well/it is benevolent to the taxpayers/the stable economic situation guarantees its work/it has the necessary support to carry out its work.

5.5. Assessment of manipulation checks

Perceived Coercive Power (time 1: $\alpha = 0.82$, time 2: $\alpha = 0.91$) was assessed with three items: The tax authority… punishes severely/prosecutes taxpayers with controls and fines/enforces its demands with audits and fines.

Perceived Legitimate Power (time 1: $\alpha = 0.80$, time 2: $\alpha = 0.91$) was assessed with five items. The tax authority … due to the legal situation, is in the position to levy taxes/shares comprehensible information/knows how a correctly filled in tax return should look like/makes all taxpayers understand which taxes they have to pay and how they have to pay them/knows how the correct tax return of every singly taxpayers should look like.

5.6. Statistical power

To examine our research questions, we investigated the direct effect of our manipulations on the dependent variables. Therefore, we conducted 2 (antagonistic-based versus confidence-based climate) by 2 (low versus high coercive power) by 2 (low versus high legitimate power) ANOVAs with perceived antagonism-based climate, perceived confidence-based climate, reason-based trust and implicit trust as well as tax payments as dependent variables at Time 1 and Time 2 as repeated measurement factor. It should be noted that the present between-within subject design requires smaller sample sizes than a pure between subject design (Bellemare, Bissonnette, & Kröger, 2005). Detailed sensitivity analyses were conducted with the program G*power. Generally, sensitivity analyses for an ANOVA: repeated measures, within-between interaction (F-tests, $p = .05$, power = 0.80, six groups, two measures) indicated that with an $N = 199$ we can detect effects of $f = 0.13$ ($d = 0.25$). Concerning RQ1 and RQ2, sensitivity analyses for t-tests for dependent means (two-sided, $p = .05$, power = 0.80) showed that we can detect effects between $d = 0.27$ and $d = 0.29$ (min. $N = 93$; max. $N = 106$). The same sensitivity analyses (t-tests for dependent means, two-sided, $p = .05$, power = 0.80) indicated that for RQ3 ($N = 30$ and $N = 23$) effects of $d = 0.53$ and $d = 0.61$ and for RQ4 ($N = 25$) effects of $d = 0.58$ can be detected. For RQ5 and RQ6, effects between $d = 0.27$ and $d = 0.29$ (min. $N = 93$; max. $N = 106$) are detectable with the current design (t-tests for dependent means, two-sided, $p = .05$, power = 0.80). Cohen (1988) suggests that $d = 0.20$ are small effects, $d = 0.50$ are medium effects and $d = 0.80$ are large effects. Thus, we can detect at least medium effects.

5.7. Manipulation checks

Perceived Tax Climate (Time 1). Participants in the antagonism-based condition perceived the interaction climate as more antagonism-based ($M = 4.29$, $SD = 1.72$) than participants in the confidence-based condition ($M = 1.77$, $SD = 0.99$), $t(197) = 12.05$, $p < .001$; Cohen's $d = 1.73$. In a similar vein, participants in the confidence-based condition perceived the interaction climate as more confidence-based ($M = 5.69$, $SD = 1.48$) than participants in the antagonism-based condition ($M = 2.31$, $SD = 1.25$), $t(197) = 17.44$, $p < .001$, $d = 2.50$. These findings suggest that our manipulation of interaction climate was successful.

Perceived Coercive and Legitimate Power (Time 2): As intended, participants in the high coercive power condition ($M = 5.93$, $SD = 1.21$) perceived more coercive power than participants in the low coercive power condition ($M = 3.65$, $SD = 1.66$), $t(197) = 11.19$, $p < .001$, $d = 1.59$. Participants in the high legitimate power condition ($M = 5.64$, $SD = 1.33$) perceived more legitimate power than participants in the low legitimate power condition ($M = 3.37$, $SD = 1.21$), $t(197) = 12.62$, $p < .001$, $d = 1.79$.

5.8. Results

Detailed analyses of direct and indirect effects are presented in Supplementary material (1.2; 1.3). To examine our research questions, we conducted five 2 (antagonism-based versus confidence-based climate) by 2 (low versus high coercive power) by 2 (low versus high legitimate power) ANOVAs with perceived antagonism-based climate, perceived confidence-based climate, reason-based trust, implicit trust, and tax payments as dependent variables, and T1 and T2 assessment as repeated measurement factor. We also conducted planned comparisons (paired t-tests) to examine the differentiated effect of combinations of coercive and legitimate power in the antagonism-based versus confidence-based climate[1]. Fig. 3 provides an overview of the results. Descriptive results (mean, standard deviation) concerning all main and interaction effects are presented in the Supplementary material.

Perceived Antagonism-based Climate. Supporting the assumptions of RQ1, the Coercive power × Time interaction ($F[1, 191] = 21.45$, $p < .001$, $\eta^2 = 0.10$) showed that low coercive power had no impact ($p = .13$), whereas high coercive power increased the perceived antagonism-based climate (T1: $M = 3.25$, $SD = 1.95$; T2: $M = 4.34$, $SD = 1.96$, $t[105] = 4.53$, $p < .001$; $d = 0.56$).

Supporting arguments underlying RQ2, the Legitimate power × Time interaction ($F[1, 191] = 32.21$, $p < .001$, $\eta^2 = 0.15$) showed that low legitimate power increased the perceived antagonism-based climate (T1: $M = 3.39$, $SD = 2.01$; T2: $M = 4.49$, $SD = 1.88$, $t[98] = 4.07$, $p < .001$; $d = 0.57$), whereas high legitimate power had no effect ($p = .20$).

Supporting assumptions of RQ3, planned comparisons showed that the combination of high coercive and high legitimate power decreased the perceived antagonism-based climate in an initial antagonism-based climate (T1: $M = 4.27$, $SD = 1.68$; T2: $M = 3.41$, $SD = 1.59$; $t[29] = 2.21$, $p = .035$, $d = 0.52$), and increased the perceived antagonism-based climate in an initial confidence-based climate (T1: $M = 1.88$, $SD = 1.15$; T2: $M = 3.33$, $SD = 1.92$; $t[22] = 3.87$, $p = .001$, $d = 0.92$).

Perceived Confidence-based Climate. Supporting assumptions of RQ2, the Coercive power × Time interaction ($F[1, 191] = 9.49$, $p < .001$, $\eta^2 = 0.05$) showed that low coercive power had no impact on the perceived confidence-based climate ($p = .95$). High coercive power, however, decreased the climate (T1: $M = 3.64$, $SD = 2.24$; T2: $M = 2.80$, $SD = 1.87$; $t[105] = 2.91$, $p = .004$, $d = 0.41$).

Supporting arguments underlying RQ2, the Legitimate power × Time interaction ($F[1,191] = 102.11$, $p < .001$, $\eta^2 = 0.35$) indicated that low legitimate power decreased (T1: $M = 3.56$, $SD = 2.05$; T2: $M = 1.91$, $SD = 0.99$, $t[98] = 7.88$, $p < .001$, $d = 1.02$) and high legitimate power increased the perceived confidence-based climate (T1: $M = 3.91$, $SD = 2.23$, T2: $M = 4.66$, $SD = 1.91$; $t[99] = 2.72$, $p = .008$, $d = 0.36$).

Supporting assumptions of RQ3, planned comparisons showed that the combination of high coercive with high legitimate power led to an increase in an initial antagonism-based climate (T1: $M = 2.09$, $SD = 1.40$; T2: $M = 4.02$, $SD = 1.82$; $t[29] = 4.25$, $p < .001$, $d = 1.19$) and to a decrease in an initial confidence-based climate (T1: $M = 5.39$, $SD = 2.10$; T2: $M = 3.72$, $SD = 2.19$; $t[22] = 7.67$, $p = .014$, $d = 0.78$). Supporting arguments underlying RQ4, low coercive power combined with high legitimate power did not strongly influence the perceived confidence-based climate (T1: $M = 5.81$, $SD = 1.19$, T2: $M = 5.69$, $SD = 1.62$, $t[24] = 0.41$, $p = .685$).

Perceived Implicit Trust. Not supporting arguments underlying RQ1, results showed no main effect of Coercive power ($p = .293$) and no Coercive power × Time interaction ($p = .085$).

Supporting assumptions of RQ3, planned comparisons showed that the combination of high coercive with high legitimate power increased implicit trust in an initial antagonism-based climate (T1: $M = 3.38$, $SD = 1.53$; T2: $M = 4.06$, $SD = 1.81$; $t[29] = 2.31$, $p = .028$, $d = 0.40$), whereas the same power combination had no impact in an initial confidence-based climate ($p = .13$). Supporting assumptions of RQ4, the combination of low coercive power with high legitimate power did not have a strong effect on implicit trust in a confidence-based climate (T1: $M = 4.25$, $SD = 1.55$, T2: $M = 4.24$, $SD = 1.82$, $t[24] = 0.07$, $p = .940$).

Perceived Reason-based Trust. Supporting assumptions of RQ2, the Legitimate power × Time interaction ($F[1, 191] = 117.89$, $p < .001$, $\eta^2 = 0.38$) revealed that low legitimate power decreased reason-based trust (T1: $M = 3.82$, $SD = 1.21$; T2: $M = 2.79$, $SD = 0.98$; $t[98] = 8.32$, $p < .001$, $d = 0.94$) and high legitimate power increased reason-based trust (T1: $M = 3.90$, $SD = 1.42$; T2: $M = 4.67$, $SD = 1.41$; $t[99] = 5.05$, $p < .001$, $d = 0.54$).

In agreement with the reasoning underlying RQ3, planned comparisons showed that the combination of high coercive with high legitimate power increased reason-based trust in an initial antagonism-based climate (T1: $M = 3.30$, $SD = 1.22$; T2: $M = 4.41$, $SD = 1.37$; $t[29] = 4.52$, $p < .001$, $d = 0.86$), whereas the same power combination had no impact in an initial confidence-based climate ($p = .54$). Supporting assumptions of RQ4, the combination low coercive power with high legitimate power increased reason-based trust in the confidence-based climate (T1: $M = 4.73$, $SD = 1.26$, T2: $M = 5.14$, $SD = 1.38$, $t[24] = 3.43$, $p = .002$, $d = 0.31$).

Tax Payments. Results showed a main effect for Climate, ($F[1, 199] = 6.024$, $p = .015$, $\eta^2 = 0.03$), indicating that a confidence-based climate led to higher tax payments (T1: $M = 0.88$ [$SD = 0.22$]; T2: $M = 0.86$ [$SD = 0.21$]) than an antagonism-based climate (T1: $M = 0.80$ [$SD = 0.28$]; T2: $M = 0.78$ [$SD = 0.21$]). In addition, the main effect for Time was significant ($F[1, 199] = 4.45$, $p = .036$, $\eta^2 = 0.02$), indicating that at T1 ($M = 0.83$, $SD = 0.26$) tax payments were higher than at T2 ($M = 0.81$, $SD = 0.26$).

[1] All analysis were also conducted as ANCOVAs in which sex and age were used as covariates. All significant effects remained significant and all non-significant effects remained non-significant.

Experiment 1

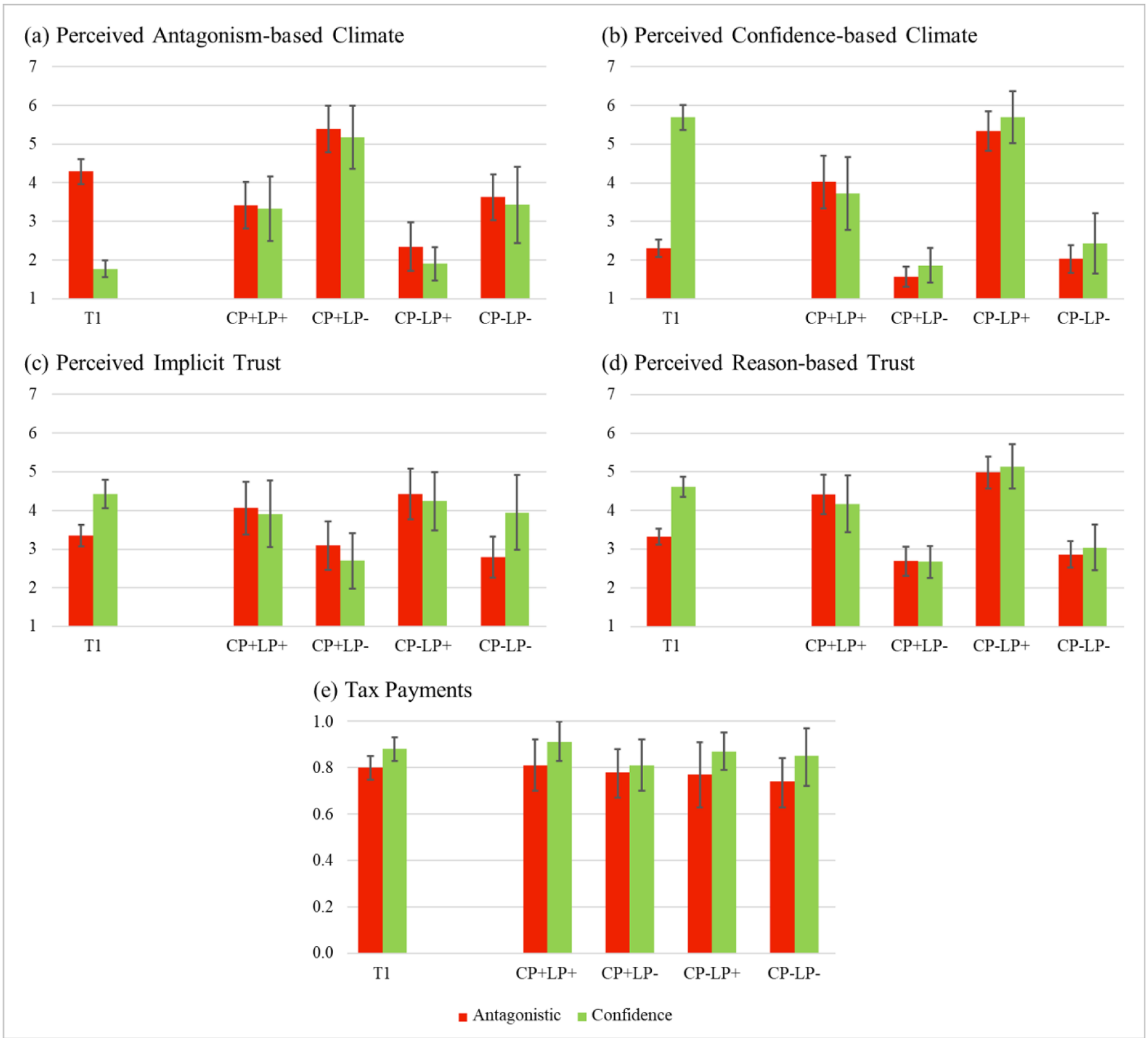

Fig. 3. Overview of results of Experiment 1. *Notes:* The figure shows how, depending on the initial antagonism-based climate (red T1) or confidence-based climate (green T1), the combinations of coercive and legitimate power at T2 led to an increase or decrease of (a) the perceived antagonism-based climate, (b) the perceived confidence-based climate, (c) implicit trust, or (d) reason-based trust (red for the initial antagonism-based climate and green for the initial confidence-based climate). Means are presented with 95% confidence intervals. T1 = Time 1 (in the figure, in contrast to the text, all four T1 assessments are presented in combination). Time 2 assessments are given for CP + LP+ = coercive power high, legitimate power, CP + LP- = coercive power high, legitimate power low, CP-LP+ = coercive power low, legitimate power high, CP-LP- = coercive power low, legitimate power low.

Not supporting assumptions of RQ5, the Coercive power × Time interaction (F[1, 199] = 1.66, p = .20, η^2 = 0.01) was not significant, indicating that the change in tax payments from T1 to T2 was not moderated by coercive power.

Supporting assumptions of RQ6, the Legitimate power × Time interaction (F[1, 199] = 23.19, p < .001, η^2 = 0.11) was significant: Low legitimate power decreased tax payment (T1: M = 0.86, SD = 0.22; T2: M = 0.78, SD = 0.27; t[98] = 4.56, p < .001, d = 0.33), whereas high legitimate power increased tax payments (T1: M = 0.81, SD = 0.29; T2: M = 0.84, SD = 0.26, t[99] = 2.19, p = .03, d = 0.13). No other main or interaction effects were significant (all ps > .10).

5.9. Discussion

Experiment 1 offered first insights into the building, changing, and maintenance of interaction climates. Confirming the assumptions of RQ1, results showed that high but not low coercive power affected the perceived interaction climates. However, in contrast to expectations, no impact on implicit trust was found. These results corroborate studies showing that coercive power triggers an antagonism-based climate, but it has no robust and strong effect on implicit trust (Hofmann et al., 2014, 2017).

Results also supported the assumptions of RQ2 that, compared to low legitimate power, high legitimate power increased reason-based trust, reduced a perceived antagonism-based climate, and fostered a confidence-based climate. In addition, low but not high legitimate power had an impact on the perceived antagonism-based climate and implicit trust. This indicates that low legitimate power might be a more important signal to citizens than high legitimate power. Importantly, our findings showed that also under dynamic conditions legitimate power maintains its characteristic impact on trust, interaction climates, and tax compliance (Hartl, Hofmann, Gangl, Hartner-Tiefenthaler, & Kirchler, 2015; Hofmann et al., 2017; Mooijman et al., 2017).

As assumed in RQ3, compared to in an antagonism-based climate, in a confidence-based climate high coercive power combined with high legitimate power decreased reason-based trust and implicit trust and decreased a confidence-based climate and increased an antagonism-based climate. These results provide first evidence showing that the effect of legitimately applied coercive power depends on the initial climate and, thus, is not always fostering trust. Results also showed, as outlined in the RQ4, that in an initial confidence-based climate low coercive power combined with high legitimate power maintained the confidence-based climate.

In addition, our results did not confirm that high coercive power increased tax payments (RQ5). Supporting assumptions of RQ6, results showed that legitimate power increased tax payments.

6. Experiment 2

To assess the robustness of the results of our first (online) experiment, we conducted a second, laboratory experiment, which allowed us to incentivize tax behavior and collect data in a more controlled environment.

6.1. Sample and design

Two hundred and sixty-three Austrian university students (M_{age} = 25.45 years, SD = 7.79; 56.7% female) were recruited for a behavior-dependent remunerated laboratory study on tax decision-making. Participants could provide multiple answers on their educational status; most had a high school degree (71.5%, university degree: 26.6%, vocational training: 1.5%, basic school: 1.5%, vocational school: 0.4%, other: 1.5%). Participants also were allowed to give multiple answers on their working status; most were in education (66.9%, employed: 31.6%, unemployed: 12.5%, self-employed: 8.0%, maternity leave: 0.8%, retired: 0.8%, at home: 0.4%).

6.2. Procedure

The study was conducted in a computer laboratory in which up to 16 participants were tested simultaneously. The experimental setting, the task, and the manipulations of initial interaction climates, coercive power, and legitimate power were identical to Experiment 1. Importantly, in contrast to Experiment 1, participants knew that the audits and possible fines for detected evasion also would determine their remuneration for participation. We used the fictitious currency ECU. Participants were informed that at the end of the study, based on one randomly chosen tax round, the experimenter would roll a die to determine whether this round would be audited. The number "1″ would result in an audit and the other numbers ("2" to "6") would not. If participants would be caught as evaders they would have to pay back the evaded amount plus the same amount as a fine. Participants also learned that at the end of the experiment their earned income in ECU would be converted into Euro (2800 ECU was equivalent to 1 Euro) and paid out. On average participants earned €5.48 for participating (min. €2.85; max. €7.14).

Dependent Variables. The same dependent variables as in Experiment 1 were assessed: Tax payments, perceived antagonism-based climate (T1: $\alpha = 0.86$, T2: $\alpha = 0.87$), perceived confidence-based climate (T1: $\alpha = 0.92$, T2: $\alpha = 0.90$), implicit trust (T1: $\alpha = 0.88$, T2: $\alpha = 0.90$), and reason-based trust (T1: $\alpha = 0.78$, T2: $\alpha = 0.83$).

Manipulation Check Variables. The same scales as in Experiment 1 were used: Perceived coercive power (T1: $\alpha = 0.81$, T2: $\alpha = 0.90$) and legitimate power (T1: $\alpha = 0.82$, T2: $\alpha = 0.87$).

6.3. Statistical power

The same sensitivity analyses as for Experiment 1 were conducted. Generally, sensitivity analyses for an ANOVA: repeated measures, within-between interaction (F-tests, $p = .05$, power = 0.80, six groups, two measures) indicate that with an $N = 263$ we can detect effects of $f = 0.11$ ($d = 0.22$). Concerning RQ1 and RQ2, sensitivity analyses for t-tests for dependent means (two-sided, $p = .05$, power = 0.80) showed that we can detect effects between $d = 0.24$ and $d = 0.25$ (min $N = 123$; max $N = 140$). The same sensitivity analyses (t-tests for dependent means, two-sided, $p = .05$, power = 0.80) indicated that for RQ3 ($N = 35$ and $N = 28$) effects between $d = 0.49$ and $d = 0.55$ can be detected and for RQ4 ($N = 24$) effects of $d = 0.60$ can be detected. For RQ5 and RQ6, effects between $d = 0.24$ and $d = 0.25$ (min $N = 123$; max $N = 140$) are detectable with the current design (t-tests for dependent means, two-sided, $p = .05$, power = 0.80). Cohen (1988) suggests that $d = 0.20$ are small effects, $d = 0.50$ are medium effects and $d = 0.80$ are large effects. Thus, with the current design we can detect at least medium effects.

6.4. Manipulation checks

Perceived Tax Climate (Time 1): Results showed that participants in the antagonism-based condition perceived the climate as more antagonism-based (M = 4.58; SD = 1.34) than those in the confidence-based condition (M = 2.53, SD = 1.44), t

(261) = 11.96, $p < .001$, $d = 1.41$. In a similar vein, participants in the confidence-based condition perceived the interaction climate as more confidence-based ($M = 5.25$, $SD = 1.49$) than those in the antagonism-based condition ($M = 2.66$, $SD = 1.37$), t(261) = 14.63, $p < .001$, $d = 1.89$. These findings suggest that our manipulation of interaction climate was successful.

Perceived Coercive and Legitimate Power (Time 2): Results showed, as intended, that: (1) participants in the high coercive power condition ($M = 5.77$, $SD = 1.31$) perceived more coercive power than those in the low coercive power condition ($M = 3.78$, $SD = 1.76$; $t[261] = 10.32$, $p < .001$, $d = 1.28$) and (2) participants in the high legitimate power condition ($M = 5.50$, $SD = 1.22$) perceived more legitimate power than those in the low power condition ($M = 3.77$, $SD = 1.40$; $t[261] = 10.68$, $p < .001$, $d = 1.32$).

6.5. Results

Detailed analyses of direct and indirect effects are presented in Supplementary material (2.1). As in Experiment 1, we examined our research questions with repeated measurement ANOVAs and planned comparisons (paired t-tests)[2]. Fig. 4 provides an overview of the results. Descriptive results on all main and interaction effects are presented in the Supplementary material.

Perceived Antagonism-based Climate. Supporting assumptions of RQ1, the Coercive power × Time interaction ($F[1, 255] = 94.66$, $p < .001$, $\eta^2 = 0.21$) showed that low coercive power decreased (T1: $M = 3.58$, $SD = 1.75$; T2: $M = 2.95$, $SD = 1.41$; $t[139] = 3.66$, $p < .001$, $d = 0.40$) and high coercive power increased the perceived antagonism-based climate (T1: $M = 3.59$, $SD = 1.70$; T2: $M = 4.56$, $SD = 1.76$; $t[139] = -5.01$, $p < .001$; $d = 0.56$).

Supporting assumptions of RQ2, the Legitimate power × Time interaction ($F[1, 255] = 64.40$, $p < .001$, $\eta^2 = 0.15$) showed that low legitimate power increased (T1: $M = 3.49$, $SD = 1.69$; T2: $M = 4.34$, $SD = 1.69$, $t[137] = 4.98$, $p < .001$; $d = 0.50$) and high legitimate power decreased the perceived antagonism-based climate (T1: $M = 3.69$, $SD = 1.76$, T2: $M = 2.99$, $SD = 1.59$; $t[124] = 3.53$, $p < .001$; $d = 0.42$).

In agreement with the reasoning underlying RQ3, planned comparisons showed that the combination of high coercive and high legitimate power decreased the perceived antagonism-based climate in an initial antagonism-based climate (T1: $M = 4.48$, $SD = 1.23$; T2: $M = 3.56$, $SD = 1.47$; $t[34] = 3.88$, $p < .001$, $d = 0.75$) and increased the perceived antagonism-based climate in an initial confidence-based climate (T1: $M = 2.26$, $SD = 1.10$; T2: $M = 4.02$, $SD = 1.74$; $t[27] = 5.76$, $p < .001$, $d = 1.17$).

Perceived Confidence-based Climate. Supporting assumptions of RQ1, the Coercive power × Time interaction ($F[1, 255] = 13.93$, $p < .001$, $\eta^2 = 0.05$) revealed that low coercive power had no impact on the perceived confidence-based climate (T1: $M = 3.95$, $SD = 1.97$; T2: $M = 3.81$, $SD = 1.79$; $t[139] = 0.61$, $p = .55$), whereas high coercive power decreased the perceived confidence-based climate (T1: $M = 3.87$, $SD = 1.88$; T2: $M = 3.08$, $SD = 1.73$; $t[122] = 3.77$, $p < .001$, $d = 0.44$).

In agreement with the reasoning underlying RQ2, the Legitimate power × Time interaction ($F[1, 255] = 63.44$, $p < .001$, $\eta^2 = 0.20$) showed that low legitimate power decreased (T1: $M = 4.04$, $SD = 1.82$; T2: $M = 2.61$, $SD = 1.42$, $t[137] = 8.38$, $p < .001$, $d = 0.88$) and high legitimate power increased the perceived confidence-based climate (T1: $M = 3.77$, $SD = 2.03$, T2: $M = 4.42$, $SD = 1.69$; $t[124] = 2.91$, $p = .004$, $d = 0.35$).

Supporting assumptions of RQ3, the combination of high coercive with high legitimate power increased the perceived confidence-based climate in an initial antagonism-based climate (T1: $M = 2.46$, $SD = 1.16$; T2: $M = 4.14$, $SD = 1.82$; $t[35] = 5.57$, $p < .001$, $d = 1.08$) and decreased it in an initial confidence-based climate (T1: $M = 5.73$, $SD = 0.99$; T2: $M = 3.63$, $SD = 1.41$; $t[27] = 7.23$, $p < .001$, $d = 1.71$). In addition, supporting assumptions of RQ4, in an initial confidence-based climate, low coercive power combined with high legitimate power did not influence the perceived confidence-based climate (T1: $M = 5.24$, $SD = 1.73$; T2: $M = 5.18$, $SD = 1.73$; $t[24] = 0.15$, $p = .884$).

Perceived Implicit Trust. In agreement with the reasoning underlying RQ1, the Coercive power × Time interaction ($F[1, 255] = 5.47$, $p = .020$, $\eta^2 = 0.02$) revealed that low coercive power had no impact (T1: $M = 3.74$, $SD = 1.84$; T2: $M = 3.81$, $SD = 1.72$; $t[139] = 0.59$, $p = .56$) and high coercive power decreased implicit trust (T1: $M = 3.83$, $SD = 1.66$; T2: $M = 3.56$, $SD = 1.68$; $t[122] = 2.08$, $p = .04$, $d = 0.16$).

Supporting assumptions of RQ3, planned comparisons showed that the combination of high coercive with high legitimate power led to an increase in implicit trust in an initial antagonism-based climate (T1: $M = 3.30$, $SD = 1.72$; T2: $M = 3.70$, $SD = 1.74$; $t[34] = -2.21$, $p = .034$, $d = 0.23$), whereas the same power combination had no impact in an initial confidence-based climate ($p = .336$). Supporting assumptions of RQ4, results also showed that, the combination low coercive power with high legitimate power did not strongly decrease implicit trust in an initial confidence-based climate (T1: $M = 4.37$, $SD = 1.46$, T2: $M = 4.33$, $SD = 1.75$, $t[24] = 0.34$, $p = .74$).

Perceived Reason-based Trust. Supporting assumptions of RQ2, the Legitimate power × Time interaction ($F[1, 255] = 56.78$, $p < .001$, $\eta^2 = 0.26$) revealed that low legitimate power decreased reason-based trust (T1: $M = 3.84$, $SD = 1.11$; T2: $M = 3.06$, $SD = 1.10$; $t[139] = 7.95$, $p < .001$, $d = 0.71$) and high legitimate power increased reason-based trust (T1: $M = 3.76$, $SD = 1.21$; T2: $M = 4.40$, $SD = 1.21$; $t[139] = 5.95$, $p < .001$, $d = 0.53$).

In agreement with the reasoning underlying RQ3, results of planned comparisons showed that the combination of high coercive with high legitimate power led to an increase in reason-based trust in an initial antagonism-based climate (T1: $M = 3.31$, $SD = 1.34$; T2: $M = 4.31$, $SD = 1.34$; $t[34] = 4.99$, $p < .001$, $d = 0.75$), whereas the same power combination had no impact in an initial

[2] All analyses were also conducted as ANCOVAs in which sex and age were used as covariates. All significant effects remained significant and all non-significant effects remained non-significant.

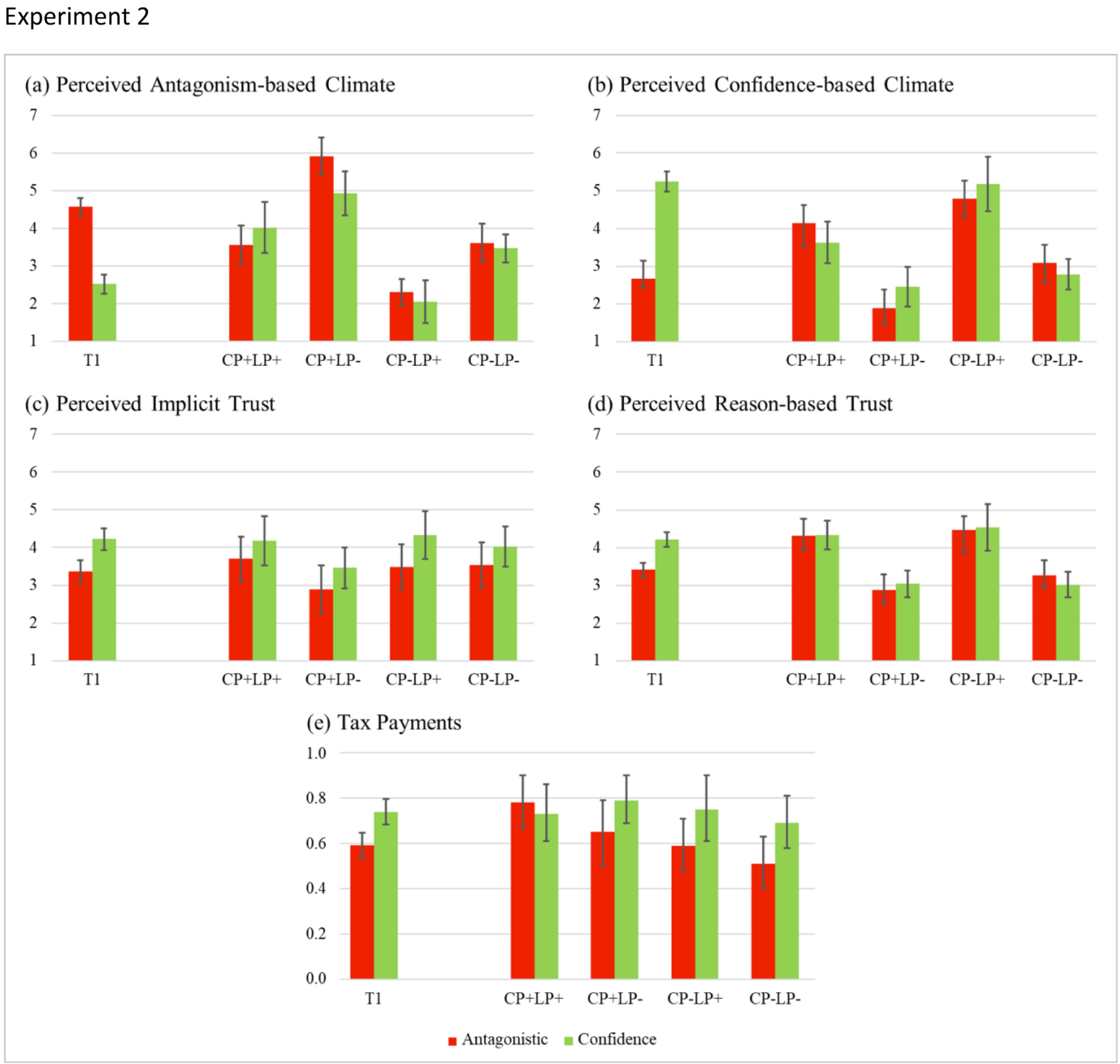

Fig. 4. Overview of results of Experiment 2. *Note:* The figure shows how, depending on the initial antagonism-based climate (red T1) or confidence-based climate (green T1), the combinations of coercive and legitimate power at T2 led to an increase or decrease of (a) the perceived antagonism-based climate, (b) the perceived confidence-based climate, (c) implicit trust, or (d) reason-based trust (red for the initial antagonism-based climate and green for the initial confidence-based climate). Means are presented with 95% confidence intervals. T1 = Time 1 (in the figure, in contrast to the text, all four T1 assessments are presented in combination). Time 2 assessments are given for CP + LP + = coercive power high, legitimate power, CP + LP- = coercive power high, legitimate power low, CP-LP + = coercive power low, legitimate power high, CP-LP- = coercive power low, legitimate power low.

confidence-based climate (T1: $M = 4.32$, $SD = 0.87$; T2: $M = 4.33$, $SD = 0.98$; $t[27] = 0.07$, $p = .94$). Supporting assumptions of RQ4, results also showed that the combination low coercive power with high legitimate power did not strongly influence reason-based trust in the confidence-based climate (T1: $M = 4.28$, $SD = 1.21$, $M = 4.53$, $SD = 1.46$; $t[23] = 1.20$, $p = .242$).

Tax Payments. Results showed a main effect for Climate ($F[1, 255] = 9.98$, $p = .002$, $\eta^2 = 0.04$) indicating that a confidence-based climate led to more tax payments than an antagonism-based climate (T1: confidence-based climate: $M = 0.74$, $SD = 0.33$ vs. antagonism-based climate: $M = 0.59$, $SD = 0.33$; T2: confidence-based climate: $M = 0.74$, $SD = 0.34$ vs. antagonism-based climate: $M = 0.63$, $SD = 0.36$). No other main effects were significant (all $ps > .07$).

Supporting assumptions of RQ5, the Coercive power × Time interaction ($F[1, 255] = 6.03$, $p = .015$, $\eta^2 = 0.02$) showed that independent of the initial climate high coercive power increased tax payments (T1: $M = 0.68$, $SD = 0.33$; T2: $M = 0.74$, $SD = 0.33$, $t[122] = 3.45$, $p = .001$, $d = 0.18$), whereas low coercive power had no effect on tax payments ($p = .59$).

Supporting assumptions of RQ6, the Legitimate power × Time interaction ($F[1, 255] = 8.68$, $p = .004$, $\eta^2 = 0.03$) showed that high legitimate power increased tax payments (T1: $M = 0.64$, $SD = 0.35$; T2: $M = 0.71$, $SD = 0.34$; $t[124] = -3.40$, $p = .001$,

d = 0.21), whereas low legitimate power had no effect (T1: M = 0.68, SD = 0.34; T2: M = 0.66, SD = 0.36, $t[137] = 1.23$, $p = .22$). No other interaction effects were significant (all $ps > .16$).

6.6. Discussion

Experiment 2 replicated Experiment 1′s main findings and offered additional support for the assumptions of our research questions on the effects of coercive power and legitimate power on building, changing, and maintaining climates. In agreement with the rational underlying RQ1, compared to low coercive power, high coercive power reduced implicit trust and increased a perceived antagonism-based climate and decreased a perceived confidence-based climate. Supporting assumptions of RQ2, high versus low legitimate power increased reason-based trust and fostered a perceived confidence-based climate and reduced a perceived antagonism-based climate. In agreement with the assumptions of RQ3, compared to in an initial antagonism-based climate, in a confidence-based climate the combination of high coercive power and high legitimate power decreased implicit trust, reason-based trust, and the perceived confidence-based climate, whereas it increased the perceived antagonism-based climate. Supporting assumptions of RQ4, low coercive power combined with high legitimate power maintained reason-based, implicit trust, and a confidence-based climate. Finally, supporting assumptions of RQ5 and 6, compared to low coercive or legitimate power, high coercive power and high legitimate power increased tax payments.

7. General discussion and conclusions

The aim of the present research was to expand the knowledge on building and maintaining confidence-based climates with regulating public administrations, in particular tax authorities. The present research is based on the extended Slippery Slope Framework which, similar to other theoretical accounts (Adler, 2001; Alm & Torgler, 2011; Haslam & Fiske, 1999), suggests that citizens and public administrations cooperate in different interaction climates ranging from antagonism-based to confidence-based climates. The framework posits that based on these climates, the policy measures needed to build or maintain trust are markedly different (Gangl et al., 2015). In an antagonistic-based climate, authorities can build trust by regulating with legitimate sanctioning systems. In a confidence-based climate, however, coercive control and sanctions, even if they are applied in a legitimate way, erode trust and confidence. Thus, in a prevailing confidence-based climate likely only perceived low coercion combined with high legitimate power can maintain confidence and trust.

Previous research indicated that existing individual perceptions and attitudes are cues that frame the meaning of policy measures (James & Van Ryzin, 2016; Olsen, 2017). However, to the best of our knowledge, no previous research examined experimentally how different initial interaction climates influence the building and maintaining of trust in public authorities. The literature typically reports that public institutions can increase citizens' trust with legitimate sanctioning systems (e.g., Mooijman et al., 2017) without taking situational differences or temporal developments into account. The current two experiments confirm the assumptions of the extended Slippery Slope Framework and showed that only if the individually perceived interaction climate is antagonism-based, legitimate sanctioning systems increase trust and, in turn, foster a confidence-based climate. If the individually perceived climate was already confidence-based, legitimate sanctioning systems can be seen as a betrayal of trust (Joskowicz-Jabloner & Leiser, 2013) and undermine the confidence-based climate. Moreover, our results suggest that high legitimate power combined with low coercive power maintained an initial confidence-based climate.

In addition to these novel findings, the present research corroborates prior research about the independent effects of coercive and legitimate power (Gangl et al., 2017; Hartl et al., 2015; Hofmann et al., 2014, 2017). Coercive power's negative effects on (implicit) trust and cooperation, however, are rather small and not robust (Costa & Bijlsma-Frankema, 2007; Hofmann et al., 2017). This result indicates that there exists no simple negative relationship between coercive power and trust. Legitimate power, on the other hand, seems to have a strong positive effect on reason-based trust, the perception of a low antagonism-based and high confidence-based climate, and on cooperation, independent of the initial interaction climate (Hartl et al., 2015; Hofmann et al., 2014, 2017).

Thereby, our results confirm that initial interaction climates can likely be changed and maintained by tax administrations' coercive and legitimate power, as proposed by the extended Slippery Slope Framework (Gangl et al., 2015). Our exploratory analyses also suggested that initial confidence-based climates lead to higher tax cooperation than antagonism-based climates. In addition, the initial climates can have a prolonged impact on cooperation. An initial confidence-based climate led to more cooperation (i.e., tax payments) than an initial antagonism-based climate even after power was introduced (at T2). Results also showed that legitimate power had a robust impact on reason-based trust and tax payments, whereas coercive power's impact was rather small and instable (Hofmann et al., 2017). This suggests that, compared to coercive power, legitimate power leads to more elaborate processing and highlights the moral implications of behaviour (Gangl et al., 2017). Results in line with previous research (Hartl et al., 2015; Hofmann et al., 2014, 2017) showed that, despite the differentiated impact on trust, coercive and legitimate power did not differ in their overall level of obtained tax compliance. This confirms that there is cooperation without trust (Yang, 2008). However, the cooperation obtained by trust and legitimate power is more efficient as costly monitoring can be reduced.

An important strength of the present research is that we replicated our main finding in two experiments with different samples and different settings. Participants in our online experiment were a bit older and predominantly male, whereas those in our laboratory experiment were younger and predominantly female. In the first experiment, responses had no consequences, whereas in the second experiment, students were paid depending on their decisions. Thus, the two experiments balanced each other's strengths and weaknesses. The converging evidence from two different experiments indicates that our findings are a robust phenomenon

(Hüffmeier, Mazei, & Schultze, 2016). Previous studies on the external validity of laboratory tax compliance experiments found that behavioural patterns of participants (also students) in the laboratory conform to those of taxpayers making similar decisions in naturally occurring settings (Alm, Bloomquist, & McKee, 2015). Nonetheless, tax experiments have like online or laboratory experiments in general, a lower external validity than for example representative survey studies which, however, do not allow causal conclusions (Muehlbacher & Kirchler, 2016). Thus, to increase external validity of the present results, ideally, a large-scale field experiment using administrative data in which coercive and legitimate power are implemented in different countries varying in their antagonistic- and confidence-based tax climate should be conducted (Mascagni, 2018). Finally, we also argue that perceptions of tax climates are probably more important than "actual" tax policy or what is written in the law, as behaviour is built on perceptions. For instance, previous research showed that also media reports can elicit perceptions of powerful authorities and in turn influence the intention to be tax honest (Kasper, Kogler, & Kirchler, 2015). Thus, our results are not only theoretically but also practically relevant.

The current experiments were designed to test the assumptions of the eSSF (Gangl et al., 2015). However, an important related question for future research would be whether there are threshold effects for coercive power. For instance, future experiments, ideally conducted in countries differing concerning their tax climates, could vary the degree of coercive power by using different audit frequencies while keeping a high degree of legitimate power constant, to examine the effect on the perceived confidence-based climate. Such investigations would inform authorities how much coercion is needed or too much in a specific situation. The current research examined how temporal changes influence trust and confidence development. However, also comparisons of the quality of relationship between different administrations might influence the interpretation of administrative measures and, thus, confidence development and change (Olsen, 2017). In addition, the relationship between trust in the administration and trust in fellow citizens and related perceived social norms needs further investigation. Empirical investigations are needed to examine how coercive and legitimate power impact the perceived social norm of cooperation and whether this also leads to trust in other citizens. Future research could also examine whether specific political orientations, religiosity or general trust are related to the perception of a specific interaction climate (Lozza, Kastlunger, Tagliabue, & Kirchler, 2013) and consequently to different reactions to coercive and legitimate policies. Moderator analyses also are relevant to further understand the relationship between coercive power and (implicit) trust.

Practically, the present research suggests that tax administrations are well-advised to consider the specific perceived interaction climate of their taxpayers. Regulating institutions have to develop diagnostic capabilities to be able to plan and process targeted policies to specific groups (Braithwaite, 2003). The perceived interaction climate could be determined by survey studies to select the most effective strategy to foster trust and a confidence-based climate for a specific group of citizens. This targeted approach also would save resources as trusting citizens who likely have a high level of cooperation require less monitoring by expensive auditing schemes (Braithwaite, 2003).

To conclude, the present results show that public administrations likely can change the interaction climate with their citizens by the means of coercive and legitimate power. They need to consider, however, the initial interaction climate, thus, the perceived interaction quality, before choosing the right combination of harsh and soft measures.

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The Relationship Between Austrian Tax Auditors and Self-Employed Taxpayers: Evidence From a Qualitative Study

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A constructive, highly professional relationship between tax authorities and taxpayers is essential for tax compliance. The aim of the present paper was to explore systematically the determinants of this relationship and related tax compliance behaviors based on the extended slippery slope framework. We used in-depth qualitative interviews with 33 self-employed taxpayers and 30 tax auditors. Interviewees described the relationship along the extended slippery slope framework concepts of power and trust. However, also novel sub-categories of power (e.g., setting deadlines) and trust (e.g., personal assistance) were mentioned. Furthermore, also little-studied categories of tax behavior emerged, such as accepting tax behavior, e.g., being available to the tax authorities, or stalling tax behavior, e.g., the intentional creation of complexity. The results comprehensively summarize the determinants of the tax relationship and tax compliance behaviors. Additionally, results highlight future research topics and provide insights for policy strategies.

Keywords: public institutions, public administration, tax compliance, tax evasion, cooperation, power, trust

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INTRODUCTION

The quality of the interaction climate between tax authorities and taxpayers is increasingly deemed important for tax compliance. Whereas studies historically considered simple stimulus-response mechanisms such as the influence of an increased tax rate on tax compliance (Allingham and Sandmo, 1972), today practice, and research increasingly considers the relationship between tax authorities and taxpayers (Braithwaite, 2002; Feld and Frey, 2002; Kirchler, 2007). For instance, the Organization for Economic Co-operation and Development (Organisation for Economic Co-operation and Development [OECD], 2013) promotes cooperative relationships between tax authorities and taxpayers, and encourages tax administrations to build up trust-based interactions with honest taxpayers. These new policy perspectives are supported by theories such as the responsive regulation theory (Braithwaite, 2002, 2003) and the slippery slope framework of tax compliance (Kirchler, 2007; Kirchler et al., 2008). Responsive regulation theory proposes that tax authorities manage their relationships with taxpayers as response to the taxpayers' motivational postures (Braithwaite, 2007). Akin to other theoretical accounts (e.g., Feld and Frey, 2007; Luttmer and Singhal, 2014), the slippery slope framework suggests that two key determinants (i.e., the power of authorities and trust in authorities) related to classical economic deterrence factors such as audits and fines, as well as psychological factors related to fairness and reciprocity rules, shape the tax climate, and in turn, tax compliance (Gangl et al., 2015). However, in spite of practical acknowledgment and the existence of several theoretical models concerning the relationship climate, empirical knowledge regarding the determinants that shape the interaction process and resulting tax behavior remains to be further investigated.

The first aim of the present explorative research is, based on in-depth interviews with Austrian taxpayers and tax auditors, to empirically examine the theoretical constructs regarding the actors' relationship and tax compliance behaviors that are defined in the extended slippery slope framework. The second aim is, to identify novel sub-categories about tax behavior and its perceived relationship antecedents to generate new research hypotheses. In contrast to quantitative experimental and survey approaches, which often over-simplify compliance behavior, use closed questions and investigate student samples, our interview-based approach which includes both tax auditors and self employed taxpayers, will increase the practical relevance of insights into the tax compliance relationship, allowing to detect concepts that have not been considered so far. There is only one previous study, to the best of our knowledge, which investigates taxpayers and tax auditors (Kirchler et al., 2006).

THEORETICAL BACKGROUND

The Extended Slippery Slope Framework

The slippery slope framework was developed as a conceptual tool to organize research on tax compliance determinants into two dimensions: power of authorities and trust in authorities (Kirchler et al., 2008). Power defines research predominantly in economics and is defined as the potential and ability of an entity to influence another entity's behavior (Freiberg, 2010). Trust summarizes predominantly psychological approaches and refers to taxpayers' perception of tax authorities' competence and their behavior in the interest of the community (Kirchler et al., 2008). Both determinants affect tax behavior, although power fosters an antagonistic relationship climate, whereas trust leads to a synergistic climate. In the case of the former, compliance is based on strict enforcement, whereas in the latter, compliance is based on voluntary or committed cooperation (Kirchler et al., 2008).

According to the extended slippery slope framework (Gangl et al., 2015), power, and trust are further differentiated. For instance, the power of authorities is divided into coercive and legitimate power (Turner, 2005; Tyler, 2006). Coercive power is related to classical economic theories on tax compliance, incentivizing a rational taxpayer through punishment, and rewards (Becker, 1968; Allingham and Sandmo, 1972). Legitimate power, on the other hand, summarizes social and legal psychological ideas about influencing citizens by gaining their acceptance through being perceived inter alia as legitimized and as acting professionally (Tyler, 2006). The dimension of trust in authorities refers to dual process theories (i.e., system 1 and system 2) on cognition (e.g., Kahneman, 2003) and trust (e.g., Lewicki and Bunker, 1996; Misztal, 1996), and differentiates trust in reason-based and implicit trust (Castelfranchi and Falcone, 2010). Reason-based trust is defined as taxpayers' deliberate conclusion that the tax authorities can be trusted based on a series of criteria such as tax authorities' perceived goals. Finally, implicit trust is defined as inter alia taxpayers' automatic and unconscious trust reactions to stimuli such as an official-looking document (Gangl et al., 2015). In order to explain the development of and change in tax relationships, the extended slippery slope framework integrates a wide range of theories on cognition (Kahneman, 2003; Evans, 2008), leadership (French and Raven, 1959; Avolio and Bass, 1991), and social and organizational relationships (Lewin et al., 1939; Ouchi, 1979; Haslam and Fiske, 1999; Adler, 2001; Alm and Torgler, 2011).

Tax Authorities' Power

In the following section, and based on the extended slippery slope framework's concepts of power and trust, we review and categorize research on tax compliance determinants, particularly relationship determinants as well as the different qualities of tax compliance behaviors, by incorporating the latest findings from psychological, economic, legal, and administrative research. After each section, we present our research questions.

Coercive power

Coercive power is defined as the possibility of deterring tax evasion and fostering tax honesty by using enforcement and incentives. Based on the theory of the social bases of power (French and Raven, 1959; Raven, 1993; Raven et al., 1998) and in line with research on taxes, we differentiate between punishment power and reward power as forms of coercive power. Although Raven et al. (1998) called this forms of power harsh power, we stay with the term coercive power as previous research on regulation of citizens' behavior (Turner, 2005).

Punishment power in the form of audits and fines is probably the instrument that is most commonly used by tax authorities to enforce compliance (e.g., Andreoni et al., 1998; Kastlunger et al., 2009; Kirchler et al., 2010; Castro and Scartascini, 2013). Punishment power operates in line with the standard economic model of criminal behavior (Becker, 1968) and the standard model of tax compliance (Allingham and Sandmo, 1972). The models state that individuals evaluate the probability and consequences of audits and punishment of law violation. Given that individuals and firms are assumed to seek profit maximization, next to income and tax rate, compliance is essentially considered a function of detection probability, and severity of sanctions (Allingham and Sandmo, 1972; Srinivasan, 1973). Thus, all possibilities to coercively enforce compliance by maximizing detection, e.g., based on third-party information or withholding taxes, increase tax honesty (Luttmer and Singhal, 2014). More recent research has additionally examined public disclosure in the form of transparent tax returns (Bø et al., 2014) or black lists (Perez-Truglia and Troiano, 2015) as coercive measures to deter tax evasion.

> *Research question 1a:* Do tax auditors and taxpayers perceive categories of punishment power (audits, fines and public disclosure)?

Research question 1b: Do tax auditors and taxpayers perceive categories of punishment that have not been considered in the literature?

Akin to punishment power as negative reinforcement, reward power in the form of positive reinforcement is considered in the decision to comply or not comply (Feld et al., 2006). Rewards for compliant behavior are also considered a form of coercion, and are likely to crowed-out intrinsic motivation to cooperate (Deci, 1971; Frey, 1997). Tax research on the effects of monetary and non-monetary rewards is rather scarce and findings are inconsistent (Falkinger and Walther, 1991; Torgler, 2002; Feld et al., 2006; Feld and Frey, 2007; Kastlunger et al., 2010). For instance, studies examine the impact of lottery tickets (Bazart and Pickhard, 2011), wellness vouchers (Koessler et al., 2016), or the promise of privileged treatment (Simone et al., 2013). Although, rare empirical evidence for the effect exists, some non-governmental organizations (NGOs) hope to increase tax compliance by honoring honest taxpayers through positive disclosure (see for example[1]).

Research question 2a: Do tax auditors and taxpayers perceive categories of reward power (monetary, non-monetary or positive disclosure)?

Research question 2b: Do tax auditors and taxpayers perceive categories of reward power that have not been considered in the literature?

Legitimate power

In the extended slippery slope framework, legitimate power is characterized by the legitimacy of the tax authority (Hofmann et al., 2014; Gangl et al., 2015). Based on theories of legitimacy (Tyler, 1990, 2006; Turner, 2005) and social bases of power (French and Raven, 1959; Raven et al., 1998), legitimate power is seen as soft power, comprising positional power, information power, expert power, and referent power. Although Raven et al. (1998) called this form of power soft power, we stick with the terminology of the regulation of citizens' behavior, and call soft power legitimate power (Turner, 2005). Positional power refers to the perception that the authority has the legal right to levy taxes. Information power is based on tax authorities' circulation of relevant information. Expert power means that tax authorities are perceived as skilled and professionally trained. Referent power refers to authorities' capacity to influence taxpayers based on their own positive image (Raven et al., 1998). The different categories of legitimate power are related to the perception of a transparent and fair tax system (Wenzel, 2002; Bradford et al., 2014), facilitating the taxpayer's voice, and participation (Pommerehne and Weck-Hannemann, 1996; Feld and Tyran, 2002) in levying and spending taxes. Rich empirical data regarding the effectiveness of proxies for legitimate power indicate a positive relationship between customer orientation, perceived legitimacy, provision of relevant information and supportive procedures, knowledge and skills, and tax compliance (Alm et al., 2010; Hartner et al., 2011; Gangl et al., 2013; Hofmann et al., 2014).

Research question 3a: Do tax auditors and taxpayers perceive categories of legitimate power (positional, expert, information and referent)?

Research question 3b: Do tax auditors and taxpayers perceive forms of legitimate power that have not been considered in the literature?

Taxpayers' Trust in the Tax Authority

Citizens' trust in authorities is of paramount importance with regard to law compliance (e.g., Tyler, 1997; Jackson et al., 2012) and this is particularly relevant in the tax relationship (e.g., Scholz and Lubell, 1998; Feld and Frey, 2002; Murphy, 2004; Kirchler et al., 2008; Hammar et al., 2009; van Dijke and Verboon, 2010). Taxpayers trust the tax authority either deliberately or implicitly (Castelfranchi and Falcone, 2010; Gangl et al., 2015).

Implicit trust

Implicit trust in the tax authority originates from an automatic, unconscious reaction based on associative and conditional learning processes (Castelfranchi and Falcone, 2010). Based on such associative experiences, individuals learn that in some situations they can trust to a greater degree than in others. For instance, if taxpayers possess positive experiences of interacting with the tax authority, they are more likely to trust them in the future without thinking about it (Gangl et al., 2015; see also trust based on reciprocity and reputation, e.g., King-Casas et al., 2005). Implicit trust is related to a perceived shared identity and shared values (Castelfranchi and Falcone, 2010). Individuals are more likely to trust those who they perceive similar to themselves (e.g., concerning sociodemographic background) and who share their views, interests and values (Kirchler et al., 2006). Relatedly, a perception that the tax authorities treat taxpayers as equal partners and exhibit empathy for their problems is likely to trigger implicit trust (Gangl et al., 2015). Finally, cues such as official documents, smiling faces and friendly voices can also stimulate automatic trust. Empirical studies show that proxies of implicit trust such as nudges (Behavioural Insights Team, 2011; Chirico et al., 2017) of social norms (Hallsworth et al., 2017) or reminders of a shared national identity (Gangl et al., 2016a,b) can increase tax compliance. However, the quantitative approach of most preexisting studies may explain why empirical evidence regarding the relevance of implicit trust on tax behavior remains scarce (Hofmann et al., 2014). Nevertheless, many tax authorities seek to trigger implicit trust, such as through advertisements or appealing website designs.

Research question 4a: Do tax auditors and taxpayers perceive categories of implicit trust (automatic trust, experience, shared values, empathy, and perception of being equal stakeholders)?

Research question 4b: Do tax auditors and taxpayers perceive categories of implicit trust that have not been considered in the literature?

Reason-based trust

Reason-based trust is based on deliberate considerations concerning taxpayers' dependency on the tax authorities and the

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importance of tax authorities' goals (Castelfranchi and Falcone, 2010; Gangl et al., 2015). In addition, taxpayers consider internal factors of the tax authorities such as competence, motivation, and benevolence and external factors, which may be relevant for the work of the authorities, such as economic and political conditions (Castelfranchi and Falcone, 2010; Hofmann et al., 2014; Gangl et al., 2015). Considerable empirical and theoretical evidence exists concerning the positive effects of deliberate forms of trust on cooperation, such as knowledge-based trust (Lewicki and Bunker, 1996) and rational trust (Ripperger, 1998). Conceptually, reason-based trust, especially internal factors, overlap with legitimate power (e.g., Malhotra and Murnighan, 2002; Hofmann et al., 2017a). They represent two sides of the same tax relationship: the legitimate power of the authorities is a perception of influence, and reason-based trust of taxpayers is the decision to be vulnerable based on the influencing entity and its environment. Numerous studies have demonstrated that reason-based trust (e.g., Murphy, 2004; Wahl et al., 2010; Gangl et al., 2013; Kogler et al., 2013) and its proxies such as perceived institutional quality and corruption (e.g., Cummings et al., 2009; Torgler and Schneider, 2009; Gangl et al., 2017) are essential for tax compliance.

> *Research question 5a:* Do tax auditors and taxpayers perceive categories of reason-based trust (dependency, shared goals, internal factors and external factors)?
> *Research question 5b:* Do tax auditors and taxpayers perceive categories of reason-based trust that have not been considered in the literature?

Tax Compliance Behavior

In the slippery slope framework, and similar to numerous theoretical and empirical accounts, only small subsets of tax compliance behaviors (such as honest payment and tax avoidance; see however Kirchler and Wahl, 2010, who developed scales on voluntary compliance, enforced compliance, tax avoidance, and evasion) are distinguished (Kirchler et al., 2008; Gangl et al., 2015). Furthermore, in the seminal work by Allingham and Sandmo (1972) and Srinivasan (1973), tax compliance is defined as the amount of honestly paid, or evaded tax. Most empirical work applying laboratory experiments and surveys is based on this simplified view on tax compliance (Alm et al., 1995; Hartl et al., 2015; Hofmann et al., 2017b). However, practitioners such as tax administrations (Organisation for Economic Co-operation and Development [OECD], 2004) hold a more complex understanding of tax compliance. They see it as consisting of, e.g., correct registration as a taxpayer, completing tax reports on time, reporting complete and accurate information, and paying taxes on time. Others differentiate between filing compliance, payment compliance, and reporting compliance (Brown and Mazur, 2003), or administrative compliance (i.e., registering, reporting, and time requirements) and technical compliance (i.e., taxes are calculated based on the technical requirements of the law, Organisation for Economic Co-operation and Development [OECD], 2001). Finally, tax authorities distinguish commercial tax avoidance as legal tax reduction within the brackets of the law (e.g., claiming refund for investments) from aggressive tax avoidance, as tax reduction against the spirit of the law (e.g., cross-border profit shifting and tax flight; Organisation for Economic Co-operation and Development [OECD], 2001).

> *Research question 6a:* Do tax auditors and taxpayers perceive different categories of tax compliance behavior (honest taxpaying, tax evasion, tax registration, timely filing, correct reporting, commercial tax planning, and aggressive tax planning)?
> *Research question 6b:* Do tax auditors and taxpayers perceive categories of tax behaviors that have not been considered in the literature?

METHOD: QUALITATIVE INTERVIEW STUDY

In order to answer the research questions and to depict the perception of the tax stakeholders, we followed a qualitative approach and conducted semi-structured interviews. Qualitative psychological research investigates the distinctive characteristics of experience of persons and is usually distinguished from quantitative methods adapted from natural sciences (Fischer, 2005). A qualitative approach is appropriate for investigating exploratory questions, such as the tax auditors' and taxpayers' perception of power and trust, as well as tax behaviors, as it gives voice to the subjective experience of the interviewees. Our qualitative approach builds on social constructivism and social representations theory, proposing that knowledge and attitudes about tax issues are gained through social interaction, communication and discussion in peer-groups, and insights from media reports (c.f., Moscovici, 1998; Peters, 2010).

We interviewed self-employed taxpayers and tax auditors as relevant stakeholders. We choose self-employed because compared to employed taxpayers in Austria their taxes are not withheld by the employer; rather they need to declare their gross income and pay taxes out of pocket. Thus, they have likely more experience with interactions with the tax authorities. In the following section, we present the sample, recruitment technique and interview procedures for both self-employed taxpayers and auditors. The results are presented subsequently.

Self-Employed Taxpayers

Sample

In total, 33 Austrian self-employed taxpayers with small to medium size businesses participated in the study. Participants (15 of whom were female) were on average 44.34 years old ($N = 32$; one person did not indicate his/her age; $SD_{\text{age}} = 11.69$), and had on average 10.58 years ($SD = 10.31$) of experience as self-employed persons. The number of employees working for the self-employed taxpayers ranged from 0 (48.5%) to 50 (5.9%); 41.2% of those who employed personnel claimed to only have one employee. The majority of participants reported an annual turnover of less than 25,000 EUR (nine taxpayers), or between 25,000 EUR and 50,000 EUR (nine taxpayers). The majority of self-employed taxpayers (17 taxpayers) utilized a tax advisor.

Concerning their experience with the tax authority, 11 taxpayers reported that they had been audited at least once.

Procedure and Material

Interviewees were recruited via a market research agency in 2013. All interviews were conducted by one interviewer, accompanied by two assistants, who tape-recorded the interviews. Interviews were semi-structured, lasting between 30 and 90 min. Following the interview, a short questionnaire was completed to gather information regarding the participants' demographics and their businesses (see **Supplementary Material**). Interviews opened with a general question concerning taxpayers' experience with the tax authority, thus affording them full freedom of expression. Subsequent questions delved into the tax authorities' potential to affect tax behavior (power of the tax authority), taxpayers' trust in the authority, and the impact of power and trust on their tax compliance. The interview questions were on taxes in general and did not specify a specific kind of tax. The interview guideline and questions were developed with the help of an experienced advisory board of tax researchers, including improvement loops based on test interviews. The interview materials can be found in the **Supplementary Material**, the transcripts can be found at osf.io/nv285/. Participants were remunerated with 50 EUR (approximately 53.35 USD).

Tax Auditors

Sample

Overall, 30 Austrian tax auditors (13 of whom were female) who were on average 46.73 years (*SD* = 4.59) old participated in the study. Tax auditors reported their job experience, ranging from 6 years (3.3%) to 34 years (3.3%), with an average 20.70 years (*SD* = 7.52). Participants worked as tax auditors in three different eastern federal states of Austria; half were from the city of Vienna (53.3%) and half were from the country side (Styria: 26.7% and Lower Austria: 20.0%). Half of the tax auditors were responsible for auditing small and medium businesses, and the other half were responsible for auditing large businesses.

Procedure and Material

Access to 30 experienced tax officers was provided by the Austrian Ministry of Finance in 2013, which ensured that the participants were evenly distributed in terms of sex, urban vs. rural area, and area of responsibility. The interviews were conducted in the offices of the tax auditors by two interviewers. Interviews were semi-structured and lasted between 30 and 130 min. The interviews opened with a general question regarding tax auditors' work, followed by questions about tax authorities' potential to shape tax behavior (power of tax authorities), the role of taxpayers' trust in the tax authorities, and the impact of power and trust on tax compliance. The interview questions were on taxes in general and did not specify a specific kind of tax. The interview materials can be found in the **Supplementary Material**, the transcripts can be found at osf.io/nv285/. No monetary or other form of remuneration was provided for participation, but the interviews were conducted during the tax auditors' working hours.

Analytical Procedure

The interviews with self-employed taxpayers and tax auditors were transcribed and analyzed using the qualitative analysis software NVivo (Qsr International Pty Ltd, 2010). The analysis followed an inductive as well as deductive approach. Data were analyzed using qualitative content analysis (QCA; Schreier, 2012), i.e., deriving codes from the data, as well as the extended slippery slope framework to provide codes. QCA is a method for systematically describing and conceptualizing the meaning of qualitative data, such as interviews, by categorizing parts of the material using a coding frame (Schreier, 2012). QCA is flexible in such as it is made to fit the material; thus, the coding categories are not purely theory-based but data driven. After data collection, two tax researchers read through the interviews, and build a coding frame based on the basic text and along the extended slippery slope framework. After the coding process, two other researchers who were also well-acquainted with tax research examined each of the categories, checking for homogeneity within and clear discrimination between them.

RESULTS

Perception of Tax Authorities' Power

In the following section, we present the results on perceived power. **Table 1** summarizes the findings. The results indicated that tax auditors and taxpayers perceived the categories known in the literature, as well as mentioned some additional categories of authorities' power.

Coercive Power

Punishment power

As regards research questions 1a,b, the interviews illustrated that the tax stakeholders do perceive the categories of punishment power discussed in the literature (audits, fines, and public disclosure). Punishment power consisted of the categories of "punishment" (e.g., financial fine or imprisonment), "audits" (control mechanisms as well as monitoring), "negative disclosure" (public exposure of tax evaders), and a new category, "deadlines" (setting deadlines e.g., for taxpayers to submit documents). As one tax auditor claimed: "*And if he stood me up the fifth time, I write beneath, that I want a deadline." Like, "Until that day you have to present the documents*" (Tax auditor #08, male, 41 years). It is of particular interest that "audits" played a significant role, as this category was mentioned more often than any other type of power measure. As one self-employed taxpayer (#13, male, 43 years) claimed: "*Well, without monitoring it is not working for sure.*"

Reward Power

Both tax auditors and taxpayers reported monetary and non-monetary rewards, as well as positive disclosure as aspects of tax authorities' reward power (research question 2a). In particular, reward power consists of the monetary "gain" (e.g., tax reduction for taxpayers who pay on time – obviously, depending on legal constraints), non-monetary "praise" (e.g., "thank you letter" or positive feedback), "positive disclosure" (publicly praising

TABLE 1 | Results for tax authorities' power.

	Categories	Examples
Coercive power		
Punishment power	Punishment/fines Audits Disclosure – negative Deadlines	*(Self-employed taxpayer #26, female, 40 years)* *"Somehow it is always a form of punishment [short laugh]"*
Reward power	Monetary: gain Non-monetary: praise Disclosure – positive Accommodation Active assistance	*(Tax auditor #21, male, 50 years)* *"Yes, this is actually a policy taken up more strongly in the last years by the financial administration, with which we want to reward the honest"*
Legtimate power		
Position power		*(Tax auditor #16, male, 49 years)* *"Well, I would see it in a way, that when I go out there, I want to leave the impression of a persisting instance, which ensures that the equality of taxation is adhered to"*
Expert power		*(Self-employed taxpayer #28, male, 60 years)* *"The tax authority is certainly the expert"*
Referent power	Image	*(Self-employed taxpayer #23, female, 43 years)* *"When I identify myself with the state and say 'OK, the money is used for this or that and Austria is very worth living and therefore, we need taxes,' this indeed increases tax honesty"*
Information power	Individual information Attain information oneself Publicity	*(Self-employed taxpayer #10, male 31 years)* *"Actually, that would be normal. That wouldn't be so unusual, for example if you receive some kind of information per mail"*
Transparency		*(Self-employed taxpayer #13, male, 43 years)* *"The most important point would rather be transparency, more transparency on the part of the tax authority, so you know: the activity, the income, the expenditures, the taxes that you pay"*
Justice	Unfairness	*(Tax auditor #29, male, 50 years)* *"The person vis-à-vis cannot say, 'I won't declare parts of my income,' he has to pay taxes, no matter what tax rate. It is simply about justice"*
Participation		*(Self-employed taxpayer #16, male, 34 years)* *"Of course there is the idea, that you can for example sort of decide, what taxes are used for, well. To a certain degree, entirely or third. I want to promote this, I want to promote this. Yes, this would simply be a marvelous way to see, where you want to get that to"*

Direct translation.

honest taxpayers), and the new categories (research question 2b) of "accommodation" (the authority demonstrates goodwill, for instance when taxpayers can choose the date of an appointment), and "active assistance" (employers of the authorities go beyond their role, e.g., by providing helpful tips to honest taxpayers). Tax auditors reported that they reward taxpayers by praising them during audits: "*Yes, yes. So that is really important. People like that VERY much, when you praise them. I mean, everyone needs praise and even if they then [ask]: "So, is that alright like that?" "Yeah, you did an awesome job."* (Tax auditor #12, female, 48 years). Some self-employed taxpayers noted that they perceived a lack of additional tax payment a reward in itself. Many self-employed taxpayers criticized the random application of rewards, believing that individual tax auditors offer tax reductions with varying levels of frequency. For instance, one self-employed taxpayers compared the auditing situation to a bazaar, whereby taxpayers and tax auditors are able to bargain about positive and negative reinforcement: "*And what makes me angry is that it became like a bazaar. So really like at a bazaar."* (Self-employed taxpayer #23, female, 43 years).

Nevertheless, most of the self-employed taxpayers wanted the tax authority to have greater opportunities to reward desired behavior. As one self-employed (#06, male, age not indicated) said, *"Just introduce bonus systems. But this is already what we do today . . . what I have said before. Well, just bonus systems. Or MORE bonus systems."*

Legitimate Power

Concerning research questions 3a,b, the interviews revealed that legitimate power consists of "position power" (the authority has the right to levy taxes), "expert power" (the authority and its employees are perceived to be experts), "referent power" (the authority has a positive image), "information power" (the authority is circulating information), "transparency" (all tax-related processes are transparent for the taxpayers), "justice" (the authority is treating all taxpayers fairly), and "participation" (taxpayers can take part in decision-making, e.g., how taxes are used). A tax auditor noted that transparency as information power is an important topic for self-employed taxpayers, especially when it comes to the action taken by the tax authority: *"You have to show a lot of transparency in what you are actually doing"* (Tax auditor #14, male, 38 years). Both types of self-employed taxpayers as well as tax auditors reported mechanisms of legitimate position power and information power more frequently than the other categories of legitimate power. A self-employed taxpayer (#01, female, 52 years) mentioned *"[. . .] that* *the tax authorities are legitimate, or simply that they are in the position, that they then use strategies, well they can implement this as strategies at taxpayers."* One tax auditor emphasized that it was important to refer to the legal position of the institution of which he is a representative: "*There have to be rules and I have to tell the people "I am the tax authority' when I come to them*" (Tax auditor #33, male, 46 years).

Perception of Trust

Both self-employed taxpayers and tax auditors reported that taxpayers trust the tax authority implicitly as well as based on deliberation (**Table 2**). All categories of implicit and reason-based trust (Hofmann et al., 2014; Gangl et al., 2015) were mentioned in the interviews. In addition, new categories were found (e.g., implicit trust: personal support; reason-based trust: respect).

Implicit Trust

In line with research question 4a, both types of tax stakeholders reported that implicit trust consists of the categories "blind trust" (trusting the authority without thinking about it), "sympathy and communication" (taxpayers can communicate openly with employees of the tax authority), "empathy" (feeling of being understood by the authority), "shared values" (the authority and the taxpayers share the same values, or *weltanschauung*), and "equal stakeholders" (the tax authority and taxpayers interact at eye level). Furthermore, as regards research question 4b, "personal support" (taxpayers receive personal support from the employees of the tax authority) was mentioned as a new category. Some interviewees spoke quite generally of fundamental or basic trust ("Grundvertrauen") in the tax system. As noted by a self-employed taxpayer: *"Well, I believe that in Austria there is a fundamental trust in the state system and therefore also in the system of taxation."* (Self-employed taxpayer #12, female, 27 years). Personal support was considered important for implicit trust: "*So if you know the face behind the institution, that tells you: "Come here, we talk about it*" (Self-employed taxpayer" #11, female, 40 years), given that "*for the entrepreneur a personification of the tax office occurs*" (Tax auditor #30, male, 40 years). Many self-employed taxpayers refused to use the phrase "blind trust" when discussing their trust in the tax authority, given that it has a negative connotation, being associated with naivety toward the authorities' actions. They preferred instead the phrase "automatic trust." As one self-employed taxpayer (#03, female, 35 years) suggested: *"Well, simple blind, blind trust that shows a lot of naivety."*

TABLE 2 | Results for taxpayers' trust in the tax authority.

	Category	Examples
Implicit trust	Blind-Automatic trust Sympathy and communication Empathy Experiences Shared values Equal partners Personal Support	*(Self-employed taxpayer #12, female, 27 years)* *"I think, that in Austria, a level of basic trust in the state system and therefore in the tax system exists"*
Reason-based trust	Common goal Internal factors Dependency External factors Respect	*(Self-employed taxpayer #07, female, 53 years)* *"No, no, I think (...) that doesn't work with sympathy, that really only works due to facts and actions"*

Direct translation.

Reason-Based Trust

The interviews revealed that stakeholders do perceive the categories of reason-based trust discussed in the extended slippery slope framework (research question 5a). Reason-based trust consists of the categories "common goal" (tax authority and taxpayers share the same goals), "internal factors" (employees at the tax authority are competent, motivated, and benevolent), "dependency" (taxpayers depend on the tax authority and therefore trust the authority), and "external factors" (the perception of opportunities and dangers). Furthermore, as a novel category of reason-based trust (research question 5b), "respect" (respectful communication between the tax authority and the taxpayers) was mentioned. Tax auditors in particular claimed that interaction with taxpayers was most successful where there is mutual respect: *"As said before, the encounter. Every person needs to be respected*" (Tax auditor #21, male, 50 years), *"and taking them [the taxpayer] seriously and not talking deprecatory to them."* (Tax auditor #09, male, 41 years). The interviews revealed that media reports concerning the unnecessary expenditure of taxes were perceived as important external factors that hinder the work of the tax authority. One tax auditor (#17, male, 49 years) stated: *"The media – you have said so already – [...] that has an extreme effect."* A second (Tax auditor #27, male, 54 years) argued: *"Based on different media reports this – how shall I say it – trust is nowadays, I believe, is not particularly high."* Accordingly, self-employed taxpayers referred to negative media coverage of the topic of taxes. On the one hand, they referred to scandalous tax evasions by prominent people, but on the other hand they talked about the impression that their tax payments are wasted, e.g., "*Through the media you get to know how much is squandered*" *(self-employed taxpayer #11, female, 40 years).*

Tax Compliance

Taxpayers as well as tax auditors reported a differentiated view of tax compliance. As shown in **Table 3**, both groups cited the relevance of behaviors such as "tax honesty," "tax evasion," and "tax avoidance" for compliance and non-compliance, which relate to categories that have already been discussed in the tax literature (research question 6a). However, "tax registration," "timely filing," "correct reporting," "commercial," and "aggressive tax planning" were not explicitly mentioned as distinct categories. Concerning research question 6b, "accepting tax behavior" and "stalling tax behavior" were identified as distinct categories. In the following section, we present the contents of all mentioned categories of tax behavior.

Tax Honesty

Tax honesty was a relevant category of tax compliance for both self-employed taxpayers and tax auditors. Being tax honest was

TABLE 3 | Categories of tax compliance behavior mentioned in the interviews.

	Examples
Tax honesty	*(Self-employed taxpayer #05, male, 47 years)* *"The tax honesty in Austria is certainly higher; this is also an advantage"*
Tax evasion	*(Self-employed taxpayer #06, male, age not indicated)* *"If the authority takes advantage of it, then sooner or later it actually causes tax evasion, because somehow you always want to take revenge for giving you wrong advice or saddling you up with too many taxes"*
Tax avoidance	*(Tax auditor #15, female, 53 years)* *"And among the big corporations there are always the – not even loopholes – but legal possibilities to save taxes and this is actually, this is difficult"*
Accepting tax behavior	*(Tax auditor #10, female, 52 years)* *"Well (. . .) basically I follow the people – I honestly have to say that I rarely have difficulties – that the people basically are very cooperative and it works"*
Stalling tax behavior	*(Tax auditor #06, female, 49 years)* *"And on the other hand you find audits where the taxpayers block, where nothing is handed in"*

Direct translation.

characterized as paying the full amount of the tax liability, in particular submitting all documents and transferring the correct amount of money to the tax authority on time. Self-employed taxpayers especially perceived tax honesty as significant in Austria: *"I guess that 90% of the people, without knowing the concrete numbers, are honest"* (Self-employed taxpayer #06, male, age not indicated).

Tax Evasion

When referring to tax evasion, all interviewees cited tax fraud. Of particular interest was the finding that the great majority thought of tax evasion as an intended behavior, with relatively few discussing tax evasion as "sloppy taxpaying" ("Schlampiges Steuerzahlen"). As a tax auditor (#26, female, 49 years) argued, *"There are firms that do this purely – how should I say – purely because of sloppiness."* However, at least for some tax auditors the distinction between intended and observed tax evasion is important.

Tax Avoidance

Tax avoidance was considered in terms of being commercial rather than aggressive, and hence as a "normal," legal and legitimate way of reducing the tax burden. Self-employed taxpayers generally talked very positively about this means of reducing the tax liability, often using the phrase "to save taxes" ("Steuern sparen"). For example, a self-employed taxpayer (#05, male, 47 years) claimed: "*The more someone possesses, the more he can employ someone to help save taxes*"; moreover, (#21, male, 53 years): *"BECAUSE in general the one who pays less tax is cleverer."* A tax auditor (#08, male, 41 years) argued similarly: *"The citizen is like that, he tries to pay as less taxes as possible. That is in the nature of the human being."*

Accepting Tax Behavior

Both self-employed taxpayers and tax auditors reported examples of "accepting tax behavior," referring to taxpayers who accept tax authorities' requests and behave cooperatively when interacting with the tax authority. Providing ordered and full materials, being accessible on the telephone, email or in person, and giving comprehensive answers when asked, were all considered examples of accepting tax behavior. A self-employed taxpayer (#08, female, 36 years) argued *"[. . .] that you be more precise, that you be perhaps also more punctual."* A tax auditor mentioned (#07, male, 48 years) that *"If the counterpart is cooperative, it works pretty easily, it takes the simplest route."*

Stalling Tax Behavior

In accordance with accepting tax behavior, stalling tax behavior has rarely been considered in previous tax literature. Tax auditors in particular spoke of taxpayers who fail to cooperate. Failing to provide all documents, intentionally creating complexity, or attempting to be inaccessible to the tax authorities comprised examples of stalling behavior. For instance: *"Why is this missing? Why is it not there? Or how long did someone have time? If you now say after a week he has said that he brings this and then it is not there. Or someone has postponed a meeting for the fourth time and then this occurs"* (Tax auditor #08, male, 41 years).

DISCUSSION

Research into tax compliance increasingly postulates that the quality of the relationship between tax authorities and taxpayers is an important factor that shapes tax compliance (Braithwaite, 2002; Feld and Frey, 2002; Kirchler, 2007). The results of the present study indicate that taxpayers and tax auditors indeed perceive power and trust categories as determinants of the relationship and use this categories to describe their tax relationship and tax compliance behavior. Thereby, the present study offers support for the assumptions of the extended slippery slope framework (Kirchler et al., 2008; Gangl et al., 2015) and allows a comprehensive and theoretical conceptualization of the determinants of the tax relationship and tax compliance behaviors. However, the present results also indicate that the tax stakeholders perceive categories that have scarcely been acknowledged in previous research. In addition to the well-known categories of power and trust, new sub-categories were identified that should be included in the extended slippery slope framework. The present research shows in particular, that the extended slippery slope framework as well as other theoretical models on the tax relationship (e.g., the responsive regulation theory) need to consider a larger variety of tax compliance behaviors. Thereby, the present research highlights research gaps and facilitates the generation of new research questions.

The results indicated that coercive power as a form of punishment pertains to audits, fines and negative disclosure (Allingham and Sandmo, 1972; Bø et al., 2014), as well as the new category of deadlines. Deadlines are not considered neutral, but rather as a means of enforcing compliance. To the best of our knowledge, empirical research on the effect of deadlines on the tax relationship, on tax compliance or on other forms of citizens' compliance with the administration is rare. Thus, this represents an important starting point for future research and policy, because unilaterally established deadlines are a typical administrative instrument to influence citizens, and as the results here indicate, they may instigate the negative consequences of coercive power such as a reduction in trust and an increase in enforced motivation (Kirchler et al., 2008). Future quantitative research should examine the ways in which deadlines might be implemented to render them less aversive. For example, research on the effect of deadlines on student assignments has indicated that deadlines do not undermine intrinsic motivation if students are allowed to actively participate in the establishment of deadlines (Burgess et al., 2004), thus an increase in perceived legitimacy.

Reward power is related to monetary and non-monetary rewards and praise (Bazart and Pickhard, 2011; Simone et al., 2013; Koessler et al., 2016), as well as to the new categories "accommodation" (i.e., showing goodwill during the audit) and "active assistance" (i.e., helping honest taxpayers in accounting matters). It would appear that for many taxpayers, any administrative actions that are perceived as cooperative and as "not punishing" are considered a reward. In addition, our results demonstrate that taxpayers perceive rewards as something positive, and not as an additional form of coercion. However, again the combination with legitimate power might be important. The interviews indicated that rewards that result from arbitrary and non-transparent negotiations (e.g., like at a bazaar) can reduce trust in the administration and in turn preclude any intrinsic motivation to be honest (Deci, 1971; Frey, 1997). Future quantitative research should determine whether and under what conditions rewards can foster trust in the tax system.

The results for legitimate power indicated that (as expected) this is based on position, expert, referent and information power (French and Raven, 1959). As regards legitimate power, no new categories emerged. However, some related constructs of legitimate power were mentioned frequently, hence we summarized them into their own categories, including "justice," "transparency" and "participation" (Feld and Tyran, 2002). It can be assumed that these are keywords, especially for taxpayers, which signal a legitimate tax system. Thus, the present research indicates that authorities possess numerous options to increase their perceived legitimacy.

In the tax relationship, implicit trust plays an important role, as tax stakeholders mentioned all known categories and spoke of a kind of "basic system trust" in the state and its institutions. In addition to empathy and perceived partnership, an interesting new category emerged: long-term "personal support." The self-employed claimed to favor a person in the tax administration who can be considered personally responsible and an expert on their tax files. Although, personal assigned assistance (e.g., at unemployment agencies) is a standard procedure in other areas of public administration, this is not the case in tax administration. However exceptions include the specialized units of individual relationship managers for very wealthy taxpayers found in the United Kingdom (UK, National Audit Office, 2016). Future research should clarify whether a personal tax officer truly enhances trust and reduces stalling behavior, or whether in contrast this is considered an additional form of monitoring. In terms of personal support, numerous other (unintended) side effects must be considered, such as whether tax officers can remain neutral when they have known a taxpayer for a long time. Nonetheless, a personal support officer would undoubtedly represent a strong pillar for fostering a synergistic relationship between the tax authority and taxpayers. This "service" would change the culture in the administration, which is currently perceived by some as an anonymous, bureaucratic machine. Additionally, the current categories of implicit trust can be used in future quantitative studies utilizing recognition and speed tasks to examine whether implicit trust cues really lead to faster trust reactions than explicit trust cues.

Reason-based trust originates from a perception of a common goal, dependency, competence, motivation and benevolence; in sum, a supportive political environment (Castelfranchi and Falcone, 2010). The interviewees claimed that media reports play a crucial role in building (or compromising) reason-based trust, and so further quantitative research should be conducted to examine the positive and negative effects of media reports on tax compliance. "Respect," as a new highlighted category of reason-based trust, is of course central to the tax relationship. However, to the best of our knowledge, the term has until now been used largely superficially (Feld and Frey, 2007) or considered a means of describing tax authorities' respect for the legal rights of taxpayers (Murphy, 2004). In our interviews, respect meant mutual respect when interacting with each other, taxpayers' respect for tax auditors and their expertise, and that tax auditors encounter taxpayers objectively and appreciatively. Future research should examine whether taxpayers' respect has a real, positive influence on compliance, and whether tax auditors' respect for taxpayers (e.g., for their hard work) can foster a synergistic relationship and build voluntary tax compliance.

The interviews also supported previous studies (Kirchler et al., 2003) that show that taxpayers and tax auditors alike talk about different categories of tax behavior. In addition to tax honesty, tax evasion and tax avoidance, the results indicate the importance of direct cooperative or non-cooperative contact between self-employed taxpayers and authorities as an aspect of tax compliance ("accepting behavior" and "stalling tax behavior"). Accepting tax behavior refers to all proactive supportive actions and service provisions on the side of the taxpayers that facilitate the quick and accurate determination of the real tax burden. In contrast, stalling tax behavior refers to all actions that jeopardize the work of the tax auditors and determination of the real tax burden. These new categories highlight the fact that some taxpayer behaviors are related to more costly administrative burdens than others. It should be noted that these categories are distinct from administrative (Organisation for Economic Co-operation and Development [OECD], 2001) or reporting compliance (Brown and Mazur, 2003), because they concern aspects such as being available or not intentionally creating complexity in bookkeeping, which is different from filing or submitting material on time. However, in spite of their obvious relevance, to the best of our knowledge, little research exists regarding the strategies that influence taxpayers' accepting or stalling behavior in collaboration with tax authorities. We believe that this finding offers important directions for future research. Another interesting finding was that tax auditors spoke of unintentional sloppiness as a factor behind tax evasion. Future research could examine whether lack of knowledge or motivation leads to sloppiness in tax filing and paying and how tax auditors can distinguish intention from sloppiness. Whereas intention needs compulsory action, sloppiness (for example, also because of the complex tax system) can be tolerated by tax auditors and needs supportive service related actions. Empirical examination of the fostering of ordered and accepting tax behavior and reducing stalling tax behaviors has considerable potential in reducing the administrative costs of collecting taxes.

Although the current approach has its merits, there are some limitations that must be considered in future research. The current research takes into account only one country with a relatively high level of trust in public institutions (Alm and Torgler, 2006; Schneider et al., 2010). The present results are, thus, most generalizable only to other European countries with similar tax morale, especially Germany, which shares a similar legal and cultural background with Austria (see **Supplementary Material** for details on the Austrian tax system). Thus, the present results might not fully capture the reality of developing countries (and others) that have large populations of non-filers (Gangl et al., 2017). Also the view of additional stakeholders, in particular the tax advisors is missing in the present research. In addition, our results are unlikely generalizable to large international corporations. Based on our sample selection, our results apply to self-employed taxpayers and less likely to employed taxpayers. However, self-employed taxpayers who have to submit their taxes personally likely have more experiences with the tax authority and with taxpaying compared to employed taxpayers who's taxes are deducted automatically. Due to our aim to investigate a large diversity of views and due to the qualitative research design with a relative small sample, it is not possible to determine whether the perceptions of tax auditors and taxpayers differ. We find that both stakeholder groups hold similar perceptions. They gave similar examples of power, trust and tax compliance. Although, we do not find indication of clear differences, we suggest that future quantitative research (e.g., example questions can be found in the **Supplementary Material**) targets different views of stakeholders and gives priority to similarities and differences to understand possible misunderstands and conflicts. We used the extended slippery slope framework to review the literature and to categorize the interview data. Thus, applying different theoretical models might lead to other categories. However, given that the extended slippery slope framework builds on established theories of taxation (Allingham and Sandmo, 1972; Braithwaite, 2002; Kirchler, 2007), power (French and Raven, 1959; Tyler, 2006), trust (Castelfranchi and Falcone, 2010), regulatory relationships (Ouchi, 1979; Adler, 2001), and cognitive processing (Kahneman, 2003), we are confident that our results are valid. Finally, as most qualitative studies also our study is based on a relative small, non-randomly selected sample and does not allow generalizable conclusions and hypotheses testing. Nonetheless, the present qualitative study is the first which rigorously investigates both, the tax auditors and taxpayers. Therefore, we are confident that the present results are a fruitful starting point for future quantitative research on tax compliance with larger samples from different countries.

The current qualitative interview study can fuel further quantitative research. The categories found in these interviews can be used to develop more accurate measurement instruments (see **Supplementary Material** for example questions and scales) to evaluate tax administrative policies and to analyze the relationship between different determinants of the tax relationship and tax behaviors. Further, an important influencing factor of the perception of power and trust, as well as tax behavior might be the frequency of taxpayers' contacts with the tax authority. Also the employment of tax advisors, as intermediaries between self-employed taxpayers, and the tax authority, may have a significant impact on the taxpayers' perception of the tax authority. Future studies should test the causal link between relationship determinants and tax compliance behaviors. Existing studies on coercive and legitimate power have not considered deadlines, different forms of reward power or personal support, all of which may be considered determinants of compliance. Some of the "known" categories such as public disclosure continue to require further empirical investigation. Empirical evidence regarding the effects (and side effects) of negative disclosure through "black lists" and public shaming is also limited; maybe shaming only effects middle class but not wealthy tax evaders (Lenter et al., 2003; Perez-Truglia and Troiano, 2015; Casal and Mittone, 2016). Empirical evidence regarding the effect of positive disclosure (e.g., the Fairtax mark) is especially rare.

The main advantage of the current paper is that the perspectives of both individual citizens and authorities were considered. Based on this strong empirical grounding, the present outcomes have considerable practical relevance. They indicate that the relationship between tax authorities and taxpayers is of inherent importance for compliance. Taxpayers do not simply respond and tax auditors do not simply use command and control, but rather demonstrate a sophisticated understanding and nuanced behaviors when interacting with one another. However, in most countries the training of tax auditors and the approach of tax authorities continue to focus on "hard" auditing and monitoring skills, whereas the soft skills used to shape relationships with taxpayers are neglected. The present results present a summary of instruments of coercive power, legitimate power, reason-based trust, and implicit trust and can be used to develop strategies to improve the relationship between authorities and taxpayers, and training programs for tax auditors aiming to improve their communication skills when interacting with taxpayers. For instance, in workshops, setting deadlines could be trained such that their perceived coerciveness is reduced.

A significant trend in tax administration is digitalization and automating, as well as reducing the personal interaction between tax authorities and taxpayers (Kochanova et al., 2017). Based on the results presented here, in particular on the appreciation of personal support and respect as novel categories of implicit and reason-based trust, we argue that the resources invested in cooperative relationship programs should be increased. Without doubt, digital services that enhance tax handling for taxpayers are required. However, relying solely on a machine-mediated interaction between the tax authorities and taxpayers, with the aim to reduce personalized service costs, bears the risk that tax behavior degenerates to a merely rational calculating task. The social dimension of paying one's contribution must not be neglected.

ETHICS STATEMENT

This study was carried out in accordance with the recommendations of Declaration of Helsinki (7th revision, 2013) and local ethical guidelines for studies with human participants (including approval by an institutional review board) at the Faculty of Psychology of the University of Vienna with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the institutional review board at the Faculty of Psychology.

AUTHOR CONTRIBUTIONS

EH, KG, and EK planned the study. KG and BH collected and analyzed the data. KG, BH, EH, and EK wrote the manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01034/full#supplementary-material

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Taxpayers' Motivations Relating to Tax Compliance: Evidence from Two Representative Samples of Austrian and Dutch Self-Employed Taxpayers

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Abstract

Tax compliance is assumed to be shaped by three main motivations to comply: enforced, voluntary, and committed motivation. Taxpayers, who hold an enforced motivation to comply, only pay taxes because of audits and fines for non-compliance. Voluntary motivated taxpayers respect the law and pay taxes because it is the easiest option. Committed motivation represents an intrinsic motivation, whereby taxpayers feel a moral obligation and responsibility to be honest. However, little and inconsistent empirical research exists on the relationship between motivations and tax compliance. The present paper empirically examines the connection between motivations and reported tax compliance based on data from two representative samples of 500 self-employed Austrian taxpayers and 1,377 Dutch entrepreneurs. Results show that an enforced motivation is negatively related to tax compliance, whereas a committed motivation is positively related to compliance. Contrary to expectations, voluntary motivation is not related to tax compliance. Based on the present outcomes it is suggested that tax authorities should present themselves as legitimate and benevolent in order to decrease enforced motivations and to foster committed motivations and subsequent high tax compliance.

INTRODUCTION

Taxpayers differ in their motivation to pay taxes (Braithwaite, 2003a; Kirchler, Hoelzl, & Wahl, 2008). Whereas some might be motivated to pay taxes because of audits and severe fines, others might pay taxes because they feel a moral obligation to contribute their fair share. Theoretically, it is assumed that these different motivations also determine differences in tax compliance (Braithwaite, 2003a; Kirchler et al., 2008; Kirchler, Kogler, & Muehlbacher, 2014). Taxpayers with dismissive motivations are expected to see it as less important to pay taxes correctly than taxpayers who are morally motivated to comply with the tax law (Braithwaite, Murphy, & Reinhart, 2007). However, little empirical research has been conducted on the relationship between motivation and tax compliance and in addition, this research is contradictory (Hartner, Rechberger, Kirchler, & Schabmann, 2008; Kirchler & Wahl, 2010).

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Consequently, it cannot be determined if and how tax authorities should respond to taxpayers' motivations. The present paper sheds light on the relationship between motivations and reported tax compliance by examining data of two representative samples of self-employed taxpayers in order to determine the relevance of taxpayers' motivations for tax authorities' policies.

The slippery slope framework originally differentiated between enforced and voluntary motivation (Kirchler, 2007; Kirchler et al., 2008) and after an extension, now distinguishes between three different qualities of tax compliance motivations defined as enforced, voluntary and committed motivation (Gangl, Hofmann, & Kirchler, 2015). This categorization corresponds to research on general psychological reactions towards influence differentiating between compliance, identification, and internalization (Kelman, 2006). Enforced, voluntary, and committed motivation could be seen as representing a continuum between the two broad angles of extrinsic and intrinsic motivation (Feld & Frey, 2007; Frey & Jegen, 2001; Ryan & Deci, 2000). Extrinsic motivation emphasizes outcomes of behavior, e.g., working for pay, whereas intrinsic motivation reflects an inherent interest in the actual activity, e.g., working because of curiosity (Ryan & Deci, 2000). Generally, it is assumed that tax compliance motivations develop within individuals based on their experiences, attitudes, and feelings towards taxpaying and the tax authority (Braithwaite, 2003a; Kirchler, 2007). This implies that tax authorities, through their activity, may also influence and change taxpayers' motivations (Feld & Frey, 2002; Gangl et al., 2015; Kirchler et al., 2008). In the following, the three main motivations of tax compliance are presented according to the slippery slope framework (Gangl et al., 2015).

Motivations of tax compliance

Enforced motivation is based on the deterrent effect of audits and fines (Kirchler, 2007; Kirchler et al., 2008). Taxpayers holding an enforced motivation only pay taxes when they fear audits and fines and therefore think there is no alternative to compliance. Such a motivation is related to the broader concept of extrinsic motivation (Ryan & Deci, 2000). Taxpayers comply because it leads to a comparatively better financial outcome than non-compliance, i.e., not being fined (Ryan & Deci, 2000). Enforced motivated taxpayers feel a large social distance between themselves and the tax authorities and the state (Braithwaite, 2003a). Consequently, enforced motivated taxpayers likely have negative attitudes and feelings towards paying taxes (Kirchler, 1998). They may even condemn the tax collecting state as a thief (Sloterdijk, 2010). The state and its tax authorities are perceived as taking money in terms of taxes from taxpayers with the help of coercion and force (Kirchler et al., 2008).

Voluntary motivation to pay taxes is based on positive reciprocity (Gangl et al., 2015; Kelman, 2006). The tax law is respected and tax authorities are perceived as service providers who should assist taxpayers to comply with the law. Taxpayers in turn reciprocate and are voluntarily motivated to pay their taxes without the need of enforcement. However, the voluntary motivation does not represent a true intrinsic motivation to be compliant (Ryan & Deci, 2000). Taxpayers do not value the tax system itself, they rather accept its necessity, give in and capitulate (Braithwaite, 2003a). Voluntary motivation reflects a view that taxpayers are compliant because of the law and because of tax authorities who collect taxes within a professional bureaucratic system. Taxes are paid voluntarily because this is easier than to evade them (Gangl et al., 2015). Nonetheless, voluntary motivated taxpayers are interested in engaging in tax avoidance and in reducing their tax payments within the legal framework.

Committed motivation is an intrinsic motivation to be tax compliant (Feld & Frey, 2002; Gangl et al., 2015; Kelman, 2006). Tax compliance is internalized and seen as a moral obligation. Tax authorities are perceived to share the same values as the citizens and the way taxes are collected and spent is appreciated. Taxpayers feel committed to the tax system and have the feeling that they actively contribute to societies' well-being. Committed taxpayers do not need explicit rules and strict bureaucracy, because they follow the spirit of the law and not just the letter of the law (Gangl et al., 2015). For committed taxpayers honest taxpaying is seen as a natural and automatic activity.

Relationship of tax motivations to tax compliance

The different qualities of taxpayers' motivations are assumed to be related to different types of tax compliance (Braithwaite, 2003a; Kirchler et al., 2008). Tax compliance can be defined as the opinion that one should cooperate with tax authorities and that it is important to pay taxes honestly and in time (OECD, 2001). Taxpayers with an enforced and dismissive motivation are assumed to be not tax compliant. They feel it is not important to cooperate with the tax authorities, to pay taxes honestly or in time. In contrast, voluntarily motivated and committed taxpayers in particular want to pay taxes honestly and thus, should show high tax compliance (Braithwaite, 2003a; Gangl et al., 2015). Survey studies in different countries showed that taxpayers differ in their reported motivations to pay taxes (Braithwaite et al., 2007; Muehlbacher, Kirchler, & Schwarzenberger, 2011). However, little empirical research exists that relates different motivations of taxpayers to tax compliance (Hartner et al., 2008; Kirchler & Wahl, 2010). Moreover, research has inconsistent results. A survey study among 300 self-employed Austrian taxpayers indicated that both voluntary and committed motivations are positively related to tax compliance. No relation between enforced motivation and tax compliance was found (Kirchler & Wahl, 2010). In contrast, in two survey studies, conducted among more than 2,000 Australian citizens, enforced motivations assessed as defiance motivations towards tax paying were negatively related to tax compliance whereas committed motivations were not associated with tax compliance (Hartner et al., 2008). Hence, it is neither clear whether enforced, voluntary, and committed motivations are at all related to tax compliance nor which of these motivations might have negative or positive connections to the willingness to comply with tax obligations.

Insights into the relation between tax motivations and tax compliance have a high practical relevance for tax authorities. If the exact relation between motivations and tax compliance is known, tax authorities could apply their strategies in a more efficient and tailored way, as suggested by the responsive regulation theory (Braithwaite, 2003b) and the slippery slope framework (Kirchler et al., 2008). The responsive regulation theory argues that taxpayers should be treated differently by tax authorities depending on their motivation, i.e., applying audits and fines for enforced motivated taxpayers and assistance and respect for voluntary and committed motivated taxpayers (Braithwaite, 2003b). As most taxpayers are assumed to be voluntarily and committed motivated, tax authorities' major task is to be perceived as service-oriented and respectful (Braithwaite, 2003a). The slippery slope framework claims that tax authorities should apply a specific mix of coercive power and legitimate power to reduce enforced and to enhance voluntary and committed motivations among taxpayers (Gangl et al., 2015; Hofmann, Gangl, Kirchler, & Stark, 2014; Kirchler et al., 2008). However, as it is not clear whether motivations are at all relevant for tax compliance, it cannot be determined whether tax authorities should respond to motivations or should influence motivations of taxpayers.

The aim of the present study is to examine the relation between different motivations to pay taxes and tax compliance. We seek to gain robust results by conducting two studies in countries, which are similar concerning tax compliance measured by the extent of the shadow-economy (Buehn & Schneider, 2012). Further, to gain results with high external validity we used representative samples of self-employed taxpayers. In contrast to employed taxpayers whose taxes are often deducted by the employers, self-employed taxpayers have to provide all relevant information themselves. Hence, they are more experienced regarding tax paying and have more opportunities to engage in tax avoidance and tax evasion than employed taxpayers (Antonides & Robben, 1995). We assessed motivations towards taxpaying with two different methods. In Study 1, we examine the relationship between enforced motivation, voluntary motivation, committed motivation and tax compliance in a representative sample of 500 self-employed Austrian taxpayers. In Study 2, we confirm results of Study 1 in a representative sample of 1,377 Dutch entrepreneurs by using the variables "Something is taken from me" as a proxy for enforced motivation, "I give up something" as a proxy for voluntary motivation and "I contribute something" as a proxy for committed motivation.

STUDY 1

Sample

The sample consisted of 500 self-employed taxpayers representative for the Austrian population of self-employed with respect to sex (49.9% women) and age ($M = 44.46$, $SD = 10.55$). Table 1 presents a detailed description of the sample concerning socio-demographic characteristics.

Procedure and material

A market research agency sent out an online questionnaire to self-employed Austrians who received 1.50 EUR (approximately 2 US-Dollar) for participation. The questionnaire consisted of several scales on tax-related issues. Four of them are used in the present paper: tax compliance intention, enforced compliance, voluntary cooperation, and committed cooperation. Tax compliance intention was assessed with the average of answers to six questions from Gangl et al. (2013) following the OECD (2001) definition of tax compliance (e.g., "To what extent do you think it is important that the Tax Administration receives correct and complete tax returns?"; 1 = very important, 7 = absolutely not important; Cronbach α = .77, M = 5.44, SD = 1.11). Scales to measure tax motivations were adapted from Hofmann et al. (2014). Enforced compliance was assessed with the average of answers to four items ("When I pay taxes, I do so because a great many tax audits are carried out," "When I pay taxes, I do so because I know I will be audited," "When I pay taxes, I do so because the tax authority often carries out audits,", "When I pay taxes, I do so because I feel forced to pay my taxes"; Cronbach α = .87). Voluntary cooperation was also assessed with the average of answers to four items ("When I pay taxes, I do so because the tax authority will probably reciprocate my cooperation," "When I pay taxes, I do so because the tax authority treats me correctly as long as I admit mistakes," "When I pay taxes, I do so because the tax authority supports taxpayers who make unintentional mistakes," "When I pay taxes, I do so, because it is easier than to deceive the tax authority"; Cronbach α = .79). Finally, committed cooperation was assessed with four items ("When I pay taxes, I do so because it is the right thing to do," "When I pay taxes, I do so because it is ultimately in everyone's interest," "When I pay taxes, I do so because I feel a moral obligation to pay taxes," "When I pay taxes, I do so, because it is an important civic duty"; Cronbach α = .92; M = 5.04, SD = 1.56). All questions on tax motivations were assessed on seven-point Likert scales with labeled endpoints 1 (I totally disagree) and 7 (I totally agree).

Table 1: The relation between motivations and compliance intention in the Austrian sample

	f / *M*(*SD*)	Block 1	Block 2	
		β	β	*r*
Female	49.0%	0.11^{*}	0.10^{*}	0.08
Age	44.46 (10.55)	0.19^{***}	0.16^{***}	0.18^{***}
Low education	2.6%	-0.02	-0.02	-0.04
Medium education	66.8%	0.04	0.04	0.02
0- 25,000 Euro turnover	35.6%	0.00	0.03	0.02
25,001– 50,000 Euro turnover	26.2%	-0.01	-0.00	0.01
50,001 – 100,000 Euro turnover	15.0%	0.00	-0.01	0.01
100,000 – 1,000,000 Euro turnover	18.0%	-0.05	-0.06	-0.04
1-4 employees	19.2%	0.05	0.05	0.02
5-49 employees	5.2%	0.02	0.02	-0.01
50 < employees	0.4%	-0.07	-0.04	-0.09
Information technology	10.6%	0.01	0.00	-0.04
Tourism	7.0%	-0.03	-0.01	-0.04
Creative industries	6.4%	0.02	0.01	0.01
Education	5.8%	0.10^{*}	0.08^{*}	0.10^{*}
Financial services	5.6%	0.06	0.10	0.06
Consulting & engineering	3.2%	-0.01	-0.04	-0.01
Enforced motivation	3.83 (1.61)		-0.13^{***}	-0.15^{**}
Voluntary motivation	3.56 (1.43)		0.04	0.05
Committed motivation	5.04 (1.56)		0.47^{***}	0.48^{***}
R^2		0.07	0.31	
ΔR^2			0.23^{***}	
F		2.18^{**}	10.55^{***}	
ΔF			53.91^{***}	
Max. VIF		6.06	6.06	

Note: Reference groups: male, high education, turnover of more than 1 million Euro, no employees, other sectors; *f* = frequency, *M* = mean, *SD* = standard deviation, *r* = Spearman or Pearson correlation; ΔR^2 and ΔF refer to a change in R^2 and F statistics; max. *VIF* refers to the largest variance inflation factor; asterisks denote significance at the 0.1% (∗∗∗), 1% (∗∗), and 5% (∗) level.

Results

To examine the relation between personal motivations and tax compliance intention an OLS regression analysis was conducted. In a first step, we included socio-demographic characteristics of entrepreneurs as control variables (Block 1) into the regression model and in a second step, enforced motivation, voluntary motivation, and committed motivation (Block 2) to explain the tax compliance intention from motivations. Results in Table 1 show that enforced compliance was associated with lower tax compliance intentions whereas committed cooperation was related to higher tax compliance intentions. Voluntary cooperation was not related to tax compliance intentions.

STUDY 2

Sample

The sample consisted of 1,377 entrepreneurs representative of the Dutch population of entrepreneurs with respect to sex (31.7% woman), age (M = 48.67, SD = 11.22), number of employees, and startups versus existing companies. A detailed sample description can be found in Table 2 and in Gangl et al. (2013).

Procedure and material

Within the Dutch Fiscal Monitor 2010, mostly conducted via online questionnaires, entrepreneurs were asked to indicate their motivation to pay taxes ("Which describes your personal feeling about paying taxes best?") by choosing one of three statements: "Something is taken from me" (15.9%), "I give up something" (46.6%), and "I contribute something" (37.5%). Tax compliance intention was assessed with the same six items as in Study 1 except that a five-point Likert scale (1 = very unimportant, 5 = very important) was used (M = 4.07, SD = 0.60). This tax compliance scale was used in a previously published study (Gangl et al., 2013), where detailed descriptions of the scale can be found. Sex, age, education, turn-over, number of employees, and sector were included as socio-demographics (Table 2).

Results

To examine the relation between personal motivations and tax compliance intention an OLS regression analysis was conducted. In a first step, we included socio-demographic characteristics of entrepreneurs as control variables (Block 1) into the regression model and in a second step the motivations to pay taxes (Block 2) to predict the tax compliance intention by motivations. Results in Table 2 show, similar to Study 1, that an enforced motivation measured with the feeling "Something is taken from me" was negatively related to tax compliance intentions. Likewise, the feeling "I contribute something" as a proxy for committed cooperation was positively related to tax compliance intentions.

Table 2: The relation between motivations and tax compliance intention in the Dutch sample

	f / *M*(*SD*)	Block 1	Block 2	
		β	β	*r*
Female	31.7%	.01	0.01	-0.01
Age	48.67 (11.22)	0.06*	0.02	0.06*
Low education	7.6%	-0.00	0.01	-0.01
Medium education	41.8%	-0.02	-0.00	-0.04
0- 25,000 euro turnover	28.5%	-0.07	-0.07	-0.01
25,001– 50,000 Euro turnover	11.3%	-0.04	-0.04	0.00
50,001 – 100,000 Euro turnover	12.1%	-0.03	-0.04	0.01
100,000 – 1,000,000 Euro turnover	29.6%	-0.08*	-0.08*	-0.04
1-4 employees	26.4%	-0.19*	-0.16+	0.01
5-49 employees	19.1%	-0.15+	-0.13	-0.01
50 < employees	2.7%	-0.16*	-0.14*	-0.02
Financial services	26.9%	0.07*	0.07*	0.09**
Retail	26.9%	0.01	0.01	0.01
Health care	7.0%	0-.01	-.01	-0.01
Construction	6.4%	-0.03	-0.03	-0.03
Agriculture	4.9%	-0.08**	-0.08**	-0.10***
Something is taken from me	15.9%		-0.11***	-0.15***
I contribute something	37.5%		0.09**	0.14***
R^2		0.03	0.05	
ΔR^2			0.03	
F		2.38**	4.14***	
ΔF			17.77***	
Max. VIF		12.10	12.11	

Note: Reference groups: male, high education, turnover of more than 1 million, no employees, other sectors, I give up something; *f* = frequency, *M* = mean, *SD* = standard deviation, *r* = Spearman or Pearson correlation; ΔR^2 and ΔF refer to a change in R^2 and F statistics; max. VIF refers to the largest variance inflation factor; asterisks denote significance at the 0.1% (∗∗∗), 1% (∗∗), 5% (∗), and 10% (+) level.

DISCUSSION

The present paper shows that different motivations to pay taxes correspond to different levels of reported tax compliance. As predicted, negative feelings related to dismissive and enforced motivations seem to correspond to lower tax compliance than positive feelings related to committed motivations (Braithwaite, 2009; Braithwaite & Braithwaite, 2001; Kirchler et al., 2008). In contrast with existing studies (Hartner et al., 2008; Kirchler & Wahl, 2010), the present outcomes suggest that both enforced and committed motivations relate to tax compliance, the former in a negative and the latter in a positive way. Voluntary motivation was unrelated to tax compliance. Therefore, the present paper suggests that enforced and committed motivations play an important role for tax decisions and should be considered by tax authorities.

As expected, taxpayers holding an enforced motivation to pay taxes also report being less tax compliant (Braithwaite, 2003a; Kirchler et al., 2008). They seem to pay taxes only if they are forced to do so. The present results on voluntary motivation and tax compliance suggest that the relation between voluntary motivation and tax compliance could be two-fold. Voluntary motivation might lead to both positive and negative correlations with tax compliance which in turn mutually dissolve each other. Voluntary motivated taxpayers may pay taxes according to the law but at the same time try to utilize legal tax holes if possible. Hence, overall there might be no connection between voluntary motivation and tax compliance. Committed motivation as an intrinsic acceptance of taxpaying and a felt responsibility seems to be the only motivational force which increases tax compliance in the present study. This outcome suggests that initiatives which reduce enforced motivations and foster committed motivation seem to be important factors to enhance tax compliance.

The present result extends previous theoretical and empirical findings. As predicted by the responsive regulation theory, taxpayers holding an enforced motivation likely need more audits and fines to pay taxes than voluntarily, or committed motivated taxpayers (Braithwaite, 2003b). As assumed by the slippery slope framework, it seems a worthwhile strategy of tax authorities to change motivations in order to increase tax compliance (Gangl et al., 2015; Kirchler et al., 2008). Experiments indicate that severe audits and fines which are perceived as applied by illegitimate and unfair authorities produce enforced motivations whereas audits and fines which are applied by legitimate, fair and trusted tax authorities lead to voluntary motivations (Hartl, Hofmann, Gangl, Hartner-Tiefentahler, & Kirchler, 2015; Hofmann, Hartl, Gangl, Hartner-Tiefentahler, & Kirchler, 2014; Kirchler & Wahl, 2010; Verboon & van Dijke, 2011). Thus, the present results strengthen the assumptions of previous research and suggest that tax authorities should react to different motivations with tailored enforcement programs and should apply strategies in such a way that voluntary and especially committed motivations are enhanced.

To change taxpayers' motivations, the slippery slope framework suggests application of a tailored mix of coercive power (i.e., audits and fines) and legitimate power (i.e., fair procedures, information services, etc.). Tax authorities should apply coercive audits and fines in a legitimate and fair way to enforced motivated taxpayers in order to change their motivation into voluntary motivation (Hofmann, Gangl, et al., 2014). Tax authorities should avoid coercive audits and fines for voluntary and committed motivated taxpayers and should focus on legitimate services procedures to maintain and foster the positive motivations of these taxpayers. Examples of initiatives which foster committed motivations are fair procedures of tax collection and tax spending, enhanced service initiatives (telephone hotlines, websites, etc.), communication strategies presenting public goods such as schools which are financed with tax money, and the establishment of trust-based relationships with taxpayers (Alm & Torgler, 2011; Gangl et al., 2015; Gangl et al., 2013). In the enhanced relationship program of the OECD (2013), tax authorities dispense with auditing taxpayers going back for several years. Instead, they try to resolve and settle uncertainties on tax issues immediately when taxpayers ask for advice. On the other hand, taxpayers agree to fully disclose their tax files and to sign a voluntary contract of fair play in which they agree to refrain from aggressive tax planning (OECD, 2013). This enhanced relationship involves trust, which can be harmed. However, it pays off in lower costs of auditing for tax authorities and importantly in enhanced planning reliability for taxpayers. As a consequence, taxpayers are assumed to feel respected as honest taxpayers and gain trust towards the tax authorities (Gangl et al., 2015). Thereby, taxpayers are assumed to develop a committed motivation to pay taxes, which means a felt responsibility to be tax compliant. The present results provide evidence for these assumptions.

The present paper has limitations. The present results only apply to developed countries with relatively high rates of tax compliance. To confirm and expand the generalizability of the present results, future studies should investigate the relationship between motivations and tax compliance in developed countries with relatively low rates of tax compliance. The explained variance of tax compliance differs in the Austrian and in the Dutch study. A reason for this difference might be the different way in which motivations were assessed. In the Austrian study seven-point Likert scales were used for each motivation whereas participants in the Dutch study had to choose between one of the three motivations. However, the direction of results is the same in both studies and the different measures applied to assess motivations also indicate that motivations have a robust relationship to tax compliance.

Based on two studies on representative samples the present paper indicates that the distinction between different motivations to pay taxes seems to be a relevant factor for tax compliance. Tax authorities can be recommended to avoid actions which produce an enforced motivation and to foster initiatives which enhance a committed motivation to pay taxes in order to increase the number of citizens that comply.

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Effects of supervision on tax compliance: Evidence from a field experiment in Austria

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HIGHLIGHTS

- We study the impact of supervision on tax compliance with a field experiment.
- We manipulate supervision through friendly deterrence.
- Results suggest that supervision leads to delayed tax payments.
- It is concluded that supervision causes a crowding out of intrinsic tax compliance.

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ABSTRACT

We conduct a field experiment on tax compliance, focusing on newly founded firms. As a novelty the effect of tax authorities' supervision on timely tax payments is examined. Interestingly, results show no positive overall effect of close supervision on tax compliance.

1. Introduction

Taxes are important as they finance the provision of public goods. To ensure sufficient tax funds, tax authorities enforce compliance—mainly by inducing fear via audits and fines (Allingham and Sandmo, 1972; Srinivasan, 1973). Meta and overview studies report that there is a tendency for deterrence to reduce tax evasion (Fischer et al., 1992; Alm, 1999; Blackwell, 2010); however, the effect is small or even negligible (Andreoni et al., 1998; Kirchler, 2007). It has also been suggested that deterrence may crowd out the intrinsic motivation of paying taxes (Feld and Frey, 2002; Torgler, 2002; Kirchler et al., 2008).

Most of the empirical research on tax compliance is based on surveys analyzing individual taxpayer self-reports and laboratory experiments that mainly work with students. Hence, evidence on firm tax compliance is limited (Torgler, 2002; Alm and McClellan, 2012). This gap in the empirical literature is particularly important as firms or self-employed people have more opportunities to engage in tax evasion and are reported to have lower tax morale (Torgler, 2007). Laboratory experiments have been criticized for

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their lack of generalizability. On the other hand, despite the availability of very reliable field data such as that from the Taxpayer Compliance Measurement Program of the IRS, it only permits the exploration of limited questions and does not allow analysis of causal relationships. Thus, controlled field experiments have recently emerged as an important tool in empirical research because they evoke real processes outside the laboratory while avoiding an experimental demand effect, with the aim of generating causal effects (Blumenthal et al., 2001; Slemrod et al., 2001; Torgler, 2004; Kleven et al., 2011).

To the best of our knowledge, there are only five studies that manipulate deterrence in the field (Ariel, 2012; Hasseldine et al., 2007; Kleven et al., 2011; Schwartz and Orleans, 1967; Slemrod et al., 2001). However, these studies mostly have individual taxpayers as subjects and manipulate deterrence through questions, prior audits, or through letters announcing audits in order to emphasize a higher perception of audit probability (threat-of-audit letter). Hasseldine et al. (2007) report a positive impact of deterrence on tax behavior while Kleven et al. (2011) find a modest impact. In contrast, Schwartz and Orleans (1967) and Ariel (2012) find no effect whereas Slemrod et al. (2001) observe a small positive effect for low and middle income groups and a negative impact on high income taxpayers. However, perceived audit probability may differ from the manipulated audit probability (Slemrod et al., 2001; Mittone, 2006). For example, one cannot be sure that the taxpayers actually read the letter. Additionally, the letters themselves could be perceived as unfriendly, invoking reluctance in taxpayers because of the hostile communication and not just due to deterrence itself. Using reported taxable income, net profit, or deductions as measures of compliance can also be problematic as they do not directly measure tax non-compliance (no information on taxpayer return audits). Moreover, earnings generated in the informal sector are not reported in taxable income. Audits also struggle to detect tax evasion through informal activities which leads to measurement biases in tax evasion and therefore lower-bound estimates (Kleven et al., 2011).

The strength of our study is that it uses firm data and a field experiment to provide further evidence on tax compliance. In addition, as a novelty, we explore the influence on the compliance of close supervision by the tax administration. Supervision is defined as a friendly and constant form of deterrence and interaction with the firms. This allows controlling for awareness of the auditing while avoiding communication that is perceived as unfriendly. To reduce any historical or firm-specific experiences with the tax administration we focus only on newly founded firms. In addition, we explore firms that are classified as high-risk groups in regard to tax evasion. To avoid tax compliance measurement biases we analyze the timely payment of taxes and the amount of the delayed taxes that were not paid.

2. Sample

The sample consists of all the 1721 firms that began operation during the year 2011 within the tax district "East-Styria" in Austria. Each of these businesses was obliged to pay its full taxes before November 15, 2012. Ninety-three of these firms were randomly selected, mostly among the high-risk businesses in terms of tax evasion (gastronomy: 54.8%, construction: 22.6%, trading: 19.4%, mining: 1.1%, counseling: 1.1%) to compose the treatment group that we call "supervision". The remaining 1628 enterprises comprise the non-treatment group of which 35.5% are high-risk businesses (gastronomy: 4.2%, construction: 6.4%, trading: 14.5%, mining: 0.1%, counseling: 10.3%) and 65.5% low-risk businesses, mostly in the real estate (19.6%), service (8.2%) and agriculture business (7.2%). It should be noted that we will also present results limiting this control group to only those sectors who appear in the treatment group. Most enterprises had a turnover of up to 29,999 Euro (treatment group: 62.4%, non-treatment group: 74.2%; $p = 0.07$). Finally, the majority of firms had the legal status of a natural person (treatment group: 79.6%, non-treatment group: 72.2%, $p = 0.22$) and an employed tax practitioner (treatment group: 86.0%, non-treatment group: 69.9%; $p = 0.003$). Using a multivariate analysis we control for the legal status of a firm, turnover, and the tax practitioner.

3. Procedure

The supervision consisted of two parts: (a) an introductory visit, and (b) constant auditing throughout the first year of the firm. Both phases were conducted and administered by a tax auditor. The introductory visit took place at the firm following an application for a tax number. The tax auditor offered advice regarding the tax law and the subsequent rights and duties of a taxpayer, handed out information brochures and give-aways (a pen, a pad, and a candy). The tax auditor explicitly used friendly and respectful communication and invited the firms to contact the auditor if there were any further questions. Importantly, the auditor informed the firm that he/she would audit the reports and payment liabilities on a monthly basis throughout the year. The component of constant auditing ensured that the tax auditor monitored the tax files of the enterprise each month according to Austrian tax law. All other firms that were not part of the treatment were deliberately not contacted, informed, or audited by the tax authorities.

4. Measurements

According to the IRS, tax compliance comprises three aspects: accurate reporting, timely filing, and timely paying (Slemrod et al., 2001). As mentioned previously we only focus on timely paying as the quality and frequency of an audit make accurate reporting comparatively hard to assess. The variable on timely payment has no measurement errors as one is able to assess whether a taxpayer paid before or after the deadline, which is November 15 for Austrian firms. Thus, we compiled the anonymized tax accounts of December 15, 2012, including all taxes from 2011 (VAT, income tax, property tax etc.). Obviously, at this date all taxes owing can be considered as late. Accordingly, timely payment is assessed as both a dichotomous (paid in time or not) and a continuous (amount of tax due for those who are late) variable. The continuous variable was logarithmized to take into account the skewed distribution of the variable's values (skewness $= -1.98$).

Additionally, we clustered the analyses over the business sector and included as control variables the turnover, legal status, and whether they have used a tax practitioner. The opportunity of tax evasion is seen as one of the most important determinants of tax compliance (Engström and Holmlund, 2009; Kleven et al., 2011). Certain types of businesses such as gastronomy, construction or trading operate with cash and thus have increased opportunities to engage in tax evasion than, for example, real estate businesses. The legal status allows us to differentiate between one-person enterprises and larger enterprises. Finally, involvement of a tax practitioner is an important factor for tax compliance. There is evidence that tax practitioners increase non-compliance (Erard, 1993) and that changes in tax authorities' interaction style influence tax compliance of taxpayers who prepare their own taxes but not of those who employ a tax practitioner (Hasseldine et al., 2007).

5. Results

In the following, two regression analyses are presented (Table 1). First we use a probit model to explore whether our treatment has an influence on timely paying (specification 1–3). We then restrict our sample to those cases where firms did not pay on time, using OLS specifications to analyze whether the treatment

Table 1
Effect of supervision on not paying on time and the amount of delayed tax payment.

Dependent variable	*Paying on time*			*Amount of delayed tax payment*	
Model	Probit			OLS regression	
	Clustering over business sector				
	(1)	(2)	(3)	(4)	(5)
Supervision	0.475***	0.450***	0.327***	−0.311	−0.699***
	4.68	*4.76*	*5.24*	*−1.08*	*−3.84*
	0.120	**0.112**	**0.092**		
30,000–90,999	0.420*	0.395*	0.129	−0.223	−1.194
Euro turnover	*2.34*	*2.14*	*0.66*	*−0.37*	*−1.35*
	0.102	**0.095**	**0.034**		
100,000–219,999	0.184	0.166	0.009	−0.714	−0.684
Euro turnover	*0.77*	*0.69*	0.04	*−0.68*	*−0.58*
	0.041	**0.037**	**0.002**		
220,000–699,999	−0.035	−0.064	−0.066	2.565***	1.817*
Euro turnover	*−0.13*	*−0.23*	*−0.19*	*5.18*	*3.85*
	−0.007	**−0.012**	**−0.016**		
700,000–9.679,999	0.422[a]	0.396	−0.069	0.101	−0.903
Euro turnover	*1.69*	*1.58*	*−0.34*	0.09	*−0.43*
	0.106	**0.098**	**−0.017**		
Natural person	0.513**	0.527**	0.880*	−0.361	0.053
	3.02	*3.19*	*2.57*	*−0.80*	*0.30*
	0.089	**0.091**	**0.179**		
Limited liability corporation	0.975***	0.941***	1.266**	−0.904	−0.102
	4.60	*4.39*	*3.29*	*−1.21*	*−0.15*
	0.283	**0.270**	**0.428**		
Limited partnership	0.083**	0.799**	0.966[a]	0.882	0.442
	2.80	*2.79*	*1.83*	*1.14*	*1.11*
	0.241	**0.231**	**0.330**		
Commercial corporation	0.570[a]	0.556[a]	1.012*	−3.571	−3.509
	1.69	*1.67*	*2.09*	*−1.61*	*−1.42*
	0.152	**0.147**	**0.348**		
Tax practitioner		0.171[a]	0.233	0.084	−0.31
		1.66	*1.54*	*0.18*	*−0.66*
		0.033	**0.056**		
Observations	1713	1713	714	227	130
Pseudo R^2	0.0497	0.0523	0.0368	0.079	0.1594

Note: *z*-values and *t*-values are given in italics, marginal effects in bold.
[a] Represent statistical significance at the 10 ($p < .10$).
* Represent statistical significance at the 5 ($p < .05$).
** Represent statistical significance at the 1 ($p < .01$).
*** Represent statistical significance at the 0.1 ($p < .001$) levels, respectively; the reference group of turnover is 0–29,999 Euro, the reference group for legal status consists of all the other possibilities (club, business partnership, consortium, civil law association, capital company, hiring association, silent partnership, and house owner association).

influences the amount of the delayed tax (specification 4–5). In specifications 3 and 5 we provide a robustness check by restricting the control group sample to only those industries that appear in the treatment group (high-risk firms). In all specifications standard errors are clustered by business sectors to capture unobserved sector-specific characteristics. For paying on time the results report that the coefficient for our treatment variable is always statistically significant at the 1% level with marginal effects between 9.2% and 12%. Thus, the results on timely paying indicate that the supervision actually crowds-out compliance.

When exploring the amount of tax owed by non-compliant firms (those that did not pay on time) we actually observe that supervision has a positive effect, reducing the amount of tax due. In specification 4 we control for turnover, legal status, and tax practitioner: the resulting coefficient is far from statistically significant. However, when we restrict our sample to the same business industries as in the control group, the coefficient becomes highly statistically significant. The estimated reduction of the amount of tax due based on supervision is between 27% ($100[\exp(-0.311) - 1]$, specification 4) and 50% (specification 5) taking into account that the average tax due in our data set is 2723 Euro (SD = 6546).

To better acknowledge observable differences between control and treatment group that can also be seen when estimating the propensity score, namely the conditional probability of receiving a treatment given pretreatment characteristics (see Table A.1), we report in Table 2 estimations of average treatment effects based on propensity score matching. We report several methods jointly to offer a better assessment of the robustness of estimates.[1] The results reported in Table 1 remain robust. The ATT (Average effect of Treatment on Treated) is always statistically significant for paying on time but not for the amount of delayed tax payment.

6. Discussion

The reported results indicate that supervision can backfire. Rather than increasing tax compliance, even a friendly version of deterrence reduces tax compliance. Thus, supervision seems to crowd out the intrinsic motivation of tax compliance (Feld and Frey, 2002; Torgler, 2002; Kirchler et al., 2008). It might be that such interventions are perceived as too controlling, which reduces self-determination and self-esteem, thereby decreasing intrinsic motivation. Such an effect is observed in the literature on work morale (Frey, 1997a). There is also evidence that sanctions are perceived as a "price". For example, Gneezy and Rustichini (2000) observe that the introduction of a fine for parents arriving late to a day-care center was perceived as a price rather than as a signal encouraging on-time collection of children. Therefore, delayed pick-up of children increased and was persistent even after the fine was removed.

[1] For a discussion see Becker and Ichino (2002) and Guo and Fraser (2010).

Table 2
Estimation of average treatment effects based on propensity scores using various matching methods.

	n. treat.	n. control.	ATT	Std. Err.	t
Not Paying on Time (logit)					
Matching					
Nearest-Neighbor	93	1480	0.132	0.048	2.715
Nearest-Neighbor bootstrapping (2000 bootstrap replications)	93	1480	0.132	0.05	2.622
Kernel (Gaussian) (2000 bootstrap replications)	93	1627	0.143	0.048	2.974
Stratification (2000 bootstrap replications)	93	1627	0.129	0.049	2.638
Amount of delayed tax payment					
Matching					
Nearest-Neighbor	93	168	−0.616	0.377	−1.631
Nearest-Neighbor bootstrapping (2000 bootstrap replications)	93	168	−0.616	0.776	−0.793
Kernel (Gaussian) (2000 bootstrap replications)	93	1627	−0.689	0.707	−0.975
Stratification (2000 bootstrap replications)	93	1627	−0.885	0.635	−1.393

Note: ATT: Average effect of the Treatment on Treated.

Thus, it does not seem that this external intervention was perceived as supportive despite establishing a personal relationship between the tax administration and the taxpayer which could have been expected to reduce crowding-out of the firm's intrinsic motivation to pay taxes (Frey, 1997b). On the other hand, for those who were non-compliant, supervision tends to reduce the amount of late taxes due, particularly when restricting the sample size to high-risk industries.

In sum, the negative effect of supervision on timely paying and the positive effect on the tax due which was not statistically significant in most of the estimates lead to the conclusion that close supervision of newly created high-risk firms offers no overall positive effect on tax compliance. Accordingly, alternatives to enforcement measurements such as service and/or trust approaches might be recommended to the tax administration to increase tax compliance (Alm and Torgler, 2011).

It should be noted that the study has some limitations. The present outcomes might not apply to countries with a different tax culture to Austria (Alm and Torgler, 2006; Balliet and van Lange, 2013). Also, the relatively small sample size of our treatment group makes it necessary to replicate the current outcome with a larger treatment sample and in other countries. It might be argued that supervised firms have adapted their behavior based on the additional information available (e.g., a better understanding of the sanctions for paying late, which are not that severe after all). Additionally, it can be argued that the inexperienced non-treatment group faced a much more ambiguous situation than the supervised firms causing them perhaps to be more risk averse with respect to reporting, and as a result more tax compliant.

To conclude, tax authorities are recommended to invest in further services such as telephone hotlines or a website to increase tax compliance (Braithwaite et al., 2007; Alm and Torgler, 2011; Gangl et al., 2013). Future research could study the effects of such services in the field to determine whether it is possible to generalize the positive impact of "soft-factors" reported in survey and laboratory studies.

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Table A.1
Estimation of the propensity score.

Probit estimates	Coef.	z
30,000–90,999 Euro turnover	0.630***	4.49
100,000–219,999 Euro turnover	0.762***	3.05
220,000–699,999 Euro turnover	0.517*	1.70
700,000–9.679,999 Euro turnover	−0.035	−0.08
Natural person	0.580***	2.75
Limited liability corporation	0.224	0.83
Commercial corporation	1.069***	3.33
Tax practitioner	0.485***	3.61
N	1721	
Pseudo R^2	0.088	

Note: Common support condition imposed. Region of common support is [.0044, .3820]. Balancing property is satisfied with the reported specification. Number of blocks: 4.
* Represent statistical significance at the 10% ($p < .10$) levels.
** Represent statistical significance at the 5% ($p < .05$) levels.
*** Represent statistical significance at the 1% ($p < .01$) and 0.1% ($p < .001$) levels.

Appendix

See Table A.1.

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Patriotism's Impact on Cooperation with the State: An Experimental Study on Tax Compliance

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Although it seems reasonable to assume that activating patriotism might motivate citizens to cooperate with the state in reaching societal goals, the empirical evidence supporting this contention is based mostly on correlational rather than experimental studies. In addition, little is known on whether patriotism can be manipulated without simultaneously triggering nationalism and on the psychological processes which determine the patriotism-cooperation relation. This current article reports results of one survey and three experiments that manipulate patriotism by displaying either a national flag or national landscapes or by priming national achievements. The outcomes indicate that reported and manipulated patriotism indirectly increase tax compliance, although the national flag also increases nationalism. National achievements, on the other hand, seemingly increases trust in national public institutions and the voluntary motivation to cooperate, whereas national landscapes only increase the voluntary motivation to cooperate. Hence, it is possible to increase social capital in the form of trust and cooperation through patriotism without fostering nationalism as well.

KEY WORDS: national pride, tax compliance, trust, voluntary cooperation, social capital

The state and its public institutions depend on such citizen cooperation as tax compliance, which might potentially be increased by using patriotism as a promotional tool (Konrad & Qari, 2012; Mummendey, Klink, & Brown, 2001). Public information campaigns, brochures, or websites, for instance, might use the national flag or its colors to foster citizens' identification with their community and thus their willingness to cooperate (Jones, 1996; McMakin, Malone, & Lundgren, 2002). Survey studies do in fact report a positive relation between patriotism and prosocial behavior such as tax compliance, election participation, or blood donation (Huddy & Khatib, 2007; Wenzel, 2007). Surprisingly, however, no experiments were conducted showing the positive impact of patriotism on cooperation. Although there are several experiments analyzing whether national symbols such as the flag generate patriotism rather than destructive nationalism (e.g., Becker, Enders-Comberg, Wagner, Christ, &

Butz, 2012; Butz, Plant, & Doerr, 2007; Hassin, Ferguson, Shidlovski, & Gross, 2007; Kemmelmeier & Winter, 2008), only few experiments have empirically tested the effects of other potentially promotional tools of patriotism like national achievements (Mummendey et al. 2001) and national landscapes. There is also a lack of empirical studies on the psychological processes through which patriotism might impact cooperation indirectly by generating trust in public institutions and voluntary motivation to cooperate (Kirchler, Hoelzl, & Wahl, 2008; Wenzel, 2002). Yet insights into the effects of promotional patriotic tools would not only enhance theoretical understanding of patriotism and its effects but might also allow public institutions to choose the most effective communication instruments for enhancing cooperation of citizens by patriotism and not nationalism.

This present study, therefore, uses the results of one survey and three experiments to test for an effect of three common patriotism promoting tools—the national flag, national achievements, and national landscapes—on cooperation with the state in the form of tax compliance. It also assesses whether the impact of such tools on tax cooperation is direct or indirect via increased trust in tax authorities and voluntary motivation to cooperate.

Theoretical Background and Research Questions

One useful explanation of patriotism and its effects is offered by social identity theory (Tajfel, 1974; Tajfel, Billig, & Bundy, 1971), which may describe patriotism in terms of citizen self-categorization as members of a specific social group such as a national or local community (Tajfel & Turner, 1986). Such self-categorization provides citizens with a positive self-concept through such positive emotions as love and pride in national achievements (Federico, Golec, and Dial, 2005; Tajfel & Turner, 1986), meaning that patriotism can be more narrowly defined as "positive identification and feelings of affective attachment to one's country" (Schatz, Staub, & Lavine, 1999, p. 152). This patriotism as social identity provides important guidance for social behavior (Huddy & Khatib, 2007; Tajfel & Turner, 1986): individuals tend to copy the actions of others seen as members of their own social group (Cialdini & Goldstein, 2004) and likely increase their cooperation with them (Blader & Tyler, 2009; Tajfel, 1974; Terry, Hogg, & White, 1999). Nevertheless, this increased cooperation with individuals sharing the same identity is often accompanied by decreased cooperation with individuals perceived as belonging to an outgroup (Tajfel & Turner, 1986). For instance, shared identity can easily be manipulated experimentally by asking participants to express a preference for the paintings of either Paul Klee or Wassily Kandinsky (Tajfel et al., 1971). As a consequence, these participants tend to identify more with others that share their painter preference who they subsequently reward more and punish less than participants with a different painter preference. Participants in these experiments are also willing to maximizing the difference between ingroup and outgroup members at the price of deliberately disadvantaging the outgroup (Tajfel, 1974; Tajfel et al., 1971). Hence, increased cooperation with one's own group often goes along with deliberate discrimination of an outgroup.

Identification with one's own country and community can also be the basis of "healthy" patriotism, on the one hand, and "destructive" nationalism, on the other hand (Kosterman & Feshbach, 1989; Schatz et al., 1999). Patriotism reflects a psychological state of love for and pride in one's country and its community, whereas nationalism reflects a belief that one's own country should dominate and discriminate against other countries and their citizens (Federico et al., 2005; Kosterman & Feshbach, 1989; Mummendey et al., 2001). Patriotism, in principle based on positive evaluations of the own nation, however, does not exclude or even demand criticism of the own community if the community does not meet certain standards (Federico et al., 2005; Schatz et al., 1999). In contrast, nationalism can be characterized as a form of ethnocentrism in which the own community is not criticized and perceived as homogeneous—a view, typically combined with hostility towards foreigners living in one's own country (Blank & Schmidt, 2003; Federico et al., 2005).

Patriotism and nationalism are connected (Blank & Schmidt, 2003). However, the two are not necessarily reciprocally related (Brewer, 1999) and hence, might be activated independently from each other (Mummendey et al., 2001). According to experimental survey data from several countries, patriotism is activated by comparing one's own country's present with its past or by evaluating it without any explicit comparative standard or rational explanation (Mummendey et al., 2001). In contrast, nationalism tends to be activated when individuals are asked to compare their own country with other countries. These studies also show that thinking about national achievements as a comparison between past and present compared to thinking about differences between the own country and other countries does not lead to derogation of outgroup members like foreigners (Mummendey et al., 2001). Analogously, although no empirical evidence is yet available, the ability of identification with the local community versus the identification with the national community also may render it capable of reducing nationalistic tendencies (Herrmann & Brewer, 2004; Paasi, 2003). A reason might be that local patriotism in contrast to national patriotism is more dynamic concerning historical and geographical development (Raagmaa, 2010), a characteristic which might prevent immutable views and discrimination of outgroup members.

Identification with the community in one's country or local region in the form of patriotism, therefore, unlike nationalism, is social capital that fosters important prosocial behavior (Bar-Tal, 1993; Raagmaa, 2010; Rothstein, 2003) and thereby fuels social prosperity (Rothstein, 2003). For example, an analysis of World Value Survey (WVS) data from 45 countries suggests that those who are proud to be members of their own community show more trust in other people and contribute to a society's social capital by such responsible behaviors as not claiming unjustified government benefits, not buying stolen goods, and not lying in their own interests (Whiteley, 1999). Other studies also associate identification with one's own community with donation of blood or money and attentiveness to elections (Huddy & Khatib, 2007; Skitka, 2005). For tax compliance particularly, surveys from across the globe indicate that national pride and identification with one's own country or local community, as measurements of national and local patriotism, are positively associated with high tax morale (Hartner, Rechberger, Kirchler, & Wenzel, 2011; Konrad & Qari, 2012; Torgler, 2003, 2004, 2005; Torgler & Schneider, 2005). For instance, based on data from the WVS, European Value Survey (EVS), and Latinobarómetro, being proud to be a member of one' s own country is positively correlated with tax compliance in Asia (Torgler, 2004), Central and Eastern Europe (Torgler, 2003), Austria (Torgler & Schneider, 2005), and Latin America (Torgler, 2005). A two-wave study of 1,161 Australians also indicates that identification with the Australian community positively impacts social norms of tax compliance and tax-compliance intention (Wenzel, 2005). Admittedly, the very large samples in these studies (e.g., 92,141 participants in Whiteley, 1999) increase the possibility that the patriotism–tax-compliance relation is simply an artefact of large sample size (Lin, Lucas, & Shmueli, 2013); however, the effect sizes are not only statistically meaningful but also economically significant. Nevertheless, no experimental evidence exists for a causal impact of patriotism on cooperation, and none of the existing studies analyze the psychological processes that might mediate the relation between patriotism and tax compliance.

Concerning psychological processes which might cause indirect effects of patriotism, the slippery slope framework of tax compliance assumes that identification with one's own community should impact tax compliance through increased trust in the tax authority that then engenders voluntary tax cooperation (Gangl, Hofmann, & Kirchler, 2015; Kirchler et al., 2008). That is, the more citizens identify with their state and community, the more they should trust state authorities seeing them as benevolent and dedicated to the common good, and the more citizens should be motivated to voluntarily pay their taxes (Kirchler et al., 2008). Both experimental and nonexperimental research suggests that a shared identity leads to an evaluation of others as trustworthy (Tyler, 2001; Voci, 2006) and indicates that trust in tax authorities fuels individual voluntary motivation and willingness to pay them

(Kogler et al. 2013; Wahl, Kastlunger, & Kirchler, 2010). Hence, based on both the slippery slope framework and existing empirical data, patriotism's impact is likely to be based on an indirect psychological process that fuels trust in the tax authorities, generates voluntary motivation to cooperate, and thereby increases cooperation.

Despite these valuable insights, however, no empirical studies have as yet examined whether patriotism impacts cooperation directly or indirectly through different evaluative, emotional, and ultimately motivational psychological processes (Bar-Tal, 1993; Wenzel, 2007). A direct impact of patriotism would provide evidence that patriotisms' effect is predominantly implicit and emotional, conforming with a definition of patriotism as an emotional affiliation to one's country (Bar-Tal, 1993; Schatz & Lavine, 2007; Schatz et al., 1999). In contrast, an indirect effect via deliberate evaluations on whether or not to trust public institutions would suggest that patriotism has a deliberative cognitive impact on individuals as they evaluate whether or not to trust state institutions and only then develop a voluntary motivation that leads them to cooperate (Gawronski & Bodenhause, 2003; Wenzel, 2002; Wenzel & Jobling, 2006). At present, little is also known about whether the way that patriotism is activated, for instance, whether national patriotism or local patriotism is triggered, generates different processes such that some promotional patriotic tools induce a direct emotional process leading to automatic loyalty and cooperation whereas others lead to an indirect deliberate process that results in reason-based motivation to support one's own community.

The present study analyses the results of one survey and three experiments to determine whether typical patriotism promoting tools like the national flag, national achievements, and national landscapes lead to patriotism or nationalism. It also tests whether these tools impact tax cooperation and whether this effect is direct or indirect, mediated by reason-based trust in tax authorities and voluntary motivation to cooperate. To ensure results with high external validity, the study data were collected from field settings in which government institutions would typically use promotional tools to promote tax compliance—for example, the business sections of newspapers.

The remainder of the article is organized as follows: the next section outlines the survey results, after which we report the outcomes of the three experiments on the effects of the national flag, national achievements, and national landscapes. We then discuss the theoretical and practical implications of these findings and explore how patriotism can be used to increase social capital and citizens' cooperation with the state.

Survey

Sample

Our sample was made up of 84 Austrians, the majority of whom were male (66.7%), with an average age of 44.13 (SD = 12.24, range: 23–72). Most participants had a university degree (33.3%), were employed in the private sector (45.2%), and reported a monthly income between 1,501 and 3,000 Euro (40.5%). When asked to indicate their experience with tax authorities on a 7-point scale, participants rated themselves overall as rather experienced (M = 4.45, SD = 1.67).

Material

The online questionnaire included items on patriotism, nationalism, trust in the tax authorities, voluntary cooperation, and tax-compliance intention. Patriotism was assessed as national and local patriotism, based on national pride and identification with the local community. National pride was measured on a 7-point Likert scale from 1 = *not proud at all* to 7 = *very proud*, using the following WVS item: "How proud are you to be Austrian?" Identification with the local community "I see myself as a part of my local community" was measured on a 7-point Likert scale from 1 = *totally disagree* to 7 = *totally agree*, again based on the corresponding WVS item. Nationalism was measured based on four items from Meier-Pesti and Kirchler's (2003) nationalism scale: (1) "It is important that Austria is different than other countries"; (2) "Austria is a better country than most other countries"; (3) "It would be good if Austria would differentiate itself more from other countries"; and (4) "It is justified that Austria is better off than other countries."

Trust in tax authorities was measured using five items modelled after Castelfranchi and Falcone's (2010) sociocognitive definition of trust which captures trust as a reason-based and deliberate decision to trust: "I trust the tax authorities in Austria . . . (1) because of their highly motivated employees who give comprehensive advice, (2) because they involve no financial dangers for me, (3) because they have the important objective of giving competent advice, (4) because they benevolently advise taxpayers, and (5) because they give me competent advice." Voluntary tax cooperation was assessed using five items from the TAX inventory (Kirchler & Wahl, 2010): "When I pay my taxes as required by the regulation, I do so . . . (1) because to me it's obvious that this is what you do, (2) to support the state and other citizens, (3) because I like to contribute to everyone's good, (4) because for me it's the natural thing to do, and (5) because I regard it as my duty as a citizen." All scales were measured on a 7-point Likert scale from 1 = *I do not agree* to 7 = *I totally agree* and are highly reliable, with a Cronbach's α equal to .79, .91, and .88, respectively.

Tax-compliance intention was assessed based on the following scenario: Participants were asked to imagine having to pay 40% tax on a self-employed income of 83,330 Euro with an audit probability of 17% and a tax evasion fine equal to the amount of the tax evaded. An open-ended question then asked them to indicate how much tax they would be willing to pay in this scenario. The questionnaire also collected sociodemographic data, including citizenship, sex, age, education, occupation, income, and experience with tax authorities.

Procedure

To recruit participants, we posted an invitation to take part in a survey on the financial decision making of individuals currently living in Austria on the business discussion forums of eight Austrian newspapers. Those who followed the link were redirected to an online questionnaire structured in four sections: The first asked participants to indicate their citizenship. The second included the scenario measuring tax-compliance intentions, followed by items on national pride, identification with the local community, nationalism, trust in tax authorities, and voluntary cooperation. The third and final sections collected the sociodemographic characteristics, after which participants were given an opportunity to leave comments and were thanked for their participation.

Results and Discussion

To identify the overall relation between national pride, identification with the local community, nationalism, trust, voluntary cooperation, and tax compliance, we conducted individual-level correlational analyses to assess three factors: whether national pride and nationalism are related to trust and voluntary cooperation, whether identification with the local community is related to voluntary cooperation, and whether voluntary cooperation is related to tax-compliance intention. The results, reported in Table 1, show no direct link between national pride, identification with the local community, nationalism, and tax compliance.

To test the assumption that national pride, identification with the local community, or nationalism have an indirect effect on tax compliance via trust and voluntary cooperation, we used Process software (Hayes, Preacher, & Myers, 2011) to run simple and multivariate linear regressions on a bootstrap sample of 1,000 participants. This analysis assessed the extent to which the relation

Table 1. Intercorrelation of Scales and Items of the Survey

	M (*SD*)	1	2	3	4	5
1. National pride	5.16 (1.79)					
2. Identification with local community	4.94 (1.95)	.07				
3. Nationalism	4.31 (1.49)	.61***	−.00			
4. Trust	3.52 (1.41)	.28*	.15	.20†		
5. Voluntary cooperation	5.13 (1.51)	.25*	.33**	.01	.32**	
6. Tax-compliance intention	81.58% (29.25)	.14	.00	.01	.14	.29*

Note. M = mean, SD = standard deviation
†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

between two variables might be indirect through a path of other mediating triggers (Hayes, 2013; Hayes et al., 2011).

The results indicate that, as expected, national pride leads to trust ($\beta = .28$, $p = .01$) which impacts voluntary cooperation ($\beta = .26$, $p = .04$), and in turn impacts tax compliance ($\beta = .28$, $p = .03$; 95% CI [0.05; 1.43]. The indirect effect via pride and trust alone (95% CI [−1.22; 1.60]) or pride and voluntary cooperation alone (95% CI [−0.14; 3.06]), however, is not significant. The results for identification with the local community show that identification with the local community triggers voluntary cooperation ($\beta = .33$, $p = .006$), which in turn impacts tax compliance ($\beta = .29$, $p = .03$; 95% CI [0.03; 3.94]). Other indirect paths are not significant (identification and trust: 95% CI [−0.49; 1.13]) or marginally not significant (identification, trust, and voluntary cooperation: 95% CI [−0.00; 1.01]). Nationalism seems also to be indirectly connected to tax compliance: it triggers trust in tax authorities ($\beta = .20$, $p = .09$), which fosters voluntary cooperation ($\beta = .32$, $p = .009$), and in turn tax compliance ($\beta = .28$, $p = .03$; 95% CI [0.02; 1.31]). The other indirect effects are not significant (nationalism and trust: 95% CI [−0.71; 2.16]; nationalism and voluntary cooperation: 95% CI [−1.99; 1.00]). In sum, we identify only indirect relations between identification with the community and tax-compliance intention: national pride and nationalism are related to trust in tax authorities, which fuels voluntary motivation to cooperate and in turn tax compliance. Identification with the local community, in contrast, seems to be related to voluntary cooperation (and less to reason-based trust), which fuels tax compliance. Hence, whereas national pride and nationalism tend to trigger deliberate processes in which evaluations about whether or not to trust tax authorities play a role, identification with the local community seems to be a rather emotional process that fuels patriotic motivations based on civic duty and not deliberate evaluation whether or not tax authorities can be trusted.

First Experiment: National Flag

Sample

The first experimental sample consisted of 110 Austrians, the majority of them male (70.9%), with an average age of 41.44 ($SD = 12.18$). Most participants had a university degree (34.5%), were employed in the private sector (36.4%), and had a monthly income of between 1,501 and 3,000 Euro. Again, when asked on a 7-point scale about their experience with the tax authorities, participants rated themselves overall as rather experienced ($M = 4.28$, $SD = 1.82$).

Material and Procedure

The recruitment of participants, conducted in online newspaper forums, was identical to that for the survey. After participants indicated their citizenship, their patriotism was manipulated by

Table 2. Means and Standard Deviations of the National Flag Experiment

	National Flag M (SD)	Fictitious Flag M (SD)
National pride	5.32 (1.45)	4.48 (2.10)
Identification with local community	5.02 (1.93)	4.63 (1.59)
Nationalism	4.24 (1.57)	3.71 (1.44)
Trust in the tax authorities	3.22 (1.45)	3.02 (1.41)
Voluntary cooperation	5.36 (1.74)	4.78 (1.71)
Tax-compliance intention	79.22% (26.49)	72.37% (34.80)

Note. M = mean, SD = standard deviation

randomly assigning them to one of two conditions: an image of their national flag or an image of a fictitious flag (see the online supporting information). Next, participants were presented with the same tax-compliance scenario as in the survey and filled in the same items on national pride, identification with the local community, nationalism (Cronbachs' $\alpha = .80$), trust in tax authorities (Cronbachs' $\alpha = .92$), voluntary cooperation (Cronbachs' $\alpha = .92$), and sociodemographic characteristics.

Results and Discussion

The differences between the experimental groups were identified using t-tests, with the national versus fictitious flag as the independent variable and national pride, identification with the local community, nationalism, trust, voluntary cooperation, and tax-compliance intention as dependent variables. The national flag led to greater national pride than the fictitious flag ($t(101) = 2.31$, $p = .02$, Cohen's $d = .47$) and also to marginally more nationalism ($t(98) = 1.76$, $p = .08$, Cohen's $d = .35$). No differences emerged for identification with the local community ($t(102) = 1.15$, $p = .25$). The results also indicate, however, that the national flag induced no higher trust in tax authorities ($t(90) = 0.65$, $p = .52$), tax-compliance intentions (t(108) = 1.14, $p = .26$), or voluntary cooperation (t(84) = 1.56, $p = .12$) than the fictitious flag. Respective means and standard deviations of the experimental groups are displayed in Table 2.

The corresponding regression analyses, again on a bootstrap sample of 1,000 participants, indicate an indirect effect. The national flag elicits national pride ($\beta = -.22$, $p = .02$), which in turn impacts tax compliance ($\beta = .27$, $p = .009$), 95% CI [−13.71, −0.58]. The results also show that national pride leads to more reason-based trust in tax authorities ($\beta = .27$, $p = .01$) and in turn fosters voluntary cooperation ($\beta = .34$, $p = .002$) and tax compliance ($\beta = .28$, $p = .01$; 95% CI [−2.09,−0.07]). The fact that no path without national pride is significant (trust in tax authorities: 95% CI [−2.39, 1.16]; voluntary cooperation: 95% CI [−10.78, 0.77]) implies that the national flag increases intended tax compliance indirectly through an explicit and deliberative process based on trust in tax authorities. Given the t-test result of no impact for the national flag on identification with the local community, no indirect effect via identification with the local community is possible. Also only tendencies but no significant indirect effects emerge for elicited nationalism (nationalism: 95% CI [−4.10, 4.20]; nationalism and trust: 95% CI [−2.20, 0.25]; nationalism and voluntary cooperation: 95% CI [−0.05, 3.87]; nationalism, trust, and voluntary cooperation: 95% CI [−1.70, 0.01]). These results indicate that an indirect effect similar to that found in the survey study occurs only if the national flag impacts national pride thereby indirectly fostering trust and voluntary cooperation and in turn tax-compliance intention. No such indirect effect on tax compliance is observed if the flag impacts nationalism.

Table 3. Means and Standard Deviations of the Priming Experiment

	Positive Priming *M* (*SD*)	Negative Priming *M* (*SD*)
National pride	5.08 (1.75)	4.35 (2.03)
Identification with local community	5.15 (1.95)	4.68 (2.29)
Nationalism	4.10 (1.55)	4.45 (1.74)
Trust in the tax authorities	3.64 (1.50)	2.83 (1.36)
Voluntary cooperation	5.22 (1.81)	4.84 (1.88)
Tax-compliance intention	81.77% (28.23)	69.43% (36.16)

Note. M = mean, SD = standard deviation

Second Experiment: Priming

Sample

Our sample comprised 99 Austrians, the majority of whom were male (63.6%), with an average age of 43.09 ($SD = 12.20$, range: 17–71). Most participants had a university degree (40.4%), were employed in the private sector (38.4%), and reported a monthly income between 1,501 and 3,000 Euro (40.4%). When asked to indicate their experience with tax authorities on a 7-point scale, participants rated themselves overall as rather experienced ($M = 4.46$, $SD = 1.92$).

Material and Procedure

The material, procedure, and analytical strategy were almost identical to those in the flag experiment except that instead of using a flag to manipulate patriotism, we employed national achievements as a priming mechanism to trigger patriotism (cf. Mummendey et al., 2001). Specifically, participants were asked to write down three reasons why they like (dislike) living in Austria, a positive (negative) priming eliciting high (low) patriotism. They were then instructed to read a short text highlighting recent Austrian achievements or shortcomings in such areas as health care, infrastructure, the quality of democratic institutions, and the economy. Next, as in the survey and experiment 1, participants were presented with a tax-compliance scenario and items on national pride, identification with the local community, nationalism (Cronbach's $\alpha = .80$), trust in the tax authorities (Cronbach's $\alpha = .89$), voluntary cooperation (Cronbach's $\alpha = .93$), and sociodemographic characteristics.

Results and Discussion

The differences between experimental groups were again identified using t-tests with positive versus negative priming as the independent variable and national pride, identification with the local community, nationalism, trust, voluntary cooperation, and tax-compliance intention as dependent variables. The positive priming for Austria led to marginally more national pride than the negative priming ($t(92) = 1.84$, $p = .07$, Cohen's $d = .39$), but no differences are observable for identification with the local community ($t(92) = 1.06$, $p = .29$) or nationalism ($t(91) = -1.00$, $p = .32$). Positive priming also generated more trust in tax authorities ($t(97) = 1.89$, $p = .01$, Cohen's $d = .57$) than did negative priming and also lead to marginally more tax-compliance intention ($F(97,1) = 3.58$, $p = .06$, Cohen's $d = .38$). No differences emerge, however, for voluntary cooperation ($t(81) = 0.90$, $p = .37$). Respective means and standard deviations of the experimental groups are illustrated in Table 3.

To identify the underlying psychological mechanisms, we again tested for indirect effects using a bootstrap sample of 1,000 participants. The results indicate that the priming impacts national pride ($\beta = -.19$, $p = .07$) which influences trust ($\beta = .15$, $p = .15$) and in turn impacts voluntary motivation to cooperate ($\beta = .41$, $p < .001$) and thus, tax compliance ($\beta = .65$, $p < .001$; 95% CI [−4.04; −0.01]). The other paths with national pride are not significant (national pride: 95% CI [−9.76; 0.16], national pride and trust in tax authorities: 95% CI [−0.01; 2.49]). However, the analysis also suggests paths without national pride: Compared to negative priming, positive priming leads to more trust in tax authorities ($\beta = -.26$, $p = .01$) which in turn impacts tax compliance ($\beta = .16$, p =16; 95% CI [0.25; 9.09]) or impacts first voluntary cooperation ($\beta = .43$, $p < .001$) and then tax-compliance intention ($\beta = .68$, $p < .001$; 95% CI [−10.80; −0.89]). Likewise, the *t*-test results indicate that priming has no impact on identification with the local community or nationalism, meaning that no indirect effect is possible via identification or nationalism. Taken together, these findings indicate that priming increases national pride and in turn, similar to the survey study, trust, voluntary motivation to cooperate, and tax compliance. However, the present results also suggest that reason-based trust in tax authorities seems to be particularly important for the indirect impact of the priming on tax compliance. Thus, the priming of national achievements seems to increase tax-compliance intention through an explicit deliberative process.

Third Experiment: National Landscapes

Sample

The third experimental sample consisted of 74 Austrians, the majority male (91.9%), with an average age of 43.14 ($SD = 13.02$, range: 21–70). As before, most participants had a university degree (40.5%), were employed in the private economy (37.8%), and earned between 1,500 and 3,000 Euro (55.4%) a month. When asked on a 7-point scale about their experience with the tax authorities, participants again rated themselves overall as rather experienced ($M = 4.55$, $SD = 1.79$).

Material and Procedure

Although patriotism was manipulated differently, the material and procedure in this intervention were identical to those in the previous experiments. Because market research suggests that national landscapes are the most important reason for Austrians to be proud of their country (Beutelmeyer, 2011), participants were randomly assigned either to a condition of seeing images of Austrian landscapes or a control condition of seeing images of Australian landscapes. For both conditions, participants were randomly presented with four pictures in two different orders to avoid order effects (see the supporting information for the images).

As in the national flag experiment and priming task, the dependent variables were tax-compliance intention, national pride, identification with the local community, nationalism (Cronbachs' $\alpha = .83$), trust in tax authorities (Cronbachs' $\alpha = .83$), voluntary cooperation (Cronbachs' $\alpha = .89$), and sociodemographic characteristics. Participants were also asked to indicate whether they recognized the landscapes presented and to write down what they thought each picture showed. Based on this information, we were able to calculate a *recognition* variable indicating whether participants (1) did not recognize or (2) recognized the landscape shown.

Results and Discussion

The differences between experimental groups were identified using ANCOVA, with national versus foreign landscape as the independent variable; national pride, identification with the local community, nationalism, trust, voluntary cooperation, and tax compliance as dependent variables; and recognition as the control variable. Although the national landscape pictures led to more identification with the local community ($F(71,1) = 3.93$, $p = .05$, $\eta^2 = .05$), the national (Austrian) landscape

Table 4. Means and Standard Deviations of the National Landscapes Experiment

	National Landscape *M* (*SD*)	Foreign Landscape *M* (*SD*)
National pride	4.81 (2.03)	4.66 (1.58)
Identification with local community	4.92 (1.73)	4.03 (2.01)
Nationalism	3.91 (1.65)	4.23 (1.47)
Trust in the tax authorities	2.94 (1.31)	2.82 (1.13)
Voluntary cooperation	5.11 (1.49)	4.88 (1.66)
Tax-compliance intention	86.25% (23.07)	76.92% (26.42)

Note. M = mean, SD = standard deviation

pictures did not generate more national pride ($F(71,1) = 0.14$, $p = .71$) or nationalism ($F(71,1) = 1.02$, $p = .32$) than the foreign (Australian) landscape controls. The results also reveal no differences between the conditions for trust in tax authorities ($F(71,1) = 0.29$, $p = .60$) or voluntary cooperation ($F(71,1) = 1.68$, $p = .20$). They do, however, indicate that national landscapes led to higher tax-compliance intention than foreign landscapes ($F(71,1) = 5.56$, $p = .02$, $\eta^2 = .07$). Respective means and standard deviations of the experimental groups are shown in Table 4.

The significant recognition covariate for tax-compliance intention ($F(71,1) = 8.58$, $p = .01$, $\eta^2 = .11$) also indicates that nonrecognition increases tax-compliance intention (Spearman correlation = $-.29$, $p = .01$) in a similar manner in both experimental conditions (national landscape: Spearman correlation = $-.30$, $p = .07$; foreign landscape: Spearman correlation = $-.41$, $p = .01$). The covariate is insignificant, however, for pride, identification with the local community, nationalism, trust, and voluntary cooperation (all at $p \geq .10$).

An additional analysis with recognition as a control variable was aimed at identifying the mechanisms determining the landscapes' impact on tax compliance. This analysis, again conducted on a bootstrap sample of 1,000, points to an indirect impact via identification with the local community ($\beta = -.24$, $p = .05$), which impacts voluntary tax cooperation ($\beta = .41$, $p < .001$) and in turn tax-compliance intention ($\beta = .29$, $p = .02$; 95% CI [-5.04; -0.01]). No other mediation models produced significant results: identification with the local community (95% CI [-3.34, 4.26]), identification with the local community and trust in tax authorities (95% CI [-2.40; 0.06]), trust in tax authorities (95% CI [-3.94, 1.99]), trust and voluntary cooperation (95% CI [-1.35; 0.43]), or via voluntary cooperation (95% CI [-6.34; 1.95]). According to the ANCOVA results, the landscapes have no impact on national pride or nationalism and can thus have no indirect effect via pride or nationalism. These findings imply that the landscapes' impact on tax-compliance intention is indirect and rather implicit. This assumption is also supported by the finding that the landscapes particularly increased tax-compliance intentions of those participants who did not deliberately recognize them. As with the survey results, identification with the local community triggers the voluntary motivation to cooperate and in turn tax-compliance intention without rational consideration of whether national tax authorities can be trusted.

General Discussion and Conclusion

To demonstrate that patriotism can be used as a promotional tool for cooperation with the state, this article reports evidence from one survey and three experimental studies showing that certain patriotic materials can indeed impact identification with the community and increase cooperation. Nevertheless, the present article also shows that attempts to manipulate patriotism can also lead to destructive nationalism and apparently have different underlying mechanisms depending on whether the identification is with the national or regional community (Bar-Tal, 1993; Mummendey et al., 2001). Specifically, our results indicate similar to previous research from the United States (Butz et al., 2007; Kemmelmeier & Winter, 2008), that the national flag, although it does have an impact on patriotism, also increases nationalism. National achievements (Mummendey et al., 2001) or national landscapes, on the other hand, impact patriotism without triggering nationalism. The results also show that whereas the processes underlying cooperation generated by identification with the national community include deliberate trust in national tax authorities, those underlying identification with the local community do not include trust in national authorities. The present article is one of the few which uses different priming methods to examine the impact of patriotism and nationalism on domestic policy attitudes.

The current findings confirm and expand research showing a connection between patriotism and cooperation with the state (Konrad & Qari, 2012; Whiteley, 1999). In particular, the present studies demonstrate that identification with one's own country or local community are indeed related to tax compliance but through indirect paths mirroring different psychological processes. Whereas identification with the community of one's own country (e.g., manipulated through the national flag or national achievements) impacts trust in national tax authorities, voluntary motivation to cooperate, and thus tax compliance, identification with the local community (e.g., manipulated through national landscapes) seems to impact tax compliance only via the voluntary motivation to cooperate out of a felt loyalty and not via deliberate trust in national authorities. However, identification with the local community might also involve trust in authorities, but in local authorities and not in national authorities. Future empirical studies are needed to replicate the present findings and additionally assess trust in local authorities.

The present results also indicate that promotional tools which trigger identification on a local level (e.g., through national landscapes) compared to identification on the national level (e.g., through the national flag) run a smaller risk of triggering nationalism next to patriotism (Herrmann & Brewer, 2004; Raagmaa, 2010). This might be related to the way local identity was manipulated in the present study. If local identity is triggered through local symbols such as flags or traditional costumes, a local identity might also increase nationalism as degradation of outgroup members.

While national flags and national achievements trigger patriotism, only national achievements seem to be able to trigger patriotism without nationalism. This outcome confirms previous experiments on the effect of national flags (e.g., Butz et al., 2007; Kemmelmeier & Winter, 2008) and national achievements (Mummendey et al., 2001). These results clearly suggest that public institutions should rather present national achievements than the national flag to increase cooperation of citizens. However, national achievements might also lead to nationalism if they are not carefully designed. For instance, if the comparison between ones' country's past with its present leads to the impression that the country is more successful in mastering challenges than other countries, nationalism might be triggered as well. Therefore it can be suggested to public institutions to run pretests of promotional material they would like to use to ensure that their material is only eliciting patriotism and not nationalism.

The results on the covariate recognition of landscapes show that nonrecognition of landscapes leads to more tax-compliance intentions than recognition of landscapes. Although this relation can be found in both experimental conditions (the national and the foreign landscape condition), it is only significant in the foreign landscape condition. Concerning the foreign landscapes, it is perhaps not surprising that explicit recognition of a foreign country is negatively related to national tax compliance. Nonrecognition of a foreign landscape might be perceived as a neutral landscape which does not influence tax-compliance intentions. In contrast, the explicit recognition of a foreign country might lead to the impression that tax compliance does not support one's own community but a foreign community, a perception which might reduce tax-compliance intentions. However, nonrecognition of national landscapes also tends to be related with more tax-compliance intention than recognition of national landscapes. One could speculate that recognized national landscapes might be linked to concrete and sometimes negative attitudes which in turn reduce tax compliance. In contrast, nonrecognized national landscapes might unconsciously only be perceived as familiar and therefore might implicitly elicit more positive emotions and more tax-compliance intentions. However, these are only speculations, and the underlying sample sizes necessitate approaching such arguments with caution. Future studies are needed to replicate the current finding and to shed light on the reasons why nonrecognition of landscapes might be positively related to cooperation with the state.

The present research is subject to certain limitations. First, although public institutions like tax authorities need the cooperation of foreign citizens, all participants in our research had Austrian citizenship. This choice was made based on the assumption that the Austrian national flag, national achievements, and/or national landscapes might not be as familiar to foreigners and might not, therefore, have equal power to increase their identification, trust, and cooperation. Nonetheless, future studies should investigate how identification with the country or region of residence can be triggered to increase trust and cooperation in foreigners.

Second, unlike the findings in previous research (Torgler, 2003; Whiteley, 1999), the survey results from this study identify no significant direct relation between patriotism and tax compliance, only a tendency for the two to be linked. We attribute this failure to our smaller sample sizes; had our survey used thousands of participants like others in the literature, this mere tendency might have grown in significance. Nonetheless, this result does underscore our experimental finding that the relation between patriotism and cooperation is not direct but indirect and mediated through trust and voluntary motivation to cooperate.

Finally, our research design does not take into account the fact that Austria has one of the highest tax morale and tax-compliance rates across the globe (Alm & Torgler, 2006; Schneider, Buehn, & Montenegro, 2010). Future empirical research thus needs to clarify whether our findings can be replicated in countries with lower tax-compliance rates and hence lower perceived social norms of compliance. Our findings do, however, emphasize the high relevance of patriotism for cooperation: patriotism seems to increase tax-compliance intention even beyond Austria's already high tax-compliance rates.

Despite these shortcomings, our findings have important theoretical and practical implications for governmental information campaigns promoting cooperation. First, they show that emphasizing national achievements not only promotes patriotism without nationalism but increases cooperation and maybe even more important, trust in public institutions. Given the declining levels of trust—and thus social capital—in Western democracies (Putnam, 1995), this outcome seems particularly important. Based on our findings, campaigns that make citizens aware of national progress can strengthen reason-based trust and optimism, important determinants not only of tax compliance, but also of economic and social prosperity (Akerlof & Shiller, 2009; Gangl, Kastlunger, Kirchler, & Voracek, 2012). On the other hand, patriotic materials that trigger a local identity, although they too increase cooperation, may not have the important side-effect of triggering trust in national public institutions. It also seems likely that a cooperation effect induced through an implicit cue like national landscapes may be short lived, whereas one induced through explicit positive evaluations of state achievements may have a long-term impact. Although the use of national landscapes can be recommended to increase cooperation, public institutions that want to increase patriotism, trust, voluntary motivation to cooperate, as well as long-term cooperation should particularly highlight national achievements in their promotional campaigns (Bar-Tal, 1993; Mummendey et al., 2001).

Our observations also provide useful insights for public campaigns in general. Whereas some patriotic materials (e.g., the national flag) induce nationalism and should be avoided, others, such as national achievements or national landscapes, can increase citizens' identification and cooperation with their community. Nevertheless, if a long-term impact on patriotism, trust, and cooperation is pursued, campaigns should use salient and explicitly positive evaluations of state achievements (Bar-Tal, 1993). Such an assumption is supported by our empirical evidence that patriotism can be elicited and leveraged to increase citizens' trust and gain their voluntary cooperation with both the state and the community.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Photos of fictional country and Austrian flags

Photos of Australian and Austrian national landscapes

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How to Achieve Tax Compliance by the Wealthy: A Review of the Literature and Agenda for Policy

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Tax compliance by the wealthy is relevant not only because their contributions are essential to maintain public budgets and social equality, but because their (non)compliance behavior and the perceived (un)fairness of their contributions can fuel social unrest. In this article, after giving a brief history of taxing the wealthy, we review the existing theoretical, empirical, and policy literature on their tax compliance. We discuss how and why the wealthy differ from less affluent taxpayers because of specific interrelated political, social, and psychological conditions. Understanding the psychological mechanisms that determine the tax compliance of the wealthy can provide policy insights on how to better integrate the wealthy in the tax system. Therefore, the present review is also a starting point for new policy approaches to increase tax compliance and tax morale among the wealthy.

Healthy state budgets and social cohesion depend on the tax cooperation of the wealthy. But with increasing levels of income inequality in strong economies such as the United States or Germany (Stiglitz, 2018), the public and many scholars are increasingly questioning whether the rich are sufficiently contributing to the provision of public goods. Scholars and intellectuals such as Piketty (2014)

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and Bregman (2017) emphasize that the real problem of our time is tax avoidance by the rich who do not pay their fair share (see, e.g., recent 2019 World Economic Forum in Davos). Bregman, for example, emphasized the importance of taxes compared with the philanthropic schemes of the rich.[1]

Tax compliance of the wealthy not only directly impacts a state's capacity to finance public goods, but it also influences the tax compliance of the general population and can be the cause of social and political turbulence (for historical examples, see Adams, 1993; Finer, 1999; Webber & Wildavsky, 1986). Recent examples are the "Occupy Wall Street" protest in the United States in 2011 or the "Mouvement des Gilets Jaunes" in France in 2018. Tax changes have become a divisive issue centered around fairness in which some politicians regard efforts to increase taxes as "class warfare," whereas others consider lower taxes for the wealthy as balancing the budget on "the backs of the poor" (Slemrod & Bakija, 2000, p. 50).

The wealthy's tax behavior is also socially important because they, by personifying society's measures of success, prompt other citizens to imitate their tax behavior (Fassin, 2005). This role model function, interpreted from an evolutionary perspective, is a strategy to improve survival chances by learning from those perceived as the best models, whose habits, styles, goals, and motivations are worth imitating (Henrich, 2015, p. 120). Thus, if accusations of tax fraud by sports stars, Chief Executive Officers, and politicians violate ordinary citizens' tax morale, these latter then start questioning the reasons for their own tax honesty. Massive fines for tax evasion rarely harm their fame and positive image, or even the role model function. For example, a fine of 18.8 million Euros imposed on Portugal's football superstar Cristiano Ronaldo did not diminish the cheers and adulation after a brilliant hat trick in the World Cup.

For their part, the wealthy do contribute substantially to the tax pool. As an example, the top 2.7% of the income bracket in the United States pays about 51.6% of total income taxes (Desilver, 2016), while in Germany, the top 5.6% contributes 43.25% (Bundeszentrale für Deutsche Bildung, 2013). Even taking into account the high portion of indirect taxes (e.g., value-added taxes) in total tax returns (between 30% and 55% in the EU; Carone, Schmidt, & Nicodème, 2007) paid mostly by the middle and lower classes, rich individuals' contributions are essential for financing public goods (OECD, 2008) such as infrastructure or health care. The problem is, as empirical data show (e.g., E. Hofmann, Voracek, Bock, & Kirchler, 2017b), that the motivation to engage in tax evasion and avoidance increases with wealth. Many wealthy individuals also support initiatives to reduce their tax contributions (e.g., Tea Party protests, see Martin, 2015) and promote alternatives to tax payments such as the philanthropic system (Giridharadas, 2019). Thus, understanding the political macro, social, meso and individual micro

[1] https://www.youtube.com/watch?v=P8ijiLqfXP0

mechanisms that determine and psychologically motivate the wealthy to pay taxes are essential to maintain and increase state budgets and social cohesion.

Despite the importance of the subject, social science (and particularly psychological science) remains surprisingly silent on the topic. Most tax research focuses on compliance by average citizens, with only a limited number of studies explicitly comparing the compliance behavior of the wealthy with that of the middle or lower class. However, the wealthy are different from the average citizen in the sense that they not only have access to different political and legal possibilities, opportunities, and incentive structures, but also have different social environments and individual dispositions that are relevant for their tax behavior. The aim of the present review is to draw attention to these differences and their psychological origins and expressions, thereby highlighting the importance for more differential tax research and tailored tax policies.

The present article starts with an historical overview. This overview shows the importance of tax collection from the wealthy and demonstrates that the status quo is by no means unchangeable. We then move to contemporary tax research and give a definition of tax compliance before examining the empirical evidence, indicating that (on average) the wealthy are less tax compliant than less affluent taxpayers. Based on a review of the interrelated political (macro), social (meso), and individual (micro) factors, we discuss psychological causes, research gaps, and practical solutions concerning the lower tax compliance of the wealthy. Among other things, we show how the political and legal macro level allows the wealthy to "morally disconnect" from their own tax behavior and therefore from their impact on society. On a meso level, their ability to hire highly skilled tax practitioners transforms their tax decisions into a group decision with specific group dynamics allowing to "optimize" their tax behavior. Also, on the micro level, the wealthy differ from average taxpayers as wealth and status go together with specific personal values, which likely increase reactance to taxation. We argue that the entire range of these peculiarities calls for more tailored policy approaches, which (as our historical overview shows) can be built on good examples from the past. Finally, we discuss how the classical coercion-based and legitimacy-based instruments that are used to influence tax compliance can be applied to address the peculiarities of the wealthy. We claim that for each level—the macro, meso, and micro—a specific combination of hard coercive-based and soft trust-generating legitimacy-based measures is necessary to achieve tax compliance from the wealthy.

In this article, we highlight innovative social psychological research in addition to reviewing literature from a wide range of other academic disciplines (e.g., economics, sociology, political science, history) and practitioners (e.g., OECD, tax administrations). Applying this multidisciplinary approach allows us to generate new ideas that go beyond expensive and hard-to-implement tactics designed to foster tax compliance of the wealthy, such as international cooperation in closing legal loopholes given the armada of tax havens that offer tax "saving" schemes to the rich. Understanding the specific psychological differences between wealthy and average taxpayers and their causes is important to policymakers whose job is to increase compliance in these specific target groups. Such understanding is also relevant for researchers interested in cooperation, poverty reduction, inequality, and behavioral interventions in public management.

A Short History of Taxing the Wealthy

The history of taxes and the evolution of human societies are closely intertwined. In early societies, those with power created economic bottlenecks in trade routes so that they could collect payments from merchants in return for safe passage (Pennisi, 2012). These tax earnings were used to defend and further extend their rule (Pennisi, 2012) making stable finances the foundation of state power (Davies & Friedman, 1998; Webber & Wildavsky, 1986). For instance, from 5,000 BCE onward, the flourishing Egyptian culture had its own sophisticated tax system (Davies & Friedman, 1998) with the Rosetta Stone (inscribed around 200 BCE) as its most famous artifact, being a tax document granting exemptions to priests (Carlson, 2005) and reporting the reactions to a tax revolt (Adams, 1993). The Pharaoh regularly collected taxes from officials and ordinary citizens, with special levies as needed (e.g., for military campaigns; Ezzamel, 2002). To avoid the risk of scribes enriching themselves by cheating taxpayers, pharaohs increased the salary of their scribes (Adams, 1993). In addition, scribes were instructed to conduct tough enforcement strategies, but also to act kindly and were granted autonomy to reduce the tax for poor farmers (Adams, 1993, p. 8). Thus, even in ancient Egypt, the importance of a well-paid, and therefore trustworthy and competent tax administration was recognized as a key factor for successful tax collection.

Ancient Greece developed a tax system that depended on a sophisticated administration, but was also strongly based on social norms and social enforcement, in which wealthy citizens were expected to make voluntary contributions to various state projects (Reich, 2018). This so-called Liturgical system encouraged the rich to compete for honor and gratitude in a way that led to public improvements and beautiful buildings; that is, the liturgy. Public buildings, amusements, and, in particular, military equipment were purchased by rich citizens and donated to the city (Adams, 1993). An interesting feature of the liturgical system was the so-called “antidosis procedure”: A wealthy person who was assigned a liturgical service could attempt to resist to perform the liturgy by nominating another, wealthier person who had not performed any significant liturgy recently. In cases where the two could not come to an agreement, a court would decide which of the two would carry out the liturgy (Reich, 2018).

With the Industrial Revolution, land and property were used to obtain credit, to invest and earn income based on profit (Seligman, 1913). The new developments allowed banking families like the German Fuggers to gain immense wealth. Wealth creation and contribution to state finances were intertwined. The bankers lent money to the Kings who often paid back their loans not with money, but by granting mining or other monopoly rights (Graulau, 2008). However, sometimes, the Kings defaulted; for example, around 1,600 CE, the Spanish King shirked his debts, thereby making the Fuggers pay for his wars. The Habsburg dynasty was particularly notorious for defaulting (e.g., five times just in the 19th century, see Gasser & Müller, 2012). Thus, especially in times of war—and hence need—states took money away from the wealthy for state reasons.

In 1798, England needed to fund the Napoleonic Wars, which may have provided the motivational base to invent the first known income tax. This was a progressive system in which those with lower income paid less than those with higher income (Cooper, 1982). The new idea was probably influenced by the concurrent rise of the labor movement (Aidt & Jensen, 2009) and mirrored Smith's (1937, p. 777) similar proposal in his *Wealth of Nations* that "the subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their abilities." Thus, although it was first implemented only temporarily as "national defense levies," the progressive income tax soon became the primary source of national finance in most countries (Steinmo, 2003).

In the early and mid-20th century, progressive income taxation was extreme by today's standards, with national finances based on taxes from corporations and from fewer than 5% of the wealthiest citizens (Steinmo, 2013). In Spain, only 1,500 individuals paid taxes in 1933 (Alvaredo & Saez, 2009). In the United States, the Second World War increased national expenditures more than 12-fold (Steinmo, 2003), which meant that taxes on the easily identified rich were no longer sufficient, and the government began to include the identifiable income of an increased number of industry workers in the tax collection. To gain the acceptance of the workers, the marginal tax on the wealthy was pushed up to extreme levels, while the tax thresholds were substantially lowered (Steinmo, 2003), with a major propaganda campaign linking all income tax to the war effort (Jones, 1988). Hence, while only the richest in the United States paid income tax before 1930, by the end of World War II, 60% of income earners paid (Steinmo, 2003), and after the war, income tax was no longer an exclusive tax for the rich but a tax for the masses (Jones, 1988). Nevertheless, at this time, the rich were paying more than ever, with a 1957 U.S. federal individual income tax of 91% on incomes over USD400,000 (equivalent to around USD3,500,000 today; Slemrod, 2000) compared with the current rate of 39.6%.

After the Second World War, income taxes were maintained rather than being rolled back (Steinmo, 2003), with both politicians and economists positing that the state should manage the capitalist society through tax regulations. This political consensus ended in the early 1980s with representatives of neoliberal thought such as Friedrich von Hayek and Milton Friedman (Mirowski & Plehwe,

2015) questioning whether the complex tax code was really fair, and whether it helped accomplish the government's goals (Steinmo, 2003).

Then, in the mid-1980s, U.S. taxes were cut dramatically, resulting in an increase in public deficits. Further questions were raised about the state's ability to manage society, a trend that went hand in hand with disregard for a progressive income tax system (Steinmo, 2003). Because of increased income tax evasion (accelerated through the increased opportunities of a globalized financial market), consumption taxes—being hard to evade—became more popular (Graetz & Wilde, 1985), while at the same time, countries began competing to attract foreign capital through tax exemptions (Devereux, Griffith, Klemm, Thum, & Ottaviani, 2002). Across the globe, countries began following the U.S. tax reforms, lowering taxes while financing income tax reductions by increasing other taxes (e.g., VAT, FICA; Devereux et al., 2002; Steinmo, 2003). As a result, the average tax rate of 26.38% for the top 400 highest earning taxpayers in 1992 fell to 23.13% in 2014 (IRS, 2014); since Donald Trump's tax reforms began, this group now has lower effective tax rates than any other group in the United States (Saez & Zucman, 2019). The same trend is observable in Germany where the tax rates on capital companies declined from 53% in 2000 to 42% in 2005 (Hartmann, 2011). On the other hand, the tax burden of the masses increased with the rise in value-added taxes, so that in Germany today, around 50% (compared to 40% in 1990) of total tax monies come from value-added taxes, with only around one third from income tax (compared to 40% in 1980; Hartmann, 2011).

Overall, this history of taxation identifies several factors that facilitate the raising of tax revenue from the wealthy: (i) the ability of the state to identify wealth, thus taxable assets, (ii) a professional tax administration, (iii) budgetary necessity, often related to war, and (iv) political, social, and intellectual trends. If several of these factors come together as they did in the United States during the world wars, with the war against the Nazis generating patriotism and a common social drive, extremely high taxes can be collected from the wealthy (Steinmo, 2003). Thus, what seems to help is a "common purpose" under which the community can assemble and bond. Humans are "groupish" (Boyer, 2018) as within-group cooperation tends to favor success in intergroup competition (Henrich, 2015). Thereby, the statement of Nobel prize winner Joseph Stiglitz that "The climate crisis is our third world war" (Stiglitz, 2019) might be the adequate first step in creating such a new narrative and vision under which the global community, including the wealthy can unite, a narrative that is strong enough to even increase tax contributions of the top 1%.

What Is Tax Compliance?

In the present review, we use the term tax compliance in general terms such that high- versus low-tax compliance means that individuals pay more compared to less tax to the state. Tax compliance can be differentiated into a motivational and behavioral component (Kirchler, 2007). Tax compliance *motivation* is defined as the individual willingness to comply with the tax law. The literature typically differentiates (as we do in our research) between the sources of motivation: enforced, voluntary, and committed tax motivation represents the continuum between the two broad angles of extrinsic and intrinsic motivation (Feld & Frey, 2007; Gangl, Hofmann, & Kirchler, 2015; Ryan & Deci, 2000, Torgler, 2007). Enforced motivation means that someone only pays taxes because of the fear of audits and fines. Voluntary motivation means an individual gives in to the tax law and pays because it is easier than evasion. Committed motivation drives someone to pay taxes because of a felt moral duty (Gangl et al., 2015; Koessler, Torgler, Feld, & Frey, 2019) or due to emotional stress, probably related to anticipated guilt or shame (Blaufus, Bob, Otto, & Wolf, 2017; Dulleck et al., 2016).

Tax compliance *behavior* refers to the concrete behavioral compliance with specific tax laws (Gangl, Hartl, Hofmann, & Kirchler, 2019; Kirchler, Maciejovsky, & Schneider, 2003) such as honest and timely payment and tax filing (i.e., tax honesty), proper and transparent handling of documents (i.e., administrative compliance), registering as a taxpayer (i.e., tax filing), legal exploitation of the tax law (i.e., tax avoidance), paying less than the statutory tax (i.e., tax evasion), or criminally exploiting the tax law (i.e., tax fraud).

Although a coherent typology of tax compliance motivations or behaviors does not exist, many studies conclude that there is a positive relationship between tax motivations and tax behaviors such that an intrinsic motivation to be an honest taxpayer also should result in higher tax honesty or lower tax avoidance (Gangl et al., 2015; Torgler, 2007; Wenzel, 2005). However, compared to tax motivations, which can be assessed with specific questionnaires (e.g., Kirchler & Wahl, 2010; Torgler, 2016), the assessment of tax compliance behaviors is inherently difficult, operating as it does in the shadows. Therefore, real tax compliance behavior can only be *estimated*, even by the revenue bodies. In fact, due to complex tax laws, taxpayers themselves often do not know whether they are honest or dishonest (Kirchler, Niemirowski, & Wearning, 2006), with some believing themselves honest but actually evading taxes, while others report evading taxes but are, in fact, honest. To study tax compliance, therefore, a multimethod approach is used in which revenue data, survey data, experimental data, and qualitative methods are combined to understand self-reported motivations and behaviors.

The Wealthy Are Less Tax Compliant than Average Taxpayers

The empirical evidence is relatively clear, no matter whether tax compliance motivation or behavior is examined or what method is used: almost all studies report that the wealthy are (on average) less tax compliant than middle-class citizens. Research using World Values Survey data shows a negative relation between income and tax motivation (Doerrenberg & Peichel, 2013), although our own research indicates that the results are mixed when different regions are considered separately (for an overview, see Torgler, 2007). A meta-analysis of 334 survey studies also reports a negative relation between income and self-reported tax compliance (E. Hofmann et al., 2017b). Furthermore, E. Hofmann et al. (2017b) demonstrate that this negative relation is stronger in Eastern Europe and Central Asia than in other world regions. Most notably, the negative relation holds even when the data sets may not sufficiently capture particularly wealthy taxpayers (e.g., the top 5% of income earners).

Studies based on tax revenue data that control for opportunity to evade and for tax rates also find a negative relation between income and tax honesty (Crane & Nourzad, 1986; Feinstein, 1991; Pommerehne & Weck-Hannemann, 1996). Likewise, recent studies that match wealth records from Norway, Sweden, and Denmark with microdata leaked from two large offshore financial institutions (HSBC Switzerland and Mossack Fonseca) indicate that tax evasion increases sharply with wealth, with the top 0.01% of the wealth distribution (i.e., households with more than $40 million in net wealth) evading about 30% of their income and wealth tax versus 3% by taxpayers overall (Altstaeder, Johannesen, & Zucman, 2017). Another study using IRS data of around 55,000 taxpayers concludes that the relationship between income and tax compliance has a reverse U-shape (Cox, 1984), meaning that, on average, the most noncompliant taxpayers are those with either very high or very meager incomes, with middle-income taxpayers being the most compliant (Cox, 1984). On the other hand, reports from the United Kingdom claim that affluent taxpayers are more likely to submit their tax returns on time than other taxpayer groups (Tax Audit Office, 2016)

In general, aggressive tax avoidance tends to be discussed in relation to companies, particularly with respect to large multinational corporations (e.g., Apple, Google, Starbucks, Amazon, Facebook) that engage in profit shifting from high-tax to low-tax jurisdictions (European Commission, 2016; Frijters, Gangl, & Torgler, 2019). Consequently, multinational enterprises pay relatively low amounts of tax (Crivelli, De Mooij, & Keen, 2016; Dharmapala, 2014), like the mere 10% tax on real profits paid by Google in the United Kingdom (Tax Justice Network, 2016). According to the OECD, an estimated USD100 to 240 billion are lost globally each year to the profit-shifting activities of multinationals (OECD, 2015a). Although OECD countries have begun implementing policies to reduce profit-shifting (BEPS), the success of these initiatives depends on each country's willingness to forego maximization of its own short-term financial benefit. Some suggest that a 10 percentage point reduction in a country's average effective tax rate would, in the long run, increase the stock of inward foreign direct investment by an average of over 30% (De Mooij & Ederveen, 2008).

Like large corporations, wealthy individuals are also widely involved in tax-avoidance activities, with top earners and football stars sometimes even moving to another country to avoid taxation (Kleven, Landais, & Saez, 2013; Kleven, Landais, Saez, & Schultz, 2014). However, most individuals may not only find such a step more difficult, but some star scientists (measured by the number of patents) and millionaires (Moretti & Wilson, 2017; Young & Varner, 2011) stay put simply because moving abroad also involves great costs; for example, costs involved in migration, living expenses, personal circumstances, and connections (Simula & Trannoy, 2010). Hence, rather than moving to another country, affluent individuals may prefer to avoid taxes by moving money to less-taxed assets (e.g., in the stock market, trusts, or real estate; Goolsbee, 2000) or by donating to charity (Peloza & Steel, 2005). On the other hand, as the so-called Paradise Papers show, wealthy individuals can also legally avoid taxes by moving money to offshore havens. Overall, however, in contrast to the tax loss from corporate tax avoidance, the loss from wealthy taxpayers stems from a combination of tax avoidance and tax evasion (Gravelle, 2009). For instance, the U.K. HRMC reports that their 2015 auditing and monitoring activities enabled the collection of £230 million from avoidance schemes, £140 million from disclosure of offshore facilities, and £80 from serious civil fraud, a clear indication that tax avoidance and tax evasion are equally important for tax loss among rich taxpayers (National Audit Office, 2016).

Finally, some wealthy also engage in criminal tax fraud, although they might frame it as a sort of clever tax avoidance. One such example are the cum-ex business models in which wealthy individuals (with the help of banks) claim unjustified tax refunds for investments, generating a total loss of 31.8 billion Euros for Germany (Ackermann et al., 2017). Thus, the simple business model of cum-ex investments is to withhold money from the public tax coffers by exploiting imperfections in the tax administration. A legal solution for the future would be to forbid any businesses whose profit is only generated by exploiting the tax law.

However, by considering the interrelated micro, meso, and macro conditions, governments can understand why the rich evade and avoid taxes, and therefore develop strategies to increase motivation to pay honestly. In the following, we present the political, social, and individual factors that are likely reasons for the wealthy's tax compliance and starting points for policy interventions.

Political and Economic Conditions That Shape Tax Compliance of the Wealthy

The macro context is shaped by international secrecy jurisdictions including tax havens, and generous national tax exceptions often related to philanthropic foundations. We argue that this political and legal environment not only offers the opportunity to evade and avoid taxes, but also creates a tax climate with an ideological setup that reduces the moral concerns of the wealthy when avoiding taxes.

Tax Havens and Secrecy Jurisdictions

Politicians, celebrities, billionaires, and sports stars, along with fraudsters and drug traffickers, use tax havens to hide assets in secret trusts (Weisbord, 2016). Such tax havens allow large-scale tax avoidance among the rich (Forsythe, 2017), with an estimated 80% of hidden assets escaping any taxation (European Commission, 2016). Wealthy taxpayer decisions to avoid and evade taxes might thus be related to the jurisdictive environment offered by their own or, more often, a foreign country. In fact, many nations, both large and small, are motivated to earn extra money at the expense of other countries by rather hypocritically motivating rich foreigners to commit tax evasion (Weisbord, 2016). Scholars such as Piketty (2014) suggest the automatic transmission of banking information as a solution, something he sees as a first step toward a global tax on capital.

The world's most important tax havens, according to the 2018 Financial Secrecy Index, are the following 10 countries (in descending order): Switzerland, USA, Cayman Islands (United Kingdom), Hong Kong (China), Singapore, Luxembourg, Germany, Taiwan, Dubai, and Guernsey (Islands in the English Channel). The vicious international competition (or "race to the bottom"; Sharman, 2006) to attract these funds is probably one reason that an estimated 8% of global financial wealth is placed untaxed in another country (Zucman, 2013). Although the developed nations (e.g., the EU) lose the largest absolute amount, developing countries (e.g., African nations) lose the largest fraction of their financial wealth to tax havens (European Commission, 2016; Zucman, 2013). Hence, in the context of these nations' evasion-friendly jurisdictions, large corporations and wealthy individuals might also avoid suffering moral compunction when shifting funds from one country to another. The existence of these jurisdictions offering financial secrecy allows moral disconnection and moral disengagement (Den Nieuwenboer & Weaver, 2019), thus generating the perception that the own tax avoidance behavior is legal and normal, something that does not violate moral values. To reduce these psychological evasion maneuvers, the state should formulate strict legal codes in order to clearly communicate expectations. Importantly, tax administrations should actively avoid euphemistic language sometimes used among tax practitioners, who talk about *tax optimization*, *tax saving schemes*, *creative tax planning*, or *testing the limits* to disguise the ethical implications of their actions (Tenbrunsel & Messick, 2004). Instead, tax administrations should clearly use the terms aggressive tax avoidance, illegal accounting practices, tax evasion, or tax fraud to show that such behaviors are socially disapproved.

The situation becomes even more complicated when lobbying organizations intentionally influence tax laws to include loopholes for the rich (McBarnet, 1992; Mirowski & Plehwe, 2015), an effect that may have increased greatly over recent years (Martin, 2015; Scheiber & Cohen, 2015). According to one analysis of the political elite and income tax in the United States since 1945, this shift in tax laws is marked by two phases (Hartmann, 2009). Between 1945 and 1980, two thirds of the political elite came from working class environments and tax rates for top earners were high; since 1981, however, almost 70% of the political elite have originated from the upper or upper middle class, while tax rates for top earners have declined (Hartmann, 2009). Although movements to cut taxes for the rich tend to be in the political majority (e.g., Trump and the Republicans in the United States, Conservatives in the United Kingdom or Germany; Hartmann, 2011; Martin, 2015), some wealthy individuals want to see their taxes increase. For example, 64 wealthy Germans belong to an association that lobbies for increases in such wealth taxes as the inheritance tax (www.appell-vermoegensabgabe.de), while in the United States, billionaire investment mogul Buffett (2011) publicly stated that those as wealthy as he should pay more taxes. In the same vein, in 2010, a group of 51 German millionaires and billionaires (the "Club of the Wealthy") unsuccessfully proposed to Angela Merkel that they should give up 10% of their income over a period of 10 years as a form of "rich tax." The two contradictory trends—that some wealthy people see tax rates as too low, whereas others see them as too high—mirror the mixed outcomes of research on the impact of tax rates on tax honesty. While some studies (Alm, 1999) argue that the estimated underreported income-tax rate elasticity is between 0.5 and 3.0, a large number of empirical studies find no support for tax rates as an explanation for the negative relation between income and tax compliance (Cox, 1984; Crane & Nourzad, 1986; Feinstein, 1991; Goolsbee, 2000; Pommerehne & Weck-Hannemann, 1996; Poterba, 1987). It may be that perceived fairness of the tax system (derived from knowledge of the own and others' true tax burden rather than the tax rate itself) explains a certain portion of lower tax compliance by the rich (Gangl, Kirchler, Lorenz, & Torgler, 2017; Lewis, 1978). The practical conclusion is that tax administrations should focus on increasing perceived fairness by informing taxpayers about their true tax rates, in addition to detailing expenditure of tax revenue.

Tax Exemptions for Philanthropic Foundations

The generous tax treatment of philanthropic foundations and charities may legitimize tax avoidance of the wealthy by reducing the moral obligation to contribute to society via taxes (Giridharadas, 2019; Reich, 2018). In many countries, but particularly in the United States, charity is heavily subsidized by the state with allowances for generous tax exemptions. For instance, in 2016, the United States faced $50 billion foregone tax revenue due to tax relief for charities (Reich, 2018). However, these tax exemptions are relatively recent—only since 1917 the United States has allowed tax deductions for donations to charity (due to interventions by Rockefeller; Reich, 2018). Now, initiatives such as the "giving pledge," in which billionaires such as Bill Gates promise to give away half of their fortune to charity, are increasingly received with a critical view (Giridharadas, 2019). These contributions are made outside democratic institutions and are often more likely to increase the power of the founder than they are to support more equal societies. Nonetheless, think tanks and lobbyist organizations legitimize charitable giving by disparaging collection of taxes, highlighting that the donors are engineers of success who created profitable businesses, and can (in the same manner) solve society's problems much better than the state (Giridharadas, 2019).

Moral licensing theory suggests that individuals who initially behaved in a moral way can later display behaviors that are immoral because they may believe that past good behavior frees them to do something bad in the future (Merritt, Efron, & Monin, 2010). Field experiments indicate that committing a moral act earlier in the day was associated with an above-average likelihood of a subsequent immoral act (W. Hofmann, Wisneski, Brandt, & Skitka, 2014). Other research on field data found that companies with a good reputation are more likely to engage in aggressive tax avoidance than firms with a poorer reputation (Bai, Lobo, & Zhao, 2017). For instance, the good reputation from charitable giving might function as a license that allows firms to accept reputational consequences of tax avoidance. Thereby, charitable giving also avoids moral dissonance between the own unethical tax behavior and the moral self-concept, which is seen as a major driver for moral behavior (Bastian, 2019). However, empirical research comparing tax systems with charity systems as well as research on the influence of charitable giving on tax compliance are scarce. The insights from the liturgy in Ancient Greece indicate that the contribution was linked to community spirit, public sentiment, duty, and public demands (e.g., for infrastructure such as bridges). As Athenian statesman Pericles (429 BC) stated in a famous funeral oration, "We regard wealth as something to be properly used rather than something to boast about. (. . .) Every one of us who survives should gladly toil on her [Athens's] behalf" (cited in Adams, 1993, p. 63). Sitaraman (2017, p. 302) emphasizes the misalignment between constitutional and economic structure in the United States due to economic and political inequalities, citing John Adams who in 1767 raised the concern that there is "so much Rascallity, so much Venality and Corruption, so much Avarice and Ambition, such a Rage for Profit and Commerce among all Ranks and Degrees of Men even in America, that I sometimes doubt whether there is public Virtue enough to support a Republic."[2] Thus, policy makers should consider how pragmatic management of large-scale philanthropy would function. Philanthropy should support democratic institutions instead of delegitimizing them by questioning their capability to solve societal problems. For instance, it is argued that foundations designed to operate beyond one's death should be limited or forbidden, that foundations should focus on testing new approaches, should be integrated into state policy and importantly, need approval of democratic institutions before implementation (Reich, 2018). In addition, tax administrations might learn from charity administrations on how tax contributions might be made more attractive for the wealthy, for instance, by granting honor and gratitude to large taxpayers (as in the Ancient Greece liturgical system). Most current tax systems focus on deferring tax evasion with shame and guilt rather than

[2] See https://founders.archives.gov/documents/Adams/06-03-02-0202.

rewarding tax compliance with pride and honors; empirical studies on the shaming effect show that shaming increased the payments of individuals with small debts, but had no effect on individuals with larger debt amounts (Perez-Truglia & Troiano, 2018).

Special Enforcement Regimes

Increasingly, countries have specialized enforcement regimes for the wealthy. Ordinary taxpayers often complain that the rich and powerful do not pay taxes because they are not controlled or fined. Such beliefs are sometimes fostered by media reports such as a German government press release that the tax audit rate for the wealthy had declined from 1,838 cases in 2010 to 1,391 cases in 2014 (Deutscher Bundestag, 2017). On the other hand, in recent years, tax administrations in many countries (e.g., Australia, Spain, or Greece) have been more purposely targeting the rich. For instance, data on corporate audit probabilities from the German Ministry of Finance show that in 2015, 21.3% of large corporations were audited compared to 6.4% of medium corporations, 3.2% of small corporations, and 1.05% of tiny corporations (Bundesfinanzministerium, 2016). For the United States, detailed IRS (2016) data reveal that the 0.01% who earn USD10,000,000 or more had an audit probability of 18.79% on their 2015 tax return compared with an audit probability of between 0.41% and 0.80% for those with an income between USD25,000 and 200,000. Many countries also have specialized bodies that focus on auditing large corporations or even high net worth individuals (OECD, 2010, 2015b), or that implement special measures to identify wealthy tax evaders, such as owners of luxury cars or villas and those who take many international flights (Casaburi & Troiano, 2016; Gangl et al., 2017). In the United States, the IRS has a whistle-blower program that pays informers who help to detect an evader (Davis-Nozemack & Webber, 2012). Germany also buys information on offshore tax havens from whistle-blowers to identify rich tax evaders (Reuters, 2014; Wittrock, 2012). Thus, in contrast to the public perception, large corporations and wealthy citizens may be more likely to be audited than average or poor citizens.

Nonetheless, the political, legal, and economic context of financial secrecy laws and national tax loopholes—including those for charities—not only give the wealthy many more opportunities to evade and avoid taxes than the average citizen, but might also create an ideological environment that legitimizes aggressive tax avoidance behavior.

Social Contextual Factors That Influence Tax Compliance of the Wealthy

The tax relevant social meso context of the wealthy is different from that of average taxpayers. First, compared to average taxpayers who often prepare their tax returns alone, most wealthy people have the help of tax advisors. Research claims that this professional support not only leads to tax returns that are less compliant, but it also creates social group dynamics that often accelerate opinions to the unethical extreme. Second, the social environment (and thus the social identity) of the wealthy is likely different from the social identity of average citizens, creating comparisons to other wealthy, and thinking along in- and out-group interests. We will now consider each of these concerns.

Tax Practitioners

Research classically models tax behavior as individual behavior. This assumes that it is an individual who decides whether or not to be honest on their tax return (Allingham & Sandmo, 1972), which might be true for many employed taxpayers and also small entrepreneurs, but it is generally not true for wealthy taxpayers. As outlined above, compared to ordinary taxpayers, wealthy taxpayers' tax decisions are made in groups involving tax practitioners and wealth managers. Those who assist wealthy taxpayers in exploiting national and international tax laws include professional tax specialists, banks, and international accountancy firms and wealth managers (Harrington, 2012, 2015; Sikka & Hampton, 2005). Taxpayers who want to minimize their taxes and who are high risk-takers seek out tax agents who are adept at finding loopholes (Sakurai & Braithwaite, 2001). As one U.S. lawyer put it, "You have to understand, the smartest people in the country think 24/7 about the best tax saving schemes, which they seek to sell for millions of dollars to specific companies and rich individuals" (informal comment given to us at a conference). Thus, not only do the lower income classes have less ambiguous income than higher income classes (Klepper, Mazur, & Nagin, 1991; for instance, higher income classes may have revenues from entrepreneurial activities that are easier to conceal than income from employment), but "the poor evade [while] the rich avoid" with the assistance of their advisors (Slemrod, 2007). This stereotype of a wealthy individual who searches out and is convinced by the most aggressive tax advisors has some empirical support (Schisler, 1995). For instance, a study of 7,127 income tax returns found that those who used a tax preparer had lower tax liabilities, higher tax reductions, and lower prepayments than those who had no such help (Christian, Gupta, Weber, & Willis, 1994). Findings of another experimental study suggest that tax practitioners have lower moral reasoning about taxes than nonspecialists, a difference explained by tax advisors' specific professional environment (Doyle, Hughes, & Summers, 2013). Several other studies also report that the average level of noncompliance is higher for returns prepared by tax practitioners (Ayres, Betty, Jackson, & Hite, 1989; Erard, 1993), although there is also empirical evidence that tax practitioners are less aggressive than taxpayers (Schisler, 1995) or that taxpayers do not want tax practitioners to be aggressive (Hite & McGill, 1992). Nonetheless, tax professionals do tend to be more aggressive when audit and penalty risks are low

(McGill, 1988). Overall, then, individuals conceal tax money through professional tax lawyers (Ackermann et al., 2017) and with the help of banks and agencies, such as Mossack Fonseca (the Panama Papers) or Appleby (the Paradise Papers; Weisbord, 2016).

In this context, an interesting sociological study was conducted by Harrington (2015) who spent about 8 years in participatory research and conducting in-depth interviews with wealth managers in tax havens all over the world. She reports that almost all of them saw themselves as misunderstood good guys. Their self-perceptions cast them as protectors of elderly clients from rapacious heirs, facilitators of development finance to emerging markets, and quasi-family members to wealthy parents seeking advice on how to prevent their children from being destroyed by idleness and easy access to drugs. Those wealth managers concerned about poverty urge their clients to donate to charity. Wealth managers allow the ultrarich personal freedom, mobility, and privacy—they keep them off the radar of regulatory authorities, which clearly indicates that policies to increase the tax compliance of the wealthy also need to consider the role of tax advisors and wealth managers.

Social psychological group research indicates that decisions made in small groups—even dyads—differ from individual decisions. For instance, in the context of economic games, and compared to individuals, groups make more rational and analytical (Kugler, Kausel, & Kocher, 2012; Luhan, Kocher, & Sutter, 2009) and more competitive and unethical decisions (Moore & Gino, 2013; Stawiski, Tindale, & Dykema-Engblade, 2009; Wildschut & Insko, 2007). Although comparatively rare, there is also research indicating that small groups do not always differ from individuals concerning competition and ethical behavior, or are even more altruistic than individuals. Power-to-take experiments (Bosman, Hennig-Schmidt, & van Winden, 2006) and lying experiments (Muehlheusser, Roider, & Wallmeier, 2015) did not find overall differences between groups and individuals. Another experiment observed that small groups in dictator games can also be more prosocial and altruistic than individuals (Cason & Mui, 1997).

Heterogeneity of results concerning ethical decision-making in groups thus might be the consequence of different dominant opinions that existed for the respective decision situations (Isenberg, 1986). It also shows, in contrast to some suggestions from the literature (Moore & Gino, 2013), that not all group decisions are more unethical than individual decisions, as groups mainly amplify existing joint preferences. This implies that tax authorities should use information on tax advisors and on past behavior to distinguish between dishonest and honest groups. For instance, this could be achieved by increasing the auditing intensity on wealthy taxpayers who are known to employ aggressive tax advisors, or on the wealthy who, based on screenings, demonstrate initial signs of dishonesty. In contrast, wealthy people who employ nonaggressive tax advisors or those who are known to have been honest in the past would not need to be subjected to such harsh audits.

Social Identity

For the wealthy, the perception of belonging to a particular group might be related to at least two social psychological processes that influence tax motivations. On the one hand, wealthy individuals might identify with and compare themselves to other wealthy individuals, and, on the other hand, they also might feel a social distance to less affluent individuals.

Enhanced identification and comparison with other wealthy individuals adjusts internalized social norms connected with the wealthy rather than to the ordinary individuals (Wenzel, 2005), motivating affiliation and compliance with images and perceptions of what rich people ought to do. The drive to be similar to the reference group applies not only to lifestyles but also to tax behaviors. If all wealthy friends move money to offshore tax havens, then the individual will also more likely do that. On the one hand, this is due to compliance with the in-group norms, but, on the other hand, it is also due to competition and comparison, because one does not want to fall behind in the financial race (Mols & Jetten, 2017). Thus, tax evasion can be the result of fear of losing one's privileged position, or because taxes are a hindrance to upward mobility (Jetten, 2019).

Wealthy individuals' likely identification with other wealthy people is also relevant for the tax authorities, as wealthy taxpayers might be more focused on how the tax authorities treat other wealthy people and not the general population. Thus, harsh audits are more likely to be accepted if there is a perception that all wealthy people are subject to such audits, and thus, while the treatment might be harsh, it is also fair. A negative example would be the (publicly known) lower tax audit rates in the rich south compared to the poorer north of Germany (Balser, 2011). Currently, the southern German state of Bavaria employs 15% less than the recommended number of tax auditors. Thus, in Bavaria, the probability of having evasion detected is lower than in other German states (Balser, 2011). However, federal tax administrations should avoid the perception that different audit frequencies or procedures exist within one country, as this might generate a feeling of unfairness and enhance the motivation to move to another state to evade taxes.

Belonging to and group identification with the wealthy could also lead to felt social distance from nonwealthy individuals, or even to the perception of in- and out-groups (Cardenas, 2003; Kramer & Brewer, 1984; Taifel & Turner, 1986). Wealth increases real physical distance, with the wealthy tending to live in separated neighborhoods on large properties that do not allow much (spontaneous) contact with others, particularly with individuals from another social class. Such social distance reduces empathy and trust (Kraus, Tan, & Tannenbaum, 2013; Stellar, Manzo, Kraus, & Keltner, 2012) and increases the perceived difference between rich and poor, which leads to a decline in a felt shared identity (Poteete & Ostrom, 2004).

Classical social psychological experiments show that even minimal signs of group belongingness such as shared art preferences can lead to in- and out-group perceptions (Taifel, Billig, & Bundy, 1971). Wealth differences likely create much stronger signs of difference, which makes it possible that perceived out-group members are more disadvantaged, more often punished, and less rewarded than in-group members (Taifel et al., 1971; Vuong, Chan, & Torgler, 2018). In this vein, some wealthy individuals' agreement with the narrative that low taxes are good, or tax avoidance is okay, may also be the result of out-group derogation (Brewer, 1999; Brown-Iannuzzi, Lundberg, & McKee, 2017). The wealthy might argue that a low redistribution through taxes is justified; because in contrast to the poor, they are high achievers who use the money to create new firms and jobs (Jetten, 2019).

Practical interventions to reduce the perceptions of in- and out-groups could focus on increasing the likelihood of face-to-face contact between different social classes (Hewstone, 2015). Examples are the financing of social housing in rich neighborhoods, as well as providing excellent public schools, playgrounds, public parks, and sport facilities, or encouraging voluntary organizations such as the voluntary fire brigades.

In sum, as inequality increases, so does social distance, accompanied by a similar decline in shared identity among all citizens, the wealthy, and the poor. In turn, this affects empathy and trust and reduces cooperation in general and tax compliance in particular (Cardenas, 2003; Gangl et al., 2015; Kramer & Brewer, 1984).

Individual Characteristics That Affect Tax Compliance of the Wealthy

Values

Values and attitudes vary with socioeconomic status (Brown-Iannuzzi et al., 2017). According to social-psychological research, the rich likely hold fewer egalitarian values than the average citizen (Piff, Kraus, Côté, Cheng, & Keltner, 2010) and prefer social hierarchy. For example, U.S. elites are less fair-minded than the general population and prefer efficiency to equality (Fisman, Jakiela, Kariv, & Markovits, 2015). Evidence from Germany indicates that acceptance for social inequality is also stronger among the rich who grew up in affluent families than among the rich who grew up in working-class families (Hartmann, 2013). The experience of relative poverty might increase empathy with the less affluent and the willingness to pay taxes to contribute to social services, which reduce financial hardship. Experimental research shows that income and wealth distribution seemingly create a social hierarchy that (especially) those on top may be motivated to sustain through less egalitarian values, and ultimately, less cooperative tax behavior (Magee & Galinsky, 2008; Oc, Bashshur, & Moor, 2015; Xie, Ho, Meier, & Zhou, 2017). For instance, one experiment showed that individuals are reluctant to redistribute money if the redistribution changes or reverses the relative ranking in a given hierarchy (Xie et al., 2017).

Research evidence that high socioeconomic status likely increases immoral behavior such as cheating, lying, or egoism (Cardel et al., 2016; Piff, Stancato, Coté, Mendoza-Denton, & Keltner, 2012) further suggests that wealth may be related to lower moral values. In fact, other experimental and survey-based studies indicate that the wealthy have less concern for others (Stellar et al., 2012) and more favorable attitudes toward greed (Piff et al., 2012). For instance, during the 2007 financial crisis, top-earning managers constantly increased their pay without delivering any additional benefit to shareholders (Haynes, Campbell, & Hitt, 2017). Nevertheless, it remains unclear whether or why the wealthier are greedier, given that income is positively related to financial satisfaction (Sahi, 2013). However, greed may not moderate the ethical behavior of either rich or poor (Balakrishnan, Palma, Patenaude, & Campbell, 2017): several empirical studies conclude that wealthy individuals are more prosocial and moral than less affluent individuals (Andreoni, Nikiforakis, & Stoop, 2017; Balakrishnan et al., 2017; Liebe, Naumann, & Tutic, 2017; Trautmann, van de Kuilen, & Zeckhauser, 2013), suggesting that there is no simple linear relationship between wealth and ethical behavior (Mols & Jetten, 2017).

On the one hand, many of these studies demonstrating that the wealthy are more unethical than the poor only study relative wealth, and therefore may not permit conclusions on the super wealthy but only on people earning a bit more than the average. One suggestion is that moderately wealthy (but maybe also very wealthy) individuals' ethical behavior depends on felt entitlement and security concerning the own status and the perception that status group boundaries are permeable (Jetten, 2019; Mols & Jetten, 2017). Wealthier individuals behave more egoistically and harshly if they fear that they or their children could lose their status in the future (Scheepers, Ellemers, & Sintemaartensdijk, 2009). It could also be that they think that they need to be harsh to climb the social ladder even further (Mols & Jetten, 2017). In contrast, if the wealthy feel secure in their position, they may also be more generous. From a practical perspective, such insights would suggest that tax authorities need to be aware that the wealthy have a sense of entitlement or deservingness and perceived need to protect both current and future wealth and status (Mols & Jetten, 2017, pp. 128–129). This can become particularly important in situations where unpredictability and instability increase (Jetten, Mols, & Healy, 2017). The goal of the tax administration and tax policy in general should not be to threaten their social position but rather to think of instruments that encourage intergroup cooperation, prosocial behavior, and empathy toward other groups while taking into account their "Achilles heel" or particular sensitivity around the fear of losing their status in future. This will also require a good understanding of how the perceived normative climate affects individual behavior (Sánchez-Rodríguez et al., 2019). In addition, as Bird (1995) points out, "[p]ractical tax policy is, and always will be, in large part an exercise in damage control" (p. 1041).

On the other hand, wealthy and less affluent individuals might not differ in their values but in their freedom to express them. That is, wealthy people are likely more able to show their true attitudes because they are not as dependent on others as poor individuals, who might face social pressures to suppress their true feelings (Na & Chan, 2016). Experimental evidence indicates that individuals who adhere to "tit-for-tat" rules (e.g., equivalent retaliation) become more self-interested when in power, while those who opt for a more communal strategy are more prosocial when in power (Chen, Lee-Chai, & Bargh, 2001). It therefore seems reasonable to suggest that, compared to people who feel poor, individuals who feel rich can express their values more readily and efficiently regardless of whether these are seen or perceived as good or bad by society and people around them. Thus, tax auditors can expect that wealthy clients communicate their values, interests, and attitudes. For instance, they may openly talk about their disregard or regard of the tax system, which, in turn, makes it easy to classify their true tax motivation and to target interventions accordingly. For instance, taxpayers who disregard the tax system need to be informed about the existence of professional auditing procedures while seemingly committed taxpayers should be thanked for their cooperation.

Cognitive Styles

A comparison between 130 German millionaires with a representative sample of the German population showed that the wealthy differ on some personality dimensions from average citizens (Leckelt et al., 2019). Wealthy people generally have higher scores on personality dimensions such as emotional stability, extraversion, openness, disagreeableness, and agentic narcissism, and were found to have a more internal locus of control. Individuals who perceived themselves to be in a high rather than low economic position enjoy an increased sense of personal freedom and control (Manstead, 2018). In other studies, the wealthy were reported to perceive themselves as having a greater ability to influence their own and others' social environment and to overcome external threats (Guinote, 2017; Keltner, Gruenfeld, & Anderson, 2003; Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012). Indeed, economic affluence is often equated with a feeling of power (Lammers, Stoker, & Stapel, 2010), which can lead to the illusion of control—sometimes over events that, in fact, cannot be controlled (Fast, Gruenfeld, Sivanathan, & Galinsky, 2009). This increased sense of control could make influential people more optimistic and augments their perceived self-sufficiency and self-esteem (Guinote, 2017). The rich are thus generally more willing to persuade others to adopt their goals (Guinote, 2017; Laurin et al., 2016), but also more likely to start an argument, make the first offer, and compromise less often in negotiations than less wealthy individuals (Fast et al., 2009; Kraus &

Mendes, 2014). The poor, in contrast, tend to be more risk-averse and short-sighted (Haushofer & Fehr, 2014), making them more likely to control themselves and inhibit spontaneous responses than the rich (Na & Chan, 2016). Hence, while wealth may activate the behavioral approach system, poverty seemingly activates the behavioral inhibition system (Gray, 1990; Keltner et al., 2003; Lammers et al., 2010).

This heightened sense of freedom, self-esteem, and perceived control might increase the willingness to resist and oppose anything that restricts freedom (Brehm, 1966) in a response referred to as "reactance." Reactance can drive individuals to do forbidden acts or the exact opposite of what is requested simply to reestablish their personal sense of freedom, the magnitude of which governs the size of the corresponding reactance (Brehm, 1966). Given that taxes and tax authorities' attempts to increase tax cooperation can be perceived as a limitation on personal freedom, the rich find it harder to relinquish this freedom and easier to fight against such a loss. In fact, experimental research shows that coercive audits and fines increase taxpayer reactance more than less coercive attempts by the tax authorities (Gangl, Pfabigan, Lamm, Kirchler, & Hofmann, 2017). Thus, wealthier individuals faced with unfair treatment are more likely to fight for their rights (Kraus et al., 2013), while lower class individuals react with more self-conscious emotions, such as shame, guilt, or embarrassment. Additionally, the fact that the rich face less daily life risks than the poor might make them more willing to take extra risks (Guiso & Paiella, 2012; Haushofer & Fehr, 2014) of tax evasion, because compared to a poor person, a possible fine is not an existential threat. The outcome, as two field experiments (Castro & Scartascini, 2015; Slemrod, Blumenthal, & Christian, 2001) and another study (Tauchen, Witte, & Beron, 1993) indicate, that the rich, when faced with an increased audit probability, reduce their tax compliance, while the average citizen's tax compliances increases. These observations suggest that the rich may feel more reactance and a greater need to fight back when confronted by tax enforcement, which, in turn, leads to lower compliance. While more research is needed to analyze how the wealthy react to enforcement, from a practical point of view, it seems crucial to implement enforcement measures in a way that does not provoke resistance, thus increasing tax compliance and tax returns.

Fairness

Although conditional cooperation theory argues that the rich do not contribute more taxes because the poor cannot be expected to reciprocate (Cherry, Kroll, & Shogren, 2005; Frey & Torgler, 2007), another possible reason for the wealthy's lower tax compliance may be a perception that the tax system treats them unfairly (Fung & Au, 2014; Reuben & Riedl, 2013). Studies show that the rich are much more sensitive than less affluent individuals to violations of fairness, and more motivated to defend and restore it (Sawaoka, Hughes, & Ambady, 2015). They might believe that taxation is predominantly used to redistribute wealth—thus, no personal benefit is perceived at all. In addition, the perception that taxes reduce the capital base in addition to reducing capital growth might lead to perceived unfairness and fear of losing ones' privileged position. The opinion that "my money" is paid as taxes and then wasted by incompetent politicians and civil servants who are not held accountable for mismanagement might cause perceptions of unfairness. This belief might be more pronounced among the wealthy than average taxpayers because first, the wealthy (along with their companies) are often audited and thus held accountable; and second, they make tax contributions in magnitudes that allow a direct comparison to larger scale public projects that also helps to explain why liturgy in Ancient Greece was such a powerful mechanism to encourage the contribution of the rich.

Public good research suggests that wealthy individuals make lower contributions to the public good when their own economic activity is less dependent on the local commons (Cardenas, 2003; Martinsson, Villegas-Palacio, & Wollbrant, 2015). However, this research also indicates that wealthy individuals who believe that their contribution is critical to group success feel responsible and cooperate more (De Cremer & van Dijk, 2002). Yet, as our own research showed, the rich also seem to be less knowledgeable about their true tax rate—with the noncompliant rich having less tax knowledge than the compliant rich (Gangl et al., 2017)—impacting how they perceive fairness and reducing their tax compliance relative to poorer individuals (Lewis, 1978). This low perceived fairness may thus be related to a lack of knowledge about the wealthy's own relevance for the public good and/or their own exact tax contributions and direct benefits such as public infrastructure or security. A related, but not yet researched possibility is that a misperception of numbers might contribute to perceived unfairness, with individuals focusing on their total tax contribution rather than their relative tax contribution. Thus, the rich might see an absolute tax contribution of 5,000,000 Euro as more unfair than a middle-class taxpayer's absolute contribution of 5,000 Euro, although in relative terms, both might be contributing the same proportion of income. Nonetheless, from a practical standpoint, it is key to inform wealthy about their true tax contributions and benefits by reporting percentages, for instance, through information brochures. This increased knowledge about concrete relative costs and benefits may increase perceived fairness of the tax system.

Subjective Wealth Perceptions

Subjective wealth perceptions influence individuals' psychological processes and decisions more than true wealth (Brown-Iannuzzi et al., 2017). Individuals who believe that they are on the top of the wealth distribution disregard redistribution more than individuals who believe that they are on the bottom of the wealth distribution, regardless of the true position (Brown-Iannuzzi et al., 2017). For instance, millionaires who are reminded of their privileged status relative to most other citizens may act and comply differently than millionaires who compare themselves with billionaires and thus might feel “relatively poor.”

In laboratory experiments, subjective wealth is manipulated by endowing participants with different amounts of money or by allowing them to earn money. These experiments, such as those conducted by Durham, Manly, and Ritsema (2014), show a positive causal impact of subjective wealth on tax evasion and tax nonfiling by demonstrating that participants who earned more experimental income via a task (sorting numbers) evaded more than individuals who received less (Alm & McKee, 2006; Alm, Cherry, Jones, & McKee, 2010). In fact, data collected from both students and taxpayers show that those who earned the most during the experiment (by placing objects with the computer mouse) also evaded the most (Choo, Fonseca, & Myles, 2016). This effect even occurs within subjects: individuals evade more in tax or public good rounds (Bühren & Kundt, 2014; Grundmann & Graf Lambsdorff, 2017; Muehlbacher & Kirchler, 2009) in which they earn more than in rounds in which they earn less. Wealthy individuals evade more than the nonwealthy when money is endowed (Baldrey, 1987; Boylan & Sprinkle, 2001). Nonetheless, the effect seems to be stronger for earned money related to effort than endowed money related to a windfall gain (Kroll, Cherry, & Shogren, 2007). Thus, perceived income heterogeneity reduces tax compliance, particularly when individuals believe that the heterogeneity stems from actual effort rather than random allocation of windfall gains. To increase overall cooperation, tax administrations’ communication efforts should counteract the perception that material well-being is based on individuals’ own faults or efforts. In addition, the fact that tax money subsidizes services (e.g., childcare, care for the elderly) that are essential for the community could be used to increase the acceptance of redistribution through tax payments.

Tax experiments indicate that the subjective wealth effect on tax contributions also depends on visibility. In laboratory experiments, wealth heterogeneity must be visible and known to all participants to enhance positional concern or social comparisons that can crowd out, for instance, monetary contributions to public goods (Cardenas, 2003; Chan, Mestelman, Moir, & Muller, 1999), induce competition, reduce social or common identity, and decrease cooperation (Fung & Au, 2014; Nishi, Shirado, Rand, & Christakis, 2015). For example, if rich individuals know their own relative wealth position, it is possible that they consider their in-group to include other wealthy individuals, whereas the poor are perceived as members of the out-group. This in-group/out-group construction may reduce the willingness of the rich to cooperate with the poor (Fung & Au, 2014). In contrast, subjectively, wealthy individuals who perceive themselves to be alone among the poor tend not to reduce their cooperation (Reuben & Riedl, 2013). Thus, tax administrations’ communication strategies should avoid the creation of a social class discourse in which a group of wealthy opposes a group of poor, as this likely enhances visibility of differences and reduces cooperation.

Tax attitudes are also impacted by subjective expectations about the own and children's future, anticipated gains or losses, or anxiety and worry about losing money (and thereby the associated status) (Mols & Jetten, 2017). It has been suggested that the anticipated future wealth status is even more important than the current perceived status when it comes to cooperative behavior (Mols & Jetten, 2017). For instance, the perception of permeable status group boundaries (upward mobility threat) and insecure relative status positions can fuel unrest among the wealthy, particularly during unstable economic conditions and among those who acquired wealth in the recent past (Jetten, 2019; Jetten et al., 2017; Mols & Jetten, 2017). Thus, anxiety about the future might motivate some to avoid paying taxes in order to secure their wealthy status for the future. However, until now there is no research that analyzes the subjective current and future wealth perceptions of the wealthy and their impact on tax behavior. Nonetheless, if tax authorities think that such fears are relevant for a specific taxpayer, the communication strategy could highlight the factual wealth difference between a millionaire and an average person, clarifying how taxes do not change relative status positions (some reassurance of the stability of wealthy taxpayers' status quo). For example, taxes financing social services ensure social peace and thereby secure system stability. Overall, however, research on subjective wealth suggests that policy makers might be well advised to emphasize the rhetoric that wealthy are just as much part of society as all other socioeconomic groups with a duty to contribute in a meaningful way and no more virtuous or "better" than other people so as to reduce egoistic status enhancing behavior.

Policy Interventions to Motivate Tax Compliance by the Rich

There is no silver bullet to manage tax compliance of the wealthy; rather different methods have to be applied in combination while considering the context. A general idea in the tax literature is that a carefully considered mix of coercive-based harsh and legitimacy-based soft measures is needed to ensure tax compliance. This basic idea is also likely true for wealthy taxpayers. However, given the discussed peculiarities of the wealthy compared to average taxpayers, some special adjustments might be necessary. In the following, we present research on the basic distinction between coercive-based and legitimacy-based instruments before discussing how this approach in general—and, in particular, for the macro, meso, and micro level—should be applied to wealthy taxpayers. The overall aim is to use a nuanced application of the "carrot and stick" approach to better integrate the wealthy into society, or at least to the community of citizens and taxpayers.

Theoretical models on tax compliance such as the slippery slope framework (Kirchler, Hoelzl, & Wahl, 2008) and its extension (i.e., eSSF, Gangl et al., 2015), the multifaceted approach (Alm & Torgler, 2011), or the responsive regulation theory (Braithwaite, 2003, 2007) assume that a combination of coercive-based and legitimacy-based interventions can efficiently impact tax motivations and behaviors. Coercive-based interventions are founded on various auditing tools (e.g., third-party information, personal audits) and punishments (e.g., fines, prison sentences) but also incentives (e.g., tax amnesties). Legitimacy-based interventions aim to convince citizens to comply voluntarily with tax rules through fair procedures, professional support, information provision, and a positive image of the tax administration (Gangl et al., 2019). While both approaches are effective overall in generating higher tax payments, their psychological functioning is different (Kirchler et al., 2008). Coercive-based interventions lead to enforced compliance, and thus people pay because of the fear of audits (Kirchler et al., 2008). Legitimacy-based interventions foster trust in the tax system and voluntary tax compliance, and thus, people accept their tax obligations without threatening audits and fines.

These theoretical assumptions receive empirical support from lab experiments. In these experiments, students or taxpayers are put into the role of a self-employed person earning profit and paying taxes over several years. Importantly, participants receive remuneration, depending on audits and fines imposed by hypothetical tax authorities. We conducted a neurophysiological experiment in which students were asked to pay taxes, either in a country that relies on constant harsh controls and fines (i.e., coercive-based intervention) or on competent and helpful tax administrators (i.e., legitimacy-based intervention, Gangl et al., 2017). All participants made 40 tax-paying decisions in each condition, while ERPs (event-related signals on the cortex) were recorded. The analyses focused on signals between 150 and 500 ms after stimulus presentation (the page when the tax decision was to be made). Observed patterns of early signals indicated an enhanced response conflict and a higher arousal under the legitimacy-based than coercive-based intervention, while later signals suggested that the coercive-based intervention is related more to automatic processing than the legitimacy-based intervention. Using earlier economic decision-making studies as a reference, these results suggest that coercion-based interventions reduced the tax decision to a simple calculative problem, whereas legitimacy-based interventions maintained the complex moral and social dimension of tax compliance. Additional survey data indicated that the coercive (in contrast to legitimacy-based) intervention increased self-reported reactance and enforced motivation and decreased voluntary motivation.

Empirical evidence also shows that the combination of coercive-based and legitimacy-based interventions can reduce the negative effects of pure coercive-based interventions. Previous lab and online experiments framed participants as self-employed in a country in which tax authorities use harsh/lenient controls (coercive-based intervention) *and* employ well/poorly educated tax auditors (legitimacy-based intervention). Although no interaction effects were found, results suggested that coercive-based interventions lose some of their negative effects on trust and tax motivation when they are combined with legitimacy-based interventions (Gangl et al., 2013; Hofmann et al., 2014; E. Hofmann, Hartl, Gangl, Hartner-Tiefenthaler, & Kirchler, 2017a). However, together with the Austrian tax authorities, a field experiment was conducted in which the combination of coercion and legitimacy implemented through close supervision over the first year of young entrepreneurs' enterprise showed differential short-term effects. Entrepreneurs in the intervention paid more taxes but they were also late more often than entrepreneurs in the control group (Gangl, Torgler, Kirchler, & Hofmann, 2014).

In general, coercion-based and legitimacy-based interventions as classical administrative tools are also relevant for the tax decisions of the wealthy. However, some peculiarities need to be considered. Our review showed that on the micro level, the wealthy are more willing to promote and defend their view, seeking to restore fairness and remove restrictions on their freedom; this likely makes them more reactant to coercive interventions than average taxpayers who might more often give into coercion. This view is supported by field experiments that indicate how an audit threat increases compliance of average taxpayers but reduces compliance of wealthy taxpayers (Castro & Scartascini, 2015; Slemrod et al., 2001). In addition, wealthy taxpayers are less likely to give into coercion due to peculiarities on the macro and meso level that mean the wealthy are more easily able to exploit international secrecy jurisdictions with the help of skilled tax advisors. Thus, wealthy people who feel coerced by the tax administration are likely more reactant and also have more resources (compared to the average taxpayers) to escape this situation, making classical coercive attempts to increase their tax honesty less effective. Therefore, to reduce reactance and to ensure compliance of the wealthy, coercive-based interventions need to be cautiously combined with legitimacy-based interventions. The functionality of coercive-based interventions depends on perceived professionalism, fairness, and thus, legitimacy.

In detail, coercion-based and legitimacy-based interventions for each level (the macro, meso, and micro) have different priorities and different aims. On the macro level, coercive-based interventions are essential, because only compulsory legal environments and specialized revenue bodies—which can enforce compliance—can reduce the avoidance and evasion opportunities of the wealthy. However, accompanying legitimacy-based interventions through marketing campaigns are necessary to reduce the aversion to and increase the acceptance of coercive interventions. In addition, on the meso level, coercive-based interventions are needed to regulate tax advisors more strictly. However, legitimacy-based interventions should dominate on the meso level to leverage social dynamics and to create social norms of tax honesty. At the micro level, during the direct interaction between tax auditors and wealthy taxpayers, coercive-based interventions should be reduced to a minimum, whereas legitimacy-based interventions should be prioritized. Well-educated tax auditors should target coercive-based

Table 1. Conceptual Summary of Policy Interventions to Achieve Tax Compliance by the Wealthy

Conceptual level	Psychological mechanisms	Coercive-based and legitimacy-based interventions
Macro level: Political conditions	Moral disengagement, Moral licensing	• Compulsory legal environments • Specialized revenue bodies • Marketing campaigns
Meso level: Social context	Group decision-making, Social identity	• Regulation of tax practitioners • Reputation mechanisms • Increased participation
Micro level: Individual characteristics	Values, Cognitive styles, Fairness, Subjective wealth perceptions	• Well-trained tax auditors • Responsive regulation • Appreciation and respect

instruments only to known criminal tax fraudsters ("crooks"), thereby following a responsive regulation approach. Importantly, personal interaction should be characterized by appreciation and respect to increase perceived legitimacy of tax collection and trust in the tax system. Table 1 provides an overview of how, on each conceptual level, different psychological causes of tax compliance of the wealthy can be addressed by coercive-based and legitimacy-based interventions. In the following, we present the different interventions in detail.

Compulsory Legal Environments

On the macro level, moral disengagement has to be addressed by coercive tax laws that clearly communicate that tax flight and aggressive tax avoidance are morally objectionable. Thus, countries with high-tax losses through tax flight need to establish a tax law with fewer loopholes and possibilities of escape to tax havens. For example, this could include the creation of national VAT taxes that (unlike profit taxes) cannot be shifted to another country, or it might involve establishment of legal virtual locations to facilitate taxation of profit in all countries in which a company operates virtually (Rohwetter, 2017). Aggressive tax avoidance can, for example, be addressed by a modern form of a tribute (Frijters, et al., 2019). Like some kings in the past, the state could decide (with the help of an independent agency) to calculate how much a company can afford to pay in tax without endangering the company itself—and then charge exactly this amount (e.g., based on market signals about the amount of surplus created in the relevant region by the companies taxed and therefore what they could pay). Such modern ways of compulsory acquisition are particularly an option if society needs to address extreme challenges such as war or environmental disasters.

Human history is full of examples in which states demanded tribute, for example, the tribute of grain in ancient Egypt and Rome.

Charities allow moral licensing as some might feel that giving to charity permits the avoidance of taxes. Thus, legal regulations need to counteract the spin that private charities are better (or as good) as the state in addressing societies' problems. The options are to regulate more strictly what counts as a deductible charity, and in general to reduce the tax exemptions for charities (Reich, 2018).

It is essential to focus on a strict legal environment. Without simultaneously securing public opinion and the voluntary compliance of the wealthy through additional legitimacy-based instruments, however, no legal remedies will suffice.

Specialized Revenue Bodies

Engaging in tax evasion and aggressive avoidance without consequences fosters moral disengagement and the belief that it is normal to evade taxes. The OECD (2015b) suggests that countries should establish special revenue bodies for both large corporations and rich individuals that can implement targeted auditing techniques (e.g., data mining or whistle-blower systems; Casaburi & Troiano, 2016; Wittrock, 2012). However, a 100% audit rate is unrealistic and high fines may not be an existential threat to the financial situation of the wealthy (e.g., one experiment found that a fine has to be 15 times the evaded amount to be effective; Friedland, Maital, & Rutenberg, 1978); it may even provoke their resistance and their willingness to sue (e.g., Slemrod et al., 2001). Nonetheless, suspending audits and fines offers no solution either, and tax amnesties, which allow rich taxpayers to repatriate their money from tax havens without being fined, also show no long-term positive effect (Alm & Beck, 1993; Toro, Story, Hartnett, Russell, & Van-Driessche, 2017). In fact, amnesties might even lower tax morale among honest taxpayers (Torgler, Schaltegger, & Schaffner, 2003). Thus, working with coercive-based interventions alone is not enough; for example, the OECD (2015b) suggests that it is essential that special revenue bodies combine coercive-based with legitimacy-based interventions.

A good example of how to combine coercion with legitimacy comes from the United Kingdom. There, a specialized revenue body exists that focuses on 6,500 individuals (0.02% of all taxpayers) who pay 1.3% of all income tax and 15% of all capital gains tax in a year (National Audit Office, 2016). To reduce tax avoidance schemes, this audit-focused unit employs 40 customer relationship managers, each responsible for about 160 taxpayers. According to the unit's data, it has been successful in substantially increasing tax compliance (National Audit Office, 2016), making this use of specialized tax officers implementing individualized customer treatments an idea worth further exploration. Such relationship managers could treat taxpayers differently depending on the business category and interaction history. They could ensure that wealthy taxpayers are sufficiently informed about their actual tax rates and tax rights, and emphasize how significant their contributions are for the community, while explaining what the money will finance, and how it profits the taxpayer (e.g., legal and social security; Chen et al., 2001; Guinote, 2017; Oc et al., 2015). Such a monitoring system may generate less reactance among the rich and increase their perception of the tax system as trustworthy and legitimate, thereby ultimately encouraging honest tax payment.

Some tax authorities have also opted to abandon many coercive measures. For example, the tax authorities in the Netherlands, the United States, Australia, and Austria have established new working and monitoring relationships with large corporations who were honest in the past (Colon & Swagerman, 2015; De Simone, Sansing, & Seidman, 2013; Torgler & Murphy, 2004; The Netherlands Tax and Customs Administration, 2010). In such trust-based relationships, the taxpayer agrees to be transparent about all tax data and tax strategies, while the tax administration promises to resolve all tax issues on time and abstain from auditing the taxpayer for prior years, thereby reducing uncertainty for a corporation. Nonetheless, although evaluations indicate that this system leads to reduced monitoring costs and faster issuance of final corporate tax statements (Elmecker et al., 2016), there is still no empirical evidence for its positive effect on tax payments itself, which makes this noncoercive approach less attractive.

Marketing Campaigns

Public marketing campaigns are especially suited to communicating the legitimacy of the tax system and thus to generate trust. However, the practical aim is to change public opinion such that tax evasion and aggressive tax avoidance is publicly disregarded as unethical. Such public campaigns need to back up (coercive) legal regulations and administrative procedures, promoting legitimacy and making moral disengagement and moral licensing more difficult. Campaigns could promote coercive measures as protection of the honest, important pillars of democratic societies, stability, and safety. To counteract the attempts of some lobbies to disregard government interventions (Reich, 2018), campaigns should show what is financed with the tax money, thereby creating a positive vision for the country (e.g., fighting climate change, security) and enhancing social belongingness and cooperation. One historical example of this was seen in the United States during the world wars. Our own experiments showed that priming patriotic feelings by explaining what the state had successfully accomplished in the past, or by exposing participants to typical landscape pictures of the country (e.g., of mountains or rivers; Gangl, Torgler, & Kirchler, 2016) could help to increase trust, felt social belongingness and cooperation (Macintyre, Chan, Schaffner, & Torgler, 2018; Torgler, 2004b, 2005a, Konrad & Qari, 2012). Importantly, in addition to involving different stakeholder groups, wealthy and famous individuals could be used as positive role models, thereby creating a social norm of tax honesty and pride in being a significant taxpayer. In India, the government has used celebrities to promote or change tax-paying behavior. For example, the 1997 tax amnesty campaign in India used sports and film stars to attract 350,000 delinquent taxpayers and generate 2.5 billion dollars in erstwhile lost revenue (Torgler & Schaltegger, 2005). Public campaigns may also motivate more whistleblowing among wealth managers.

Even though the positive effect of such campaigns on tax compliance seems plausible, empirical evidence is still scarce (Cyan, Koumpias, & Martinez-Vazquez, 2017), and thus, tax administrations should conduct field studies in this area. Overall, a good policy intervention to achieve lasting behavioral changes requires consideration of insights from social psychology (Mols, Haslam, Jetten, & Steffens, 2015).

Regulation of Tax Practitioners

On the meso level, tax decisions of the wealthy are often conducted in a group-setting involving tax practitioners. This tends to produce more exploitative tax returns than if taxpayers made their tax decisions alone (Christian et al., 1994; Doyle et al., 2013). One option for a coercive-based regulation would be to reduce or even exclude the involvement of tax practitioners through implementing direct relationships between tax authorities and taxpayers (e.g., based on automatic data transfers). One option for legitimacy-based regulation would be to interact only with tax practitioners who have earned certificates of trust by completing official training that addresses the interests of the community, and not only the individual. It would also be worthwhile discussing strategies to increase good ethics and practices that stipulate the type of professional code exemplified by medicine's Hippocratic oath (field evidence on promises, see Koessler et al., 2019). Such public training and professional codes could counteract the promotion of low-tax values in current private trainings. Thereby, social norms of tax honesty are built among the tax practitioners, which likely influence the tax decisions of the wealthy. Certificates could serve as both a gatekeeper and a criterion for promotion: only tax practitioners with a respective certificate would be allowed to submit tax returns in the name of a taxpayer.

Reputation Mechanisms

On the meso level, our literature review showed that social norms play a significant role. One option to influence the social norms of the wealthy is to combine coercive-based and legitimacy-based instruments in reputation measures by publicly disclosing a person as a negative or positive example. For instance, identifying tax evaders publicly (Casal & Mittone, 2016; Coricelli, Joffily, Montmarquette, & Villeval, 2010) may act as punishment and a deterrent from engaging in aggressive tax avoidance (Graham, Hanlon, Shevlin, & Shroff, 2013).

Preliminary empirical evidence from the United States, however, does not confirm that a fear of lost reputation is effective. Moreover, the use of a tax haven seems to have no negative effect on stock prices or media reports (Gallemore, Maydew, & Thornock, 2014). Similarly, a field experiment in the United States that shamed the noncompliant via letters to neighbors increased tax compliance for small but not for large tax evaders (Perez-Truglia & Troiano, 2018). On the other hand, after Greece published a blacklist of over 4,000 citizens who owed tax money to the state (Aswestopoulos, 2012), it experienced a decline in the size of the shadow economy from 25.4% in 2010 to 22.0% in 2016 (Schneider, 2016). Shaming could also be applied to aggressive tax advisors or countries that serve as tax havens (Comte, 2017) by publishing blacklists (e.g., financialsecrecyindex.com). Admittedly, these nations' incentives to attract foreign investment through tax reduction strategies could reduce the efficacy of a shaming signal (Weisbord, 2016). However, in the future, it may be possible to link specific desirable benefits with a country's decision to *not* be a tax haven; for example, visa and market access, or access to international credit, which are more significant than the benefits from foreign tax evasion investment. Perhaps, shaming would be more effective if there were extensive media reports on the legitimacy of tax collection and the related harm of tax avoidance.

An alternative to shaming evaders is to reward honest taxpayers (Feld, Frey, & Torgler, 2006). An example is the "fair tax mark" assigned by a U.K. NGO to companies assessed as honest taxpayers (fairtaxmark.net). Recipients of this designation can leverage the label in marketing. If such a mark were accompanied by mass media reports, it could benefit honest companies, like the "fair trade" and "certified organic" labels. Another suggestion put forward by Feld et al. (2006) is that tax offices issue a certificate of "correct declaration and tax cooperation" showing the firm to be a good taxpayer. The resulting increase in a firm's reputation and image could attract more favorable conditions on the capital market and positive shareholder reactions through higher share prices. In general, it would seem worthwhile to reward honest taxpayers with special attention (e.g., being held up as honorable citizens and role models), and even small rewards (e.g., vouchers; Koessler et al., 2019). Another method of rewarding honest taxpayers would be to place their name on public buildings that were financed with tax money. The Liturgy system of ancient Greece surely can be an inspiration for new ways to leverage the social norms existent among the wealthy, using gratitude and honor to motivate tax payments. As the late Boulding (1992) pointed out, "[T]he dynamics which governs the creation, destruction, and distribution of various forms of pride and shame in society are very little understood, yet nothing perhaps is more crucial to the understanding of the overall dynamics of a particular society than the marked differences which exist among societies in this regard" (p. 93).

Increased Participation

On the meso level, participatory elements are key to increasing legitimacy. Participation and voice in the selection of tax rules foster perceived fairness, felt responsibility, identification with the state, and the community at large (Feld & Tyran, 2002) and, in turn, tax morale and tax compliance (Alm, 2019; Torgler, 2005b). Thus, both the rich and the less affluent citizens could be more involved in (i) the administrative processes, (ii) determination of tax rates, and (iii) the spending of tax money. In the administrative process, taxpayers could have a voice in setting deadlines and scheduling meetings. Concerning the determination of tax rates, citizens (like in Switzerland) could be asked which assets should be taxed more than others (Pommerehne & Weck-Hannemann, 1996). With respect to spending, taxpayers could be allowed to have a voice in the outlay of at least a certain proportion of their own tax money. Rich taxpayers may even become involved in the realization of particularly needed public goods; for example, by choosing from a list of such projects that they could finance and support personally. Once the project is underway, a committee could be formed with other citizens to bring it to fruition. Once again, ancient Greece's liturgy system shows how to encourage the rich by involving them in the tax collection and spending process in a way that leads to public improvements. The administration of charities could give further ideas on how to manage the tax system in a more participatory way allowing the relevant wealthy contributors more control over tax issues. Nonetheless, there are few extant field studies (Touchton & Wampler, 2019) concerning participation, and rarely do they focus on wealthy taxpayers.

Well-Trained Tax Auditors

On the micro level, the powerful situation of wealthy taxpayers has to be addressed by well-trained tax auditors to generate legitimacy, trust, and voluntary tax motivation. Thus, tax administration personnel need to not only be well versed in their legal and administrative skills but also on their social, emotional, and psychological skills. The Pharaohs in Ancient Egypt realized that those who collect the tax are key for a successful tax system (Adams, 1993). Tax auditors should be able to compete with their counterparts, i.e., tax practitioners of the wealthy, who are often better equipped with resources and are well trained and highly compensated. Thus, tax administrations need to offer competitive salaries, and also need to put the single tax auditors or auditing teams into an empowered and autonomous position, allowing them to directly negotiate with taxpayers by maintaining a high level of transparency to avoid the potential of corruption. Hence, tax auditors need to be highly skilled and trusted professionals who are given and are capable of taking a lot of responsibility. Some countries, particularly in the past, have employed tax auditors without a university degree. This was especially the case outside of big cities: tax auditors were not specialists, and had little knowledge of specific target groups or business sectors. In addition, the practice of giving the decision-making power to someone who is not present during an audit (e.g., to the supervisor of the auditor) reduces perceived competence of personnel directly interacting with the taxpayer. Accordingly, to ensure perceived legitimacy of those who interact with a taxpayer, an excellent and specialized education is necessary. International educational and exchange programs and international cooperation programs that create and exchange information and expertise such as the EU Fiscalis program[3] or sabbaticals at universities can also contribute to an increase in skills.

Responsive Regulation

On the micro level, it is important to recognize the peculiarities and diversity of wealthy taxpayers' attitudes, motivations, and cognitions in order to choose the most effective coercive-based and legitimacy-based strategy. Responsive regulation claims that taxpayers need to be treated differently depending on their tax motivation (Braithwaite, 2003, 2007). For instance, strict and harsh control measures should be targeted only to taxpayers motivated by enforcement, such as known fraudsters. Tax audits for new taxpayers should be used to educate and to demonstrate the professional way in which monitoring is conducted. Finally, harsh audits for committed motivated taxpayers should be suspended, and instead, these taxpayers should be respected and thanked (Gangl et al., 2015). Additionally, tax auditors should be aware of the special values, cognitions, and fairness perceptions of the wealthiest, in order to choose a convincing and trust-generating communication strategy. For instance, the wealthy who respond to gratitude should be made aware of gratitude measures, whereas wealthy who are afraid that they are the only ones who pay honestly should be made aware of auditing frequencies for fellow wealthy taxpayers. Thus, tax auditors should also be trained in how to psychologically diagnose a taxpayer in order to implement the right communication and enforcement strategy. One way of training these competencies is through role-plays that practice convincing arguments in response to the most common complaints of taxpayers. Additionally, escalation plans for coercive measures can be developed, giving tax auditors a road map of which situation (e.g., repeated postponed meeting) should be addressed with which measure (e.g., issuing a caution).

Appreciation and Respect

On the micro level, cognitive tendencies of the wealthy such as an increased willingness to defend own rights or to fight perceived unfairness likely increase their sensitivity to friendly or unfriendly interactions. Thus, appreciation and

[3] https://ec.europa.eu/taxation_customs/fiscalis-programme_en

respect for those who are tax compliant represent very inexpensive legitimacy-based instruments, which nonetheless are central to maintain, guarantee, or generate trust, particularly the basic trust in the system (Gangl et al., 2019). In official documents and interaction, respectful treatment would include a thank you note in advance for future cooperation, past cooperation, and the tax contribution itself, which is a sign of appreciation. In addition, examples of what will be financed with the money could be shared. Personal interactions are important. In personal encounters, tax auditors should listen to the taxpayers and convey a feeling of genuinely caring for their situation, and for valuing their accomplishments and contributions to society. This empathic and respectful approach should, of course, be the rule for all taxpayers, not just the wealthy; however, it is suggested that it is especially needed for the wealthy. If unsatisfied by treatment from the tax authorities, the wealthy have more options to sue or to hire aggressive tax advisors.

Conclusions

Tax compliance by the wealthy is of paramount importance to a well-functioning society. The present review summarizes the existing evidence from various academic fields, from history, and from practitioners, delineating how and why the wealthy differ from average taxpayers. We do not yet fully understand the extent or the determinants of the wealthy's tax noncompliance. However, the tax decisions of the wealthy are based on specific interrelated political-economic, social, and individual differences with associated psychological consequences. We discuss how these peculiarities can be addressed by tax authorities, via tailored coercive-based and legitimacy-based instruments. Given the recent burgeoning of costly crises that are straining public budgets across the world (e.g., climate and demographic change, financial recessions, the refugee crisis), together with a loss of public confidence in governments' ability to establish a fair economic and political system, it seems both important and timely to intensify efforts into research and policies regarding wealthy taxpayers. Thereby, research and practice should go hand in hand. To foster an evidence-based focused tax administration, all new policy attempts should be accompanied by evaluation procedures that recognize contextual dependencies and examine differential effects. One way to test the usefulness of new potential instruments would be through randomized control trials conducted in close collaboration between researchers and the tax administrations (for a detailed discussion, see Torgler, 2016).

One main aim of this review was to shed light on the tax compliance of the wealthy, to show that they are different from average taxpayers, and to suggest that research and policy interventions in this regard can be successful. The historical overview at the beginning of this review should convince researchers and policy makers that there are many possible different ways to motivate the wealthy to contribute more taxes to the benefit of the society.

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RESEARCH ARTICLE

Enhancing feelings of security: How institutional trust promotes interpersonal trust

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Abstract

Interpersonal trust is an important source of social and economic development. Over decades, researchers debated the question whether and how public institutions influence interpersonal trust, making this relationship a much-discussed issue for scientific debate. However, experimental and behavioral data and insights on this relationship and the underlying psychological processes are rare and often inconsistent. The present set of studies tests a model which proposes that institutional trust indirectly affects trust among unrelated strangers by enhancing individuals' feelings of security. Study 1 (survey on trust in a broad spectrum of state institutions), Study 2 (nationally representative data from 16 countries), and Study 3 (experimental manipulation of institutional trust) provide convergent support for this hypothesis. Also, the results show that the effect remains consistent even after controlling for individual dispositions linked to interpersonal and institutional trust (Study 1 and 3) and country level indicators of institutional performance (Study 2). Taken together, these findings inform and contribute to the debate about the relationship between institutions and interpersonal trust by showing that when institutions are trusted, they increase feelings of security, and therefore promote interpersonal trust among strangers.

Introduction

Trust among citizens is crucial for the societal, political, and economic functioning of a state [1]. Societies with high interpersonal trust have happier citizens [2], more political participation [3], and stronger economic growth [4]. Traditionally, trust is deeply rooted in social interaction in dyads and small groups. However, those interactions do not occur in a social vacuum, as they are directly or indirectly embedded in a societal context regulated by institutions, which constitute "rules of the game" that structure social life [5].

In the last two decades, research has been conducted to understand whether certain features of the institutional setting (e.g., performance, efficiency, and fairness) can favor the

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development of interpersonal trust among strangers [6–10], often leading to opposite predictions [11]. Also, little empirical evidence for the key mechanisms underlying a presumed association between institutions and interpersonal trust is provided in the research literature (e.g., [12]), largely relying on survey studies within one particular society and a limited set of institutions. In the present research, we contribute to this body of literature by focusing on individuals' perceptions of institutions and, more specifically, testing the hypothesis that institutional trust can stimulate trust among strangers by enhancing feelings of security. Across three studies (a survey, an analysis of a cross-national database, and an experimental study), we tested a model proposing that institutional trust fosters interpersonal trust as it serves as cue conveying that one is not completely at the mercy of potentially hostile strangers, but rather is protected in case strangers have malevolent intentions.

Interpersonal trust and institutions: Crowding-out and institution-centered approaches

Interpersonal trust is a pervasive phenomenon of social life and a lubricant for many societal processes. It is defined as a psychological state that involves the intention to accept vulnerability in social interactions, under conditions of social risk and interdependence [13,14]. It is often conceptualized as a multidimensional construct that can be differentiated into trusting beliefs and the resulting trusting intentions or behavior [15–17]. The former refer to individuals' perceptions of trustworthiness of others, while the latter reflect the acceptance of vulnerability and actions undertaken to gain possible advantages [18]. Positive expectations regarding the intentions or behavior of one or more persons are often based on own direct experience or reputational information shared by others [19–21]. Such interaction processes are key to the development of trust and, thus, to people's willingness to accept risk in situations often characterized by strong interdependence (e.g., [18,22]; for reviews see [23,24]). However, in modern complex societies, individuals often face interactions with strangers, in situations where trust is unlikely to be based on social interactions or reputational information shared by others. Here formal institutions, conceptualized as external systems of control that offer "rules of the game", help to structure and increase the predictability of such exchanges [5]. Indeed, state institutions such as public administration or the police provide safeguards ensuring that others behave cooperatively, and therefore offer cues that increase trust in others [11].

The relationship between institutions and interpersonal trust has been debated, however, especially in light of institutions' key role in providing rules and normative expectations [7,11]. The main claim of the so-called crowding-out approaches is that interpersonal trust becomes no longer relevant if institutions are in place. External sources of control as sanctioning systems directly affect the incentive structure of the interaction by increasing the cost of non-cooperative actions. As a consequence, such institutions remove the social uncertainty involved in the social exchange, and expectations and actions become driven by assurance rather than interpersonal trust [25]. While interpersonal trust is based on beliefs about the benevolent and intrinsic motivation of the partner, assurance is based on the expectation that the interaction partner will behave according to the relevant incentive structure, thus crowding-out interpersonal trust and voluntary cooperation [26]. Moreover, the mere need to establish such systems can even be considered as a signal of others' untrustworthiness and, therefore, decrease the motivation to trust [27]. Also, findings from cross-cultural research make similar claims, showing that individuals in societies that differ along the tightness-looseness dimension (i.e., the strength of social norms and the tolerance of deviance) manage their relationships differently in terms of interpersonal trust. Individuals in tight societies, compared with loose ones, tend to rely on strongly defined norms that provide clear expectations enforced through external control systems [28,29], while those in loose cultures, where rules and regulations are less prevalent, are more likely to rely on interpersonal trust instead [30].

On the other hand, a different theoretical perspective considers formal institutions as laying the ground for the development of interpersonal trust, especially when there is high level of uncertainty about others' beliefs and norms [31]. Accordingly, institutions initially enforce trustworthy interactions through external rules, but after repeated successful interactions, individuals would not rely on mere assurance anymore, generalizing their beliefs about others' benevolence to other settings [32]. In fact, evidence shows that societies with efficient institutions, operationalized for example as societies with high level of democracy or effectiveness in enforcing agreements between strangers, display greater levels of interpersonal trust, as compared to countries with inefficient institutions [7,9].

The relationship between institutional and interpersonal trust

Importantly, together with the quality of the institutions, individuals' perceptions and subjective assessments based on existing information of institutions might play a major role in understanding how institutions affect trust and the underlying mechanisms. Indeed, existing empirical evidence shows that, compared to institutional quality indicators, perceptions of institutions are similarly associated to interpersonal trust. For example, citizens' perceptions of institutional fairness or perceptions of corruption are related to interpersonal trust as do country-level indicators of fairness (e.g., skewness of income distribution) and corruption (e.g., number of arrests for corruption) [33,34]. Thus, it is possible to assume that, although in some situations external institutions may undermine interpersonal trust, this effect is conditional to whether people perceive them as legitimate and trustworthy (e.g., [35,36]). That is, taking into account whether these institutional constraints are trusted themselves can be crucial for understanding how they affect interpersonal trust. Indeed, institutional trust, defined as the extent to which individuals accept and perceive institutions as benevolent, competent, reliable, and responsible toward citizens [37], has been proposed as especially relevant for sustaining interpersonal trust [38,39]. For individuals, trusting institutions involves the perception that institutions would act in accordance to the common interest and society's needs to resolve disputes [40,41]. Recent evidence drawn from survey studies suggests that countries with high institutional trust are also characterized by more interpersonal trust [42,43]. This correlation appears robust across different countries and institutional settings, e.g., in Europe [44], Asia [45,46], and the USA [47], suggesting that these two types of trust are interrelated, with institutional trust influencing interpersonal trust. Given the observational nature of these studies, some authors argue that this relationship might actually be reversed (i.e., with interpersonal trust influencing institutional performance; e.g., [48]) or of mutual influence (e.g., [49]), while other more recent studies with individual fixed effects and cross-lagged panel models suggest that this is unlikely, and that institutional trust has an impact on interpersonal trust (e.g., [44,50–52]). Institutional trust has also been proposed as a mediator mechanism to explain how quality of institutions relates to interpersonal trust. For example, in a recent study, Lo Iacono showed that the ineffective institutions mostly affected interpersonal trust via a decrease in institutional trust [38]. Similarly, in a pilot study we found that institutional trust mediated the relationship between the presence (vs. absence) of institutions and trusting beliefs and behavioral intentions (methods and results are presented in detail in S1 Appendix in S1 File).

Although the existence of a relationship between institutional trust and interpersonal trust has been extensively discussed (e.g., [39]), empirical evidence to illuminate the underlying processes is scarce. In a pioneering experiment, Rothstein and Eek [53] manipulated corruption with scenarios describing corruption of institutional representatives in a fictitious country in order to test the effect of institutions on interpersonal trust. In this study, student participants from Sweden and Romania were exposed to eight vignettes which respectively manipulated a bribe (present or absent), the initiator (the authority or the citizen), and the outcome of the exchange (positive or negative). The results showed that when public authorities were depicted as corrupt, participants perceived fellow citizens in the scenario as less trustworthy. The authors of the study further speculated that this effect could be explained by an inference-based underlying mechanism. Accordingly, individuals would make generalized inferences about others' trustworthiness based on observations of corrupt behavior enacted by public officials, others, and even themselves, interpreting these signals as information about what type of "game" is being played in a society [53,54]. Up to date, this remains the only experimental evidence available. However, the authors did not test the mechanisms underlying this effect, nor did they test the implications for trusting behavior. As such, little is still known about the question of whether institutional trust influences interpersonal trust beliefs and behavior toward unrelated strangers, or what underlying processes are responsible for this relationship. The present studies were designed to fill this void and to provide preliminary evidence for a potential underlying mechanism that might inform this debate.

The mediating role of feelings of security

Previous literature suggests that, among their other functions, institutions have a crucial role for individuals to achieve security and safety in life [55,56]. Benevolent institutions provide structure in society, which allows individuals to achieve a greater sense of control over their lives [57]. Indeed, individuals are motivated to avoid victimization and exploitation from others [58] and to pursue safety and security by reducing personal threats in social situations [59]. Accordingly, institutions related to law and order may lead citizens to experience generalized feelings of security that would make them feel protected from potential offenses perpetrated by other fellow citizens [60]. We define these feelings as individuals' generalized perception of how safe they feel and to what extent they feel protected from socially threatening events. Additionally, we propose that when challenged by threats, feelings of security may be influenced by cues of trustworthiness of formal institutions, such as encounters with corrupt public officials or witnessing corrupt exchanges between other citizens and public representatives, as they provide a strong signal that social order is not guaranteed [53,60]. When it comes to interpersonal trust, there is evidence that general emotional states play a role [61], but, in particular, feelings of security are relevant to build interpersonal trust because they lead individuals to feel less vulnerable, which is key in trusting interactions with unknown strangers [14].

Law and order institutions are specifically related with protecting one's personal safety, but also social institutions [56], religious institutions [62], or the government [12] have been proposed to serve this motive and affect individuals' feelings of security. Despite the underlying role of feelings of security has never been investigated in previous research, other indirect empirical evidence is also in line with this assumption. In experiments, individuals prefer to interact in settings where sanctioning and rewarding institutions are in place [63]. These institutionalized societal models are particularly effective in mitigating people's fear of exploitation and, thus, to establish a culture of cooperation over time [64]. Further evidence in this vein comes from survey research, suggesting that efficient institutions promote less parochial behavior and more interpersonal trust [55]. Moreover, recent survey data support the protective function of trust toward governmental and legal institutions in Sweden focusing on fear of crime [12], showing that crime-related insecurity mediated the relationship between institutional trust and interpersonal trust.

The current studies

The aim of the current three studies is to provide a first experimental and cross-country test for the hypothesis that institutional trust indirectly promotes trust among strangers by providing feelings of security, which in turn allow people to accept vulnerability and to trust others. Fig 1 summarizes the model tested across all studies, as well as the expected relationships between the constructs. In Studies 1 to 3, we tested whether feelings of security mediate the relationship between institutional and interpersonal trust. In Study 1, through a survey, we investigated whether trust in several formal institutions is related to feelings of security, and subsequently, to interpersonal trust. In Study 2, we tested our model with a multilevel mediation analysis on European Social Survey data (ESS; [65]) across 16 countries. Finally, in Study 3, we addressed the same hypothesis by directly manipulating institutional trust in a between-subjects experimental design. Additionally, in Study 3 we also test an alternative mediation model, according to which institutional trust affects interpersonal trust through an increase of the expectations about other's behavior. For an overview of the different operationalizations of the constructs used to test the model across all studies, and their descriptive statistics, see S1 Table in S1 File.

To establish the robustness of our results, all studies included control variables to account for variation in the dependent measure. Indeed, the lack of control for stable psychological dispositions in previous cross-sectional studies might have overestimated the relationship between the two forms of trust in the past (see [39]). In Studies 1 and 3, we controlled for individual dispositions related to interpersonal and institutional trust, namely trust propensity, political orientation, and security values. Trust propensity is a stable individual disposition, defined as a generalized expectation about others' trustworthiness, and one of the most significant predictors of trust in interactions with strangers [13,66]. This variable was included in Study 1 and 3 to disentangle that trusting beliefs and behavior toward a specific target did not depend on an underlying general willingness to trust others. Right-wing political orientation and, more generally, conservative ideology [67] may both be associated with the need to reduce uncertainty and support of external control systems [68]. The endorsement of security values characterizes individuals who prioritize security and predictability [37] and, therefore,

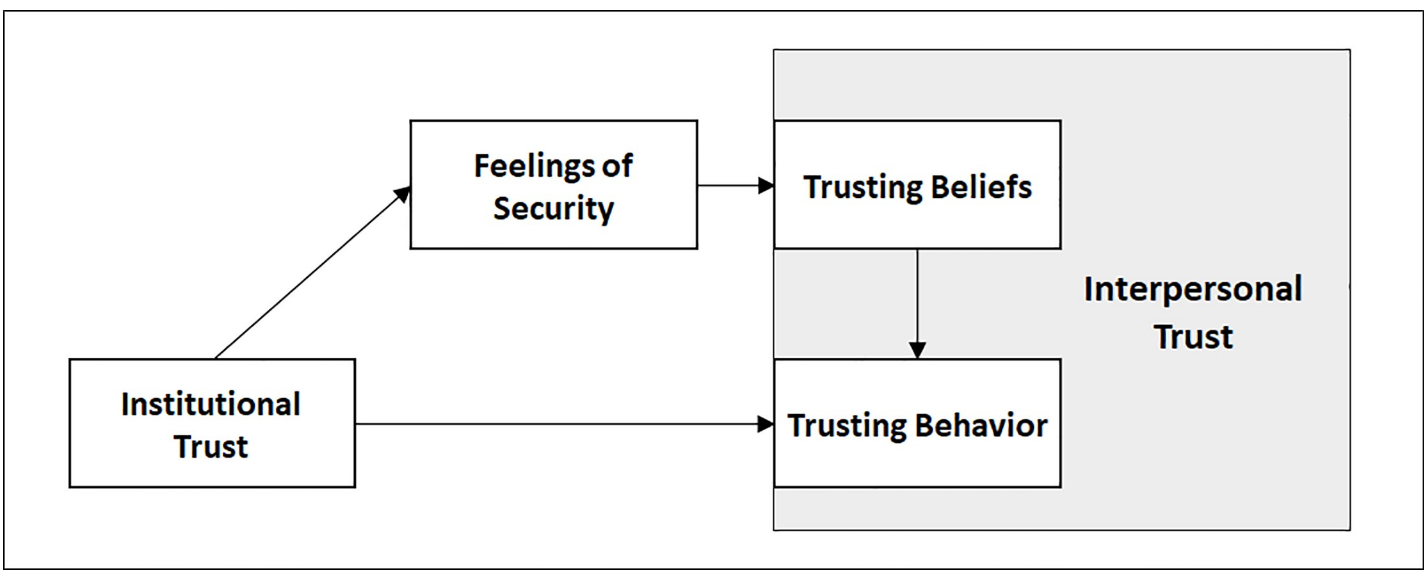

Fig 1. The model: Institutional trust as a predictor of interpersonal trust (trusting beliefs and subsequent behavior) via feelings of security.

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are more likely to prefer strong institutions. In Study 2, we included country-level indicators of institutional performance that strongly correlate with both institutional and interpersonal trust (e.g., political and economic performance; [69]).

Study 1

In Study 1, we aimed to extend findings on the relationship between institutional trust and interpersonal trust by providing a preliminary first test of the hypothesis that institutional trust promotes interpersonal trust toward strangers by enhancing individuals' feelings of security. In doing so, we used a cross-sectional survey design that analyzed trusting beliefs toward state institutions and fellow citizens. Additionally, we assessed institutional trust toward a large set of public institutions to identify whether the perceiving feelings of security would be relevant for specific institutions (such as those absolving more monitoring or sanctioning functions) or generalizable across institutional settings. Unlike previous observational studies that use single items to measure institutional trust, institutional trust was measured through scales covering perception of competence, benevolence, and integrity [70], to overcome single-items psychometric limitations (e.g., random measurement errors and biases in interpretation).

Materials and methods

Participants

The sample consisted of 181 Italian participants (75.7% female; M_{age} = 28.06, SD_{age} = 9.74). Most of them had bachelor's degree (40.3%) and described themselves as slightly left-wing on a 10-point political orientation scale ranging from left to right (M = 4.06, SD = 2.31). The participants' regions of origin were proportionally distributed among north (43.1%), center (14.9%), and south Italy (42%). To ensure that all participants had some degree of experience or previous information about Italian public institutions, we recruited participants being at least 18 years of age, and excluded participants that reported to have a different nationality (N = 1). Sensitivity analysis revealed that this sample size would result in 80% statistical power to detect a small effect of institutional trust on trust beliefs (f^2 = 0.04; [71]). The whole research was conducted in accordance with the Declaration of Helsinki (7th revision, 2013) and local ethical guidelines for experimentation with human participants and was approved by the institutional review board at the University of Turin and by the ethical commission of the Zeppelin University in Friedrichshafen. All participants gave written informed consent prior to the experiments.

Procedure

Participants were recruited on social media through a snowball sampling. They accessed to the online survey through a call for participation posted on social media accounts and were requested to share the call with others. The study included measures of trust toward different state institutions, interpersonal trust, feelings of security enhanced by public institutions, security values, trust propensity, and a socio-demographic section. To avoid sequence effects, all items were presented in a randomized order within each scale and, unless otherwise stated, they were answered on a seven-point Likert scale from 1 (*I completely disagree*) to 7 (*I completely agree*).

Institutional trust. We assessed trust in five different institutions related to social order ([70], eight items for each institution, e.g., *"I trust the police in Italy because they behave benevolently toward citizens"*, police: α = .81; legal system: α = .84; government: α = .81; media: α =

.82; religious institutions: α = .87). Following Agroskin, Jonas, and Traut-Mattausch [72], in addition to the items proposed in the original scale, we presented an additional item to increase the scale validity (i.e., "*I generally trust the police in my country*"). Following previous research on institutional trust (e.g., [73]), we then additionally averaged the scores of these five scales in a single cumulative index of institutional trust, which showed a good reliability, α = .70.

Interpersonal trust. Trusting beliefs toward Italian citizens were measured through an adaptation of General Trust Scale ([25]; six items, e.g., "*I believe that Italian citizens are basically honest*", α = .93). This scale consisted in a series of questions that assessed to what extent respondents perceived fellow citizens as trustworthy.

Feelings of security. We included a measure of feelings of security that individuals experience in relation to institutional performance and representatives (three items, i.e., "*I feel protected by public institutions*", "*I am comforted by thinking that I can count on public institutions if anything happens to me*", "*I feel I can rely on public institutions to assert my own rights*", α = .89).

Control variables. As control variables, we measured trust propensity through the Trust in Others Scale ([74]; three items, e.g., "*I dare to put my fate in the hands of most other people*", α = .65) and the endorsement of security values using the respective subscale from the Portrait Values Questionnaire [75]. Here respondents are asked to indicate own perceived similarity to a described person (five items, e.g., "*It is important to him to live in secure surroundings. He avoids anything that might endanger his safety*", α = .74) on a six-point Likert scale from 1 (*not like me at all*) to 6 (*very much like me*).

Results

Results showed the expected significant associations between average and distinct trust in the five institutions, feelings of security, and trusting beliefs toward citizens (S2 Table in S1 File). Additionally, the individual dispositions used as controls confirmed the hypothesized association with both interpersonal trust and institutional trust. The Pearson's correlation analyses also showed associations between trust propensity and interpersonal trust ($r = .39$, $p < .001$), the endorsement of security values and institutional trust ($r = .22$, $p = .003$), and right-wing political orientation and trust toward the police ($r = .27$, $p < .001$) and religious institutions ($r = .21$, $p = .006$), respectively. We also found a medium correlation between institutional trust and feelings of security ($r = .50$, $p < .001$), suggesting a possible partial overlap between the two constructs. However, confirmatory factor analyses showed that this is unlikely, and that security and institutional trust are separate factors (statistical details are reported in Table A in S2 Text in S1 File).

The main effect of institutional trust on interpersonal trust. We conducted a simple linear regression with institutional trust (average trust in all five institutions) predicting trusting beliefs. Institutional trust significantly predicted trust toward fellow citizens (interpersonal trust), $F(1, 179) = 15.29$, $p < .001$, $R^2 = .08$.

The indirect effect of institutional trust on interpersonal trust via feelings of security. A mediation analyses with 5,000 bootstrapped samples using the SPSS macro Process model 4 [76] showed that the indirect effect of institutional trust on trusting beliefs towards other citizens is significant for each of the five institutions under analysis: police ($b = 0.12$; 95% CI [0.05; 0.21], $R^2 = .12$), legal system ($b = 0.14$; 95% CI [0.06; 0.24], $R^2 = .11$), government ($b = 0.13$; 95% CI [0.06; 0.23], $R^2 = .12$), religious institutions ($b = 0.04$; 95% CI [0.01; 0.09], $R^2 = .02$), and the media ($b = 0.09$; 95% CI [0.04; 0.16], $R^2 = .12$). Overall, the relationship between institutional trust and trusting beliefs towards fellow citizens was mediated by feelings of security while considering the aggregate index of institutional trust as a predictor in the model, $b = 0.18$; 95% CI [0.06; 0.32], $R^2 = .13$. These results appeared robust even if trust propensity, security values, political orientation, and education were included as controls in the analyses, $b = 0.15$; 95% CI [0.05; 0.27], $R^2 = .26$. Detailed results of the mediation models are presented in detail in Table 1.

Discussion

The findings of Study 1 are in line with previous studies and our key hypothesis. Institutional trust was associated with interpersonal trust, and this relationship was mediated by the feeling that institutions can protect individuals from the exploitative behavior of strangers. This

Table 1. Results of mediation models for the effect of institutional trust (aggregate measure and single institutions) on interpersonal trust through feelings of security.

Predictor and effect	Outcome: Trusting beliefs					
	Model 1			Model 2		
	b	*SE*	95% CI	*b*	*SE*	95% CI
Mediator: Feelings of security	0.23	0.07	0.08; 0.37	0.19	0.07	0.05; 0.33
Predictor: Institutional trust (Aggregate)						
Total effect	0.39	0.10	0.19; 0.59	0.29	0.10	0.10; 0.49
Direct effect	0.21	0.11	-0.01; 0.44	0.15	0.11	-0.07; 0.37
Indirect effect	0.18	0.06	0.06; 0.32	0.15	0.06	0.06; 0.27
Mediator: Feelings of security	0.25	0.07	0.11; 0.39	0.19	0.07	0.06; 0.33
Predictor: Institutional trust (Police)						
Total effect	0.25	0.07	0.10; 0.40	0.22	0.08	0.07; 0.36
Direct effect	0.13	0.08	-0.03; 0.29	0.11	0.08	-0.06; 0.27
Indirect effect	0.12	0.04	0.05; 0.21	0.11	0.04	0.04; 0.20
Mediator: Feelings of security	0.26	0.07	0.12; 0.41	0.2	0.07	0.06; 0.34
Predictor: Institutional trust (Legal system)						
Total effect	0.22	0.07	0.08; 0.36	0.18	0.07	0.05; 0.31
Direct effect	0.08	0.08	-0.08; 0.23	0.07	0.08	-0.08; 0.22
Indirect effect	0.14	0.05	0.06; 0.24	0.11	0.04	0.03; 0.19
Mediator: Feelings of security	0.26	0.07	0.12; 0.40	0.20	0.07	0.07; 0.34
Predictor: Institutional trust (Government)						
Total effect	0.24	0.08	0.09; 0.39	0.19	0.07	0.04; 0.33
Direct effect	0.11	0.08	-0.06; 0.27	0.09	0.08	-0.07; 0.24
Indirect effect	0.13	0.04	0.06; 0.23	0.10	0.03	0.04; 0.18
Mediator: Feelings of security	0.28	0.06	0.16; 0.41	0.23	0.06	0.11; 0.35
Predictor: Institutional trust (Religious institutions)						
Total effect	0.12	0.06	0.01; 0.25	0.06	0.06	-0.06; 0.18
Direct effect	0.09	0.06	-0.03; 0.20	0.03	0.06	-0.09; 0.15
Indirect effect	0.04	0.02	0.01; 0.09	0.03	0.02	-0.01; 0.07
Mediator: Feelings of security	0.27	0.07	0.14; 0.40	0.22	0.06	0.10; 0.35
Predictor: Institutional trust (Media)						
Total effect	0.21	0.08	0.06; 0.37	0.14	0.08	-0.01; 0.30
Direct effect	0.13	0.08	-0.03; 0.28	0.07	0.08	-0.9; 0.22
Indirect effect	0.09	0.03	0.04; 0.16	0.07	0.03	0.03; 0.14

Results based on 181 observations. Model 1: Mediation analyses did not include control variables. Model 2: Mediation analyses included trust propensity, security values, political orientation, and education as control variables.

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indirect effect appeared to be independent from individual dispositions. Moreover, Study 1 showed that this indirect effect was consistent over all the five main public institutions related to social order, even for those that do not directly deal with monitoring or sanctioning (e.g., the media). However, religious institutions seemed to play a more marginal role, as suggested by the magnitude of the effect size and the fact that the indirect effect becomes non-significant after control variables were added.

Study 2

Study 1 provided initial evidence for the hypothesis that institutions, when trusted, are associated with feelings of security, which in turn predict trust in strangers. However, our results were limited to relatively small and non-representative samples from a single country and institutional context (i.e., Italy). In Study 2, we filled this gap by testing this hypothesis across 16 countries. Importantly, the current study presents different operationalizations of feelings of security and interpersonal trust. Feelings of security were measured as perception of personal safety. This measure is not explicitly tied to the specific institutions under investigation as in Study 1, but it is particularly relevant for institutions that are supposed to regulate social exchange and safeguard law and order. A different operationalization of feelings of security also allows to further generalize the findings and disentangle any possible overlap with the construct of institutional trust. Interpersonal trust has been assessed using respondents' scores on the Generalized Trust Scale. Differently from Study 1, the current trust measure does not involve a specific target of the trusting beliefs, but rather reflects beliefs toward "most people", that are likely to drive behavior in contexts involving unfamiliar actors. This different operationalization of interpersonal trust allows to relate our findings to previous evidence from survey studies using this scale (e.g., [43]) and to generalize them above specific trust targets (i.e., members of own community such as Italian citizens in Study 1). Finally, we included several control variables specifically related to both respondents' trust-relevant socio-demographic characteristics and institutional performance.

Materials and methods

Participants and procedure

This study used data from the European Social Survey (ESS). In total, answers from 180,051 participants (50.65% female; $M_{age} = 47.27$, $SD_{age} = 18.04$) from 16 countries of the European area (Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Sweden, and Slovenia) were included in the analysis. Most respondents completed upper secondary education (35.7%) and described themselves as politically moderate ($M = 5.08$, $SD = 2.11$) on a bipolar 11-point scale from 0 (*left-wing*) to 10 (*right-wing*). ESS data are gathered through cross-sectional face-to-face individual interviews administered to nationally representative samples, with different samples recruited for each wave. To provide greater temporal stability of the theoretical assumption, we decided to include only those countries participating to all survey waves (1–7) from 2002 to 2014, as well as only respondents without missing values in the variables described below (initial and final sample sizes and main descriptive statistics for each country are reported in S3 Table in S1 File). For the present analysis, we selected measures of trust in different state institutions, interpersonal trust, feelings of security, and country level indicators of institutional performance.

Institutional trust. As in Study 1, we obtained the measure of institutional trust by aggregating trust ratings toward four state institutions (i.e., "*How much you personally trust the parliament*", "*the legal system*", "*the police*", and "*the politicians*", α range among countries = .78 -

.87). Individual responses were given on a 11-points Likert scale, ranged from 0 (*no trust at all*) to 10 (*complete trust*).

Feelings of security. The study contained a single-item measure as a proxy for respondents' feelings of security (i.e., "*How safe do you—or would you—feel walking alone in this area after dark*?"). Answers have been reverse-scored to allow consistent interpretation with the three-items measure used in Study 1, thus ranging from 1 (*very unsafe*) to 4 (*very safe*).

Interpersonal trust. Interpersonal trust was assessed using the Generalized Trust Scale (three items, e.g., "*Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people*?", α range = .63 - .77). As for institutional trust, each item was answered on a 11-points Likert scale from 0 (*no trust at all*) to 10 (*complete trust*), phrased according to the specific item from 0 (*you can't be too careful*) to 10 (*most people can be trusted*).

Control variables. Last, country-level indicators of institutional performance of political and economic institutions were retrieved from established databases for each of the countries under investigation (i.e., government effectiveness, political rights, rule of law, economy competitiveness, GINI, and GDP per capita) from available time points between wave 1 and 7 of the ESS (2002–2014). A detailed description of these indicators is provided in S2 Appendix in S1 File.

Results

First, data were corrected for sampling errors, since the ESS data involved respondents from multiple countries. By applying the design weight variable (*dweight*) included in the ESS dataset, we adjusted for the differences in the chance of selection of respondents for each country in all the following analyses. Moreover, control variables were included in the models in two steps, with respondents' trust-relevant socio-demographic characteristics (i.e., age, gender, and education) being included first, followed by institutional performance indicators at a second stage. We report results from both analyses.

The indirect effect of institutional trust on interpersonal trust via feelings of security. To test our main prediction that institutional trust predicts interpersonal trust through increased feelings of security, we performed multilevel mediation analyses with bootstrapping method with the R package mediation [77,78] to account for the nested structure of the ESS data. In this model, respondents (level-1) are nested within countries (level-2). The mediation functions took as an input two multilevel regression models. The first multilevel regression had institutional trust as independent variable and feelings of security as dependent measure with countries as random intercept. The independent variables of the second multilevel regression were institutional trust and feelings of security, while the dependent variable was interpersonal trust, again with country as random intercept.

In line with the hypothesis, the results showed that the feelings of security had a significant indirect effect in interpersonal trust, $b = 0.013$, 95% CI [0.0117; 0.0136] controlling for survey wave and common sociodemographic variables associated to interpersonal trust in survey research (i.e., gender, age, and education; e.g., [79]). The relationship was partially mediated since the effect of institutional trust on interpersonal trust, $b = 0.342$; 95% CI [0.3377; 0.3458], remained significant when the mediator was included in the model, $b = 0.329$; 95% CI [0.3251; 0.3325]. Moreover, the results showed that including institutional performance indicators (e.g., GDP per capita, government effectiveness, and rule of law) as covariates in the multilevel mediational analysis did not affect the significance of the model, $b = 0.013$; 95% CI [0.0123; 0.0145]. While controlling for institutional performance indicators, the effect of institutional trust on interpersonal trust, $b = 0.352$; 95% CI [0.3484; 0.3563], remained significant when the

Table 2. Results of the multilevel mediation models for the effect of institutional trust (aggregate measure) on interpersonal trust through feelings of security.

Predictor and effect	Model 1		Model 2		Model 3	
	b	95% CI	*b*	95% CI	*b*	95% CI
Mediator: Feelings of security	0.298	0.2978; 0.2984	0.326	0.3260; 0.3265	0.296	0.2954; 0.2962
Predictor: Institutional trust (Aggregate)						
Total effect	0.352	0.3479; 0.3564	0.342	0.3377; 0.3458	0.352	0.3484; 0.3563
Direct effect	0.339	0.3347; 0.3421	0.329	0.3251; 0.3325	0.339	0.3354; 0.3424
Indirect effect	0.013	0.0121; 0.0144	0.013	0.0117; 0.0136	0.013	0.0123; 0.0145
% of Total effect	0.04		0.04		0.04	

Results of all models are based on 180,051 observations and use countries as random effects. % of Total effect: Proportion mediated (i.e., ratio of the total effect to the indirect effect).

Model 1: Mediation analyses included survey wave as control variable. Model 2: Mediation analyses included survey wave and individual-level variables (gender, age, and education) as control. Model 3: Mediation analyses included survey wave and country-level variables (political rights, government effectiveness, rule of law, economy competitiveness, GINI coefficient, and GDP per capita) as control.

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mediator was included in the model, *b* = 0.339; 95% CI [0.3354; 0.3424]. Results of the multi-level mediation models are presented in detail in Table 2.

As in Study 1, we also run our models considering trust in the four different institutions, instead of a single aggregated measure. As expected, results showed consistent patterns, suggesting that the effect can be generalized over a variety of institutions. The details of such analyses can be found in S4 Table in S1 File. Given that estimates of indirect effects were similar across the four institutions (*b* range = 0.007–0.011), we limit the report to trust in the police, as it will be the focus of Study 3. Overall, the relationship between trust in the police and interpersonal trust was mediated by feelings of security, *b* = 0.007; 95% CI [0.0068; 0.0087], even controlling for individual differences *b* = 0.008; 95% CI [0.0076; 0.0091], and differences in the quality of institutions, *b* = 0.008, 95% [0.0069; 0.0084].

As an additional robustness check, we also tested our hypotheses with a different model specification. We included countries as fixed effects, thus removing the multilevel structure. The results (using both aggregate measure of institutional trust and trust in the four different institutions) were in line with those presented above, even controlling for individual differences (see S5 Table in S1 File).

Discussion

The results of Study 2 replicated findings of Study 1, using cross-national data with representative samples. Taking together responses obtained from participants of 16 different countries, we found that individuals who trusted institutions tended to feel more secure, which resulted in higher levels of interpersonal trust. Remarkably, these effects have been observed even considering more general feelings of security, not directly tied to the specific institutions as in Study 1. Moreover, by including country-level indicators of institutional performance (both political and economic), we found support for the hypothesis that the indirect effect of the feelings of security is related more to individuals' perception of the public institutions, rather than their actual efficiency and performance.

Study 3

Study 1 and 2 provided support for the hypothesis that institutional trust is positively associated to interpersonal trust, and that the effect is related to the feelings of security that institutions convey. In Study 3, we aimed to experimentally test this mechanism by manipulating institutional trust, in order to replicate the results obtained in Study 1 and 2. The manipulation consisted in providing participants with specific information about the institution's competence, benevolence, and reliability, in order to elicit consequent trust assessments. Additionally, we wanted to extend our claims on trusting beliefs to actual trusting behavior in an economic game. Thus, we tested our main prediction that institutional trust promotes trusting behavior, operationalized by investments in a trust game with a stranger, by increasing feelings of security conveyed by institutions.

Moreover, we also tested an alternative mechanism, to disentangle a possible explanation that the effect of institutions merely depends on the expectations regarding the behavior of the interaction partner. This would allow to test the hypothesis that interpersonal trust is influenced by feelings of security rather than a change in normative expectations brought about by formal institutions.

Materials and methods

Participants

A total of 94 participants (70.2% female; M_{age} = 25.45, SD_{age} = 6.24) were recruited from an online panel (i.e., Sona System) at a large Austrian University and received a 2 € show-up fee and a behavior-depending remuneration. Most had a high school diploma (44.7%) and reported a moderately left-wing political orientation (M = 4.12, SD = 1.57). Participants were mainly Austrians (59.5%), 22.3% were Germans, and the remaining 18.1% were German-speakers from other countries. Sensitivity analysis revealed that this sample size would result in 80% statistical power to detect a medium effect of institutional trust on trusting behavior (d = 0.58; [71]).

Procedure

Participants were invited to take part in an incentivized online study on decision-making. They learned that their choices could be matched with those of other anonymous participants from ten different countries, whose identity or belonging country would not be disclosed at any time. This matching protocol was introduced to manipulate institutional trust, providing the respondents with different information about the police in the partner's home country. After the manipulation, we measured participants' trusting beliefs toward the partner, trusting behavior, and expectations of reciprocity. Then, they completed a questionnaire assessing the feelings of security enhanced by the police depicted in the scenario, trust propensity, security values, risk attitudes, and political orientation.

Experimental manipulation (institutional trust). Past research found that individuals lacking perfect information about others (e.g., in interactions with strangers) make inferences about others' trustworthiness based on behavior of public officials in that society [53]. Following the same approach, at the beginning of the study, participants were randomly assigned to one of the two experimental conditions manipulating institutional trust (low vs. high) and were exposed to two scenarios providing different information about the police in the trustee's home country (referred to as Country X from now on), that was never disclosed across the entire duration of the study. They read a fictitious report of a survey about police's performance and perception in Country X the previous year. Following the definition of institutional trust as perception of benevolence, competence, and reliability of public institutions toward citizens (e.g., [37]), in the *low institutional trust* condition, the police were depicted as poorly qualified, neither fulfilling their obligations and nor serving the collective interest. Conversely, in the *high institutional trust* condition, the police were described as extremely skilled, committed, and responsible (see S3 Appendix in S1 File).

Manipulation checks. Two measures were used as manipulation checks to evaluate the extent to which the scenario elicited different degrees of (low vs. high) trust in the police. First, we directly asked participants how much would they trust the police in Country X on a seven-point Likert scale from 1 (*not at all*) to 7 (*completely*). Additionally, participants were asked to guess the trustee's country out of a list of ten countries, select as those ranking highest (i.e., Switzerland, Luxembourg, Norway, Sweden, Finland) and lowest (i.e., Portugal, Slovenia, Hungary, Czech Republic, Greece) in institutional trust scores according to data from OECD [80]. We expected that participants exposed to the high institutional trust condition would have associated Country X to an actual country renowned for its institutional trust.

Dependent variables (trusting beliefs and behavior) and mediating variables (feelings of security and expectations of reciprocity). In this study, interpersonal trust was operationalized as trusting beliefs and trusting behavior (i.e., the money invested in a trust game played with an unknown other) [81]. Participants were endowed with 5 Lab Coins (LC), each worth € 0.30, and assigned to the role of trustor. At stage one of the game, the trustor could transfer any of this amount (0–5 LC) to the trustee, keeping the remaining for herself, being aware that the transferred amount would have been tripled by the experimenter while passing it to the trustee. In stage two, the trustee could have transferred any portion of the tripled amount received back to the trustor. Importantly, they were informed that their decision would be randomly matched with that of another participant in the pool who will play a complementary role at a later stage of data collection in order to determine the final payment from the game. In reality, all participants played the sole role of trustor, since we were only interested in trusting behavior. The use of deception in this study (i.e., providing participants with fictitious information about the institutions in place in the trustee's country) was functional to increase internal validity of the study and to set up a situation in which any observed effect on interpersonal trust would have been solely attributed to the manipulated information. Given that we did not assess actual return behavior, the final payment for the participants was determined by tripling the amount they transferred in the game (€ 0–1.50) and was paid in addition to the show-up fee. After verifying the comprehension of the game, we assessed expectation of reciprocity by asking to express the percentage of the money they expected to receive back (0–100). Then, as in Study 1, we measured trusting beliefs toward the trustee through an adaptation of General Trust Scale ([25], α = .88) and feelings of security using the 3-items measure (α = .96).

Control variables. To adjust for potential underlying baseline individual dispositions across the different conditions, a number of variables were included in the experimental design and analyzed as covariates in the mediational models. As Study 1, we included as covariates a measure of trust propensity ([74]; α = .75), security values ([75]; α = .72), and political orientation measured through a bipolar 10-point scale item. In addition, we included a measure of risk attitudes as further control, as trusting behavior consisted in an actual monetary investment decision, which is generally associated with individual risk preferences [82]. Risk attitudes were measured using the financial subscale of the Risk-Behavior Scale [83]. Here respondents are asked to indicate the likelihood to engage in a series of economically risky behaviors (10 items; e.g., "*Spending money impulsively without thinking about the consequences*", α = .68) on a seven-point Likert answering scale ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*). To avoid sequence effects, all items were presented in a randomized order within each scale.

Results

As expected, participants exposed to the scenario of high institutional trust reported more trust in the police of Country X (M = 5.15, SD = 1.07), compared to the other condition

Table 3. Guessed trustee's country according to experimental condition.

Institutional Trust	Switzerland	Luxembourg	Norway	Sweden	Finland	Portugal	Slovenia	Hungary	Czech Republic	Greece
Low	0	4.35%	2.17%	0	0	4.35%	6.52%	32.61%	21.74%	28.26%
High	22.92%	10.42%	18.75%	27.08%	12.50%	0	2.10%	2.10%	2.10%	2.10%

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(M = 2.43, SD = 1.44), $t(92)$ = -10.39, $p < .001$, d = 2.14. Also, a Chi-square test was performed to test whether, consistently with the experimental condition, participants associated the description of Country X to an actual high trust vs. low trust country as classified in OECD official rankings. As predicted, those in the high institutional trust condition associated Country X to a high trusting country significantly more than in the other condition, $\chi^2(1, N = 94)$ = 68.12, $p < .001$ (Table 3), suggesting that the manipulation was successful in eliciting the intended perception of partner's country institutions and, thus, institutional trust.

The main effect of institutional trust on interpersonal trust. To test whether institutional trust had a main effect on trusting beliefs and trusting behavior, we used an independent samples t test comparing the trusting beliefs about the trustee and trusting behavior (i.e., the amount of money invested in the trust game) observed in the two experimental conditions. On average, participants transferred 70.6% (SD = 26.7%) of their initial endowment to the trustee. Results of the t test showed no differences between the two experimental groups in either trusting beliefs toward the trustee, $t(92)$ = -1.00, p = .317, R^2 = .01, nor trusting behavior, $t(92)$ = -1.00, p = .321, R^2 = .01 (see S6 Table in S1 File).

The indirect effect of institutional trust on interpersonal trust via feelings of security. A serial mediation (Process model 6) on a bootstrap sample of 5,000 participants showed a significant effect of institutional trust on the money invested in the trust game, mediated by the feelings of security, which impacted trusting beliefs toward the partner in the trust game, b = 0.21, 95% CI [0.06; 0.54], R^2 = .11. The full serial mediation model remained significant after controlling for trust propensity, security values, risk attitudes, political orientation, and education, b = 0.19, 95% CI [0.03; 0.54], R^2 = .13. Results of the mediations are presented in detail in Table 4.

Testing two competing psychological explanations for enhanced interpersonal trust. One additional intended contribution of Study 3 was to test whether the indirect effect of institutional trust on interpersonal trust could simply be explained by increased expectations of reciprocity rather than increased feelings of security. To examine this possibility, we conducted

Table 4. Results of serial mediation models for the effect of institutional trust (manipulation) on interpersonal trust through feelings of security.

Predictor and effect	Outcome: trusting behavior					
	Model 1			Model 2		
	b	*SE*	95% CI	*b*	*SE*	95% CI
Mediator 1: Feelings of security*	-0.07	0.10	-0.28; 0.13	-0.07	0.11	-0.28; 0.15
Mediator 2: Trusting beliefs*	0.52	0.17	0.19; 0.85	0.51	0.18	0.15; 0.88
Institutional trust (Manipulation)						
Total effect	0.28	0.28	-0.27; 0.82	0.38	0.29	-0.19; 0.95
Direct effect	0.34	0.34	-0.34; 1.02	0.36	0.37	-0.36; 1.09
Indirect effect	0.21	0.11	0.06; 0.54	0.19	0.12	0.03; 0.54

Results based on 94 observations. Model 1: Mediation analyses did not include control variables. Model 2: Mediation analyses included trust propensity, security values, political orientation, risk attitudes, and education as control variables.

*Estimates of regressions of the mediators (feelings of security and trusting beliefs, respectively) predicting trusting behavior.

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a parallel mediation analysis (Process model 4) with 5,000 bootstrapped samples. The results show that feelings of security had a significant indirect effect on trusting beliefs toward the trustee, $b = 0.41$, 95% CI [0.13; 0.83], while expectations of reciprocity did not, $b = 0.02$, 95% CI [-0.01; 0.15] (all path coefficients are reported in S7 Table in S1 File).

Discussion

The results of Study 3 replicated the indirect effect obtained in Study 1 and 2 with experimental data. Institutional trust enhanced feelings of security, which in turn significantly predicted interpersonal trust. As expected, the extent to which participants transferred money to the other person depended on their achieved feelings of security from the institutions. Study 3 also generalized these effects on trusting behavior with real incentives, providing evidence for the external validity of the results.

Differently from Study 1 and 2, we did not observe a main effect of institutional trust on trusting beliefs or behavior. One possibility to explain these different findings can be attributable to the operationalization of institutional trust. In Study 3, institutional trust was indirectly manipulated by providing information about institutional performance, aimed at creating different perceptions of institutions in the two experimental condition. In the two surveys, however, respondents' perceptions of institutions were built across years of repeated exposure to institutional performance and behavior of institutional representatives.

General discussion

Interpersonal trust among strangers is key for the societal, political, and economic development of a state. Given that interactions are embedded in a context regulated by societal institutions, recent research has increasingly focused on the questions whether and how these institutions can enhance (or impair) the development of interpersonal trust. In three studies, we tested the hypothesis that institutional trust indirectly promotes trust among strangers by increasing feelings of security, which in turn allow people to accept vulnerability and to trust others. Study 1 provided initial evidence for this underlying psychological process and showed that the association between institutional trust and interpersonal trust is mediated by feelings of security. Institutions that are trusted serve as a cue that individuals are protected, which in turn indirectly allows them to accept vulnerability and trust others. Study 2 further validated this initial evidence by analyzing cross-sectional data from 16 countries and using different operationalizations of the constructs. Finally, Study 3 provided an extension of the findings by manipulating institutional trust in an experimental design, and testing the effects on trusting behavior. In this study, we found again support for the indirect effect obtained in Study 1 and 2 with experimental data but, in contrast with these, we did not observe a main effect of institutional trust on trusting beliefs or behavior.

The current studies add an important piece to the puzzle on how micro-level perceptions and behaviors relate to macro-level societal processes. When it comes to institutional features, individual psychological processes often reflect the broader societal context. For example, individual self-regulation is higher in institutionally regulated countries [29], and citizens' intrinsic honesty is affected by country-level norm violations [84]. With respect to trust among strangers, our findings suggest that trusted institutions can provide feelings of security that serve as a basis to develop interpersonal trust [42,44]. Given the vulnerability to exploitation that trusting acts involve [14], we traced back the effect of institutional trust to the key functions of institutions to serve the fundamental need to feel protected. Indeed, trusting institutions does not automatically lead individuals to feel secure. Even if institutions are considered competent and reliable, individuals still may feel highly insecure in unpredictable and extreme situation (e.g., terroristic attacks, that highly increase distrust toward others). This is confirmed by our results, showing that the two constructs are only moderately correlated (Pearson's r = .50 and r = .18 in Study 1 and 2, respectively) and load on different factors.

Our findings are not in line with research that would propose that institutions have a detrimental effect on interpersonal trust in light of their primary role of providing assurance by affecting the incentive structure and individuals' normative expectations [25,26]. In Study 2, we included a series of control variables related to institutional quality to control for the possibility that the actual performance of institutions is driving the effect. Among those, there were estimates of the ability of government to provide high quality public services, implement effective policies, protect legal entitlements, and to maintain social order through formal rules [85]. These variables did not affect the significance of the model. Moreover, when institutional trust was manipulated in Study 3, we observed an indirect effect on trusting behavior even if the institution was not directly involved in the interaction and had no actual power to influence the outcome of the interaction and provide assurance (e.g., by punishing exploitative actions). Also, this study sought to rule out that this effect could be merely explained by positive expectations about the partner's behavior. Although this was not a key goal of the research, this finding suggests that social inferences are unlikely to be the main mechanism underlying the relationship between institutional and interpersonal trust [54]. If that would have been the case, we should have observed expectations to mediate this relationship, given that institutional representatives (the police in Study 3), according to this approach, should act as a signal of the type of game played in a certain society. Future research should further explore this question by designing ad hoc studies to understand the relative contribution of feelings of security and social inference-based mechanisms.

The current findings highlight the need to actually implement cues that generate trust in public institutions such as transparent communication, legitimate law enforcement, or explicit anti-corruption policies to promote trust in the general society and thereby, social and economic prosperity [46]. If public institutions cannot fulfil the need of individuals to feel secure, citizens may turn away from established institutions, start to individually protect themselves (e.g., by investing in lawyers and insurances), and support or develop new parallel institutions (e.g., alternative media) to achieve this need and restore trust levels. In extreme cases, as response to perceived insecurity, individuals might start to endorse nationalist positions [86], and even turn to anti-social organizations like the mafia in order to restore their lack of security [87,88]. Also, the results have implications for policy in light of research on the effects of individuals' past experiences of victimization on interpersonal trust. In particular, trust has been showed to be hardly affected by direct victimization [89], but rather by a more general fear of crime, developed as response to the environmental context, such as segregated and disadvantaged neighborhoods [12,79]. This can undermine efficacy of interventions exclusively aimed at reducing victimization experiences (such as severe monitoring and sanctioning of violent and property crimes). Thus, public institutions might combine these interventions together with others with a focus on restoring feelings of security, such as the implementation of direct and accessible dialogue and transparent communication with citizens, as well as the possibility to monitor openly this process, especially in disadvantaged contexts where fear of victimization is more prevalent.

Limitations and future research

Our findings have some limitations that need to be acknowledged. Due to the use of observational data across Study 1 and 2, it may be argued that our results are affected by endogeneity. That said, we addressed this issue in two ways. First, in both Study 1 and 2 we included relevant control variables related to stable individual dispositions to prevent overestimating the hypothesized relationships, which are often overlooked in current research practices (see [39]). Second, we specifically integrated the survey evidence provided in Study 1 and 2 with an experiment that exogenously manipulated institutional trust by providing specific information about institutions in the trustee's country (Study 3).

Another potential limitation is the lack of a main effect of institutional trust in Study 3, which was observed in Study 1 and 2. That said, this finding does not affect the overall conclusion we derive from the results for several reasons. First, the main focus of this work was testing the indirect effect of institutional trust on interpersonal trust and this effect was replicated across all studies (with different datasets and operationalizations), even when tested against competing mechanisms. Moreover, our manipulation in Study 3 was carefully designed from previous research which found a significant effect on trusting beliefs toward strangers based on the behavior of institutional representatives [53]. Therefore, it is possible that higher sample sizes would be successful in detecting a significant main effect. Although previous research found evidence that the presence of cues (or inferences), rather than the actual implementation of mechanisms (such as reputation), is enough to elicit an effect [90], future research might consider to identify the boundary conditions of this effect by designing a setting that more closely resembles daily experience with (not) trusted institutions, that could actually intervene in the situation (e.g., punishing untrustworthy behavior), and not involving the use of deception, in order to draw stronger conclusions about whether and how this perception, and subsequent feelings, affect interpersonal trust.

Moreover, even if we collected evidence from several countries, all respondents of the current studies were from Western democratic countries in which institutional trust levels are generally high. Additionally, two of the three studies involved convenience samples and, thus, not representative of the national population. Thus, a remaining question for the future would be to test these hypotheses on a more diverse set of institutional contexts and to test the generalizability in non-Western societies. Last, although exchanges with strangers within a society often do not exceed a single interaction, future research could explore the role of institutional trust in repeated interactions, where reputational information comes into play.

All things considered, the present findings appear robust and generalizable across research methodologies and variables operationalizations, and remain consistent even when controlling for relevant individual characteristics and institutional performance indicators. Study 1 allows to generalize the results across the entire set of studies by firstly testing the reliability of the three-items measure of feelings of security and trusting beliefs then adopted in Study 3, and to provide a more fine-grained measure of institutional trust as compared to the standard single-item questions adopted by the ESS in Study 2. Additionally, by testing our hypotheses across different conceptualizations of strangers (i.e., fellow citizens, most people, a person from a foreign country), the current set of studies controlled for the risk of refer to different targets, ranging from family members to people from other nationalities, while answering to the standard interpersonal trust question that is widely diffused in survey research (i.e., trust radius problem; [91]).

Concluding remarks

Trusting strangers is a fundamental pillar of human societies. Understanding how institutional trust can shape and maintain interpersonal trust, with a focus on individual's needs, brings together converging insights from different research traditions and methodologies. The present work provides survey, cross-cultural, and experimental evidence in support of the conclusion that trust in formal institutions is important for understanding variation in interpersonal trust, especially when they manage to enhance a feeling of security among citizens. This is relevant both for the theoretical debate around interpersonal trust and social capital. But also, the role of institutions may become even more essential, as societies become more and more complex, and if anything, move away from small societies in which trust is largely based on tight groups who meet face-to-face in their community, the workplace, or the local café.

Supporting information

S1 File.
(DOCX)

S1 Data.
(SAV)

S2 Data.
(SAV)

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The German Ethical Culture Scale (GECS): Development and First Construct Testing

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Misconduct in organizations (such as fraud, stealing, deception, and harming others) is not only a matter of some "bad apples" but also related to the organizational context ("bad barrels"), which can facilitate either ethical or unethical behaviors. Given the financial crisis and recurring corporate ethics scandals, policymakers, regulators and organizations are interested in how to change their organizational cultures to enhance ethical behavior and to prevent further disasters. For this purpose, organizations need to better understand what strategies and factors of the organizational environment can affect (un)ethical behavior. However, to assess the corporate ethical culture, solid measures are required. Since there is an urgent need to have a German measure to promote research in German-speaking countries, this research developed and tested the German Ethical Culture Scale (GECS). Drawing on a prominent approach that has received much attention from scholars and practitioners alike, the GECS attempts to integrate the notion of compliance- and integrity-based ethics programs (with its focus on how to steer organizations) with the notion of ethical culture (with its focus on what factors inhibit or foster ethical behavior). Three studies with heterogeneous samples of German and Swiss employees and managers were conducted to develop, test and validate the multidimensional scale (total $N > 2000$). Overall, the studies provide first evidence of the measure's construct, criteria-related and incremental validity. The paper concludes with a discussion of the strengths and weaknesses of the GECS and implications for future research.

Keywords: ethical culture measure, compliance-based culture, integrity-based culture, ethics management, organizational culture

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INTRODUCTION

The financial crisis and recurring corporate ethics scandals have strengthened the interest of policymakers, regulators and industry in leveraging corporate culture to enhance ethical behavior. There is broad consensus that misconduct in organizations (such as fraud, stealing, deception, and harming others) is not only a matter of some "bad apples" but also related to the organizational context ("bad barrels"), which can facilitate either ethical or unethical behaviors. To manage this challenge, organizations need to better understand what strategies and factors that make up the organizational environment influence (un)ethical behavior. For this purpose, solid measures are required that allow assessing those dimensions, help to provide benchmarks and allow reflecting progress in firms' cultures. The goal of our research is to develop and provide a first testing of a German measure of features of a corporate ethical culture. While most research in this field has mainly been conducted drawing on English measures, a German measure on ethical culture is still lacking. There is an urgent need to develop a German measure to make it possible to advance research on ethical culture in countries with German-speaking populations, such as Germany, Switzerland, and Austria, which encompass an overall population of approximately 100 million people. However, it is about not only the possibility of advancing research in German-speaking countries but also offering organizations in those countries instruments to obtain information about the existing organizational environment in the firm, to deduce interventions and to monitor potential progress. Not all firms are international, so it cannot be expected that all people understand and speak English fluently.

Conceptually, over the past decades, three main research lines have emerged that examine the ethical environment of an organization: A first stream is related to the notion of *ethical climate.* Most research in this field has referred to the seminal work by Victor and Cullen (1987, 1988). According to them, ethical climate refers to shared perceptions about "what constitutes right behavior" in an organization, thus delivering guidelines for the employees on how they *should* behave (Martin and Cullen, 2006, p. 177). In their pioneering work, Victor and Cullen also developed the Ethical Climate Questionnaire (ECQ), which was originally designed to assess nine various types of ethical climates (Victor and Cullen, 1987, 1988). Although this measure has been criticized for its inability to provide a consistent factor structure, most research has used the ECQ. This research has often found that an employee's perception of the organization's focus is associated with unethical behavior and the employee's attitudes toward the organization (for a review, see Kish-Gephart et al., 2010; Mayer, 2014).

A parallel stream is related to the notion of *ethical culture*. In contrast to ethical climate, ethical culture focuses more on the perceived formal and informal elements of an organizational context that may be likely to encourage ethical conduct (Treviño et al., 1998; Kaptein, 2008a; Ruiz-Palomino and Martínez-Cañas, 2014). As was true for ethical climate, research on ethical culture has consistently found that the perception of an ethical culture among employees is, e.g., associated with more-favorable job attitudes, ethical intentions and behavior (for a review, see Mayer, 2014). In comparison to ethical climate, we believe that the concept of ethical culture better allows interventions, since it draws more directly on the conditions of (un)ethical behavior. However, as Mayer (2014) pointed out, there is still little consistency in not only the conceptualization but also the measurement of ethical culture. While previous studies treated ethical culture as a one-dimensional construct (Treviño et al., 1998), Kaptein, for instance, conceptualized ethical culture as a multi-dimensional construct. Drawing on a virtue-based theory of business ethics, he developed the Corporate Ethical Virtues questionnaire (CEV; Kaptein, 2008a, 2011), which was designed to assess eight organizational virtues. These virtues are posited to represent organizational conditions that may be likely to stimulate employee ethical conduct.

Finally, there is a third prominent stream targeting corporate ethical culture, which has received much attention from scientific scholars and practitioners alike. Since Paine's (1994) groundbreaking article on how to manage organizational standards, it has become an integral part of organizational discussions on distinguishing between *compliance* and *integrity*. Yet, the governance strategies associated with a compliance- or integrity-based approach are quite different. The *compliance-oriented approach* (also called the command-and-control approach) is mainly designed to prevent violations through control, detection and threats of punishment for misconduct. The *integrity-oriented* approach (also called the value-oriented or self-regulatory approach), on the other hand, combines a concern for legal issues with the goal of supporting ethically sound behavior through encouraging moral self-governance and responsibility for shared values. In contrast to ethical climate and ethical culture, the notions of compliance- and integrity-oriented programs emphasize how to *steer* organizations toward profitability while taking into account consistency with legal and ethical standards (Verhezen, 2010; Webb, 2012; Wieland et al., 2014). Despite their varying characteristics, both ethics programs represent organizational control systems that aim to encourage rule adherence (Weaver and Treviño, 1999; Weaver et al., 1999; Tyler and Blader, 2005).

There is no doubt that compliance- and integrity-based ethics programs are currently the leading pragmatic approaches to ethics used in the business environment (see e.g., OECD, 2009, for a recognition of this general trend in business, or see Wieland et al., 2014, for acknowledging this trend in Germany). Surprisingly, despite this dominance, it has not been adopted in the (empirical) research on ethical culture. To our knowledge, no sound measure assessing those components has thus far been developed.

The purpose of this paper is to take first steps to address this gap by developing a new measure. We believe that there are several reasons that it is necessary to expand previous scales. (1) The prior ethical climate/culture approaches do not say a great deal about how to embed ethics in organizations and managerial practice. Adopting the compliance and integrity framework in a new measure thus complements prior work by emphasizing more how to steer an organization. (2) Integrating the compliance and integrity framework into a measure not only better matches trends in practice but also offers an important means to organizations, risk managers, compliance or ethics officers of reflecting current states and progress in their firm. It also allows comparing the utility of both approaches to achieve adherence to rules and ethical standards. (3) A new measure is also needed to be able to conduct rigorous empirical research on the antecedents, consequences and effectiveness of the applied governance strategies. Astonishingly, empirical studies in this domain are thus far nearly absent. Most inferences for organizations are, as far as we can see, mainly based on theory and cased-based studies (e.g., Paine, 1994; Verhezen, 2010). As rare exceptions, we mention Treviño et al. (1999), Weaver and Treviño (1999), and Tyler and Blader (2005), who have provided first empirical evidence that integrity-based programs are likely to make a unique contribution to predicting unethical behavior and employee attitudes compared to programs that are solely based on command and control. However, our knowledge about what those various programs actually accomplish and how they affect employee's attitudes and ethical behavior is still severely limited. Thus, developing a measure integrating this framework offers opportunities to examine more thoroughly possible antecedents and consequences of a compliance- and integrity-based culture and the interplay of those programs. (4) A further reason we decided to start developing a new measure was to better account for essential findings from the field of behavioral ethics and social psychology. In particular, behavioral ethics research has, in recent years, provided many important insights about organizational factors that can affect ethical behavior but which have, as far as we can see, not been considered in prior ethical culture measures.

Overall, we aim to develop a new scale that adopts both a compliance and integrity orientation, representing two steering strategies to implement ethics programs, and adopting features of the organizational culture, which can inhibit or facilitate the effectiveness of those governance strategies. Specifically, we propose that to manage ethics, compliance- and integrity-based programs should be supplemented by knowledge about features of the organizational culture, which can inhibit or facilitate the effectiveness of the governance strategies.

ADOPTING THE COMPLIANCE AND INTEGRITY FRAMEWORK

As mentioned above, compliance- or integrity-based programs focus on different strategies for how to *steer* the organization. However, while both compliance- and integrity-based approaches share the same goal (behavior in accordance with organizational rules and values), the procedures to steer the organization are quite different. Whereas the former emphasizes regulation through lawful rules, the latter emphasizes regulation through values (Paine, 1994; Weaver and Treviño, 1999; Verhezen, 2010; Webb, 2012; Wieland et al., 2014). Ethics policies, however, whatever aim they have, have to rely on an effective implementation. Obviously, there may be key features of the organizational environment that can affect the effectiveness of the policies. For example, an organization may attempt to build on shared values such as honesty, fairness and respect; however, the leaders in the firm may not "live" those values, thereby potentially undermining the effectiveness and credibility of the ethics program.

To implement effective ethics programs, board and managers need therefore to know how members of an organization perceive and evaluate the firm's policies and activities; however, it is also important that they have insights into factors of the organizational context that may affect the effectiveness of the firm's strategies. The goal of the proposed German measure here is to assess both (1) people's belief about the extent to which an organization relies on compliance and/or integrity governance procedures and (2) people's perception about the unwritten but lived norms, expectations and behaviors. Consistent with this goal, we define ethical culture as perceptions about the governance strategies and the effectively implemented norms and expectations that are shared by the members of the organization.

As mentioned earlier, we believe that adopting the compliance and integrity distinction will, among other things, identify new research questions that can advance our knowledge about the consequences of ethical culture. This framework points to the possibility that compliance- or integrity-oriented approaches, despite sharing the same goal, may have different implications for employee motivation, attitudes and behavior (see Stimmler and Tanner, 2019, for developing various propositions). For example, whereas compliance factors may likely be associated with controlled motivation, integrity factors may likely foster autonomous motivation (Gagné and Deci, 2005). Indeed, prompted by corporate scandals and the financial crisis, compliance officers and risk managers have mainly implemented compliance-based programs to prevent legal violations (Paine, 1994). Several authors have pointed out the necessity to move beyond an exclusively compliance-based approach (Paine, 1994; Verhezen, 2010; Webb, 2012; Wieland et al., 2014). For example, it is proposed that an integrity-oriented culture may be more advantageous in managing misconduct, since it builds on encouraging people's intrinsic motivation to follow the organizational standards. This suggestion is intuitively appealing, but it still awaits empirical examination.

We also expand previous measures by including important insights from the fields of behavioral ethics, social psychology and organizational psychology into organizational factors that are likely to be related to ethical behavior. Drawing on this research, our measure will incorporate dimensions such as the role of ill-conceived goals, accountability or pressure to compromise (which will be detailed below). These dimensions have thus far not been addressed in prior ethical culture measures. With rule viability and rule defectiveness (which will also be detailed below), we will adopt two new dimensions. We learned from discussions with practitioners about those dimensions allegedly representing two essential challenges of compliance management. We continue by describing the German Ethical Culture Scale (GECS).

BUILDING BLOCKS OF THE GECS

As is common in research on ethical climate or culture, we measure employee perception of both formal elements (e.g., code of ethics or availability of a hotline) and informal ones, since their perception is the reality based upon employee reactions. Building on the converging features of previous measures, we also conceptualize ethical culture as a multi-dimensional concept. The focus will be on dimensions that are proposed to match with a compliance- or integrity-based strategy. As mentioned earlier, the GECS will be designed to assess (1) people's belief about the extent to which an organization relies on compliance and integrity governance strategies and (2) people's perception about the lived norms and expectations. These factors might inhibit or promote the implementation of the strategies.

Compliance Factors

A compliance-based approach to ethics management focuses on preventing misconduct through control, monitoring and punishment (Paine, 1994; Weaver and Treviño, 1999). Such procedures are based on classic economic theory that following rules is a function of extrinsic costs and benefits associated with questionable behavior (e.g., Sutherland, 1983; Tyler and Blader, 2005). Such strategies are also implicitly based on the assumption that people cannot be trusted and are ethically incompetent, which is why external controls are inevitably to prevent wrongdoing (Weaver and Treviño, 1999; Verhezen, 2010; Webb, 2012). Building on past studies and converging elements of previous measures, we propose the following five aspects to reflect a compliance-based culture:

(1) *Controlling* and (2) *Sanctioning* reflect classic governance procedures clearly associated with a compliance strategy. Controlling is the degree to which people believe that they are being monitored and that misconduct is likely to be detected. Sanctioning refers to the extent to which people believe that unethical conduct is not tolerated and will be punished. However, for sanctions strategies to work, organizations must also be willing to invest resources into monitoring behavior and make detection of misconduct sufficiently likely. These two dimensions are similar to previous ethical culture models, which have posited that visibility and punishment of unethical behavior is likely to inhibit unethical behavior (Treviño et al., 1998; Kaptein, 2008a). Empirical studies on the effects of supervision and incentives on unethical behavior are, however, controversial. Some studies suggest that command-and-control strategies do affect undesirable behavior, whereas other studies question the effectiveness of such strategies (see Tyler and Blader, 2005).

Furthermore, we propose three dimensions to reflect the (in)effectiveness of rule-based compliance strategies. (3) *Rule clarity* is the extent to which rules and expectations, as they are often portrayed in codes of ethics or conduct, are sufficiently clear and concrete to employees. This aspect is consistent with Kaptein (2008a), who posited that ethical standards should be concrete, comprehensible and understandable if employees and managers are expected to follow them. Clear rules help to reduce ambiguity and vagueness of ethical expectations, thereby supporting ethical behavior in positive ways. Other authors also pointed out that, for rules to become effective for influencing behavior, one important precondition is that they are accessible, clearly communicated and easy to understand (Schwartz, 2001; Stevens, 2008).

(4) *Rule defectiveness* is the extent to which employees believe that there are ethical gray areas or other challenging situations where corresponding guidelines are missing. According to Jackson (2000), an issue that has been mainly neglected in prior studies on ethics programs is how organizations deal with "ethical gray areas," i.e., decisions that do not overly attract ethical condemnation but that nevertheless represent characteristic daily work topics that may be considered as ethical issues (e.g., Should I call in sick to have a day off? Should I do personal business on company time? How should I deal with giving and receiving gifts or ethical dilemmas?). Cross-cultural studies have usually found differences between nations and companies concerning which ethical gray areas are perceived as important and which are adopted in the codes of ethics (see Jackson, 2000). It is plausible to assume that a compliance program's efficiency in shaping behavior is limited if employees believe that important ethical issues and daily challenges are not appropriately addressed in the proposed rules. To render unethical behavior less likely, employees must believe that they have some guidance when they are faced with important ethical issues.

(5) *Rule viability* refers to the degree to which the company's rules are perceived to complicate and hinder daily work rather than to provide support. Various authors have expressed concerns that if codes and rules are not deemed relevant and useful for daily work, they are less likely to be accepted and adopted for guiding behavior (Schwartz, 2004; Bageac et al., 2011). An additional aspect of rule viability that has thus far hardly been addressed in prior studies is the issue of being faced with too many rules. This aspect can also minimize the perceived usefulness of rules. In fact, the most prominent response to scandals in business in general and the last financial crisis in particular has been to revise laws and to increase regulation. More rules may increase bureaucratic demands, but they may also confuse and disenable employees, limiting the effectiveness of compliance strategies.

Integrity Factors

An integrity-based approach to ethics management focuses on promoting ethical behavior through encouraging self-governance and responsibility (Paine, 1994; Weaver and Treviño, 1999). Such programs are based on the view that following rules is a function of an individual's intrinsic desire to follow organizational rules (Tyler and Blader, 2005). Such strategies are also implicitly based on the assumption that employees can be trusted and are prone to follow ethical values. Hence, integrity-oriented approaches are designed to support ethical aspirations and the identification with and internalization of ethical standards (Weaver and Treviño, 1999; Verhezen, 2010; Webb, 2012). We propose the following aspects to reflect an integrity-based culture:

We deem (6) *accountability* and (7) *leader's role modeling* to reflect two essential governance procedures that are associated with an integrity strategy. Accountability refers to the extent to which people are clear about who is responsible for which tasks and has to justify one's actions to others. To our knowledge, accountability has not been addressed in previous ethical cultural models. The argument is, however, that if an organization makes clear that its members are responsible for what they do, this action can intrinsically motivate employees to feel a personal responsibility and a desire to bring behavior in line with corporate rules and ethical standards. We believe that, in contrast, an organization lacking such a governance strategy is more likely to encourage rationalization processes, such as denial of responsibility (Anand et al., 2004).

It is important to acknowledge, however, that accountability has at least three facets. We use the term "task accountability" to refer to who is accountable for which tasks. Being a member of an organization with a hierarchical structure or being involved in teams and collective decision-making tasks is likely to provide people with opportunities to free themselves from personal responsibility. Bandura (1990, 1999) called, e.g., passing the cause of wrongdoing to others displacement of responsibility, and the dispersion of tasks and blame across the members of a group diffusion of responsibility. Consistent with past research in social psychology and behavioral ethics, we refer to "outcome" and "procedural accountability" when organizational members are expected either to justify the results of their decisions (outcome) or to justify how decisions were made (procedural). Empirical studies have shown that accountability can encourage self-critical and deliberate thinking (e.g., Lerner and Tetlock, 1999). The studies by Pitesa and Thau (2013) are also noteworthy. They have provided evidence that organizations holding their employees accountable for their choice procedures (compared to holding them accountable for performance outcomes) reduced agents' propensity to behave in a self-serving, unethical manner. In other words, employees should in practice be judged on not only the basis of the achieved outcomes but also how those outcomes were accomplished.

Leader's role modeling refers to the extent to which employees perceive their top management or direct supervisors as role models for ethical conduct. Several authors have proposed ethical leadership to be a crucial element of a value-based organization that guides employee thought and action (see e.g., Treviño et al., 1998; Kaptein, 2008a; Ruiz et al., 2011; Wieland et al., 2014). Leader's behaviors do reflect the values of the organizational culture. Therefore, managers and supervisors do play a crucial role in setting the ethical tone in an organization and by living up to the values. Furthermore, through a process of social learning (Bandura, 1986), employees are likely to adopt the values and behaviors of the managers.

Many empirical studies have shown that leaders being perceived as ethical models is likely to affect followers' ethical intentions and behaviors in positive ways (e.g., Brown and Treviño, 2006; Tanner et al., 2010; Ruiz et al., 2011; Ruiz-Palomino and Linuesa-Langreo, 2018). Some authors treat *role modeling of top management* and *role modeling of supervisors* as two distinct categories that affect employees' responses in distinct ways (Kaptein, 2008a; Ruiz et al., 2011). Both, however, are expected to be negatively related to unethical behavior.

Furthermore, three dimensions are proposed to hinder the effectiveness of integrity-based strategies. (8) *Pressure to compromise* is the extent to which people experience role/value conflicts and pressure from the organization to counter their own sense of right and wrong. The sources of such pressures may be job or role demands, authority figures or working teams that push the employee in behavioral directions that are inconsistent with ethical standards. Previous organizational, business or behavioral ethics research suggests that employees who feel pressure to behave counter to their conscience are likely to suffer from stress and burnout (e.g., Örtqvist and Wincent, 2006; Eatough et al., 2011; Kammeyer-Mueller et al., 2012). A meta-analytic study by Örtqvist and Wincent (2006) indicated that among the most prominent consequences of role conflict were job dissatisfaction, loss of organizational commitment and emotional exhaustion. Another meta-analysis by Eatough et al. (2011) found a negative relationship between role conflict and organizational citizenship behavior (OCB).

It seems therefore plausible to assume that organizational members' believing that they are expected to compromise their own values is likely to discourage intrinsic motivation to identify with organizational values and to render unethical behavior more likely. Consistent with this point, empirical studies have shown that a mismatch between the expectations of the employees and the organization is likely to not only lower job satisfaction but also increase cheating (Burks and Krupka, 2012) or other forms of unethical behavior (Suar and Khuntia, 2010).

(9) *Obedience* refers to the extent to which people believe that they are expected to be subordinate, keeping authorities and tasks unquestioned (Treviño et al., 1999). Such expectations are likely to enforce a culture of fear and silence rather than a culture of voice (Morrison and Milliken, 2000; Kish-Gephart et al., 2009). While research has suggested multiple factors that can affect the choice to remain silent or to speak up (for an overview, see Morrison, 2014), one common explanation for why people hesitate to speak up is related to fear. Kish-Gephart et al. (2009) found across several studies that a substantial number of respondents reported remaining silent out of fear of experiencing negative personal, social or material consequences. If organization members feel uncomfortable to speak up, such people hardly feel encouraged to practice self-regulation and moral responsibility. In contrast, in such an environment, people may feel not committed and willing to adhere to corporate rules and standards. They may also be likely to withhold input about questionable practices (Snell, 1999; Miceli et al., 2008; Detert et al., 2010). Consistent with this reasoning, Kaptein (2011), for example, found that the opportunity for employees to raise concerns and discuss ethical issues is associated with less-unethical behavior. Additionally, Treviño et al. (1999) found that employees perceiving a structure that expects obedience from them were less willing to report ethical or legal violations or to forward bad news to management.

(10) *Ill-conceived goals* are the extent to which the organization is seen as mainly relying on competitive and economic goals (Bazerman and Tenbrunsel, 2011). Thus far, prior ethical culture models have not addressed this issue. A growing body of research in the field of behavioral ethics, however, has shown that despite the beneficial role of goals in increasing achievement motivation and productivity, goals can also lead to undesirable side effects by encouraging unethical behavior. Indeed, empirical research has demonstrated that people facing competitive or too challenging (also stretch) goals (Barsky, 2008) are more likely to exhibit cheating (e.g., Schweitzer et al., 2004; Schwieren and Weichselbaumer, 2010; Welsh and Ordóñez, 2014) and lower intrinsic work motivation (Ordóñez et al., 2009). Similarly, Van Yperen et al. (2011) have shown that interpersonal achievement goals (that emphasize competition among colleagues) are more likely than are intrapersonal goals (that emphasize mastering a task) to increase cheating. Thus, the argument here is that too challenging, competitive goals hardly support the development of moral responsibility, thereby making unethical behavior more likely.

Furthermore, the effectiveness of integrity-oriented programs may also be undermined by an organization focusing only on economic or self-interested goals in the workplace while not questioning its compatibility with ethical aspirations. For example, an organization may attempt to build on integrity and ethical values, but employees may nevertheless perceive their organizational environment as emphasizing only economic and egoistic goals. Consistent with this point, Kish-Gephart et al. (2010) found meta-analytic evidence for a positive relationship between an egoistic ethical climate and unethical behavior.

Thus, acknowledging the importance of the role of goal-setting, this dimension was also included in our instrument. However, as with the dimension accountability, we distinguish between various facets of ill-conceived goals. Acknowledging this literature, we distinguish between goal-setting with regard to its focus on "competition" and with regard to its focus on "economic" goals. An ethical culture mainly focusing on competition and economic goals is expected to be less likely to promote responsibility and adherence to ethical standards and behavior.

OVERVIEW OF SAMPLES AND STUDIES

The primary objective of the following studies was to develop and assess the validity of the GECS. For the following studies, data from three independent and heterogeneous samples of employees and managers in Switzerland and Germany were used. To test the questionnaire, it was important to us to have a broad sample of employees and managers from various economic sectors and from various hierarchical levels. Participants were therefore recruited from panels of participants of market research agencies. All data were collected through online surveys. Samples A and B were used to develop the instrument and to perform an exploratory factor analysis (EFA) and confirmatory factor analyses (CFAs) to provide first evidence for the construct validity of the measure. Sample B was also used to assess the criterion related and incremental validity by testing its relation to (observed) deviant workplace behaviors, based on regression analyses. Finally, Sample C was used to take first steps to provide evidence of the convergent validity of the GECS. The studies were conducted in accordance with the ethical standards of the Zeppelin University and the Swiss Psychological Society. The samples are briefly described below. **Table 1** reports further work-related characteristics.

Sample A: This sample consisted of 300 (German-speaking) Swiss employees and managers working in divers economic sectors. Of these respondents, 36.3% were female, and mean age was 42.6 years (*SD* = 12.6, range: 16–72 years).

Sample B: This sample consisted of 990 German employees and managers, after 17 participants had to be excluded from the analysis because of a lack of variation in their answering pattern. Of these respondents, 46.6% were female, and mean age was 44.6 years (*SD* = 11.23, range: 21–74 years).

Sample C: This sample consisted of 493 German and 498 Swiss participants (total *N* = 991), after exclusion of nine participants due to a lack of variation in their answering pattern. Of this sample, 46.1% were female, and mean age was 44.4 years (*SD* = 12.81, age range: 16–75 years).

TABLE 1 | Further work-related descriptive statistics of Samples A, B, and C.

	Sample A (*N* = 300)	Sample B (*N* = 990)	Sample C (*N* = 991)
Country	**Switzerland**	**Germany**	**Switzerland/ Germany**
Employment			
Full-time	91.7%	72.9%	66.7%
Part-time	5.7%	27.1%	33.3%
Job position			
Non-Management Level	54.3%	58.4%	65.9%
Lower management	17.0%	17.8%	15.0%
Middle management	13.7%	17.7%	12.7%
Upper management	15.0%	6.2%	6.3%
Tenure (in current organization)			
<1 year	9.3%	0.3%	1.1%
1–2 years	16.3%	15.8%	25.6%
3–5 years	21.0%	22.3%	21.1%
6–10 years	19.7%	20.4%	18.5%
>10 years	33.7%	41.2%	33.6%
Company size			
<50 employees	32.0%	28.1%	29.4%
50–249 employees	23.3%	20.2%	22.5%
250–10,000 employees	32.7%	36.8%	36.7%
>10,000 employees	12.0%	14.9%	11.4%
Economic Sector			
Agriculture and Energy	3.7%	2.0%	1.3%
Industry	28.0%	18.5%	17.3%
Services	57.7%	71.1%	73.3%
Others	10.7%	8.4%	8.1%

In sample A, 2.6% of participants were currently unemployed but worked in an organization in the past 2 years for at least 9 months.

In the following, we present the development of the GECS, its factorial structure and psychometric properties (Study 1a, 1b). We then present results on the criterion-related and incremental validity (Study 2) and tests on construct validity with external constructs (Study 3).

Study 1a – Initial Development of Instrument

In a first preliminary step, an initial pool of items was generated based on the definition of the dimensions proposed to be related to compliance and integrity, as explained in the previous section. We first created items to assess the following constructs: controlling, sanctioning, rule clarity, rule defectiveness, and rule viability (proposed to represent compliance factors) and accountability, role modeling of top management, role modeling of supervisors, pressure to compromise, obedience, and ill-conceived goals (proposed to represent integrity factors).

Our aim was to develop simple items that avoid, as often as possible, terms such as "ethical" or "moral." Examination of previous instruments revealed that they often include items that may be somewhat precarious, since they utilize the word "ethical" in the wording. Such items, however, may be problematic since they require from the respondents an understanding of what characterizes ethical or responsible conduct, which is often not self-evident. We tried to avoid this shortcoming whenever possible for this reason and also as an attempt to minimize socially desirable responses.

Furthermore, our intention was ultimately to have a relatively short but sound inventory. Of course, the generally accepted argument is that longer instruments tend to have better psychometric properties than shorter ones do (Gosling et al., 2003). However, researchers are often faced with the problem that time is limited and employees or managers are simply not willing to fill out lengthy questionnaires. In such cases (as is true in our research domain), practicable and efficient measures are necessary. We therefore sought to have a minimum of three items for each subscale. For accountability and ill-conceived goals, since they contain nuanced facets, we wished to have a minimum of six items (accountability with its facets task, outcome and procedural accountability) and four items (ill-conceived goals with its facets competition and economic goals).

To this end, 34 items were developed by us, and 27 items were adapted from prior instruments (e.g., Treviño et al., 1998; Brown et al., 2005; Kaptein, 2008a). The items were then discussed with three doctoral candidates experienced with the field. Based on their inputs, items were reworded. An initial pool of 61 items was then subjected to a first EFA (principle axis factor analysis, promax rotation) with data collected from Sample A (N = 300). Participants rated each item using a 5-point Likert-style format 1 (*strongly disagree*) to 5 (*strongly agree*), including the response option *no answer is applicable*.

Based on this EFA, we removed 23 items with loadings lower than 0.45 on one factor and cross-loadings higher than loadings of 0.30. Rerunning the EFA with the remaining 38 items resulted in nine factors (eigenvalues > 1). However, recognizing that several subscales were insufficiently represented, we repeated the item-generation and item-selection process in Study 1B.

Study 1b – Instrument Refinement and Factor Analyses

We conducted a second iteration of instrument development. Using EFA, we examined the scale's factorial structure and psychometric properties with data collected from Sample B (N = 990). The goal of Study 1B was also to assess the robustness of the proposed factor structure by conducting CFAs across Sample B and Sample C (N = 991).

Measure

In addition to the remaining items from Study 1a (38 items), new items were created in this second iteration. We added more items to those constructs, which were suggested to have nuanced facets (accountability, ill-conceived goals) (plus 15 items), and we also created some new items in the remaining scales (4 items) just to be on the safe side when subjecting the items to new analyses. In this stage, we also discussed content and comprehensiveness of the items with three business ethics scholars and three specialists with significant practical expertise in ethics management. Especially from the practitioners, we learned about rule viability and rule defectiveness as representing two essential challenges in the managerial practice of compliance management, which we consequently also included in our item pool (plus 10 items). Based on the input of those external experts, items were adapted, resulting in a final pool of 67 items.

The items describe concepts related to compliance (controlling, sanctioning, rule clarity, rule defectiveness, and rule viability) and integrity (accountability, role modeling of top management, role modeling of direct supervisor, pressure to compromise, obedience, and ill-conceived goals). Again, participants rated each item on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*), including the response option *no answer is applicable*. The items of the final instrument (37 items) – the original German items and the English translation (based on Brislin, 1976) – can be found in the **Supplementary Table 1**. Sample items include the following (English translation): "In my work environment, measures are carried out to detect rule violations and misconduct" (controlling); "In my work environment, people who engage in dishonest behavior are disciplined" (sanction); "My organization makes it sufficiently clear to me which behaviors are right or wrong" (rule clarity); "Some of the organization's rules are intentionally not or vaguely defined" (rule defectiveness); "The organization's code of conduct makes everything complicated" (rule viability); "In my workplace, how goals are achieved also plays a role" (accountability); "My direct supervisor is a good model of integrity" (role modeling of direct supervisor); "In my work environment, I am sometimes asked to do things that are in conflict with my conscience" (pressure to compromise); "I am expected to do what I am told" (obedience); and "In my workplace, I can only make a career by outperforming others" (ill-conceived goals).

Results

Building on the data from Sample B, the initial item analyses revealed no peculiarities. The pool of 67 items was then again subjected to an EFA (principal component analysis, promax rotation).

We removed items with factor loadings less than 0.45 on one factor and cross-loadings higher than loadings of 0.30. These changes ultimately resulted in an instrument of 37 items (see **Supplementary Table 1**). Rerunning the EFA on this instrument reduced the 37-item measures to 10 distinct factors (eigenvalues > 1.0) corresponding to controlling (three items), sanctioning (three items), rule clarity (three items), rule defectiveness (three items), rule viability (three items), accountability (six items), pressure to compromise (four items), obedience (three items), and ill-conceived goals (four items). Role modeling of top management and role modeling of direct supervisors were not revealed as two separate factors. They were therefore combined into one leader's role modeling factor (five items). All factors accounted for 72.07% of the variance. The factor loadings are reported in **Table 2**.

Table 3 reports the means, standard deviations, internal consistencies (Cronbach's alphas), and intercorrelations among the subscales. The subscales in this table were calculated by averaging the corresponding item scores. As shown, each scale showed good internal consistency (αs between 0.72 and 0.91).

TABLE 2 | EFA factor loadings and CFA standardized factor loadings (Study 1b).

	Factor loadings											
	PCA (Sample B)										CFA (Sample B and C)	
Item	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	λ_B	λ_C
Controlling 1	0.09	0.02	−0.01	−0.02	−0.05	−0.07	0.07	−0.07	−0.08	**0.92**	**0.81**	**0.80**
Controlling 2	−0.01	−0.06	0.02	0.04	−0.06	−0.03	0.06	−0.04	0.13	**0.91**	**0.85**	**0.85**
Controlling 3	−0.10	0.10	−0.02	−0.03	0.22	0.16	−0.20	0.27	−0.08	**0.48**	**0.48**	**0.59**
Sanctioning 1	−0.05	0.05	0.00	−0.03	−0.07	−0.03	0.04	**0.94**	−0.07	−0.02	**0.78**	**0.80**
Sanctioning 2	0.01	−0.07	−0.04	−0.01	−0.06	0.01	0.01	**0.89**	0.08	0.01	**0.83**	**0.73**
Sanctioning 3	0.19	−0.15	−0.02	0.17	0.05	−0.05	0.06	**0.54**	0.10	−0.08	**0.55**	**0.58**
Rule Clarity 1	0.00	0.03	−0.01	**0.92**	0.01	−0.01	0.00	0.05	0.01	−0.03	**0.91**	**0.88**
Rule Clarity 2	−0.05	0.05	0.03	**0.89**	−0.03	−0.03	−0.01	0.01	0.00	0.02	**0.83**	**0.88**
Rule Clarity 3	0.06	−0.07	−0.01	**0.89**	0.00	0.00	0.04	−0.05	0.02	0.02	**0.86**	**0.82**
Rule Defectiveness 1	−0.08	−0.04	0.02	−0.02	0.01	0.02	**0.85**	0.00	0.07	0.04	**0.83**	**0.79**
Rule Defectiveness 2	−0.05	0.03	0.01	0.04	0.04	0.09	**0.82**	−0.02	−0.03	0.03	**0.88**	**0.88**
Rule Defectiveness 3	0.02	0.18	−0.01	0.02	0.07	−0.04	**0.78**	0.10	−0.10	0.01	**0.73**	**0.70**
Rule Viability 1	0.10	−0.09	0.00	0.01	−0.05	**0.96**	−0.04	−0.01	0.02	0.03	**0.72**	**0.69**
Rule Viability 2	0.07	0.06	0.04	−0.04	−0.03	**0.87**	0.05	0.02	0.02	−0.03	**0.88**	**0.90**
Rule Viability 3	0.04	0.02	0.00	−0.02	−0.07	**0.81**	0.09	−0.05	0.09	−0.06	**0.87**	**0.82**
Accountability 1	−0.13	−0.07	**0.87**	−0.02	0.10	0.11	−0.05	−0.02	−0.12	−0.02	**0.67**	**0.82**
Accountability 2	−0.01	−0.06	**0.83**	−0.05	0.02	0.06	0.07	−0.01	0.10	−0.01	**0.64**	**0.74**
Accountability 3	0.10	0.09	**0.74**	0.02	−0.16	−0.10	0.08	−0.12	−0.01	−0.02	**0.68**	**0.74**
Accountability 4	0.11	−0.05	**0.66**	0.01	0.02	−0.14	−0.02	−0.01	0.07	−0.03	**0.74**	**0.77**
Accountability 5	−0.04	−0.04	**0.60**	0.08	0.09	0.16	0.05	0.13	−0.13	0.07	**0.61**	**0.55**
Accountability 6	0.11	0.07	**0.56**	0.05	−0.05	−0.12	−0.15	0.00	0.16	0.05	**0.66**	**0.64**
Role Modeling 1	**0.96**	0.00	−0.03	0.02	0.05	0.09	−0.04	−0.06	0.00	0.03	**0.94**	**0.92**
Role Modeling 2	**0.95**	0.00	−0.06	0.08	0.03	0.11	−0.02	−0.08	−0.05	0.02	**0.90**	**0.86**
Role Modeling 3	**0.94**	−0.01	−0.05	0.04	0.09	0.10	−0.05	−0.02	0.00	0.01	**0.89**	**0.91**
Role Modeling 4	**0.68**	0.09	0.16	−0.13	0.02	−0.10	−0.03	0.14	−0.04	−0.01	**0.67**	**0.68**
Role Modeling 5	**0.65**	0.10	0.16	−0.09	−0.10	−0.03	0.03	0.15	−0.02	−0.01	**0.62**	**0.67**
Pressure To Compromise 1	0.04	**0.92**	−0.02	0.02	−0.07	−0.02	0.02	−0.03	0.06	0.03	**0.87**	**0.87**
Pressure To Compromise 2	0.07	**0.89**	−0.05	0.04	0.01	−0.02	0.01	−0.02	0.06	−0.01	**0.86**	**0.85**
Pressure To Compromise 3	0.05	**0.86**	−0.04	−0.02	0.00	−0.04	0.03	−0.05	0.02	0.02	**0.81**	**0.76**
Pressure To Compromise 4	−0.04	**0.81**	0.04	−0.05	0.02	0.03	0.08	0.03	0.00	−0.05	**0.87**	**0.87**
Obedience 1	0.03	0.01	0.00	0.04	−0.01	0.05	−0.03	0.01	**0.89**	0.00	**0.77**	**0.81**
Obedience 2	−0.10	0.10	0.02	0.03	0.05	0.02	0.00	0.02	**0.80**	0.01	**0.90**	**0.91**
Obedience 3	−0.13	0.17	−0.01	−0.09	0.13	0.08	−0.04	0.04	**0.54**	0.02	**0.72**	**0.84**
Ill-Conceived Goals 1	0.01	−0.20	0.02	−0.04	**0.86**	−0.06	0.07	−0.07	0.14	0.04	**0.63**	**0.63**
Ill-Conceived Goals 2	0.26	−0.07	−0.05	−0.08	**0.85**	−0.17	0.14	−0.03	0.07	−0.03	**0.56**	**0.53**
Ill-Conceived Goals 3	−0.09	0.16	0.01	0.05	**0.66**	0.07	0.01	−0.01	−0.10	−0.05	**0.76**	**0.85**
Ill-Conceived Goals 4	−0.11	0.27	0.08	0.11	**0.65**	0.05	−0.14	−0.02	−0.11	−0.04	**0.76**	**0.85**

Factors: 1 = Leader's Role Modeling, 2 = Pressure to Compromise, 3 = Accountability, 4 = Rule Clarity, 5 = Ill-Conceived Goals, 6 = Rule Viability, 7 = Rule Defectiveness, 8 = Sanctioning, 9 = Obedience, 10 = Controlling; λ = standardized factor loadings of the CFA (Model C with 10 first-order factors and correlated error terms for role modeling of top management items).

The GECS with the final item set (37 items) was then sent online to Sample C. We next tested robustness of the proposed model by conducting a series of CFAs across Samples B and C. CFAs were performed using AMOS 22 maximum likelihood estimation of covariance. The answer *no answer is applicable* was coded as missing values; hence, we were allowed to estimate means and intercepts.

Five models were estimated and compared: Model A with one factor, Model B with two factors (compliance and integrity) and Model C with the proposed 10 factors. With Models D and E, we also examined whether the 10 factors can be summarized into higher-order factors. In the theory section, we proposed that compliance and integrity would converge at two higher-order constructs (controlling, sanctioning, clarity, defectiveness and viability of rules should load onto a compliance factor; accountability, leader's role modeling, pressure to compromise, obedience, ill-conceived goals should load onto an integrity factor, Model E). We compared this Model E with the alternative Model D (10 factors loading on one higher-order construct).

TABLE 3 | Correlation matrix of the GECS factors, means, standard deviations, and Cronbach's alphas (Sample B, Study 1b).

	M (*SD*)	α	1	2	3	4	5	6	7	8	9
(1) Controlling	3.43 (0.90)	0.72									
(2) Sanctioning	3.47 (0.88)	0.74	0.46***								
(3) Rule clarity	3.99 (0.91)	0.90	0.39***	0.43***							
(4) Rule defectiveness	2.71 (1.08)	0.85	−0.04	−0.13***	−0.23***						
(5) Rule viability	2.73 (1.08)	0.86	−0.01	−0.14***	−0.16***	0.49***					
(6) Accountability	3.59 (0.73)	0.83	0.36***	0.48***	0.44***	−0.23***	−0.27***				
(7) Leader's role modeling	3.43 (1.01)	0.91	0.28***	0.43***	0.36***	−0.31***	−0.29***	0.59***			
(8) Pressure to compromise	2.38 (1.09)	0.91	−0.01	−0.11***	−0.17***	0.57***	0.49***	−0.20***	−0.34***		
(9) Obedience	2.95 (1.00)	0.83	0.02	−0.06	−0.09**	0.39***	0.42***	−0.21***	−0.39***	0.59***	
(10) Ill-conceived goals	2.81 (0.91)	0.77	0.19***	0.09**	0.03	0.36***	0.34***	0.00	−0.12***	0.51***	0.46***

***p < 0.01, ***p < 0.001.*

To assess the model fit, the chi-square ($\chi 2/df$), comparative fit index (CFI), Tucker-Lewis-Index (TLI) and root mean square error of approximation (RMSEA) were used. According to previous studies, it is suggested that $\chi 2/df$ should be equal to or less than 3 or at least less than 5. For CFI and TLI, values above 0.90 are regarded as acceptable, and values close to or greater than 0.95 are regarded as good fit. For RMSEA, values equal to or less than 0.07 indicate a good fit. To compare the models, we used the Akaike Information Criterion (AIC), with smaller values indicating a better-fitting model (see, e.g., Wheaton et al., 1977; Hooper et al., 2008).

An examination of modification indices revealed high error covariance between the two top management role-modeling items in Models C, D, and E. When the two error terms were free to correlate, the fit was clearly improved. Importantly, this modification also makes theoretical sense because prior research suggested that role modeling of top management and role modeling of supervisors are two distinct constructs (Kaptein, 2008a; Ruiz et al., 2011).

Table 4 displays the fit statistics of the models. The results repeatedly revealed across all samples that the ten-factor solution (Model C) fit the data better than did the one- or two-factor solution (Models A and B), which was also confirmed by χ2-difference tests between the three nested first-order models. Based on the criteria, all fit indices indicated a good or acceptable fit for the 10-factor model. The same applies to the two second-order models (D and E), with the exception of CFI and TLI, which were marginally below the recommended criteria. Comparing the two second-order factor models, χ2-difference tests pointed to Model E (with two second-order factors: Integrity and Compliance) fitting the data better than did Model D (with one second-order factor: Ethical Culture). Testing the robustness of our Models C, D, and E separately for the Swiss and German respondents of Sample C also yielded very similar results for both countries. Overall, the results largely supported the 10-factor solution but also deemed second-order factors acceptable. CFA standardized factor loadings of the 10-factor model (Model C) are reported in **Table 2**.

We examined convergent validity of the 10 factors by assessing average variance extracted (AVE) in the CFAs (Fornell and Larcker, 1981; Hair et al., 2014). The results are reported in **Table 5**. With regard to AVE, the analyses revealed that most constructs were greater than 0.50, as recommended (Fornell and Larcker, 1981). Just for accountability (AVE = 0.45) and ill-conceived goals (AVE = 0.46), but only in Sample B, the criterion was not met. We assume that the reason the AVE of those factors is below the recommended threshold is that accountability and ill-conceived goals may be more heterogeneous in content. However, with data from Sample C, the criterion of 0.5 was met for all constructs.

We also examined divergent validity by AVE. Adequate divergent validity is given when the square root of the variance extracted from each of the factors is greater than the correlations between each pair of factors (Fornell and Larcker, 1981). As shown in **Table 5**, all factors satisfy this condition with data from both Samples B and C.

Study 2 – Criterion-Related and Incremental Validity

To establish criterion-related validity, the association between the GECS and deviant workplace behavior was considered with data from Sample B. To minimize potential social desirability bias, we administered *observed* and not self-reported deviant workplace behavior (which is assumed to be more susceptible to socially desirable responding and impression management), and we used different response formats to assess the predictor and criterion variables. Specifically, we expected controlling, sanctioning, rule clarity, accountability, and leader's role modeling to be associated with less observed deviant workplace behavior. We expected rule defectiveness, rule viability, pressure to compromise, obedience, and ill-conceived goals to be associated with more observed misconduct.

Several authors have argued that to align employee's behavior with ethical standards, it is important to move beyond compliance-oriented strategies, since control and punishment may prevent wrongdoing, but they do not necessarily change convictions (e.g., Paine, 1994; Tyler and Blader, 2005). Integrity-based strategies, on the other hand, encourage personal commitment to ethical aspirations, thereby being more successful in affecting behavior (e.g., Weaver and Treviño, 1999). If so, we should be able to find that integrity factors will account for variance increments over and above the compliance factors.

TABLE 4 | Goodness-of-Fit Indices of CFA models (Study 1b).

Model	$\chi^2(df)$	χ^2/df	CFI	TLI	RMSEA	AIC	χ^2 difference tests		
								$\Delta\chi^2$	Δ *df*
Sample B (N = 990)									
A: 1 factor (Ethical Culture)	13736.22 (629)***	21.84	0.39	0.36	0.15	13958.22	A–C	11897.49***	46
B: 2 factors (Integrity, Compliance)	12485.15 (628)***	19.88	0.43	0.36	0.14	12709.15	B–C	10646.42***	45
C: 10 factors[a]	1838.73 (583)***	3.15	0.94	0.93	0.05	2152.73			
D: 10 first order[a], 1 second-order factor (EC)	3015.02 (618)***	4.88	0.89	0.87	0.06	3259.02	D–E	32.58***	1
E: 10 first order[a], 2 second-order factors (Integrity, Compliance)	2982.44 (617)***	4.83	0.89	0.87	0.06	3228.44			
Sample C (N = 991)									
A: 1 factor (Ethical Culture)	13025.28 (629)***	20.71	0.42	0.35	0.14	13247.28	A–C	11153.60***	46
B: 2 factors (Integrity, Compliance)	11896.09 (628)***	18.94	0.47	0.41	0.14	12120.09	B–C	10024.41***	45
C: 10 factors[a]	1871.68 (583)***	3.21	0.94	0.93	0.05	2185.68			
D: 10 first order[a], 1 second-order factor (EC)	3001.54 (618)***	4.86	0.89	0.87	0.06	3245.54	D–E	7.07**	1
E: 10 first order[a], 2 second-order factors (Integrity, Compliance)	2994.47 (617)***	4.85	0.89	0.87	0.06	3240.47			

*EC, Ethical Culture. In models C, D, and E, the error terms for the two-role modeling of top management items were allowed to correlate. [a]The 10 factors are as follows: controlling, sanctioning, rule clarity, rule defectiveness, rule viability, accountability, leader's role modeling, pressure to compromise, obedience, ill-conceived goals. **p < 0.01; ***p < 0.001.*

TABLE 5 | Convergent and discriminant validity of the 10-Factor Model (Model C) (Study 1b).

Latent constructs	AVE	Square root of AVE	Latent construct correlation								
			1	2	3	4	5	6	7	8	9
Sample B (N = 990)											
(1) Controlling	0.54	0.73									
(2) Sanctioning	0.53	0.73	0.52								
(3) Rule clarity	0.75	0.87	0.44	0.48							
(4) Rule defectiveness	0.66	0.81	−0.11	−0.16	−0.27						
(5) Rule viability	0.68	0.83	−0.10	−0.15	−0.19	0.58					
(6) Accountability	0.45	0.67	0.44	0.54	0.50	−0.29	−0.35				
(7) Leader's role modeling	0.66	0.81	0.33	0.41	0.38	−0.34	−0.29	0.63			
(8) Pressure to compromise	0.73	0.85	−0.09	−0.10	−0.18	0.63	0.57	−0.24	−0.36		
(9) Obedience	0.64	0.80	−0.02	−0.04	−0.07	0.43	0.48	−0.23	−0.40	0.64	
(10) Ill-conceived goals	0.46	0.68	0.10	0.11	0.05	0.43	0.43	−0.03	−0.17	0.62	0.55
Sample C (N = 991)											
(1) Controlling	0.56	0.75									
(2) Sanctioning	0.50	0.71	0.62								
(3) Rule clarity	0.74	0.86	0.50	0.58							
(4) Rule defectiveness	0.63	0.79	−0.06	−0.17	−0.30						
(5) Rule viability	0.65	0.81	0.08	−0.07	−0.14	0.48					
(6) Accountability	0.51	0.71	0.33	0.47	0.48	−0.39	−0.39				
(7) Leader's role modeling	0.67	0.82	0.30	0.36	0.40	−0.37	−0.34	0.63			
(8) Pressure to compromise	0.70	0.84	0.01	−0.17	−0.23	0.59	0.52	−0.39	−0.47		
(9) Obedience	0.72	0.85	0.07	−0.07	−0.05	0.35	0.43	−0.35	−0.40	0.57	
(10) Ill-conceived goals	0.53	0.73	0.20	0.13	0.03	0.33	0.43	−0.20	−0.27	0.53	0.50

AVE, average variance extracted.

Measures

Observed deviant workplace behavior

Beyond the GECS, participants were also asked to report observed misconduct in the workplace. Drawing on a German version of Kaptein's (2008b) scale of observer-reports of unethical behavior (Kaptein, 2011; Zuber and Kaptein, 2014), participants were asked how often in the past 12 months they had observed or had first-hand knowledge of intra- or extra-organizational deviant behaviors in their work environment (e.g., discriminating against others due to age, gender, or sexual orientation; violating contracts or lawful rules; misleading others; or stealing; 19 items). Consistent with Kaptein (2008b, 2011) and Zuber and Kaptein (2014), responses were given on a 5-point frequency scale (*never, rarely, sometimes, often, almost always)*, including the response option *no answer is applicable*.

Formal factors of ethics programs

Participants were also asked about the availability of formal codes or other forms of internal formal ethics programs in their organization, such as the existence of a code of ethics, ethical training, a telephone hotline, availability of ethics officers, formal ethics controls or an ethics report (adapted from Kaptein, 2014). Possible answers were *yes*, *no*, and *not applicable*.

Results

To assess criterion-related and incremental validity, correlation and regression analyses were conducted to examine the relation between the GECS dimensions and the dependent variable (observed deviant workplace behavior). As mentioned above, the observer-based reports on deviant workplace behaviors were assessed using a 5-point frequency scale. Though such scales are widely used in social sciences, we decided to dichotomize the response scale, partly because of its skewness and kurtosis but mainly because we can hardly expect participants to have a common understanding of "rarely, sometimes, and often." The linguistic meaning of those frequency expressions is too vague. Consistent with this reasoning is Bocklisch et al. (2012), who showed that the positions and shape of participant response patterns varied considerably and that frequency expressions such as "rarely, sometimes, often" were hardly equidistantly distributed. Dichotomizing reduces this linguistic vagueness. We first dichotomized each item (0 indicates that the corresponding behavior was never observed; 1 indicates that this behavior was observed at least rarely; see also Zuber and Kaptein, 2014). Calculating the sum across all items then yielded the number of situations across which misconduct was observed (ranging from 0 to 19). This variable served as a criterion variable in the regression analyses.

The results of the bivariate correlations and hierarchical regression analyses are depicted in **Table 6**. The bivariate correlations between the ten dimensions composing the GECS and the deviant workplace behavior scale were all significant ($ps < 0.01$) and in expected directions (see **Table 6**, last column). Using regression analyses, we then tested how strongly sociodemographic variables (step 1), formal factors of ethics programs (step 2), compliance factors (step 3) and integrity factors (step 4) contribute to the variance in the outcome variable deviant workplace behavior. As scores for the GECS dimensions, we entered the factor scores of the PCA. As shown in **Table 6**, entering the formal factors (step 2) following the sociodemographic variables (step 1) increased the accounting for predicted variance from 3 to 6%. Entering the compliance factors of the GECS further increased the explained variance from 6 to 33%. However, entering the integrity factors again increased the explained variance from 33 to 48%. Thus, the results provide evidence for the incremental validity of the GECS over and above formal factors, but they also support the view that the integrity factors contribute to predicting observed misconduct even above the compliance factors.

Though not shown in the table, we also conducted an analysis using only the integrity factors (after entering the sociodemographic variables and ethics programs factors) to better compare the overall utility of the compliance versus integrity factors in predicting the criterion variable. This model explained 46% of the variance in deviant workplace behavior, while the model with the compliance factors, as mentioned above, explained 33% of the variance. These results further confirm that the utility of the compliance approach is relevant but somewhat weaker than that of an integrity- or value-oriented approach.

Overall, the final analysis revealed that 6 of 10 dimensions of the GECS were significant predictors of the extent of observed misconduct ($ps < 0.05$). The significant positive relations indicated that, as expected, participants reporting higher levels of rule defectiveness, rule viability, pressure to compromise, or ill-conceived goals were likely to observe more misconduct. The significant negative relations indicated that participants reporting higher levels of controlling or of accountability were likely to report less misconduct at work.

Study 3 – Construct Validity

Data from Sample C ($N = 991$) were used to provide further evidence of the measure's construct validity by comparing the GECS with other established measures of related constructs. We examined convergent validity by examining the relations between the composite measures of compliance and integrity factors and theoretically related constructs. As previous authors suggested that an integrity-based culture is more focused on enabling self-governance and personal commitment (e.g., Paine, 1994; Verhezen, 2010; Wieland et al., 2014), we expected integrity-based factors to correlate positively with *autonomous motivation* and negatively with *controlled motivation*. In contrast, given that a compliance-based culture is proposed to be more focused on controlling people, we hypothesized that compliance-based factors of the GECS would correlate positively with controlled but negatively with autonomous motivation. To assess those relations, we included a well-known *work motivation* measure (Gagné and Deci, 2005).

Furthermore, we included a measure of *duty orientation* reflecting people's volitional obligation to perform organizational tasks, groups and missions (Hannah et al., 2014). This scale was originally developed in the context of active army soldiers but later also employed with government and corporate employees. This scale is interesting for us to examine construct validity, since it distinguishes between adherence to normative codes and rules (*duty to code*), the willingness to support and serve one's group and its members (*duty to members*), and the willingness to support the purpose of the group and to make personal sacrifices (*duty to mission*). We expected both integrity and compliance-oriented factors of organizations to be positively related to duty orientation, since the purpose of both GECS components is ultimately to ensure employees' consistency with organizational codes and standards. However, since compliance-oriented programs are more focused on compliance with rules, we

TABLE 6 | Results on hierarchical regressions and correlations with deviant workplace behavior (Sample B, Study 2).

	Step 1		Step 2		Step 3		Step 4		
	β	*SE*	β	*SE*	β	*SE*	β	*SE*	*r*
Sociodemographics									
Female	0.04	0.68	0.03	0.67	0.01	0.57	0.03	0.50	−0.07*
Age	−0.05	0.03	−0.06	0.03	0.03	0.03	0.05	0.02	−0.12***
Job position	0.11*	0.31	0.13**	0.31	0.11*	0.26	0.10*	0.24	0.16***
Years in company	−0.10	0.04	−0.08	0.04	−0.02	0.03	−0.02	0.03	−0.02
Size of the company	0.17***	0.33	0.19***	0.34	0.08	0.30	0.04	0.27	0.06
Formal factors									
Ethics code			−0.02	0.73	0.02	0.62	0.04	0.55	−0.02
Ethics training			0.03	0.84	−0.01	0.71	0.06	0.63	0.00
Telephone hotline			−0.22***	0.77	−0.17***	0.66	−0.12**	0.58	−0.07*
Ethics office			0.10	0.93	0.10	0.79	0.07	0.70	0.07
Ethics control			−0.09	0.81	−0.03	0.72	−0.06	0.63	−0.02
Ethics report			0.10	1.01	0.10	0.86	0.04	0.77	0.11**
GECS – Compliance									
Controlling					−0.13**	0.30	−0.10*	0.27	−0.17***
Sanctioning					0.02	0.31	0.03	0.29	−0.10**
Rule clarity					−0.12*	0.29	−0.07	0.26	−0.28***
Rule defectiveness					0.26***	0.28	0.10*	0.27	0.43***
Rule viability					0.31***	0.29	0.10*	0.29	0.41***
GECS – Integrity									
Accountability							−0.16**	0.31	−0.29***
Leader's role modeling							0.01	0.30	−0.36***
Pressure to compromise							0.40***	0.30	0.58***
Obedience							0.04	0.28	0.33***
Ill-conceived goals							0.11*	0.28	0.36***
Adj. R^2 (ΔR^2)	0.03		0.06 (0.03)		0.33 (0.27)		0.48 (0.15)		
F (ΔF)	3.71**		3.51*** (3.25**)		14.57*** (35.78***)		20.51*** (25.92***)		

*Dependent variable: sum of observed deviant workplace behaviors; ΔR^2 and ΔF refer to a change in R^2 and F statistics; Max. VIF refers to the largest variance inflation factor. *p < 0.05, **p < 0.01, ***p < 0.001.*

also expected compliance factors to reveal somewhat higher positive correlations with duty to codes than would integrity factors. In contrast, as integrity-oriented programs are more focused on encouraging intrinsic, motivated commitment to standards, we expected integrity factors to reveal higher positive correlations with duty to members and mission than would compliance factors.

Measures

Work motivation

Beyond the GECS, a German version of the Multidimensional Work Motivation scale (Gagné et al., 2015) was administered. This measure assesses five distinct types of motivation along a continuum from extrinsic to intrinsic motivation. These types are combined into one category representing *controlled motivation* (11 items, e.g., "I am involved in my job, because others put pressure on me," α = 0.85) and another one representing *autonomous motivation* (6 items, e.g., "I am involved in my job, because what I do in this job has a lot of personal meaning to me.", α = 0.92). Items were rated on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Duty orientation

Duty orientation was assessed with the 12-item *Duty Orientation* scale (Hannah et al., 2014). Items were translated into German using the backtranslation method. Hannah and colleagues suggested that duty orientation is a higher-order factor that reflects three subordinate concepts, such as duty to codes, duty to members, and duty to mission. We therefore used the overall scale across all items (α = 0.86) and the subscales (duty to codes, α = 0.78; duty to members, α = 0.78; and duty to mission, α = 0.77). Sample items include "I do what is right always," "I put the interest of my team ahead of my personal interest," and "I do whatever it takes to not let the mission of my organization fail." Items were rated on a 5-point scale (1 = *strongly disagree;* 5 = *strongly agree*).

Results

To examine convergent validity, we assessed the correlations between work motivation, duty orientation and the single and composite measures of compliance and integrity (**Table 7**). As shown, among the five integrity-based factors, leader's role modeling, accountability and pressure to compromise mostly show a convergence with autonomous work motivation ($rs > 0.24$, $ps < 0.001$), while obedience and ill-conceived goals coincided with more-controlled motivation ($rs > 0.21$, $ps < 0.001$). Among the five compliance-oriented factors, we mainly found that rule clarity correlated positively with autonomous motivation ($r = 0.25$, $p < 0.001$) and that controlling ($r = 0.22$, $p < 0.001$) with correlated controlled motivation.

Note that for calculating the correlations between the composite measures of compliance, integrity and work motivation, the composite measures were constructed after reverse coding the negative items. Overall, supporting our expectation, the composite integrity factor correlated positively with autonomous work motivation ($r = 0.37$, $p < 0.001$) and negatively with controlled motivation ($r = -0.11$, $p < 0.001$). At least partially also supporting our hypothesis, the composite compliance factor correlated positively with controlled motivation ($r = 0.13$, $p < 0.001$) but also positively with autonomous motivation ($r = 0.27$) (even though to a lesser extent than with the composite integrity factor).

Furthermore, consistent with our expectations, both the composite integrity and compliance factor correlated positively with duty orientation ($rs > 0.22$, $ps < 0.001$), with leader's role modeling and accountability revealing the largest correlations ($rs > 0.30$, $ps < 0.001$). Consistent with our more specific expectations, the compliance factors correlated somewhat more positively with duty to codes than did integrity factors, while integrity factors revealed higher correlations with duty to members than did compliance factors. Surprisingly, duty to mission revealed correlations only around zero.

Overall, the patterns of correlations in this study provided acceptable support for the convergent validity of the GECS. However, **Table 7** also shows that the specific dimensions composing the compliance or integrity factor do correlate, though most of them in the expected direction, to various degrees with work motivation and duty orientation measures, suggesting that the compliance or integrity factors are not homogeneous factors but rather overlap somewhat.

GENERAL DISCUSSION

This research has taken first steps toward developing, refining and testing a German ethical culture measure. In doing so, we intended to advance the nomological network of corporate ethical culture by integrating the notion of compliance- and integrity-based ethics programs (with its focus on how to steer organizations) with the notion of ethical culture (with its focus on what factors inhibit or foster ethical behavior). In several studies involving more than 2000 participants, we presented first evidence for the factorial structure, reliability and validity of the instrument. Concerning the factor structure, fit indices based on data from various (sub)samples suggested the 10-factor solution as the best-fitting model among those tested. Considering the model with two overarching second-order factors (integrity and compliance) revealed acceptable or nearly acceptable fit indices. Item reliabilities of all subscales were good, ranging between 0.72 and 0.91. We found supporting convergent and divergent validity of the scale derived from CFA in most cases across the two samples.

Further supporting convergent validity of the scale, we found that compliance and integrity factors were in most cases predictably related to different forms of work motivation and duty orientation. The correlations were mostly modest but still significant. Composite compliance and integrity factors were mostly related in expected directions with controlled and autonomous work motivation and with variants of duty orientation (duty to codes and duty to members). The composite integrity factor was positively related to autonomous motivation but negatively to controlled motivation. The composite compliance factor, on the other hand, correlated positively with controlled motivation. However, somewhat unexpected was that the composite scale of compliance factors also correlated with perceived autonomous motivation (although to a lesser extent than did the composite integrity factor). This correlation may suggest that compliance factors can also be advantageous to autonomous motivation. As will be discussed later, this finding may provide an interesting avenue for future research.

Furthermore, the GECS revealed good predictive validity. Our studies showed that both compliance and integrity factors predicted significantly deviant workplace behavior beyond the formal factors of ethics programs. At the same time, the analyses of incremental validity stressed the added value of integrity factors in predicting deviant workplace behavior over and above compliance-base factors. Specifically, the integrity-based factors accounted for a 15% additional amount of variance beyond compliance factors. Consistent with previous studies (Treviño et al., 1999; Tyler and Blader, 2005), these results support the view that organizational strategies and factors relying on the monitoring of rule adherence may not be the only means of shaping people's deviant behavior. Moreover, in the research reported here, the utility of a command and control approach overall appears to be weaker than that of an integrity- or value-oriented approach that attempts to influence ethical behavior by encouraging employee's self-responsibility and moral motivation. Controlling for sociodemographic characteristics and ethics programs factors, the model including the compliance factors explained 33% of the variance of deviant workplace behavior, but the model including the integrity factors explained 46% of the variance.

Clearly, it would be useful to study the GECS together with other ethical culture approaches to examine the criteria and incremental validity of the GECS compared to those of other models. In our current research, we refrained from including other ethical culture questionnaires in our surveys simply to avoid too much burden from too lengthy questionnaires (e.g., the ethical culture questionnaire, the CEV, by Kaptein, 2008a, contains 58 items). Measurement economy must always be accounted for and carefully balanced out when running such studies. Nevertheless, a first rough comparison between the GECS and the CEV may be given building on Kaptein's study (Kaptein, 2011), which included the nearly identical observed work deviant behavior scale as in our study. (The only differences were that Kaptein's study included a list of 37 items of observed deviant

TABLE 7 | Relation between GECS, work motivation and duty orientation (Sample C, Study 3).

GECS	*M* (*SD*)	Controlled motivation	Autonomous motivation	Duty orientation	Duty to codes	Duty to members	Duty to mission
Controlling	3.19 (0.97)	0.22***	0.10**	0.15***	0.16***	0.11***	0.12***
Sanctioning	3.41 (0.90)	0.16***	0.17***	0.20***	0.20***	0.18***	0.13***
Rule clarity	3.89 (0.98)	0.18***	0.25***	0.22***	0.21***	0.24***	0.11***
Rule defectiveness	2.86 (1.05)	0.06	−0.15***	−0.04	−0.09**	−0.15***	0.11***
Rule viability	2.91 (1.05)	0.10**	−0.16***	−0.15***	−0.16***	−0.21***	−0.02
Accountability	3.57 (0.82)	0.12***	0.37***	0.33***	0.30***	0.36***	0.19***
Leader's role modeling	3.51 (1.02)	0.13***	0.40***	0.30***	0.27***	0.36***	0.13***
Pressure to compromise	2.28 (1.08)	0.11***	−0.24***	−0.13***	−0.18***	−0.27***	0.08*
Obedience	2.95 (1.14)	0.21***	−0.20***	−0.05	−0.07*	−0.15***	0.07*
Ill-conceived goals	2.54 (0.99)	0.30***	−0.13***	−0.02	−0.01	−0.20***	0.13***
Composite compliance factor	3.35 (0.61)	0.13***	0.27***	0.25***	0.26***	0.29***	0.08**
Composite integrity factor	3.46 (0.73)	−0.11***	0.37***	0.22***	0.22***	0.37***	0.00

*To calculate the composite compliance and integrity factors, items from the scales rule defectiveness, viability, pressure to compromise, obedience and ill-conceived goals were reversed. *p < 0.05, **p < 0.01, ***p < 0.00.*

workplace behavior and a general score calculated by averaging the scores across all items. Our study included a list of 19 behavioral items, and we calculated a general score by summing across all dichotomized items.) Conducting regression analyses, the author found that a model entering sociodemographic variables, formal factors of ethics programs and ethical climate (Victor and Cullen, 1987, 1988) accounted for 14% of the variance in observed unethical behavior. Upon entering the CEV, the exploratory power of the complete model increased to 31%. In our study, the analyses revealed that entering sociodemographic and formal factors of ethics programs accounted for 6% of the variance in observed unethical behavior. Upon entering the GECS with the 10 factors, the exploratory power of the complete model increased to 48%. This result is promising and indicates that, at least in this case, our measure appears to be superior in predicting observed unethical behavior.

This measure has several strengths. As a novelty, this measure integrates the notion of compliance- and integrity-based ethics program (with its focus on how to steer organizations) with the notion of ethical culture (with its focus on what factors inhibit or foster ethical behavior). To our knowledge, prior research on climate or culture has never considered this association, despite the prominence of the compliance and integrity distinction in theory and practice. At the same time, studies on compliance- and integrity-based ethics management have rarely conducted rigorous empirical research. We took the challenge to develop a measure to address the gap. Data gathered to test the scale were obtained across large samples, in two countries (Germany and Switzerland), and across a wide variety of organizations and jobs. This data collection is not taken for granted since many studies in this domain gather data within single organizations. Hence, the heterogeneity of our data allows some confidence to claim that the GECS is applicable across varying organizational contexts. Offering researchers a German scale will allow them to conduct stringent research in German-speaking countries on antecedents and consequences of compliance and integrity-oriented organizational cultures. In addition, such a measure allows organizations, risk managers and compliance officers to reflect the current state of corporate ethical culture within their own organizations, to design targeted interventions and to monitor organizational progress.

The present measure also represents an advancement to existing instruments in terms of including less-problematic item wording (to minimize social desirability, we avoided terms such as "moral") and including current theoretical concepts. Drawing on important insights from behavioral ethics social psychology and organizational research, our measure incorporated dimensions such as ill-conceived goals, pressure to compromise and accountability. Furthermore, building on insights from practitioners, we incorporated dimensions such as rule defectiveness and rule viability. These concepts have thus far not been addressed in prior measures. In fact, it is interesting that nearly all of these factors were the most relevant predictors of deviant workplace behavior. Of course, we do not claim that our measure contains all relevant dimensions, but the findings indicate that our measure contains at least some important dimensions over and above previous measures.

Though the current measure is in German, we do not believe that the content is only applicable and relevant for the German-speaking world. In fact, compliance and integrity-based ethics programs are the leading approaches to ethics in today's business world (e.g., OECD, 2009). Therefore, the application of the instrument in other countries would be not only very meaningful but also needed. Clearly, this process would also require testing and validation of the instrument in other languages and countries.

This research also has interesting implications for practice and future research. As mentioned above, the GECS offers practitioners a framework and measure to examine their state and progress within their own organization. In addition, our finding that integrity-based factors account for an additional amount of variance beyond compliance factors is relevant for practice, since most companies currently appear to focus primarily on improving control and command strategies in combating unethical behavior. Our results, however, strongly suggest that more attention should be focused on procedures that promote self-regulation and responsibility.

The GECS is also a basis for addressing empirical questions about the antecedents and consequences of compliance- and integrity-oriented cultures. Integrating the compliance and integrity distinction offers a unique opportunity to steer research in new directions. One fruitful direction for future research is certainly related to studying the various implicit or explicit assumptions about how compliance- and integrity-based cultures may be associated with employee motivation, attitudes and behavior (Paine, 1994; Verhezen, 2010). However, many of those assumptions still await empirical examination. In a recent theoretical paper, Stimmler and Tanner (2019) proposed that the potential implications of a compliance- or integrity-oriented culture may be better understood when considered in combination with perceptual, motivational, affective and behavioral processes at the individual level. For example, the regulatory focus theory (Higgins, 1997, 1998) can provide us with an interesting heuristic to deepen our understanding of what the psychological implications for the individual might be when an organization counts more on a compliance or integrity culture. With a regulatory focus, people can regulate their behavior via a prevention or promotion focus. Numerous empirical studies have shown that these different foci evoke different psychological processes (Higgins, 1997, 1998, 2001). We hypothesize that a compliance-oriented culture may be more likely to evoke a prevention focus, while an integrity-oriented culture may be more likely to support a promotion focus among employees. This avenue may be interesting for future research to examine these relations more thoroughly.

One specific direction for future research also relates to the, as mentioned above, somewhat unexpected finding that the composite compliance factor also correlated with autonomous work motivation. This finding could point to positive implications associated with compliance-oriented culture worth examining in more detail. Interestingly, empirical research in this domain is nearly absent, even though, for instance, the question about the possible implications of monitoring employees has been highly debated for many years (Frey, 1993; Ferrin et al., 2007). This literature primarily expect negative effects on employee work effort and intrinsic motivation. However, we speculate that, besides the potentially negative implications of a control- and command approach, such an approach may also be likely to provide employees with a comfortable feeling of certainty about the processes in the firm. An integrity-based culture, on the other hand, with its focus on encouraging self-governance, may create more uncertainty and uneasiness since it lacks explicit guidelines. It seems obvious that both compliance and integrity-oriented strategies are necessary for an effective ethical business culture. Nonetheless, our knowledge about the negative and positive implications associated with a compliance and an integrity-oriented culture and what combination or interplay may be most effective is severely limited.

Also interesting is the finding that leader's role modeling did not emerge as a significant predictor of deviant workplace behavior, though past studies strongly emphasized the relevance of the "tone of the top" and leaders being role models to encourage similar behaviors among employees (e.g., Treviño et al., 1999; Kaptein, 2011). Leader's role modeling, however, correlated highly positively with autonomous work motivation. This result suggests that role modeling is possibly more relevant for motivation than for behavior implications. Another possibility may be that leader's role modeling is more likely to moderate the relationship between some other cultural dimensions and unethical behavior. It remains open for research to examine this issue in further detail.

Of course, this research also has limitations. The first one is associated with the fact that our analyses (CFA) revealed only moderate statistical support for dividing the single factors into composite compliance and integrity components. Although the GECS provides a first essential step in assessing compliance or integrity-based cultures, an important endeavor for further work is to further ameliorate the items and foci. In fact, whereas there is a fair consensus in the literature about what the governance strategies of a compliance-based program (such as control, monitoring, and sanctioning) are, there are still divers opinions about exactly what procedures constitute an integrity-based program. Thus far, we suggested accountability and leader's role modeling as crucial building blocks of an integrity culture. Future discussions and work will probably reveal further strategies that may then be incorporated into the GECS.

Another limitation refers to the fact that some expectations about the relations between compliance and integrity factors were not confirmed. For example, in contrast to our expectations, integrity factors did not correlate with duty to mission (neither did the compliance factors). This finding might be caused by the fact that the duty orientation scale was originally developed in the context of army soldiers (Hannah et al., 2014). According to Hannah et al. (2014) and taking a closer look at the duty to mission items, this subconcept is about individual's willingness to make personal sacrifices and accept personal risks to achieve the goals of the group. We suppose that in the context of "normal" organizational life, such expectations of employees are too unrealistic and therefore likely to result in correlations around zero.

Finally, a limitation of this research may be the possibility of a common method bias. Recall that in study 2, the same respondents answered the GECS and deviant workplace behavior questions. One strength of our studies is that data were collected from heterogeneous samples, including employees and managers across various organizations. This variety has allowed us to examine the robustness of the proposed structure across heterogeneous organizational contexts. Although we administered observed rather than self-reported misconduct and used different response formats to assess the predictor and criterion variables to reduce this problem, we cannot completely exclude the possibility that the associations between the predictor and criterion measures may be biased. Thus, future research should attempt to collaborate with single organizations and to assess the predictor and criterion variable for different employees from the same working groups within an organization.

Overall, we believe that the GECS provides a first measure to build upon to advance research in German-speaking countries, to provide a basis for empirically examining antecedents and the short- and long-term consequences of compliance- and integrity-based cultures, and to improve our understanding of the influences that may hinder or facilitate the effectiveness of such procedures. In this vein, we strongly believe that the GECS can fuel future research and make contributions to the field of organizational ethics.

DATA AVAILABILITY

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies were carried out in accordance with the ethical guidelines of the Zeppelin University. The online studies were approved by the Ethics Committee of the Zeppelin University and the Department of Psychology at the University of Zurich. The studies were carried out in accordance with the APA ethical guidelines, guidelines of the Swiss Psychological Society, and the European Commission (Horizon 2020). All participants indicated affirmative consent by clicking the button, "I have read the information and I agree with them."

AUTHOR CONTRIBUTIONS

CT and KG designed the studies and collected the data. NW and KG did the analyses. All authors contributed to the writing and agreed to be accountable for all aspects of the work.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01667/full#supplementary-material

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